New Zealand Department of Scientific and Industrial Research
GEOPHYSICS DIVISION

NEW ZEALAND

SEISMOLOGICAL REPORT

1959

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SEISMOLOGICAL OBSERVATORY, WELLINGTON, NEW ZEALAND

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CONTENTS

	Page
Introduction	1
Principal N.Z. Earthquakes in 1959 ...	2
Stations of the N.Z. Network	4
Timing Arrangements	11
Technical Staff	11
Station Readings	
N.Z. Stations and Suva	13
Apia and Afiamalu	149
Raoul Island	163
Scott Base	171
Hallett	189
Instrumentally Determined Epicentres ...	240
Index of Felt Earthquakes	243
Publications by Staff Members	253
List of Maps	254

INTRODUCTION

The New Zealand Seismological Report for 1959 follows the presentation of its immediate predecessors, and summarises the standard measurements carried out at the Seismological Observatory, Wellington, and its out-stations. Some descriptive matter has been included to make the Report of some use and interest to people other than professional seismologists. The plan of the Report should be apparent from the table of contents above, and further explanations will be found at the head of each section.

New Zealand data for 1960, 1961 and 1962 are now available at the Observatory, and standard readings have been forwarded to international data centres. Reprints of research papers by members of the staff, and material that is not regularly included in this Report are issued as a series of S-Bulletins. The Observatory is prepared to consider additional agreements to exchange material of this kind with other organisations.

PRINCIPAL NEW ZEALAND EARTHQUAKES IN 1959

Perhaps the most noteworthy feature of the seismic activity of 1959 is that there were no events obviously calling for special discussion. It was a year without abnormally large shocks, abnormally deep ones, swarms, aftershocks, or activity in unusual places. 82 felt earthquakes were reported, 58 in the North Island only, 19 in the South Island only, and 5 in some part of both islands.

The two largest shocks in the epicentre list (Epicentres 59/48 and 59/96) were both centred well off the coast, some 300 miles to the north-east of East Cape. Both were deep-focus earthquakes. The first, on April 8, was the deeper, with a focal depth of 250 miles (400 km) and a magnitude of 6.7. No felt reports were received. The second and larger shock, on June 27, had a magnitude of 7.0 and a focal depth of 60 miles (100 km), and was felt over most of the eastern half of the North Island, as far south as Wellington; but intensities did not exceed MM 3.

Most of the deep shocks during the year had magnitudes less than 5. The North Taranaki shock of June 2 (Epicentre 59/81), with a focal depth of 125 miles (200 km) and a magnitude of 5.6, was felt widely over the provinces of Hawkes Bay and Wellington, and at Nelson and Blenheim in the South Island, with intensities of MM 2-3; but there is a complete absence of reports from the epicentral region. Three shocks with focal depths of about 100 miles (160 km) had magnitudes between $5\frac{1}{2}$ and $5\frac{3}{4}$; but since those on July 31 and November 12 (Epicentres 59/115 and 59/169) had submarine epicentres to the north of Tasman Bay, and the third, on January 24 (Epicentre 59/11) lay near White Island in the Bay of Plenty, they were less generally felt. Two comparable shocks on April 16 and May 18 (Epicentres 59/55 and 59/69) were not reported at all, nor were the magnitude 5.0 shocks of October 13 and November 22 (Epicentres 59/151 and 59/175), which had focal depths of 175 miles (280 km) and 150 miles (240 km) respectively. The deepest shock on the list (Epicentre 59/58), with a focal depth of 375 miles (600 km) lies in the Kermadec Islands region, and was of too small a magnitude (5.5) to be felt in New Zealand.

The largest shallow shock, on May 22 (Epicentre 59/72) had an instrumental magnitude of 6.0, and an epicentre in the Marlborough Sounds region. The felt area extended from Taumarunui to Banks Peninsula. Isoseismals have been shown on Map 3 (in the pocket inside the back cover of this Report). It was also reported to have been felt aboard fishing vessels in Cook Strait. In terms of property damage, this was probably the most severe shock since the Wairarapa earthquakes of 1942. Picton suffered most severely, but structural damage was confined to ageing buildings dating from the first decade of the century. Chimneys, plaster and lavatory pans in Blenheim and Wellington were also affected. In all some 460 insurance claims were lodged with the Earthquake and War Damage Commission.

Two shallow shocks had magnitudes near $5\frac{1}{2}$, that on February 3 (Epicentre 59/13) and that on December 29 (Epicentre 59/197). Both were in Taranaki, the former just south of Patea, and the latter in the sparsely populated area to the south-east of Whangamomona. Reported intensities

did not exceed MM 4. On the other hand, a shock of magnitude 4.8 on July 30 (Epicentre 59/114) centred some 20 miles north of Marton resulted in 40 insurance claims for damage in the Wanganui district.

Of the other shallow shocks above magnitude 5, two were in the far south of the country. The larger shock, on September 10 (Epicentre 59/128) was centred slightly to the west of Solander Island in the western approaches to Foveaux Strait, and had a magnitude of 5.4. The other shock, on March 13 (Epicentre 59/13) had a magnitude of 5.0 and an epicentre some 50 miles to the west of Milford Sound. Neither was reported felt. Adequate study of the seismicity of this active region of New Zealand is still limited both by the lack of adequate instrumental coverage and by the absence of population. The epicentres of the three remaining shocks, all of magnitude 5.1 (Epicentres 59/179, 59/185 and 59/187) were all away from centres of population; but the last of these shocks, in the Northern Ruahines, was felt on both sides of the range with intensities up to MM 5.

Three smaller shocks were reported felt with intensities of MM 5 or more. The shallow earthquake of April 9 (Epicentre 59/49), centred near Kimbolton, was felt with an intensity of MM 4 over an area including Dannevirke, Waiouru and Eketahuna, and was reported to have reached MM 5 in Wanganui. Its instrumental magnitude was 4.9. A single felt report from Kaikoura assigns an intensity of MM 5 to the shock of June 30 (Epicentre 59/101). It had an epicentre off the coast some 20 miles from the town, and an instrumental magnitude of 4.1. An intensity of MM 6 reported from Kawerau on July 23 is considered doubtful. The epicentre (59/108) lies between Kawerau and Te Teko, which reported MM 3. The instrumental magnitude of only $3\frac{3}{4}$ makes an intensity of MM 6 unlikely, unless the shock was of abnormally shallow origin and the observer very close to the epicentre.

STATIONS OF THE NEW ZEALAND NETWORK

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

During 1959, there were no important changes in the recording network, and with minor interruptions, recording continued throughout the year. There are few felt earthquakes which cannot be at least approximately located, but the distribution of stations is such that in certain districts, particularly the far south of the country, the origins cannot be placed with the highest accuracy. The discontinuance of recording at New Plymouth in 1958 left the network somewhat critically dependent upon the operation of the station at Tongariro, but the normal standard of coverage was successfully maintained.

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

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	V
Benioff	Z	1 sec	0.2 sec	72,000
			70 sec	765
	N	1 sec	70 sec	

APIA (AP)

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 volcanic rock.

Instrument	Component	Period	Damping	Magnification	Date
Wood-Anderson	N	0.80 sec	15:1	2050	12/57
Wood-Anderson	E	0.80 sec	15:1	2050	12/57

SUVA (SU)

Latitude: 18°09' S

Longitude: 178°27' E

Height above mean sea level: 6 metres, 20 ft.

Geocentric direction cosines:

a	-0.950 515
b	+0.025 720
c	-0.309 613

Lithological Foundation: Hard, fine-grained calcareous marl.

Instrument	Component	Period	Damping	Magnification	Date
Milne-Shaw	N	12 sec	20.1	250	12/57

RAOUL (RL)

Latitude: 29°15'.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
Willmore	Z	To = 0.8 sec Tg = 0.25 sec.

ONERAHI (ON)

Latitude: 35°46'.5S

Longitude: 174°21'.7E

Height above mean sea level: 33 metres, 110 ft.

Geocentric direction cosines: a -0.809 234
b +0.079 892
c -0.582 028

Lithological Foundation: Basalt.

Instrument	Component	Period	Damping	Magnification	Date
Wood Anderson	E	0.9 sec	10:1	2,800	to 22/8/59
		1.2	23:1	2,800	22/8/59

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	Date
Milne-Shaw	N	10 sec	20:1	150	7/57

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	Period	Damping	Magnification	Date
Willmore	Z	0.8 sec	critical		8/59

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	Period	Damping	Magnification	Date
Wood Anderson	N	0.8 sec	critical	1,400	7/57

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	Date
Jones	Z	0.5 sec	10:1	11,000	Nominal

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	Date
Imamura	NE(X)	8 sec	5:1	2	Nominal
	NW(Y)	8	5:1	2	
	Z	2	5:1	2	

COBB RIVER (CB)

Latitude: 41°05'.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	Nominal

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	Period	Damping	Magnification	Date
Milne-Shaw	N	12 sec	30:1	250	
Galitzin-Wilip	Z	To=10.6 Tg=10	critical	606	9/57
Wood-Anderson	n	0.8	critical	2,800	

This station has also Wenner and Imamura strong-motion instruments.

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	Nominal

GERBLES 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	Date
Wood-Anderson	N	0.8	critical	2,800	9/57

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	Date
Galitzin	Z	To=Tg=14 sec	Critical	217	5/57
	N	24	Critical	323	
	E	24	Critical	305	

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	
Willmore	Z	1	2		Nominal
Columbia	Z	15	50	1,200	
	N	15	75	1,200	
	E	15	75	1,200	

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	25 sec	1,000	Nominal
	N	1.0	10		
	E	1.0	25		
	z	1.0	0.2	100,000	Nominal
	n	1.0	0.2		
	e	1.0	0.2		

TIMING ARRANGEMENTS

Radio time-signals originating in the Seismological Observatory, Wellington, are broadcast 15 times daily by station 2YA of the New Zealand Broadcasting Service. These signals are automatically impressed on the records by an arrangement that has been described by B.H. Olssen in the N.Z. Journal of Science and Technology (Vol. 37B, pp 115-8, 1955 Sept.). All New Zealand Stations other than Auckland, Bunnythorpe, Cobb River, Monowai and Wellington have this equipment. At Wellington, the time marks are directly derived from the national time-service. At the other stations, several signals a day are recorded by the operator, who depresses a hand-key on hearing the signal. At Suva, Raoul Island, Apia, Afiamalu and the Antarctic stations similar methods are in use. The minute marks at the out-stations are provided either by an electric pendulum clock of the Synchronome type, or by a marine chronometer fitted with electric contacts. Scott Base has a quartz crystal clock.

TECHNICAL STAFF 1959

WELLINGTON

Superintendent: R.C. Hayes

Geophysicists: R.R. Dibble, M.Sc.; G.A. Eiby, M.Sc.; M.G. Muir, M.Sc.; A.A. Thomson, M.Sc.

Technicians: J. Craven (February to July); B.R. Gibson; J.H. le Fort, B.Sc. (until August); M.A. Lowry (from August); A.M. Maher (from September).

APIA

Officer-in-charge: J.G. Keys.

SCOTT BASE

Observer: R.V. Pemberton

HALLETT

Observer: L.R. Jones, M.Sc.

STATION READINGS

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

Details of New Zealand earthquakes have been omitted if the Instrumental Magnitude was less than 5, but the epicentres of all felt earthquakes and others whose magnitude exceeds 4 are listed in a separate section of the Report.

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 given with the station constants in the section 'Stations of the N.Z. Network'.

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

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

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

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

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

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

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

NEW ZEALAND STATIONS AND SUVA

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 1	SU	e(P)	N	07 27 37		9 10		
		eL	N	28¾		82 10		
	GP	eP	N	07 31 56				
	AK	eL	N	07 35				
	WN	eL	ZN	07 36½		6 17		
	RX	eLq	NE	07 40½				
		eLr	Z	41½				
		M	NE	42		6 20	5 20	5¾ RX
	Epicentre:			07 26 12	19S 176W		USCGS	
1	SU	e	N	07 52 18		4		
		eL	N	52½		97 6		
	AK	e	N	07 54 43		1 3		
		eL	N	08 00½		2 12		
	GP	eP	N	07 55 35				
	WN	eL	ZN	08 02	6½ 17	9 18		
	RX	eL	NE	08 04		6 30		
		eL	Z	05	11 25			
		M	NE	05½		6 22	6 22	5¾ RX
	Epicentre:			07 49 35	18½S 177W		USCGS	
4	SU	e(S)	N	03 35 10				
		eL	N	36		8 12		
	Epicentre:			03 32 15	21S 174½W		USCGS	
5	SU	e(P)	N	09 40 55		3		
	Epicentre:			09 35 13	7S 156½E	100km	USCGS	
5	SU	iP	N	09 48 51s		28 3		
		e(S)	N	50 23		24 5		
	ON	P	E	09 50 09e				
		e	E	52 46				
	AK	iP	N	09 50 24n		19 3		
		S	N	53 15		6 10		
	TU	P	N	09 50 52				
		eS	N	54 03				
	TO	P	Z	09 50 54d				
		e	Z	51 05				
	CB	P	E	09 51 12e				
		i	E	15				
		eS	E	54 50				
	WN	iP	ZN	09 51 13d	23 4	6 5		
		iPP	ZN	30	47 5	21 5		
		S	N	54 56		27 5		
		iScS	N	10 02 40		6 5		
	KM	P	X	09 51 24				
	GP	iP	N	09 51 36				
		eS	N	55 26				
	RX	iP	Z	09 51 56d	9¼ 6			
		iP	N	56n		8 6		
		S	NE	56 02		11 16	8 16	6 RX
		eL	ZN	57 34	22 16	10 16		
		M	NE	58½		11 20	11 18	
	Epicentre:			09 46 42	22S 171½E		USCGS	6½-6¾

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
JAN 6	TO	eP	Z	12	00	40									
	GP	eP	N	12	01	06									
	RX	eL	N	12	14					2	20				
6	GP	eP	N	14	59	07									
	TO	eP	Z	14	59	15									
	Epicentre:			14	48	03		7½S	105½E					USCGS	
8	KP	P	Z	22	44	47									
		i(pP)	Z			54½									
	TO	eP	Z	22	45	00									
		epP	Z			07									
	TU	e	N	22	45	04									
	GP	eP	N	22	45	02									
	WN	e(P)	N	22	45	07									
		eL	N	23	03½										
	KM	e	X	22	45	07									
	RX	eL	ZNE	23	04										
		M	N		09					2	19				5½ RX
	Epicentre:			22	36	08		4½S	138½E						
10	KP	iP	Z	03	13	29	u								
10	KP	eP	Z	06	00	32									
10	KP	P	Z	06	09	09									
	SU	e	N	06	06	50									
10	ON	P	E	09	19	05									
	TU	eP	N	09	19	06									
		eS	N		20	17									
		e	N			44									
	KP	P	Z	09	19	08									
		e	Z		20	37									
	TO	eP	Z	09	19	19									
	WN	eS	N	09	21	25									
		e	N		22	16									
	CB	eS	E	09	21	45									
	GP	eS	N	09	22	31									
	Epicentre:			09	17	34		34S	178½W	N?				NZ(D)	5.2 NZ
10	TU	eP	N	17	02	36									
		eS	N		03	43									
	ON	eP	E	17	02	40									
		e	E		03	04									
	KP	P	Z	17	02	40									
	TO	eP?	Z	17	02	54									
	WN	eS	N	17	04	51									
	CB	eS	E	17	05	13									
	KM	eS	X	17	05	53									
	GP	eS	N	17	05	54									
	Epicentre:			17	01	09		34½S	178½W	>N				NZ(D)	5.2 NZ
10	KP	eP	Z	22	02	17									
10	KP	P	Z	23	24	11									
11	KP	eP	Z	01	04	47									
11	KP	eP	Z	13	30	22									
		e	Z			40									
	RX	eL	NE	13	44					1	16	1	16		
	Epicentre:			13	26	00		21S	174½W					USCGS	
11	KP	P	Z	16	31	27									
		e	Z			36									

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
JAN 11	KP	P	Z	16	34	00									
12	KP	P	Z	17	51	22	d								
	Epicentre:			17	41	29		14½N	145E	150	km			USCGS	
13	SU	e	N	01	23	45									
	GP	eP	N	01	25	49									
	KP	P	Z	01	25	24½									
		PcP	Z		26	01									
	RX	eS	NE	01	34	42				1	10	1	8		
		eL	NE		44										
		M	NE		50					2	20	2	20		5¾-6 RX
	WN	eL	ZN	01	47½										
	Epicentre:			01	15	25		13½N	146E					USCGS	6¾
13	KP	eP	Z	07	45	21									
	Epicentre:			07	33	43		3S	102E	150	km			USCGS	
13	SU	e(P)	N	09	05	32									
		eS	N			57									
		L	N		06¾										
	KP	P	Z	09	09	31½									
		i	Z			41									
	WN	e	N	09	10	09									
	GP	eP	N	09	10	33									
	RX	eL	ZNE	09	26							2	20		5½ RX
13	KP	eP	Z	09	51	12									
	Epicentre:			09	37	18		9S	67½E					USCGS	
14	KP	P	Z	02	05	29									
	TU	eS	N	02	07	35									
14	KP	P	Z	13	21	11									
	Epicentre:			13	17	39		21S	179W	650	km			USCGS	
15	SU	eP	N	21	22	22				7	5				
		iS	N		23	54	s			65	5				
	KP	iP	Z	21	23	19	d								
	TU	eP	N	21	23	26									
		eS	N		25	48									
	TO	eP	Z	21	23	30									
		S	Z		25	03									
	WN	eP	ZN	21	23	51				1	1				
		S	N		26	33	n			10	1				
		iScS	N		34	41				14	4				
	CB	eP	E	21	23	55									
		eS	E		26	41									
		e	E			46									
	KM	eP	X	21	24	12									
		i	X			32									
		eS	X		27	11									
		eScS	X		34	47									
	GP	P	N	21	24	18									
		S	N		27	23									
	RX	SP	N	21	26	49				1	14				
		eS	NE		27	58				2	15	1	15		
	Epicentre:			21	20	26		25½S	180	500	km			USCGS	6½
16	KP	P	Z	01	44	23	u								
		pP	Z			43									
	RX	eL	N	02	18										
		eL	Z		20										
		M	N		21					2	20				6 RX
	Epicentre:			01	31	22		52½N	171W					USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
JAN 16	RX	L	NE	08	21	00				2	18	3	13		
		eL	Z			23½			2 11						
16	KP	P	Z	10	55	53									
		e	Z			56	16								
	WN	eP	N	10	56	28									
	GP	eP	N	10	56	50									
	RX	eL	NE	11	04					1	20				5¼ RX
	Epicentre:			10	51	52		22S	170E					USCGS	
17	KP	eP	Z	11	37	11									
	GP	P	N	11	37	49									
	Epicentre:			11	30	46		10S	162½E					USCGS	
17	KP	eP	Z	13	47	11									
18	KP	P	Z	14	48	34									
		i	Z			41									
		e	Z			50	46								
	GP	eP	N	14	49	03									
	RX	eL	ZNE	15	04					2	20	2	20		5¾ RX
	Epicentre:			14	41	06		5S	152½E					USCGS	
18	KP	eP	Z	19	33	15									
	Epicentre:			19	25	45		5S	152½E					USCGS	
18	SU	iS	N	22	24	40	n			24	2				
		e(L)	N			25¾				115	5				
	AK	P	N	22	27	14	(n)								
		S	N			30	21								
	KP	iP	Z	22	27	19	u								
		i	Z			28	28								
	WN	eP	N	22	27	49									
		eS	N			31	23			1	1				
		iScS	N			38	00			4	5				
	CB	eP	E	22	27	50									
		eS	E			31	27								
	KM	eP	X	22	28	06									
	GP	eP	N	22	28	13									
		eS	N			32	06								
	TU	eS	N	22	30	33									
	Epicentre:			22	23	15		19S	178W	450	km			USCGS	6¼
19	TO	eP	Z	10	49	00									
	RX	eL	N	11	02½					2	18				5½ RX
	Epicentre:			10	43	42		16S	168½E					USCGS	
20	KP	eP	Z	16	55	26									
		e	Z			37									
	RX	eS	NE	17	02	8						1	18		
		eSS	NE			06	54			1	15	2	15		
		eLq	N			12				4	25				
		M	NE			13				4	20	1	20		6 RX
		eL	Z			16		8	20						
	Epicentre:			16	46	11		9S	126E					USCGS	
21	KP	P	Z	11	20	07									
		pP	Z			17									
	TO	eP	Z	11	20	11									
		epP	Z			21									
	Epicentre:			11	08	10		19N	120E					USCGS	
22	TO	eP	Z	05	22	50									
	CB	eP	E	05	22	57									

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
JAN 22	WN	P	ZN	05	23	03		10	8	2	5				
		i	ZN			26	16	6	10						
		iS	N			33	22			9	10				
		iSS	N			38	45			23	20				
		eL	ZN			49		17	30	9	25				
		M	ZN			55¾		74	20	36	20				
	GP	eP?	E	05	23	09									
		e(P)	E			16									
	KM	eP	X	05	23	13									
	RX	P	Z	05	23	15		4	8						
		eP	N			15				2	10				
		e	Z			53		7	16						
		S	ZN			33	29	7	16	22	20				
		ePS	ZN			34	35	7	12	23	18				
		eSS	N			38	30			19	23				
		eL	N			50				11	20				
		eL	Z			52		4	26						
		M	N			57				47	21				
	SU	e	N	05	30	01				10	5				
		e(L)	N			38				42	20				
	AK	eS	N	05	32	47				3	17				
		eSS	N			37	43			3	16				
		eL	N			49				7	20				
	Epicentre:			05	10	25		34N	142E					USCGS	6¾
22	KP	P	Z	22	28	53									
		e	Z			29	06								
22	KP	P	Z	23	16	56									
22	TU	eS	N	00	35	18									
	TO	eS	Z	00	35	55									
24	WN	eS	N	00	36	18									
		eL	N			38½									
	GP	S	N	00	37	21									
	AK	eL	N	00	37¾										
	RX	eL	N	00	41¼					2	20				
		eL	Z			43½		3	15						
	Epicentre:							Probably Kermadec region NZ							
24	TU	iP	N	10	49	40½	s								
		iS	N			50	03								
	TO	P	Z	10	49	50½									
		e(S)	Z			50	24								
	ON	eP	E	10	49	58									
		S	E			50	32								
	WN	P	N	10	50	14									
		S	N			51	03								
	CB	eP	E	10	50	24									
		S	E			51	22								
	KM	e	X	10	50	49									
		S	X			51	59								
	GP	P	N	10	50	50									
		S	N			52	07								
	Epicentre:			10	49	11		37.5S	177.1E	170	km	NZ(B)			5.7 NZ
								Felt Waikaremoana and Motu MM2.							
24	KP	eP	Z	15	41	15									
	RX	eL	N	15	57					2	16				
		eL	Z			59		3	17						
	Epicentre:			15	33	56		New Britain region 100 km USCGS							
24	ON	eP	E	15	56	24									
	KP	P	Z	15	56	37	(u)								
		pP	Z			58									

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JAN 24	TU	eP	N	15	56	39							
		eS	N	16	00	36							
	CB	eP	E	15	57	11							
	WN	eP	N	15	57	14							
	KM	eP	X	15	57	35							
	GP	eP	N	15	57	39							
		eS	N	16	02	35							
	Epicentre:			15	51	47	17½S	175W	100	km	USCGS		
24	RX	eL	ZN	20	32				2	20			6 RX
	Epicentre:			19	42	20	15N	92½W			USCGS		6¼
24	KP	PKP1	Z	20	15	20							
		PKP2	Z		16	13							
		ePP	Z		20	00							
	RX	eSSS	N	20	48	05			2	22			
	Epicentre:			19	55	14	37½N	24½W			USCGS		6¼-6½
25	KP	eP	Z	21	19	12							
		e	Z			27							
25	KP	P	Z	22	02	23							
		e	Z			34							
25	KP	P	Z	22	32	49							
26	TO	eP	Z	05	53	23							
	CB	eP	E	05	53	48							
	KM	P	X	05	54	01							
	GP	eP	N	05	54	09							
	Epicentre:			05	48	27	16½S	174½W	300	km	USCGS		
26	KP	eP	Z	11	45	30							
26	KP	PKP	Z	11	58	37							
		e	Z			49							
	Epicentre:			11	38	35	37N	29½E			USCGS		
27	KP	P	Z	02	25	38							
27	KP	P	Z	14	15	04							
	Epicentre:						Tonga region				NZ		
27	ON	eP	E	15	01	24							
	KP	iP	Z	15	01	37	u						
	TU	eP?	N	15	01	41							
27	KP	P	Z	17	28	00	(u)						
	Epicentre:						Fiji region				NZ		
27	KP	P	Z	20	16	42							
27	KP	P	Z	21	15	36½							
	Epicentre:			21	05	29	4N	126E	200	km	USCGS		
28	ON	eP	E	06	58	41							
	TU	eP	N	06	58	54							
		eS	N	07	00	29							
	TO	P	Z	06	59	03							
	WN	eP	N	06	59	25							
		e	N	07	01	26							
		S	N			30							
	GP	e(P)	N	07	00	01							
		S	N		02	24							
	CB	eS	E	07	01	39							
	KM	eS	X	07	02	17							
	Epicentre:						Kermadec I. region				NZ		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JAN 30	SU	eP?	N	00	23	54							
		e(P)	N		24	04				7	3		
		S	N		27	25				7	7		
	KP	eP?	Z	00	25	34½							
		e(P)	Z			38							
	TU	e	N	00	26	05½							
	GP	eP	N	00	26	27							
	RX	eL	N	00	32	3/4				4	20		5¾ RX
		e(L)	Z			37½		6	16				
	WN	eL	N	00	35	¾				5	15		
	Epicentre:			00	19	25	10S	161E				USCGS	6¾
30	ON	P	E	18	11	34							
		iS	E		12	54	w						
	KP	iP	Z	18	11	44½	u						
		ScP	Z		20	14 3/4							
	TU	eP	N	18	11	44½							
		iS	N		13	10 3/4	n						
	TO	eP	Z	18	11	53½							
		eS	Z		13	31							
	WN	eP	Z	18	12	15							
		P	N			15							
		iS	N		14	07							
		iScS	N		23	50	s			8	6		
		i	N			52	n						
	CB	eP	E	18	12	20							
		iS	E		14	15½	w						
	KM	eP	X	18	12	38							
		eS	X		14	45½							
	GP	iP	N	18	12	45							
		eS	N		14	59							
	SU	e(P)	N	18	12	50				5	5		
		iS	N		15	09				26	3		
	RX	e	N	18	13	12				2	15		
		e?	Z		15	16							
		eL	ZN		16			4	12	8	25		
	Epicentre:			18	09	02	31S	179W				USCGS	
							Felt Raoul Is. MM3						
30	KP	eP	Z	20	51	41							
	Epicentre:			20	38	58	44N	144E				USCGS	5¾-6
30	KP	P	Z	22	29	32							
	RX	eS	N	22	41	05				2	18		
		eSS	N		47	.1				2	20		
		eL	N		55					Small			
		eL	Z	23	05			small					
		M	Z		07			3	20				6 RX
	Epicentre:			22	16	47	44N	144E				USCGS	6¼
30	KP	iP	Z	23	44	15½	d						
31	SU	e(P)	N	05	48	11							
		iS	N			40	n						
	KP	P	Z	05	50	21							
FEB 2	RX	eL	NZ	19	23½								
	GP	e(P)	N	19	23	48							
		e(S)	N		24	31							
		e	N		25	13							
	KM	e(P)	X	19	23	48							
		e(S)	X		24	48							
		e	X		25	20							
	CB	e(S)	E	19	26	00							
	WN	eL	NZ	19	28								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
FEB 3	TO	i(P*)	Z	23	23	42								
		(S)	Z		24	01								
	WN	i(P*)	ZN	23	23	47	us							
		S	ZN		24	07	d							
	CB	i(P*)	E	23	23	50	w							
		e	E			54								
		i	E		24	08								
		iS	E			15	e							
	KP	iP	Z	23	23	51	d							
		S	Z		24	18								
	TU	iP	N	23	23	55	s							
		S	N		24	23								
	KM	P	X	23	24	12	sw							
		e	X			17								
		e(P*)	X			23								
		iS	X			51	ne							
	GP	iP	N	23	24	18	s							
		i(P*)	N			30								
		S	N		25	02	s							
	ON	eP	E	23	24	18	e							
		eS	E		25	04								
		e	E			19								
	Epicentre:			23	23	18		39.8S	174.3E	N?		NZ(B)		5.5 NZ
	Felt Taranaki and Collingwood, max. MM4													
4	KP	e?	Z	00	19	36								
		e(P)				44								
4	SU	e	N	08	39	05				2	3			
	ON	eP	E	08	39	20								
		S	E		41	48						2	3	
	GP	e(P)	N	08	40	34								
		e(S)	N		44	07								
	TU	eS	N	08	42	19								
	CB	eS	E	08	43	14								
	KM	e(S)	X	08	43	41								
	Epicentre:			08	35	15		22S	179W				USCGS	
4	SU	eP	N	13	40	47								
		i	N			55								
		i	N		41	15								
		M	N			35				40	4			
	KP	e(P)	Z	13	45	04								
		e	Z			12								
4	KP	eP	Z	22	07	23								
		e?	Z		08	02								
6	KP	eP	Z	14	45	58								
		e	Z		46	05								
		e	Z			11	u							
	ON	e	E	14	46	11						0.4	2	
	RX	e(SKS)	N	14	57½									
		eL	N	15	19					2	24			
		M	ZN		23			4	22	2	22			
	WN	eL	ZN	15	20					1	20			
	Epicentre:			14	32	58		51½N	175½W				USCGS	6
7	WN	eP	Z	09	50	28	u	3	7					
		ePP	Z		54	28		4	6					
		eSKS	N	10	01	17				3	6			
		eS	N			55				5	8			
		e	ZN		08	30								
		eSS	N			46				7	9			
		e(SSS)	N		14									
		eLq	N		17	36				26	40			
		eLr	ZN		22½			30	26					

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
FEB 7		M	ZN		26			25	19	13	19			
		M	ZN		29			14	16	10	16			
		M	ZN		32			14	16	11	16			
		M	Z		37			17	17					
		M	ZN		42			17	15	25	15			
	TO	e(P)	Z	09	50	32								
	ON	e	E	09	50	39								
	CB	e(P)	E	09	50	52								
	RX	P	Z	09	51		u	3	7					
		ePP	Z		55									
		e	ZN	10	02									
		e(S)	N		03					15	22			
		e	N		05					6	30			
		iSS	N		10					16	18			
		eLq	N		19					30	40			
		eLr	ZN		24									
		M	ZN		29			40	18	20	18			
		M	N		34					26	16			
		M	Z		38			50	16					
		M	N		44					20	15			
	SU	eL	N	10	22					5	25			
		M	N		32					3	20			
		M	N		39					2	15			
	Epicentre:			09	36	51		4S	81½W				USCGS	7½
7	KP	eP	Z	14	54	32								
		e	Z		56	59								
	TU	eS	N	14	57	03								
	WN	eS	N	14	57	55								
	CB	eS	E	14	58	02								
	GP	e(S)	N	14	58	47								
7	CB	P	E	16	55	13								
	GP	eP	N	16	55	16								
	KP	iP	Z	16	55	21	d							
		i	Z			24	d							
		e?	Z		58	34								
	TO	P	Z	16	55	22								
	Epicentre:			16	45	35		6½S	113E	600	km		USCGS	
8	RX	eL	ZN	02	30									
		M	N		39					1	18			
	WN	M	N	02	36					1	18			
	Epicentre:			01	02	26		49N	28½W				USCGS	6¼-6½
8	SU	iP	N	05	47	55	s			4	2			
		i	N		48	05	n							
		e	N			20								
		S	N		49	09	s			11	8			
		i	N			29				25	5			
	ON	eP	E	05	49	12								
		i	E			15	e							
		eS	E		51	38						2	2	
	TU	eP	N	05	49	33								
		eS	N		52	07								
	TO	eP	Z	05	49	38								
		e	Z		52	24								
		e(S)	Z			29								
	WN	eP	N	05	49	58								
		e	N		50	00								
		e	N			06								
		e	N		52	57								
		e	N		53	00								
		i(S)	N			02				3	2			
	CB	eP	E	05	50	02								
		e	E			05								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
FEB 8		e	E		53	02								
		e(S)	E			08								
	GP	eP	N	05	50	25								
		e(S)	N		53	41								
		e	N			52								
	RX	e(S)	N	05	53					1	14			
		Epicentre:		05	46	15		23S	180	600	km		USCGS	6¼ NZ
8	KP	P	Z	12	28	56	u							
		iS	Z		34	57	u							
8	KP	eP	Z	13	09	51								
		e	Z			58								
	TU	eP	N	13	10	02								
	TO	eP	Z	13	10	03								
	WN	eP	N	13	10	20								
	GP	P	N	13	10	34	s							
8	ON	P	E	15	56	10								
		e	E			21								
		e	E			36								
	TU	e(P)	N	15	56	11								
		e(S)	N		57	45								
		e	N			50								
	KP	P	Z	15	56	12	u							
		e	Z			19								
		e	Z			41								
		e	Z		57	13								
		e(S)	Z		58	00								
		i	Z	16	00	19								
		e(ScP)	Z		05	02								
	TO	e(P)	Z	15	56	28								
		e(S)	Z		58	06								
	WN	e?	N	15	56	50								
		eS	N		58	54								
		eL	N	16	00									
	CB	e(P)	E	15	57	06								
		eS	E		59	13								
	GP	eP	N	15	57	29								
		e	N			48								
		e	N		59	58								
		e(S)	N	16	00	04								
	RX	eL	ZN	16	03			2	20	2	20			
		M	ZN		04									
		Epicentre:		15	54	06		32S	176½W	100	km		USCGS	
8	KP	P	Z	17	07	48	u							
9	RX	e	N	05	05									
		e	N		07					1	8			
		e	N		09					1	20			
		eL	ZN		26									
		M	ZN		30			5	26	3	26			
		M	ZN		33			4	20	3	20			
		M	ZN		36			4	20	2	20			
	WN	L	ZN	05	28									
		M	ZN		32			2	20	2	20			
		Epicentre:		04	42	33		50½N	177½W				USCGS	6-6½ NZ
9	KP	P	Z	21	20	41	u							
		e	Z			48								
		ipP	Z		21	01	u							
		e	Z		23	33								
		eS?	Z		26	33								
	TO	P	Z	21	20	(51)								
		pP	Z		21	(10)								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
FEB 9	CB	eP	E	21	20	54								
		epP	E		21	18								
	WN	i(P)	Z	21	21	00	u	2	2					
	KM	e(P)	X	21	21	07								
	GP	P	N	21	21	11	s							
	RX	M	N	21	35					1	20			
		Epicentre:		21	13	13		5S	154E	100	km		USCGS	6½ NZ
10	KP	iP	Z	18	33	59	u							
	WN	eS?	N	18	37	29								
11	KP	P	Z	03	54	23	u							
		i	Z			26	u							
		e	Z		58	27								
		Epicentre:		03	43	38		9S	127E				USCGS	
11	KP	eP?	Z	12	54	59								
		Epicentre:		12	49	08		12S	166½E				USCGS	
11	SU	e	N	21	39	04		3	4					
		e	N		40	13		5	4					
	ON	eP	E	21	41	59						1	2	
		e	E		42	24						1	2	
	TU	e(P)	N	21	42	15								
	WN	e(P)	N	21	42	42								
	CB	e(P)	E	21	42	46								
	KM	e(P)	X	21	43	00								
	GP	eP	N	21	43	05								
	RX	eL	N	21	54									
		M	N		56					2	24			
		Epicentre:		21	36	48		15½S	173W				USCGS	
12	ON	eP	E	00	04	37								
	GP	e(P)	N	00	05	53								
		eS	N		09	20								
	RX	eL	N	00	15									
		M	N		17					1	18			
12	SU	e(S)	N	17	05	39				4	4			
		e	N			49				6	4			
		e	N		06	43				9	5			
		e	N		16	08				6	5			
		e	N		18	32				5	5			
	ON	eP?	E	17	06	39								
		e	E			57								
	TU	eP	N	17	07	21	n							
		eS	N		10	37								
	WN	P	ZN	17	07	42				3	5			
		e(pP)	ZN		08	00				4	5			
		eS	ZN		11	24				5	5			
		e(L)	N		15									
	CB	e(P)	E	17	07	45								
	KM	e(P)	X	17	07	55								
	GP	eP	N	17	08	06								
	RX	e(S)	N	17	13½	ca				3	18			
		eL	N		16					2	22			
		Epicentre:		17	03	10		22S	173E				USCGS	5½-6
13	SU	P	N	01	47	28	(s)			4	2			
		iS	N		48	55	s			12	4			
	ON	P	E	01	48	13						2	1	
		e	E			47								
		eS	E		50	23								
		i	E			25						5	2	
	KP	iP	Z	01	48	29	d							
		i	Z			32								
		e(S)	Z		50	55								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
FEB 13	TU	eP	N	01	48	32								
		eS	N		50	53								
		e	N			57								
	WN	eP	N	01	49	02								
		i	N			09								
		eS	N		51	48								
		i	N			51				2	5			
	CB	P	E	01	49	07								
	KM	eP	X	01	49	23								
		S	X		52	26								
	GP	P	N	01	49	29								
		e(S)	N		52	35								
		e	N			41								
	Epicentre:			01	44	47		Tonga-Kermadec region				USCGS		
13	SU	e(S)	N	15	11	43								
	KP	P	Z	15	13	02	(u)							
	TU	eP	N	15	13	08								
		e(S)	N		16	10								
		e	N			29								
	WN	eP	N	15	13	35								
		e(S)	N		16	58								
	Epicentre:			15	09	18		20S 177W 600 km±				NZ		
13	KP	P	Z	19	37	59								
	TU	eS	N	19	40	51								
	KM	e(P)	X	19	38	59								
	GP	eP	N	19	39	01								
		eS	N		42	41								
	WN	eS	N	19	41	52								
14	CB	eP	E	04	45	57								
	WN	eP?	Z	04	46	02								
		e	Z			10								
		e(L)	N	05	02									
		eL	ZN		06									
		M	ZN		10			2	18	3	16			
	GP	eP?	N	04	46	05								
		e	N			18								
	TU	eP	N	04	46	20								
	RX	eL	ZN	05	04±			4	20	2	20			
		M	Z		10±			4	16					
	Epicentre:			04	36	10		7½S 122E				USCGS		5¾-6 NZ
15	RX	eP	ZN	04	11	08±		3	10	1	16			
		ePP	ZN		14	15		2	12					
		e(PPP)	N		15	42								
		e(S)	N		20	50								
		e	N		23	12								
		e(L)	N		32									
		eL	ZN		38									
		M	ZN		43			15	18	9	17			
		M	ZN		46			18	17	10	17			
	GP	eP	N	04	11	18								
	WN	P	Z	04	11	25	u	1	6					
		e(S)	N		21	53				1	5			
		e	N		22	15				2	7			
		e	N		24	35				2	6			
		eSS	N		26	.7				2	19			
		eL	ZN		39									
		M	ZN		41			4	20	6	20			
	TO	eP	Z	04	11	34								
	Epicentre:			03	59	25		59½S 25W				USCGS		6½-6¾

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
FEB 15	RX	iP?	Z	04	54	12	u							
		i	Z			17	u	6	7					
		eSS	N	05	09	11				5	14			
		e(Lq)	N		15½									
		eL	N		21									
		M	N		24					7	20			
		M	Z		26			15	18					
		M	ZN		29			22	18	14	18			
	WN	iP	Z	04	54	34	u	4	6					
		e	ZN			54		3	6	5	15			
		e	N		58	00				2	6			
		i	N		59	04				2	5			
		iS	N	05	04	56	n			2	5			
		e	N		05	19				2	8			
		eL	ZN		22									
		M	ZN		24			4	20	8	20			
		M	ZN		30			4	17	8	17			
		M	ZN		39			3	15	4	15			
	CB	eP	E	04	54	41								
	TO	eP	Z	04	54	45								
	Epicentre:			04	42	35		59½S 26W				USCGS		6¾
16	RX	eL	N	00	24									
		eL	Z		30									
		M	N		35					1	19			
	Epicentre:			00	39	32		1S 81½W				USCGS		6 NZ
16	SU	iP	N	07	56	16	s							
		i	N			20	n			3	3			
		iS	N		57	44	n							
		i	N			46	s			20	3			
	TO	eP	Z	07	57	40								
		e(S)	Z	08	00	22								
	WN	P	N	07	58	02								
		S	N	08	00	49								
		e	N		01	21								
		eScS	N		08	46				1	4			
	CB	P	E	07	58	04								
		e	E	08	00	54								
		S	E		01	03								
	GP	P	N	07	58	26								
		e	N	08	00	20								
		e(S)	N		01	44								
	TU	eS	N	07	59	55								
		eScS	N	08	08	35								
	KM	e(S)	X	08	01	31								
	Epicentre:			07	54	28		25S 180 500 km				USCGS		
17	TU	eP	N	11	26	41								
	Epicentre:			11	21	15		15S 168½E				USCGS		
17	SU	e	N	12	14	37				3	3			
		e	N		15	28				3	4			
	RX	eSKS	N	12	27	20								
		e	N		28	08				1	20			
		e	N		29	32								
		eSS	N		35	03				1	17			
		eSSS	N		38	26								
		e	N		39	04								
		eL	N		48½									
		eL	Z		54									
		M	ZN		59			4	19	3	19			
	WN	eL	ZN	12	53									
		M	N		56					4	19			
	Epicentre:			12	03	05		51½N 171W				USCGS		6¼

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
FEB 17	ON	S	E	15	23	08									
	TU	eP	N	15	23	18									
		e(S)	N		24	35									
		e	N			38									
	WN	P	N	15	23	52									
		S	N		25	38									
	CB	eP	E	15	23	58									
		eS	E		25	49									
	GP	eP	N	15	24	24									
		eS	N		26	36									
	KM	eS	X	15	26	25									
	Epicentre:			15	21	35		Kermadec I.							5.5 NZ
17	RX	eL	ZN	21	34					1	15				
18	SU	iP	N	01	59	00	n			5	3				
		e	N			35				7	2				
		i(S)	N	02	00	20				6	3				
		i	N		01	10				12	4				
	ON	iP	E	02	00	15	w					3	1		
		e	E			41									
		e?	E		02	35									
		eS	E			38						2	2		
		e	E			52									
	TU	eP	N	02	00	34									
		e	N		03	11									
	TO	P	Z	02	00	42									
		e(S)	Z		03	31									
	WN	eP	N	02	01	04									
		e	N			10									
		e(S)	N		04	03									
		i	N			07				2	1				
	CB	P	E	02	01	07	e								
		e(S)	E		04	09									
		e	E			14									
	KM	eP	X	02	01	24									
		eS	X		04	34									
	GP	iP	N	02	01	30	n								
		e	N		04	48									
		e(S)	N			54				1	1				
	Epicentre:			01	57	21		24S	179½W	500	km			USCGS	5½ NZ
20	KP	P	Z	01	23	13									
		e	Z		24	47									
	WN	eS	N	01	25	40									
	GP	eS	N	01	26	39									
20	SU	iS	N	12	04	18	s			4	3				
	ON	eP	E	12	05	48									
	KP	P	Z	12	06	00	u								
		e	Z			21									
	WN	eP	N	12	06	30									
	CB	eP	E	12	06	32									
	KM	eP	X	12	06	47									
	GP	iP	N	12	06	53	n								
	Epicentre:			12	01	57		18S	178½W	600	km			USCGS	
22	KP	iP	Z	10	35	16	d								
	Epicentre:			10	26	06		5½S	131E					USCGS	
23	SU	e	N	02	05	18				1	2				
		e	N		11	32									
	KP	eP	Z	02	06	14									
		e	Z			25									
		e	Z		08	19									

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
FEB 23	GP	e(P)	N	02	06	50									
	RX	eS	N	02	13	06				1	19				
		e	N		16	12									
		M	N		20					3	24				
		M	ZN		24			4	20	3	20				
	Epicentre:			01	58	38		5½S	150E					USCGS	5½-5¾ NZ
23	SU	e	N	18	36	05									
		e(S)	N		37	10									
	ON	eP	E	18	38	37									
	KP	eP	Z	18	38	50	u								
	CB	eP	E	18	39	22									
		e	E		43	06									
	KM	e?	X	18	39	37									
		e	X			44									
	GP	e?	N	18	39	44									
23	ON	e	E	22	23	37									
		i	E			54									
		e	E		24	34									
	SU	e?	N	22	23	45									
		e	N			54									
		e	N		24	07									
		e	N			25				3	4				
		e	N		26	07				3	4				
	KP	e?	Z	22	23	52									
		e	Z			55									
		e	Z		24	10									
		e	Z		25	31									
	WN	e(P)	N	22	24	29									
		eS	N		26	49									
	GP	e	N	22	25	02									
		eS	N		27	53									
	TU	eS	N	22	25	42									
	CB	eS	E	22	27	06									
	RX	eL?	N	22	33					2	25				
	Epicentre:			22	20	58		28½S	177W					USCGS	
25	SU	iP?	N	03	04	35				2	3				
	KP	P	Z	03	06	03									
	TU	e?	N	03	06	08									
		eS	N		09	32									
		e	N			37									
	CB	e(P)	E	03	06	43									
		e(S)	E		10	40									
	GP	eP?	N	03	07	00									
		S	N		11	35									
	WN	eS	N	03	10	36									
25	SU	eP	N	10	04	17				3	3				
		iS	N		05	20				13	3				
		i	N			38				18	4				
		i	N			49				26	4				
		i	N		06	10				26	4				
	ON	eP	E	10	06	37									
		e	E		08	59									
		eS	E		09	48									
	KP	iP	Z	10	06	51	d								
		e	Z		07	20									
		e	Z			40									
		e	Z		08	20									
		e(S)	Z		10	07									
	WN	eP	N	10	07	19									
	CB	eP	E	10	07	23									
	Epicentre:			10	02	43		19S	177W	500	km			USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
FEB 25	KP	P	Z	11	29	53	d							
		e	Z		30	09								
	GP	e(P)	N	11	30	16								
		e	N		42	02								
		e	N			40								
	CB	e	E	11	43	26								
	KM	e	X	11	42	49								
	Epicentre:			11	19	07		28½N	139E	500	km		USCGS	
25	KP	P	Z	20	17	34	d							
		e	Z			43								
		i	Z			47								
	TO	e(P)	Z	20	17	38								
	TU	e	N	20	17	50								
		e	N		18	03								
	WN	e	N	20	18	12								
	Epicentre:			20	08	09		2S	129E	200	km		USCGS	
25	RX	e(L)	N	23	43±									
		M	ZN		45±			20	11	118	17			
	GP	eP	N	23	43	35								
		i	N			37								
		e(S)	N		46	15								
	WN	(P)	Z	23	44	16	d	2	6					
		e	N		48.5									
		M	N		49					7	13			
		M	Z		50			8	12					
	TO	eP	Z	23	44	43								
		e	Z			52								
	KP	eP	Z	23	44	58								
	TU	e(P)	N	23	45	00								
	ON	e?	E	23	45	17								
		e				24								
	Epicentre:			23	40	55		Macquarie I. region					USCGS	
26	KP	P	Z	01	45	55								
26	KP	P	Z	01	54	39								
26	KP	P	Z	04	38	49								
		e	Z		39	18								
	WN	i?	N	04	54	21				5	5			
26	KP	P	Z	07	10	11								
26	KP	P	Z	15	34	52	u							
27	KP	eP	Z	00	37	13								
27	KP	e	Z	07	25	09								
27	KP	P	Z	13	55	58	d							
		e	Z		56	39								
27	SU	e(P)	N	15	22	38	n			4	4			
		i	N			45	s			8	4			
		iS	N		24	25	n			4	3			
	ON	e	E	15	24	31								
		e(S)	E		29	12						2	5	
	KP	eP	Z	15	24	35								
		e	Z			53								
		e	Z		27	54								
	TU	eS	N	15	27	36								
	WN	eS	N	15	28	44								
	CB	e(S)	E	15	28	57								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
FEB 27	GP	S	N	15	29	45								
	RX	eL	N	15	34					1	20			
		M	ZN		37			4	17	3	18			
	Epicentre:			15	20	27		22½S	175W				USCGS	5½ NZ
27	KP	P	Z	18	55	46	u							
		e	Z		56	27								
		e	Z		57	13								
	GP	e	N	18	55	48								
	Epicentre:			18	47	05		7S	126E	600	km		USCGS	
27	ON	eP	E	21	08	25								
		e	E			35								
	KP	P	Z	21	08	36	d							
		i	Z			49	d							
		e	Z		11	46								
	GP	eP?	N	21	08	53								
		e	N		09	05								
	CB	eP	E	21	08	57								
	TU	e	N	21	14	03								
	Epicentre:			20	56	30		27½N	129E				USCGS	
28	KP	e(P)	Z	01	45	40								
	Epicentre:			01	32	22		53N	168½W				USCGS	
28	KP	eP	Z	04	03	25								
		e	Z			36								
	Epicentre:			03	53	51		3S	129½E				USCGS	
28	SU	e	N	05	05	00				1	6			
	KP	e(P)	Z	05	06	07								
28	SU	e	N	05	19	50				1	4			
		M	N		21					3	6			
		e	N		22	54				4	4			
		i(S)	N		29	48	s			6	5			
		M	N		34					7	5			
	ON	eP	E	05	21	24								
	KP	eP	Z	05	21	37								
	RX	eL	N	05	35					1	15			
28	SU	e(P)	N	06	01	11	s			3	5			
		(S)	N		02	18	s			3	8			
	KP	eP?	Z	06	03	27								
		e	Z			37								
28	SU	(P)	N	06	01	38	(s)			4	6			
		i	N		04	51	s			25	5			
		M	N		06					30	5			
	ON	e(P)	E	06	03	56								
	KP	eP	Z	06	04	09								
28	SU	i(P)	N	06	03	02	n			13	7			
	ON	eP	E	06	05	12								
	KP	iP	Z	06	05	25	u							
		e	Z			39								
	RX	eL	N	06	16½					2	15			
		M	ZN		18					2	16			
28	SU	i	N	06	10	45				30	5			
		M	N		13					30	5			
	ON	eP	E	06	11	28								
	KP	iP	Z	06	11	43								
		e	Z		12	30								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
FEB 28	ON	eP?	E	06	13	38								
	KP	eP	Z	06	13	48								
		e	Z			54								
28	SU	e(P)	N	06	53	05	s							
		i(S)	N			40	s			7	4			
		M	N		55					20	5			
		M	N		57					20	5			
	ON	eP	E	06	55	11								
		e?	E		56	20								
	KP	P	Z	06	55	26	u							
		i	Z		56	23	u							
	RX	eL	N	07	06½									
		M	N		10					2	12			
28	KP	e?	Z	11	49	24								
		e(P)	Z			44								
		e	Z			56								
		e	Z		50	09								
	RX	eL	N	11	51	37								
		M	ZN		53			12	12	20	12			
	WN	e	N	11	53	41				3	4			
		M	N		56					4	9			
		M	N		59					6	6			
	Epicentre:			11	44	05		About 500 miles s.w.of Macquarie I.USCGS						
28	SU	e	N	12	58	04								
		e	N			34				2	3			
		eL	N			59				8	5			
	KP	P	Z	13	00	05								
28	ON	P	E	13	28	34	(w)							
		e(S)	E		31	03								
	KP	iP	Z	13	29	11	(u)							
		i	Z			35	u							
		e	Z		31	39								
	WN	P	N	13	29	43								
		e?	N		32	24								
		eS	N			28								
	SU	e(S)	N	13	29	45				3	3			
	CB	eP	E	13	29	46								
		S	E		32	29								
	GP	eP	N	13	30	08								
		e	N		33	06								
		S	N			16								
	TU	e	N	13	31	35								
	Epicentre:			13	25	18		About 350 miles s. of Fiji.						USCGS
				13	26.2			25S 175E						NZ
28	SU	i(S)	N	14	54	11				3	4			
		M	N		56					4	5			
	KP	P	Z	14	55	19								
MAR 1	KP	ePKP	Z	00	50	51								
	Epicentre:			00	31	20		74½N 9E						USCGS
1	ON	eP	E	16	58	13								
		ePP	E	17	00	21								
	KP	P	Z	16	58	26	(u)							
	CB	eP	E	16	58	30								
	TO	eP	Z	16	58	31								
		ePP	Z		59	24								
	WN	eP	ZN	16	58	32				3	7			
		eS	N	17	06	23				6	6			
		iSS	N		10	17				5	5			
		eL	ZN		17					19	20			
		M	N		20					44	17			

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
MAR 1	RX	eP	N	16	58.6									
		e	N	17	06	05				3	6			
		S	ZN			26		11	14	17	20			
		eSS	N		09	34				12	22			
		eLq	N		13					114	45			
		eLr	Z		17			57	22					
		M	N		19					68	15			
	TU	eP	N	16	58	37								
		eS	N	17	06	15								
	GP	eP	N	16	58	41								
	AK	S	N	17	05	59				4	7			
		eL	N		15.3					5	22			
		M	N		18					8	20			
	Epicentre:			16	49	13		½S 134½E 100 km						USCGS 6.7 NZ
2	KP	eP	Z	09	23	06								
	RX	eL	N	09	40					7	18			
		eL	Z		44			8	18					
	WN	eL	ZN	09	42			8	18	10	17			
	Epicentre:			09	13	42		8S 128E						USCGS 6.0 NZ
3	KP	iP	Z	06	08	39	d							
4	KP	P	Z	06	49	03								
	Epicentre:			06	43	16		11S 165½E 100 km						USCGS
4	SU	i(P)	N	18	56	52	n			3	3			
		i	N		57	12				7	3			
		S	N		58	08				7	3			
	ON	eP	E	18	59	09								
		e	E			45								
		eS	E	19	02	23								
	KP	P	Z	18	59	20½								
		pP	Z			37								
	TO	eP	Z	18	59	33								
	WN	e(P)	N	19	00	01								
		S	N		03	42½								
	CB	eP	E	19	00	04								
		eS	E		03	57								
	GP	eP	N	19	00	23								
		eS	N		04	41								
	RX	eL	N	19	07	07				1	12			
	Epicentre:			18	55	03		20½S 175½W 100 km						USCGS
5	KP	eP	Z	03	01	57								
		e	Z		02	21								
	WN	eL	ZN	03	10½			4	15	3	10			
	RX	eL	ZN	03	13					1	16			
	Epicentre:			02	57	27		20½S 169E						USCGS
5	KP	eP	Z	03	46	48								
5	ON	eP	E	05	45	32								
	KP	P	Z	05	45	43								
		e	Z		46	04								
	AK	eL	N	05	48					5	10			
	WN	eL	ZN	05	53			4	10	7	12			
	RX	eL	N	05	53					3	18			
		eL	Z		55½									
	Epicentre:			05	43	13		29½S 178W						USCGS 5¼ NZ
5	KP	eP	Z	14	22	17								
		pP	Z			55								
	Epicentre:			14	09	47		44½N 147E 100 km						USCGS

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR 5	KP	eP	Z	14	50	28							
		i	Z			38							
	5 ON	eP	E	16	31	08							
	KP	eP	Z	16	31	22							
		i	Z			29							
	TU	eP	N	16	31	5							
	AK	eL	N	16	35				2	10			
	WN	eL	N	16	36								
	RX	eL	N	16	39				2	20			
	Epicentre:			16	28	54	29½S	179W			USCGS		5½ NZ
	5 ON	eP	E	16	49	54							
	KP	P	Z	16	50	09							
	GP	eP	N	16	51	06							
		eS	N			54 03							
	5 KP	eP	Z	23	07	51							
	TO	eP	Z	23	07	57							
	Epicentre:			22	55	28	2N	98E			USCGS		
	6 KP	iP	Z	11	29	27							
	6 SU	e(S)	N	20	36	05			5	15			
		eL	N			38½							
	RX	eS	N	20	41	3			2	20			
		eL	N			49			2	14			
	Epicentre:			20	28	43	11S	162E			USCGS		5½ NZ
	6 KP	eP	Z	20	48	04							
		e	Z			08							
	Epicentre:			20	41	53	10½S	162E			USCGS		
	6 KP	iP	Z	21	10	15							
	7 TO	eP	Z	09	24	15							
	KP	eP	Z	09	24	16							
	Epicentre:			09	12	35	3S	102E			USCGS		
	7 SU	eL	N	14	50	20			15	15			
	ON	eP	E	14	51	08							
	KP	P	Z	14	51	21	d						
	WN	eL	N	15	02								
	RX	eL	N	15	03								
		M	N			06			2	16			
	8 SU	e	N	17	10	0							
		eL	N			12.2			7	10			
		M	N			14			28	8			
	KP	P	Z	17	11	51							
		e	Z			12 27							
	TO	eP	Z	17	12	1							
	WN	eP	ZN	17	12	40	1	5	2	5			
		L	N		17	17			2	10			
		eL	ZN			20½	2	15	4	15			
	GP	eP	N	17	12	58							
	RX	eS	N	17	17	34			2	12			
		eLq	N			20			2	18			
		eLr	Z			22½	3	15					
	Epicentre:			17	07	55	21S	170E			USCGS		5.4 NZ
	9 KP	eP	Z	05	23	18							
		e	Z			29							
	9 KP	eP	Z	10	29	23							
	Epicentre:			10	18	09	13½N	125½E			USCGS		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR 9	KP	P	Z	11	28	55½							
		e	Z			29 51							
	9 GP	eP	N	18	17	02							
	KP	eP	Z	18	17	47							
		e	Z			56							
	9 KP	P	Z	18	57	13							
	Epicentre:			18	44	21	Near N.coast Honshu. 60 km.				USCGS		
	10 KP	P	Z	02	22	03							
		e	Z			14½							
	10 KP	P	Z	18	53	26							
	11 SU	e(L)	N	00	35	30			5	10			
	KP	eP	Z	00	36	09							
	11 KP	P	Z	07	16	19							
		ePP	Z			18 53							
	GP	eP	N	07	16	23							
	Epicentre:			07	06	58	6S	127½E			USCGS		
	11 SU	eL	N	07	17	25							
		M	N			18			45	8			
		M	N			21			29	7			
		M	N			23			33	7			
	11 KP	P	Z	11	38	49							
	12 KP	eP	Z	01	38	36							
		e	Z			59							
	TO	eP	Z	01	38	38							
	TU	eP	N	01	38	8							
	SU	eS	N	01	46	33			11	12			
		eL	N			50.4			19	15			
	RX	S	N	01	46	54			4	25			
		Lq	N			53.2			4	20			
		eLr	Z			58							
	WN	eL	N	01	54								
	Epicentre:			01	29	07	17N	145E			USCGS		6
	12 KP	eP	Z	09	07	50							
		pP	Z		08	07							
	TO	eP	Z	09	08	15							
	Epicentre:			09	00	24	5S	155E			USCGS		
	13 ON	eP	E	00	44	17							
	KP	P	Z	00	44	25							
	TU	eP	N	00	44	28							
		e	N		45	44							
		eS	N			48							
	TO	eP	Z	00	44	6							
	WN	eP	N	00	45	02							
		S	N		46	53							
	GP	eP	N	00	45	38							
		S	N		47	59							
	CB	S	E	00	47	11							
	KM	eS	X	00	47	48							
	Epicentre:			00	42	40	33S	178½W			NZ(D)		5.7 NZ
	13 KP	eP	Z	08	54	26							
	13 RX	eSn?	N	10	23	29							
		S*	ZN			44							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR 13	GP	ePn	N	10	23	44							
		i(P*)	N			55							
		iSn	N		24	37							
	KM	e(P)	X	10	23	44							
		iP*	X			51							
		eSn	X		24	24							
	CB	ePn	E	10	24	03							
		e(S)	E			52							
	TO	e?	Z	10	24	51							
		eSn	Z		26	17							
	KP	ePn	Z	10	24	54							
		i	Z		25	10							
		e	Z		27	13							
	WN	e	N	10	25	20							
		eSn	N			28							
	Epicentre:			10	22	39	44.5S		166.8E			NZ(C) S	5.0 NZ
13	SU	eP	N	16	41	46							
		S	N		42	53			20	5			
	KP	P	Z	16	44	14							
	WN	eP	N	16	44	52½							
		S	N		48	29½							
	CB	eP	E	16	44	53							
	KM	eP	X	16	45	.3							
	GP	eP	N	16	45	17							
		e	N		49	17							
		eS	N			23							
	Epicentre:			16	40	15	21S		176½W	200 km		USCGS	6 NZ
14	KP	iP	Z	07	01	13							
		i	Z			33							
	GP	eP	N	07	02	05							
	Epicentre:			06	57	08	18S		166E	500 km		USCGS	
15	KP	P	Z	21	33	03							
	Epicentre:			21	28	24	Tonga		200 km			USCGS	
16	KP	eP	Z	22	11	53							
	TU	e	N	22	12	57							
		eS	N		13	00							
	WN	e	N	22	14	03							
		S	N			06							
	CB	eS	E	22	14	19							
	KM	eS	X	22	14	57							
	GP	eS	N	22	15	10							
	Epicentre:			22	08	23	Kermadec Is.		100 km			USCGS	
17	KP	P	Z	08	37	19	(d)						
	TO	eP	Z	08	37	23							
	RX	eSS	N	08	53	.3							
		eL	N	09	04								
	Epicentre:			08	25	22	27½N		130E			USCGS	5¾–6
17	KP	eP	Z	10	37	15							
	SU	eL	N	10	38								
17	TO	eP	Z	13	11	19							
	KP	P	Z	13	11	25							
	RX	eL	N	13	41								
	Epicentre:			12	58	57	57S		25W			USCGS	
18	KP	iP	Z	07	38	53	u						
		(pP)	Z		39	17	d						
	Epicentre:			07	26	47	32N		141E			USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
MAR 19	SU	L	N	18	51	22				18	11			
		M	N		52½					43	8			
	KP	eP	Z	18	54	26								
20	KP	P	Z	01	52	05								
		e	Z		53	33								
20	KP	P	Z	02	15	05								
	TO	eP	Z	02	15	25								
	WN	eP	N	02	15	43								
		eS	N		19	35								
	CB	eP	E	02	15	46								
	GP	eP	N	02	16	07								
		eS	N		20	33								
	KM	e(P)	X	02	16	01								
	TU	eS	N	02	18	30								
	Epicentre:			02	10	33		20½S		174½W			USCGS	
20	KP	eP	Z	03	40	44								
20	KP	iP	Z	07	20	14								
20	KP	eP	Z	24	03	31								
	Epicentre:			23	53	24		10S		117E			USCGS	
21	KP	P	Z	03	19	09½								
		i	Z			38								
21	SU	eP	N	04	28	50								
		iS	N		29	52					14	3		
		e	N		30	42					12	6		
	KP	iP	Z	04	31	23	d							
		e	Z		32	59								
		SP	Z		33	51								
		eS	Z		34	47								
	TO	eP	Z	04	31	30								
	WN	P	N	04	31	51½								
		eS	N		35	27½								
	CB	eP	E	04	31	55								
		eS	E		35	29								
	KM	eP	X	04	32	09								
		S	X		35	54								
	GP	eP	N	04	32	15								
		eS	N		36	09								
	TU	eS	N	04	34	34								
	Epicentre:			04	27	21		19S		178W	550 km		USCGS	5½ NZ
21	KP	P	Z	08	40	05								
21	KP	P	Z	10	13	35								
		e	Z			54								
21	SU	eP	N	19	48	30								
		S	N		49	34								
	KP	P	Z	19	50	30								
		e	Z		53	25								
	TU	eP	N	19	50	35								
		eS	N		53	20								
	TO	eP	Z	19	50	39								
	WN	P	N	19	50	59								
		eS	N		54	05								
	CB	eP	E	19	51	01								
		eS	E		54	12								
	GP	eP	N	19	51	21								
		eS	N		54	50								
	KM	eP	X	19	51	22								
		eS	X		54	38								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR 23	KP	P	Z	05	06	56							
23	RX	eL	NE	06	16				2	22			
	WN	eL	ZN	06	20½		3	20	2	15			
		M	N		22				4	12			
23	SU	e(S)	N	13	27	18							
	KP	P	Z	13	29	27							
	TU	eP	N	13	29	30							
	TO	eP	Z	13	29	36							
	WN	e(P)	N	13	29	55							
	KM	eP	X	13	30	15							
	GP	eP	N	13	30	22							
	Epicentre:			13	24	16	16S 173½W 150 km					USCGS	
23	KP	P	Z	18	05	24							
23	RX	eL	ZNE	19	36		4	18	3	25			
24	KP	P	Z	01	18	21							
24	KP	P	Z	05	18	46							
		e	Z		19	16							
24	KP	P	Z	17	17	35							
		e	Z			52							
	TO	eP	Z	17	17	50							
	GP	eP	N	17	18	24							
	Epicentre:			17	12	51	New Hebrides					USCGS	
24	KP	eP	Z	17	30	26							
	Epicentre:			17	18	24	34N 142E					USCGS	
25	KP	P	Z	00	04	33							
		e	Z		07	20							
	GP	eP	N	00	04	54							
25	KP	P	Z	07	06	59							
		e	Z		07	15							
	Epicentre:			07	02	12	New Hebrides					USCGS	
25	WN	e?	N	14	58	15			2	6			
		eL	ZN	15	05½		4	12	7	15			
	RX	eL	NE	15	01½				2	15	5	15	
		eL	Z		02		5	15					
25	KP	P	Z	16	19	10							
26	SU	e	N	02	29	46							
	KP	P	Z	02	31	09							
		e	Z			18							
		PcP	Z		33	35							
		(pPcP)Z				50							
	TU	eP	Z	02	31	24							
	CB	eP	E	02	31	26							
	RX	eL	Z	02	44		4	20					
	Epicentre:			02	24	12	7S 155½E 60 km					USCGS	
26	KP	eP	Z	05	34	51							
		e	Z		35	02							
	Epicentre:			05	24	42	0 125E					USCGS	
26	SU	eL	N	09	08½				7	6			
	KP	eP	Z	09	10	29							

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
MAR 26	ON	eP	E	11	47	36								
	KP	P	Z	11	47	51								
	WN	eP	N	11	48	24								
		eS	N		51	09								
	CB	eP	E	11	48	27								
	KM	eP	X	11	48	45								
	GP	eP	N	11	48	48								
		eS	N		52	00								
	TU	eS	N	11	50	15								
27	KP	eP	Z	07	46	23								
28	KP	P	Z	05	09	47								
		e	Z		10	08								
28	KP	(P)	Z	07	59	01								
	Epicentre:			07	45	14		48N 153E					USCGS	
28	KP	P	Z	14	57	15								
28	SU	iP	N	19	48	32					16	6		
		S	N		49	27					115	5		
	AK	iP	N	19	50	52	s				5	3		
		S	N		53	12					14	5		
	KP	iP	Z	19	50	53	u							
		eS	Z		53	58								
	TU	eP	N	19	50	56								
		S	N		54	06								
		eScS	N	20	01	15								
	WN	iP	Z	19	51	22	d							
		eP	N			22½								
		iS	N		54	56½								
		iScS	N	20	01	28					6	5		
	CB	eP	E	19	51	25								
		eS	E		54	51								
		e	E		55	05								
	GP	eP	N	19	51	46								
		e	N		55	26								
		S	N			47								
	RX	e	N	19	58	.5					2	14		
	Epicentre:			19	47	07		20S 178½W 600 km					USCGS	6.0 NZ
29	KP	iP	Z	21	05	43½	(d)							
30	KP	P	Z	18	24	11								
	Epicentre:			18	19	04		17½S 172W					USCGS	
31	SU	P	N	07	23	02					5	5		
		M	N		26						66	11		
	ON	eP	E	07	25	59								
		e	E		26	11								
	KP	P	Z	07	26	09								
	WN	eP	N	07	26	39								
		eL	ZN		35¾			5	15	4	15			
	GP	eP	N	07	27	05								
	AK	eL	N	07	32					3	15			
	RX	eL	NE	07	36					2	24	4	30	
		eL	Z		38			4	17					
		M	NE		41½					6	15	5	15	
	Epicentre:			07	20	45		15S 173W					USCGS	6
								Felt: Apia						
APR 1	TO	PKP	Z	00	55	11								
	KP	(PKP)	Z	00	55	14								
		e	Z			26								
		e	Z		58	56								

Date		Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
APR	1	RX	M	N	02	04										
		Epicentre:			00	34	18		27½N	21W					USCGS	6¼
	1	KP	e(P)	Z	14	21	04									
		RX	e(S)	N	14	26	57									
			e	N		30	34									
		Epicentre:			14	11	30		48S	98½E					USCGS	
	1	ON	e(P)	E	14	52	34									
			e	E		53	25									
			e	E			51									
		KP	iP	Z	14	52	56	u								
			e	Z		53	10									
			e	Z			14									
		SU	e	N	14	53										
		TU	eP	N	14	53	10									
		CB	eP	E	14	53	25									
		WN	eP	ZN	14	53	27									
		KM	e(P)	X	14	53	36									
		GP	e(P)	N	14	53	47									
			e	N		54	11									
		Epicentre:			14	48	28		18S	169E	150 km				USCGS	
	1	SU	e	N	19	18	19									
			eS	N		19	30									
		ON	eP	E	19	20	39									
		KP	iP	Z	19	20	49	u								
			i	Z			51	u								
			e(S)	Z		25	07									
		TU	e(P)	N	19	20	54									
			e(S)	N		25	08									
		WN	eP	N	19	21	30									
			e(S)	N		26	09									
		CB	e(S)	E	19	26	18									
		KM	eP	X	19	21	45									
		RX	eL	NE	19	31										
			eL	Z		34										
		Epicentre:			19	15	38		17S	173W					USCGS	
	1	SU	e	N	22	50	27									
		KP	eP	Z	22	52	33									
			e	Z			37									
		TU	e(P)	N	22	52	49									
		CB	e(P)	E	22	53	04									
		KM	e(P)	X	22	53	25									
		RX	eL	NE	23	00	13									
		Epicentre:			22	47	54		17S	168½E	100 km				USCGS	
	1	KP	eP	Z	23	40	51	u								
			e(pP)	Z		41	01									
			i	Z		43	10									
		TU	e(P)	N	23	41	04									
			e(S)	N		46	53									
		CB	e(P)	N	23	41	08									
		KM	eP	X	23	41	15									
		RX	eL	NE	23	53										
			eL	Z		54½										
			M	N		55						2 24				
		Epicentre:			23	33	36		6S	154½E					USCGS	
	2	ON	e?	E	06	08	24									
			e	E			25									
		TU	P	N	06	08	26									
			eS	N		09	40									
		KP	i	Z	06	08	27									
			e	Z			53									

Date		Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
APR	2	GP	e(S)	N	06	12	00									
		Epicentre:			06	06	50		Possibly Kermadec Is. NZ							
	2	KP	P	Z	12	10	00									
		RX	eL	N	12	28						1 17				
			eL	ZNE		32						1 17				
		Epicentre:			12	00	.8		New Guinea region						NZ	
	2	KP	eP	Z	19	33	32									
			e	Z			43									
		Epicentre:			19	21	34		20½N	121E					USCGS	
	2	SU	e(P)	N	21	50	35									
			e(S)	N		53	00									
		GP	e(P)	N	21	53	44									
			e	N		57	51									
			(S)	N			57									
		KM	e(P)	X	21	53	48									
			eS	X		57	45									
		TU	eS	N	21	55	46									
		WN	eS	N	21	56	48									
		CB	eS	E	21	57	07									
		RX	eL	NE	22	02										
			eL	Z		04										
			M	N		05						1 18				
		Epicentre:			21	48	20		Tonga						USCGS	
	3	KP	eP	Z	01	40	02									
			e	Z			51									
		Epicentre:			01	27	06		51½N	179E					USCGS	
	3	KP	e(P)	Z	06	00	50									
		Epicentre:			05	48	45		24N	122E	200 km				USCGS	
	5	SU	e	N	21	08	35									
		ON	eP	E	21	10	37									
		KP	eP	Z	21	10	55	u								
		TO	eP	Z	21	11	05									
		TU	eP	N	21	11	07									
			eS	N		15	15									
		CB	e(P)	E	21	11	21									
		KM	eP	X	21	11	33									
		GP	P	N	21	11	39									
		RX	eL	E	21	20								1 18		
		Epicentre:			21	05	54		15½S	167½E	150 km				USCGS	
	5	KP	iP	Z	23	37	19	u								
			e	Z			28									
			i	Z			45									
			e	Z		39	14									
		TO	iP	Z	23	37	26	u								
			e	Z			49									
			e	Z		38	03									
			e?	Z			30									
		CB	eP	E	23	37	26									
			e	E			52									
			e	E		38	08									
		WN	iP	ZN	23	37	33	u				2 4				
			e	N			40									
			e	N			57									
			eS	N		44	15							3 5		
			eL	Z		53										
			M	Z	24	01						2 15				
		KM	e(P)	X	23	37	38									
			e	X		38	37									
		RX	eP	ZN	23	37	40									
			eS	NE		44	.2							2 17		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag.
APR 5		eSS	E		48	22					2	14		
		eL	E		52									
		M	ZNE		55				2	20				
		M	ZN		59		3	15	3	18				
	Epicentre:			23	29	25	5½S	146E					USCGS	6? NZ
	6 KP	P	Z	09	43	14								
	6 CB	eP	E	14	22	16								
		eS	E		29	58								
		esS	E		30	15								
		eScS	E		31	57								
		eL	E		44									
	RX	e	E	14	22	16								
		e	N		27	20								
		eS	NE		29	40			2	17				
		e	E		32½									
		e(SS)	N		33.6									
		e	E		35	18								
		eL	ZNE		41		4	20	10	22	3	10		
		M	ZNE		47		25	18	8	18	16	18		
	WN	eP	ZN	14	22	24	2	6						
		eS	N		30	12			5	5				
		eScS?	N		32	03								
		eL	Z		41									
		e	N		43									
		eL	N		46									
		e	N		46.3									
		M	Z		47		22	18						
		M	N		48				6	14				
	KP	P	Z	14	22	25	(u)							
		e	Z			51								
		e	Z		23	18								
	TO	e(P)	Z	14	22	28								
	SU	eS	N	14	30	15	(n)		10	5				
		e(SSS)	N		36.6									
		eL	N		39									
		e	N		49	57								
	ON	eL	E	14	44									
	Epicentre:			14	12	36	10S	120½E					USCGS	6½
	6 TU	iP	N	22	23	28	(s)							
		eS	N		24	17								
	KP	iP	Z	22	23	32	u							
		e(S)	Z		24	29								
	ON	eP	E	22	23	38								
		e(S)	E		24	23								
	WN	e(P)	N	22	24	35								
		e	N		25	26								
		e(S)	N		26	06								
	CB	eP	E	22	24	37								
		e(S)	E		25	48								
	GP	e(P)	N	22	25	10								
		e(S)	N		26	29								
	Epicentre:			22	22		35S	180					NZ(D)	5 NZ
	7 KP	P	Z	00	08	44	(u)							
		e	Z		09	05								
	7 KP	iP	Z	00	57	06	d							
		e	Z			12								
	GP	e(S)	N	01	01	38								
	RX	e(L)	ZNE	01	13									
	7 KP	eP	Z	13	01	27								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag.
APR 8	ON	iP	E	01	24	59	e							
		iS	E		26	11								
	KP	iP	Z	01	25	06	(d)							
		iS	Z		26	23								
	TU	eP	N	01	25	06	n							
		iS	N		26	24								
	TO	eP	Z	01	25	16								
		iS	Z		26	47								
	WN	iP	N	01	25	38	s							
		iS	N		27	22								
		iScS	N		37	42	n							
	CB	eP	E	01	25	46								
		eS	E		27	33								
	KM	eP	X	01	26	05								
		eS	X		28	05								
	GP	eP	N	01	26	10	s							
		iS	N		28	18								
	SU	e(P)	N	01	26	34								
		e	N		28	42								
		e	N		29	54								
	RX	eP	N	01	26	40								
		eS	N		29	03					2	8		
		e	NE		29	.4					4	30		
		e	N		33	04					4	10		
	Epicentre:			01	23	26	32½S	179½E			400 km		USCGS	6-6¼ 6.7 NZ
	8 RX	e	NE	07	48	56								
	8 SU	e(P)	N	08	03	35								
		i	N			45								
		eS	N		04	59					8	5		
	ON	P	E	08	06	24								
		e(pP)	E			43								
		e?	E		18	10								
	KP	P	Z	08	06	36	(u)							
		e(pP)	Z			51								
	TU	eP	N	08	06	40								
		e(pP)	N			58								
		eS	N		10	42								
	TO	eP	Z	08	06	46								
		e	Z		07	22								
	WN	e(P)	N	08	07	05								
		e	N			11								
		e	N		10	29								
		e(S)	N		11	34								
		e	N			43								
	CB	e(P)	E	08	07	14								
	GP	eP	N	08	07	32	(n)							
		e	N			39								
		eS	N		12	18								
	Epicentre:			08	01	36	17S	174½W			100 km		USCGS	
							Felt Apia							
	8 GP	eP	N	11	55	44								
	WN	eP	Z	11	55	52					2	4		
		eL	Z	12	20		L-waves very weak							
	TO	eP	Z	11	55	57								
		e	Z		56	36								
	KP	P	Z	11	56	02	u							
		e	Z			40								
	RX	e(S)	NE	12	05	06					2	22		
		e	NE		05	.9							1	20
		eSSS	N		13	½								
		eLq	NE		15	½					2	18		
		M	ZNE		26								1	16
	Epicentre:			11	44	25	50½S	73W					USCGS	5.8 NZ

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
APR 8	KP	P	Z	15	46	15								
9	SU	e(P)	N	04	46	58								
		e	N		47	32								
		i(S)	N		49	00	s			19	10			
		e	N		51	15								
		e	N		53	25								
	ON	eP	E	04	48	55								
		e(pP)	E		49	19								
	KP	P	Z	04	49	12								
		e(pP)	Z			37								
		e(PcS)	Z		56	23								
	TO	eP	Z	04	49	24								
	GP	eP	N	04	49	57								
		e	N		50	59								
	RX	e(PP)	NE	04	51	24								
		e(S)	N		55	12								
		e(L)	NE		57.3							1	24	
		Lr	ZN		59									
		e	E	05	01	22						1	15	
		M	ZN		06			1	12					
	WN	eL	Z	05	00									
	Epicentre:			04	43	58		14½S	167½E	100	km		USCGS	7.3 M
9	TO	eP	Z	06	30	12								
	KP	eP	Z	06	30	18								
		e	Z			24								
	RX	e(S)	NE	06	38	20				2	10			
		e	NE		39	12								
		eSS	N		42	42								
		e(SSS)	NE		46	14				4	18			
		eL	N		47	08				8	20			
		eLr	ZN		49	30				2	24			
		e	Z		51	34		4	20					
	WN	eLq	N	06	49									
		eLr	Z		54									
		M	Z	07	16			1	12					
	Epicentre:			06	18	30		36S	76E				USCGS	6.2 M
9	RX	M	E	18	39							18		
	Epicentre:			17	36	10		7N	82W				USCGS	6½-6¾
9	TO	iP	Z	17	50	08	d							
		(S)	Z			24								
	WN	iP	N	17	50	15	s							
		S	N			32								
	KP	iP	Z	17	50	25	u							
		(S)	Z		51	11								
		i	Z			35								
	CB	iP	E	17	50	30	e							
		e	E			42								
		e	E			51								
		eS	E		50	59								
	GP	eP?	N	17	50	48								
		i	N		51	06								
		eS	N			37								
	ON	eP	E	17	50	58								
		i	E		51	12								
		e	E		52	03								
		i	E			15								
	Epicentre:			17	49	51		40.1S	175.8E	S			NZ(C)	4.9 M
								Felt: Southern parts of the North I. Max. Wanganui MM5.						
10	SU	iP	N	05	49	28	n							
		e	N			50								
		iS	N		51	00								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
APR 10		e	N	06	01	10				33	5			
	TO	eP	Z	05	50	(02)								
		ScP	Z			57(14)								
	ON	eP	E	05	50	07	w							
		e	E			09								
		e	E			25								
		e	E		52	05								
		iS	E			10	w							
		eScS	E	06	01	22								
		e?	E			51								
		e	E		02	26								
	KP	P	Z	05	50	23	u							
		i	Z			25								
		eS	Z		52	41								
		eScP	Z		57	46								
	TU	eP	N	05	50	28								
		e	N		52	38								
		eS	N			45								
		e	N		53	30								
		eScP	N		57	53								
		ScS	N	06	01	21								
	WN	eP	ZN	05	50	54								
		e	Z		53	14								
		eS	ZN			29								
		e	N		54	30								
		eScP	ZN		57	52								
		ScS	ZN	06	01	29								
		e	N			54								
	CB	eP	E	05	50	57								
		e	E		51	10								
		e	E			18								
		eS	E		53	38								
		eScS	E	06	01	27								
		e	E			29								
	KM	eP	X	05	51	12								
		e	X			36								
		e	X		52	04								
		e	X		54	04								
		e(S)	X			10								
		e	X			33								
		eScS?	X	06	01	34								
	GP	iP	N	05	51	19								
		e	N			23								
		e	N			32								
		e	N		54	16								
		e(S)	N			24								
		e	N			31								
		e	N		57	59								
	RX	eP	N	05	51	40				3	4			
		e(S)	ZNE		54	12				3	14			
		e	N		55	14								
		e(ScS)	N	06	01	46								
	Epicentre:			05	47	34		25S	178½E	600	km		USCGS	5.9 NZ
10	KP	e(P)	Z	13	48	24								
10	SU	e	N	23	56	03								
	KP	eP	Z	23	56	25								
		e	Z			42								
		e	Z		57	03								
	KM	eP?	X	23	57	25								
	GP	eP	N	23	57	30								
	RX	eL	ZNE	24	10						1	18		
	Epicentre:							Probably Kermadec region. NZ.						
11	KP	eP	Z	07	03	50								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
APR 11	KP	P	Z	08	26	22									
11	KP	eP	Z	11	38	40									
		e	Z			44									
	TU	e(P)	N	11	38	58									
	RX	eL	N	11	53										
		eL	N		58										
		M	NE	12	04							1	20		
	Epicentre:			11	28	50		1S	128E					USCGS	
11	SU	e(L)	N	18	00	00									
		M	N		01					11	7				
	ON	eP	E	18	01	07									
	KP	eP	Z	18	01	18									
		e	Z			25									
		e	Z			52									
	WN	e(P)	N	18	01	47									
		e(L)	Z		11										
	RX	eL	ZN	18	13										
	Epicentre:			17	55	53		15S	173½W					USCGS	
11	KP	(P)	Z	18	29	29									
11	TU	eP	N	22	03	41									
		i	N			59									
		e(S)	N		04	02									
	KP	iP	Z	22	03	44	d								
		(S)	Z		04	03									
	TO	eP	Z	22	03	55									
		S	Z		04	36									
	ON	iP	E	22	04	02									
		e(S)	E			41									
		i	E			57									
	WN	eP	N	22	04	19									
		eS	N		05	10									
	CB	e(P)	E	22	04	41									
		eS	E		05	33									
	GP	eP	N	22	04	55									
		iS	N		06	15									
	KM	e(P)	X	22	04	56									
		eS	X		06	11									
	Epicentre:			22	03	15		37.5S	177.5E	N?				NZ (D)	4.9 NZ
12	SU	e	N	06	09										
	ON	eP	E	06	09	31									
	KP	iP	Z	06	09	42	d								
		e	Z			55									
	Epicentre:			06	04	18		Samoa						USCGS	
12	KP	eP	Z	08	24	39									
12	KP	e(PP)	Z	10	12	32									
		e	Z		13	04									
	Epicentre:			09	54	51		17½N	95W	100 km				USCGS	6½
12	KP	eP	Z	11	11	37									
12	SU	e	N	15	46										
	KP	eP	Z	15	31	25									
		e	Z		34										
	TO	e(P)	Z	15	31	40									
		e	Z		32	49									
	TU	e(P)	N	15	31	45									
	RX	e	NE	15	38	52									
		e	ZE		43	24									
		eL	NE		45					14	40				

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
APR 12		eL	Z		48										
		M	NE		48						16	28	8	23	
		M	Z		53				18	20					
	WN	eL	ZN	15	46										
		M	ZN		50				16	20					
		M	Z		57				14	15					
	ON	eL	E	15	50										
	CB	eL	E	15	51										
	KM	eL	X	15	51										
	GP	eL	N	15	51										
	Epicentre:			15	22	33		4½S	134E	100 km				USCGS	
12	KP	P	Z	16	11	29									
12	ON	eP	E	20	59	13									
		e	E			26									
		e(S)	E	21	03	48									
		eL	E		06										
	KP	P	Z	20	59	25									
		e	Z			40									
	TO	eP	Z	20	59	33									
	TU	e(P)	N	20	59	40									
	CB	P	E	20	59	59									
	WN	eL	ZN	21	08				20	27	15	26			
		M	Z		11				17	22					
	Epicentre:			20	54	00		15½S	173W					USCGS	6-6½
								Felt	Apia						
13	KP	P	Z	22	45	25									
14	RX	e(L)	NE	02	50										
		e(L)	E		56										
		e(L)	ZN	03	07										
14	KP	P	Z	06	33	18									
14	KP	e(P)	Z	15	13	56									
14	KP	iP?	Z	18	11	45	d								
		i	Z		12	18									
15	KP	eP	Z	00	27	58									
	RX	eL	N	00	57										
		M	N	01	00						22				
	Epicentre:			00	15	21		41½N	143E					USCGS	
15	KP	P	Z	01	01	19									
15	KP	eP	Z	05	06	22									
	RX	e(L)	N	05	14										
		M	N		16						1	18			
	Epicentre:			04	59	14		53½S	135W					USCGS	
15	KP	P	Z	12	16	26									
15	KP	e(P)	Z	12	52	44									
15	KP	eP	Z	17	15	49									
		e	Z			52									
15	KP	P	Z	19	24	32									
15	SU	eP?	N	23	54	18									
		iS	N		55	31	s								
	ON	eP	E	23	55	38									
		eS	E		58	02									

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag.
APR 15	KP	P	Z	23	55	49					
		i	Z			51					
		e	Z		56	36					
		e	Z		58	00					
		eS	Z			30					
		e	Z	24	01	40					
	TO	P	Z	23	56	02					
		eS	Z		58	47					
	CB	eP	E	23	56	24					
		eS	E		59	24					
	KM	eP	X	23	56	39					
		e	X			47					
		e(S)	X		59	49					
	GP	eP?	N	23	56	46					
		e	N			52					
		eS	N	24	00	01					
	TU	eS	N	23	58	30					
	WN	eS	N	23	59	20					
	Epicentre:			23	52	40		23S 180 600 km		USCGS	
16	KP	iP	Z	01	15	16	u				
		iS	Z			36					
	TU	iP	N	01	15	19	s				
		i	N			21					
		iS	N			40					
	TO	iP	Z	01	15	23	u				
		i(S)	Z			51					
	ON	eP	E	01	15	36					
		iS	E		16	09					
	WN	iP	N	01	15	45	(n)				
		S	N		16	27					
	CB	eP	E	01	15	53					
		S	E		16	42					
	KM	eP?	X	01	16	15					
		iS	X		17	19					
	GP	eP	N	01	16	20					
		e(S)	N		17	28					
		e	N			31					
	Epicentre:			01	14	50		37.9S 176.5E 180 km±		NZ(C)	5.4 NZ
16	SU	(P)	N	07	29	05	(n)				
		e	N			30					
		iS	N		30	25	s				
		i	N		31	23					
	ON	iP	E	07	30	19	w				
		e	E			45					
		e	E		31	06					
		eS	E		32	39					
		e	E		33	18					
		e	E			34					
	KP	P	Z	07	30	35	u				
		i	Z			39					
		e	Z		32	33					
		e	Z		33	21					
		e	Z		40	28					
	TU	P	N	07	30	40					
		e	N			59					
		eS	N		33	09					
		e	N			50					
	TO	eP	Z	07	30	46					
		e	Z		33	33					
	WN	eP	ZN	07	31	07					
		i	N			14					
		e(S)	N		34	03					
		i	N			08					
	CB	eP	E	07	31	09					
		eS	E		34	06					

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag.
APR 16	KM	eP?	X	07	31	25					
		e	X			34					
		e(S)	X		34	33					
	GP	eP	N	07	31	31					
		e	N			34					
		eS	N		34	44					
	RX	e(S)	N	07	34	18					
	Epicentre:			07	27	27		23½S 179E 550 km		USCGS	
16	KP	iP	Z	11	53	01	u				
16	KP	P	Z	15	43	13					
16	ON	P	E	16	23	37	e				
		e	E		24	04					
	KP	iP	Z	16	23	51	u				
		e	Z			56					
	TO	P	Z	16	23	57	u				
	TU	e(P)	Z	16	24	00					
	CB	eP	E	16	24	00					
	WN	P	ZN	16	24	03	u				
	KM	e	X	16	24	08					
	GP	eP	N	16	24	12	s				
		e	N			38					
	RX	eL	N	16	40						
	Epicentre:			16	13	56		12½N 143E 100 km		USCGS	6½
17	KP	eP	Z	00	55	00					
	GP	eP	N	00	55	45					
	Epicentre:			00	50	50		New Hebrides		USCGS	
17	KP	iP	Z	10	35	17	d				
	Epicentre:			10	31	35		21S 178W 500 km		USCGS	
17	KP	iP	Z	16	08	42	d				
18	KP	iP	Z	01	59	02	u				
18	KP	iP	Z	03	37	08	d				
		(S)	Z			22					
	TO	eP	Z	03	37	09	(u)				
		(S)	Z			35					
	TU	iP	N	03	37	11	n				
		e	N			15½					
		iS	N			30					
		e	N			38					
	WN	eP	N	03	37	29					
		e	N			35					
		eS	N		38	04					
	ON	eP	E	03	37	33					
		e	E			41					
		e(S)	E			46					
		e	E		38	12					
	CB	eP	E	03	37	37					
		eS	E		38	18					
	KM	eP	X	03	38	03					
		eS	X			55					
	GP	eP	N	03	38	03					
		eS	N		39	05					
	Epicentre:			03	36	44		38.5S 175.9E 160 km		NZ(C)	5.0 NZ
18	KP	P	Z	06	25	21					
		e	Z			35					
		e(PP)	Z			38					
		iS	Z		31	16	u				
	CB	eP	E	06	25	35					
		e	E			52					

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
APR 18	TU	e(P)	N	06	25	50								
		eS	N		31	32								
	RX	eS	N	06	32									
		eL	N		36									
		eL	ZNE		38									
		M	N		42					2	21			
	WN	eL	Z	06	39									
	Epicentre:			06	17	51		4½S 154E					USCGS	
19	KP	P	Z	04	21	16								
	SU	e	N	04	23									
19	KP	P	Z	07	37	42								
	WN	e(S)	N	07	46	48								
		eLr	ZN		59									
		M	ZN	08	01			5	20	4	20			
	RX	eS	NE	07	46	57								
		e	NE		47	21								
		eLq	N		56.5									
		eLr	ZNE		59									
		M	ZNE					7	22	2	22	3	22	
	Epicentre:			07	26	15		45S 82W					USCGS	6
19	KP	e(P)	Z	07	56	54								
		e	Z		57	13								
	SU	e	N	08	10									
19	KP	iP	Z	09	18	51	d							
19	SU	e	N	11	07	37								
	ON	e(P)	E	11	09	11								
	KP	eP	Z	11	09	24								
		e	Z			39								
		e	Z			50								
	GP	e(P)	N	11	10	25								
19	ON	eP	E	13	55	15								
		e(S)	E		56	28								
	KP	eP	Z	13	55	26								
		e(S)	Z		56	54								
	WN	e(P)	N	13	56	00								
		eS	N		57	48								
	GP	e(P)	N	13	56	33								
		eS	N		58	50								
	TU	e(S)	N	13	56	48								
	CB	e(S)	E	13	58	05								
	Epicentre:			13	53	37		32S 178W 600 km±					NZ(D)	
19	KP	P	Z	15	01	48								
	RX	eL		16	00									
	Epicentre:			14	51	03		24½N 142E					USCGS	
19	KP	iP	Z	16	19	19								
		i	Z			28								
19	SU	e?	N	19	45	15								
		i(P)	N			45								
		i(S)	N		47	58								
	ON	P	E	19	48	15								
	KP	iP	Z	19	48	25	u							
		i	Z			31								
		e	Z		51	30								
		e(S)	Z		53	00								
	TU	eP?	N	19	48	28								
		e	N			35								
		e(S)	N		53	01								
	CB	eP?	E	19	49	09								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
APR 19		e	E			14								
	GP	eP	N	19	49	31								
		e(S)	N		54	53								
	WN	e(S)	N	19	54	01								
	Epicentre:			19	42	44		Santa Cruz Is. region						
20	KP	P	Z	03	35	25	u							
		e	Z			38								
		ePcP	Z		37	28								
		eS	Z		41	14								
	WN	eP	Z	03	35	41								
		e	Z			57								
		eS	N		41	54						2	5	
		e	N		45	18								
		M	Z		58					3	15			
	SU	e	N	03	39									
	RX	eS	NE	03	42	14								
		e	NE		45	36								3 12
		eL	ZNE		49							4	24	
		M	N		53							4	18	
	Epicentre:			03	27	52		6S 149½E		100 km			USCGS	6 NZ
21	KP	P	Z	01	31	01	u							
		e(S)	Z		33	52								
	TU	e(P)	N	01	31	09								
		S	N		33	52								
	WN	e(P)	N	01	31	34								
		e(S)	N		34	42								
	CB	P	E	01	31	36								
		eS	E		34	45								
	GP	eP	N	01	32	00								
		eS	N		35	29								
	ON	S	E	01	33	19								
21	KP	e(P)	Z	13	06	22								
21	RX	e(S)	N	15	28	58								
		e	N		29	50								
		eL	ZNE		33							3	23	
	WN	eL	ZN	15	36									
21	SU	e	N	16	29									
	KP	P	Z	16	30	32								
21	KP	e	Z	19	55	53								
22	WN	eL	Z	19	53									
	RX	eL	ZNE	19	54									
	Epicentre:			19	01	41		11½N 86½W					USCGS	
22	KP	P	Z	19	37	05								
22	RX	eS	ZNE	20	46	36						1	20	2 20
		SS	E		50	45								1 20
		Lr	ZNE		57.5									
		M	E		59									2 20
	WN	eL	ZN	20	57									
		M	Z		59					4	20			
	Epicentre:			20	26	46		36½S 97½W					USCGS	6
23	ON	P	E	03	50	13								
	KP	eP	Z	03	50	18								
	TU	eS	N	03	51	40								
	WN	S	N	03	52	49								
	GP	eS	N	03	53	52								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
APR 24	KP	P	Z	02	32	18								
	CB	e	E	02	33	03								
24	KP	iP	Z	08	49	43	u							
24	SU	P	N	18	00	(00)	(n)							
		M	N			08±								
	ON	iP	E	17	59	57½	w							
		e	E	18	00	06								
		M	E			35								
		eT	E		05	43								
	TU	eP?	N	18	00	01								
		e	N			03								
		e	N			28								
		S	N		01	32	n							
		e	N			42								
		i	N		02	20								
	AK	iP	N	18	00	02	s							
		e	N			17								
		e	N			45								
		e(S)	N		01	31								
	KP	iP	Z	18	00	03½	d							
		i	Z			05½								
		e(S)	Z		01	50								
	WN	eP	N	18	00	40								
		e	N			55								
		e	N		01	14								
		e	N			42								
		S	N		02	39								
		e	N		03	31								
		eScP	N		10	12								
		eScS	N		13	42								
		e	N		14	09								
	CB	e?	E	18	00	51								
		e?	E			54								
		e	E			59								
		e	E		01	10								
		e	E			36								
		eS	E		02	57								
		e	E		04	15								
	KM	P	X	18	01	(00)								
		(S)	X		03	(14)								
	GP	eP?	N	18	01	16								
		e	N			19								
		e	N			32								
		S	N		03	44								
	RX	e(P)	NE	18	02	04	ne							
		eS?	E		04	38								
		e	E		05	47								
		Lq	NE		06									
		Lr			06½									
		M	ZNE		08									
	Epicentre:			17	57	58		31S	178W				USCGS	6¾
				17	58	07		31.4S	178.3W	N			NZ(B)	6.9 NZ
24	TU	e(S)	N	18	14	27								
	KP	(S)	Z	18	14	37								
	WN	(S)	N	18	15	26								
	GP	e(S)	N	18	16	30								
24	TU	eP	N	18	18	28								
		i	N			36								
	KP	eP?	Z	18	18	32								
24	WN	S	N	21	58	03								
	GP	eS	N	21	59	09								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
APR 24	KP	e	Z	22	43	05								
	WN	eS	N	22	45	12								
25	KP	eP	Z	00	25	55								
	RX	eL	NE	00	28									
		M	E			29						6	11	
	WN	eL	ZN	00	33									
25	KP	P	Z	00	46	41								
		e	Z			47	08							
25	KP	e(P)	Z	01	24	17								
		S	Z			25	42							
	WN	S	N	01	26	45								
25	KP	P	Z	05	30	42								
25	ON	e	E	23	02	42								
	KP	e	Z	23	02	49								
		e(S)	Z			54								
	WN	eS	N	23	05	20								
	GP	eS	N	23	06	25								
25	KP	iP	Z	23	28	40	u							
26	SU	e(S)	N	05	20	24								
	ON	eP	E	05	23	02								
		e(PP)	E			27								
	KP	eP	Z	05	23	14								
		e	Z			27								
		ePP	Z			39								
	GP	eP?	N	05	24	14								
	Epicentre:			05	17	47		16S	171½W				USCGS	
26	SU	eP?	N	05	49	57								
		e(S)	N			52	08							
	ON	eP	E	05	51	31								
		e	E			47								
	KP	iP	Z	05	51	54	u							
		e	Z			52	05							
		e	Z	06	08	01								
	CB	eP	E	05	52	22								
	WN	e(P)	N	05	52	29								
		eL	Z			59		2	19					
	GP	eP	N	05	52	47								
	RX	eL	NE	06	00½							I	18	
		eL	Z			02		1	20					
	Epicentre:			05	47	28		19½S	169½E				USCGS	5 NZ
26	ON	e	E	07	23	10								
	KP	e(P)	Z	07	23	10								
	WN	eS	N	07	25	29								
	GP	eS	N	07	26	37								
26	KP	P	Z	07	46	00								
26	KP	e(P)	Z	08	54	26								
	Epicentre:			08	47	28		7½S	157E				USCGS	
26	SU	eS	N	21	00	29						55	14	
		e(ScS)	N			01.4						66	15	
		eLq	N			10								
		eLr	N			14								
	ON	eP	E	20	52	27								
		e	E			29								
		eS	E	21	02	05								
		e	E			52								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
APR 26	KP	P	Z	20	52	35	d							
		e	Z			38								
		e	Z			54								
		pP	Z		53	06								
		e	Z		54	52								
		e	Z		55	42								
		e	Z		56	18								
		i	Z		58	17								
		eS	Z	21	02	32								
	CB	P	E	20	52	42								
		e	E		53	11								
		eS	E	21	02	33								
		e	E			57								
		eSS	E		07	55								
	WN	eP	ZN	20	52	44	us	10	6					
		epP	ZN		53	08		22	7					
		e	N			36								
		S	N	21	02	43	n			24	5			
		i	N		03	30	s			14	6			
		eL	N		14									
		M	N		16					22	24			
	GP	eP	N	20	52	48								
		e	N		53	19								
		e	N		58	28								
	RX	P	ZNE	20	52	48	ue							
		e	Z		53	10								
		i	E			18	e							
		e	E		55.9							5	10	
		e	Z		56			9	8					
		iS	ZNE	21	02	50	ne			37	20	35	13	
		eSS	N		08.3					30	25			
		i(L)	ZN		14.9					34	20			
		eL	ZN		20									
		eL	NE	22	01					4	27	2	30	
		eL	N	23	13					2	25			
	Epicentre:			20	40	38		23N	122½E	150 km		USCGS		7½
27	KP	iP	Z	02	37	05	u							
27	ON	eP	E	09	57	12								
		e	E			23								
		e	E			49								
	KP	eP	Z	09	57	22								
		e	Z			56								
		e	Z	10	02	15								
	GP	e(P)	N	09	57	40								
	RX	eS	NE	10	04	27						2	20	
		e	E		05	50								
		e	NE		07	58								
		eL	N		09½					5	20			
		eL	Z		14									
	Epicentre:			09	48	09		7S	129E			USCGS		5½-6 M
27	KP	eP	Z	12	57	23								
	Epicentre:			12	47	27		½S	124E	200 km		USCGS		
28	RX	e	E	11	38.5									
		e	NE		43.4							6	22	
		eLq	N		53									
		eLr	ZNE		59									
		M	ZNE	12	02			37	20	12	20	20	20	
		M	ZE		08			38	17			25	18	
	WN	eL	Z	11	56									
		M	Z	12	00			24	19					
	Epicentre:			11	09	30		15N	93W			USCGS		6½-6¾

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
APR 30	SU	e(P)	N	01	58	40							
		S	N		59	02							
MAY 4	SU	iP	N	07	27	11				26	8		
		PP	N		29	52				76	8		
		S	N		36	32				76	8		
		SS	N		41	27				340	35		
		eL	N		47					205	35		
		L	N		48¾					820	38		
		M	N	08	01					105	18		
	ON	P	E	07	28	41							
		e	E			55							
		ipP	E		29	18							
		S	E		39	24							
	WN	iP	ZN	07	29	01	6	10					
		eP	N			03							
		pP	ZN			36	12	8					
		iPP	ZN		33	00	12	8		9	5		
		iSKS	N		39	38				8	5		
		iS	N		40	10				42	7		
		(PS)	ZN		42	30	18	10		136	35		
		eSS	N		46	15				142	45		
		L	ZN		59¾		620	40		360	40		
	AK	eP	N	07	29	04				8	7		
		SKS	N		39	00				5	10		
		S	N			54				29	10		
		PS	N		41	09				79	30		
		L	N		57	08				175	33		
	TU	eP	N	07	28.9								
	CB	eP	E	07	29	05							
		eS	E		40	08							
		esS	E			54							
	RX	P	ZN	07	29	17	12	12		7	15		
		ePP	N		33	20				10	30		
		PP	Z			34	16	8					
		SKS	NE		39	48				64	30	10	10
		S	E		40	36						38	14
		PS	NE		42	34				105	19	17	14
		eSS	NE		47	36				67	24	17	14
		Lq	NE		57½					19	30	28	26
		Lr	ZN	08	01	38	300	40		300	44		
	GP	eP	N	07	29	18							
		ePP	N		33	16							
	Epicentre:			07	15	42	52½N	159½E	60 km		USCGS		7¾ NZ
6	GP	eP	N	17	34	23							
	SU	P	N	17	30	50				6	5		
		S			31	52				25	7		
	Epicentre:			17	29	26	18S	179W	600 km		USCGS		
7	SU	eL	N	00	17					41	30		
	RX	eS	NE	00	18	41				3	18	4	14
		eLq	N		23					3	18		
		eLr	ZE		26½		6	22				3	22
		M	NE		30					5	18	6	18
	WN	eL	Z	00	26		11	18					
		eL	N		28								
	Epicentre:			00	03	24	38	148½E			USCGS		6-6½
7	TU	eP	N	07	15	44							
		S	N		16	07							
	WN	eP	N	07	16	06							
		S	N			49							
	CB	S	E	07	17	02							
	GP	S	N	07	17	50							
	Epicentre:			07	15	10	37.9S	176.0E	200 km		NZ(D)		4.9 NZ

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAY 8	SU	e	N	09	13	43			7	9			
		iL	N		14	13			23	7			
9	SU	L	N	23	49	07			6	8			
12	SU	S	N	05	19				13	11			
		L	N		32				26	30			
	RX	SKS	N	05	22	03			2	10			
		S	NE		23	04			3	15	4	15	
		PS	N		24	28			4	15			
		eSS	N		29	56			3	15			
		eL	N		39								
		eL	ZN		45		10	30	7	30			
		M	NE		53				8	20	4	20	
	WN	iS?	N	05	22	25			3	8			
		eL M	ZN		42½		15	25	10	25			
	Epicentre:			04	57	35	54½N 168E					USCGS	6½
12	RX	eS	N	10	11	38			2	15			
		ePS	E		13	06					2	15	
		eSS	N		18	34			3	20			
		eLg	N		28				5	26			
		eLr	ZE		32½		12	25			4	25	
		M	ZNE		35		16	20	4	20	7	20	
	WN	i?	N	10	13	24			3	5			
		eL	ZN		33½		9	20	5	15			
	SU	eL	N	10	38				8	20			
	Epicentre:			09	46	51	23½S 64½W					USCGS	6¼-6½
12	SU	eL	N	22	22				8	20			
	RX	eL M	E	22	47						2	20	
	Epicentre:			21	59	56	51½N 177W					USCGS	6.0 NZ
13	TU	eS	N	00	55	00							
	CB	eS	E	00	55	48							
	Epicentre:			00	48	54	22S 179½E 550 km					USCGS	
13	SU	L M	N	01	00±				94	8			
	TO	eP	Z	01	05	49							
	Epicentre:			01	00	49	17S 175E					USCGS	
14	ON	P	E	04	26	12							
	KM	eP	X	04	27	20							
	Epicentre:			04	21	19	17S 173½W 60 km					USCGS	
14	SU	S	N	09	36	45			7	3			
		L	N		38	17			60	15			
		M	N		41				55	7			
	ON	eP	E	09	37	36							
	WN	eL	ZN	09	43½		6	15	5	10			
	RX	eS	N	09	43	44			3	18			
		eL	NE		46				6	20	4	20	
		eL	Z		47½		11	20					
	Epicentre:			09	33	22	19S 170E					USCGS	5¾ NZ
14	SU	eS	N	10	45	07			2	2			
		eL	N		46	25			12	15			
		M	N		48				27	9			
		M	N		50				21	7			
14	SU	S	N	11	52	17			2	2			
		eL	N		53	48			20	15			
		M	N		55				48	9			
		M	N		57				64	8			
	ON	eP	E	11	53	36							
	RX	eL	NE	12	02				3	20	7	20	
	Epicentre:			11	49	20	19S 170E 100 km					USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAY 14	SU	S	N	13	22	16			7	3			
		eL	N		23	48			30	15			
		M	N		25				73	9			
		M	N		27				65	7			
	ON	eP	E	13	23	34							
	TO	eP	Z	13	24	08							
		i	Z			17							
	RX	eS	N	13	29	50			3	16			
		eLM	NE		32				9	20	4	20	
		eL	Z		33½		9	18					
	WN	eL	ZN	13	32½		4	12	5	10			
	Epicentre:			13	19	32	19S 170E		150 km			USCGS	5½-5¾ NZ
15	KP	P	Z	07	38	05							
16	KP	P	Z	00	03	07½							
16	SU	ePP	N	06	23	18			7	5			
		S	N		29	39			9	20			
	ON	eP	E	06	23	32							
		e	E			39							
	KP	P	Z	06	23	44	d						
		epP	Z		24	06							
		iPcP	Z		25	50	(d)						
		S	Z		29	44							
	TO	P	Z	06	23	52	u						
		epP	Z		24	13							
	CB	eP	E	06	23	57							
		eS	E		30	00							
	TU	eP	N	06	23	58							
		eS	N		30	01							
	WN	iP	ZN	06	24	04	(u)	4	6				
		eP	N			06							
		PcS	N		28	02			7	7			
		eS	N		30	08			4	5			
		ScS	N		33	50			5	10			
		eL M	ZN		36			8	22	20	22		
	KM	eP	X	06	24	11							
	GP	P	N	06	24	14							
		i	N			18							
		eS	N		30	29							
	RX	eS	NE	06	30	38			9	22	11	23	
		L	NE		34	08			19	28	11	20	
		L	Z		37	03		97	26				
		M	NE		38				52	26	33	22	
		M	NE		40				36	20	7	20	
	Epicentre:			06	16	23	4½S 153½E 60 km					USCGS	6¾
16	KP	P	Z	07	38	39							
	Epicentre:			07	31	18	4½S 153½E 60 km					USCGS	
17	KP	P	Z	17	15	33							
18	KP	P	Z	05	47	29							
		i	Z			39							
	Epicentre:			05	40	09	4½S 153½E 100 km					USCGS	
18	KP	iP	Z	19	01	21							
	TU	iP	N	19	01	22	n						
		S	N			42½							
	ON	P	E	19	01	39	e						
	WN	iP	N	19	01	51							
		S	N		02	33½							
	CB	eP	E	19	02	00							
		S	E			51							
	KM	eP?	X	19	02	26							
		eP	X			27							
		S	X		03	30							

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te		Mag.
MAY 18	GP	P	N	19	02	26						
		S	N		03	37						
		Epicentre:		19	00	55		38.0S 176.5E	170 km	NZ(B)		5.4 NZ
	19 KP	P	Z	08	40	41	(u)					
		Epicentre:		08	35	23		16S 174W		USCGS		
	19 KP	iP	Z	11	44	07	u					
	20 KP	P	Z	01	00	23						
	RX	eL	E	01	22							
		Epicentre:		00	50	03		23S 114W		USCGS		
	20 KP	eP	Z	19	47	44						
		i	Z			46						
		e	Z		48	01						
		Epicentre:		19	35	03		44½N 149E		USCGS		
	20 KP	PKP	Z	20	08	49½						
		Epicentre:		19	49	12		41½N 42E		USCGS		
	21 KP	eP	Z	02	18	53						
		e	Z		19	42						
	TU	S	N	02	20	51						
	WN	S	N	02	21	56						
	CB	eS	E	02	22	12						
	KM	eS	X	02	22	50						
	GP	eS	N	02	22	59						
	21 KP	P	Z	04	26	12						
	TO	eP	Z	04	26	35						
	21 KP	P	Z	07	04	42						
		Epicentre:		06	51	40		52½N 170½W		USCGS		
	21 TO	P	Z	11	47	19						
		pP	Z			34						
	KP	P	Z	11	47	21						
		pP	Z			36						
	RX	eL	N	12	15							
		eL	ZE			17						
		Epicentre:		11	47	21		Chile-Argentine border	60 km			6 USCGS
	21 KP	P	Z	12	18	42						
	TO	eP	Z	12	18	51						
	21 KP	P	Z	17	05	07						
	22 WN	iP*	N	06	57	22¾	s					
		iS	N			29¾						
	CB	iP*	E	06	57	33½	w					
	TO	P	Z	06	57	44½	u					
	KM	Pn	X	06	57	52¼						
		eP*	X			58¼						
		i	X		58	09½						
	GP	Pn	N	06	57	53½						
		e	N			55½						
		Sn	N		58	25						
	TU	ePn	N	06	57	56						
		i	N		58	05						
		iP*	N			08½						
		i	N			25						
		eSn	N			32						
	KP	iP	Z	06	58	00¾	d					
	ON	ePn	E	06	58	29						
		e	E			41						

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te		Mag.
		Sn	E		59	26						
MAY 22		Epicentre:		06	57	12		41.0S 174.2E	S	NZ(B)		6.0 NZ
				06	57	00		40S 176E		USCGS		
								Felt many places from Taumarunui to Akaroa; Max. Picton area, MM 6.				
	23 SU	eP	N	10	56	25			2	3		
		S	N		57	47			7	5		
	24 SU	P	N	04	40	55			2	2		
		iS	N		42	04			8	2		
	ON	eP	E	04	42	50						
	KP	iP	Z	04	43	02	u					
	TO	eP	Z	04	43	10						
	WN	P	N	04	43	49						
	TU	eS	N	04	46	18						
		Epicentre:		04	39	27		20½S 179W	700 km	USCGS		5¾? NZ
	24 SU	e	N	19	30	30						
		ePP	N		33	20			3	5		
	WN	iSKS	N	19	41	56			8	12		
		iPS	ZN		44	24		6 10	6	15		
		SS	N		51	30			7	15		
		eL	ZN	20	03¼			23 25	18	25		
	RX	eL	NE	20	06				16	23	13 22	
		eL	Z		08			22 21				
		Epicentre:		19	17	40		17½N 97W	100 km	USCGS		6¾-7
	25 KP	P	Z	05	08	08						
		i	Z			22						
		Epicentre:		05	03	07		Fiji region		USCGS		
	26 KP	P	Z	04	24	57						
	TO	P	Z	04	25	01						
		Epicentre:		04	13	01		27½N 126½E	100 km	USCGS		6½-6¾
	28 KP	iP	Z	22	35	34						
		Epicentre:		22	27	15		4S 141½E	100 km	USCGS		
	29 SU	P	N	10	45	04			40	3		
		S	N		46	54			185	10		
	ON	P	E	10	47	(00)						
	KP	iP	Z	10	47	13	d					
	TO	P	Z	10	47	26	u					
	TU	eP	N	10	47	27						
		eS	N		51	17						
	CB	eP	E	10	47	43						
	WN	iP	ZN	10	47	45	us	22 6	24	5		
		S	N		51	44			6	5		
		i	N		52	22			25	12		
		eL	ZN		55			13 15	17	15		
	KM	P	X	10	47	54	sw					
	GP	P	N	10	48	04						
	RK	P	ZN	10	48	(20)	u	6 6	4	12		
		e	E			(52)					3	8
		S	NE		52	(40)			7	14	5	14
		eL	NE		54½				19	32	19	28
		eL	Z		58½			17 15				
		Epicentre:		10	42	48		19S 169½E	100 km	USCGS		6½
	30 TU	eP*	N	17	09	55						
		S*	N		10	35						
	KP	Pn	Z	17	10	01½						
		i	Z			09						
		i	Z			19½						
		e	Z			32						

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
MAY 30	TO	ePn	Z	17	10	12								
		eP*	Z			26								
		eSn	Z		11	07								
	WN	eP*	N	17	10	55								
		Sn	N		11	45								
	CB	eSn	E	17	12	10								
	KM	eS	X	17	12	48								
	GP	eS	N	17	12	49								
	Epicentre:			17	09	02		37S	179½W	S			NZ(D)	4.9 E
31	SU	eP	N	09	33	45				5	3			
		i	N		34	51				7	4			
		e(S)	N		38	40				9	7			
		i	N		40	45				10	5			
	KP	eP	Z	09	35	14								
		e	Z			35								
		ePP	Z		36	42								
	TO	eP	Z	09	35	24								
		ePP	Z		36	59								
	WN	iP	Z	09	35	40	u	3	6					
		ePP	ZN		37	10		3	6	2	6			
		iPPP	ZN			36		4	8	5	10			
		iS	N		41	55				3	7			
		e(SS)	N		45	31				5	10			
		eLq	N		47½					14	25			
		eLr	ZN		50¼			6	15	9	15			
		M	N							15	15			
	GP	eP	N	09	35	48								
	KM	e(P)	X	09	35	54								
	RX	eS	ZNE	09	(42.7)			5	8	5	13	8	11	
		eL	ZNE		47½			8	15	9	15	12	15	
	AK	eL	N	09	45					3	15			
	Epicentre:			09	28	09		6½S	155E				USCGS	6½
31	KP	ePKP1	Z	12	35	45								
		ePKP2	Z		36	13								
	Epicentre:			12	15	51		46½N	27E				USCGS	
31	KP	P	Z	15	26	57								
		e	Z		27	08								
	GP	eP	N	15	27	49								
	KM	eP	X	15	27	52								
JUN 1	KP	iP	Z	05	38	26	d							
		e	Z			32								
		iPcP	Z		40	26								
		e(ScP)	Z		43	37								
	TU	eP	N	05	38	38								
	CB	eP	E	05	38	40								
	WN	eP	N	05	38	44								
	KM	eP	X	05	38	47								
	GP	P	N	05	38	56								
	Epicentre:			05	31	30		4S	153E	400 km			USCGS	
1	KP	iP	Z	12	39	01	d							
		ePcP	Z		41	13								
		e	Z		42	49								
		eScP	Z		44	22								
	TU	eP	N	12	39	13								
		e(S)	N		44	33								
	CB	e(P)	E	12	39	14								
	WN	eP	N	12	39	21								
	KM	eP	X	12	39	21								
	GP	eP	N	12	39	31								
	Epicentre:			12	32	25		6S	154E	400 km			USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN 1	SU	e	N	17	13									
	KP	iP	Z	17	14	20	d							
		e	Z			31								
		e(PP)	Z		15	49								
	GP	e(P)	N	17	14	28								
	RX	eL	NE	17	26							3	24	
		M	N		30							4	20	
	WN	e(L)	ZN	17	28									
		M	N		33½							6	8	
	Epicentre:			17	07	23		6½S	155½E				USCGS	
1	TU	iP	N	19	26	51	n							
		iS	N		27	01								
	KP	P	Z	19	27	02								
	WN	eP	ZN	19	27	12								
		e	N			20								
		iS	ZN			40								
		e	ZN			54								
	CB	eP	E	19	27	26								
		e	E			35								
		eS	E		28	07								
	KM	e(P)	X	19	27	51								
		e	X		28	14								
		eS	X			44								
	GP	eP	N	19	27	52								
		e	N		28	13								
		eS	N			46								
	Epicentre:			19	26	35		39.4S	176.5E	S			NZ(C)	4.8 NZ
								Felt: Hawkes Bay, Taihape. Max. Taihape MM 4.						
2	KP	P	Z	00	59	31								
2	SU	e	N	03	25	38								
		e	N		26	17								
		eL	N		28	15						12	13	
	ON	eP	E	03	26	29								
		e	E			43								
		e	E		27	12								
		eL	E		29	37								
	WN	eP?	N	03	27	24								
		eS	N		30	16								
		eL	ZN		32									
		M	ZN		34							18	17	32 17
	GP	eP	N	03	27	59								
		eS	N		31	19								
	CB	e?	E	03	29	45								
		e?	E		31	14								
	KM	e(S)	X	03	31	22								
		e	X			33								
	RX	eL	NE	03	(32)									
		M	E		(34)									17 20
		M	ZN		(36)							9	18	
	Epicentre:			03	23	12		25S	176W				USCGS	
2	SU	e	N	03	34	12								
		i	N			42								
		eL	N		36	55						9	14	
	ON	eP	E	03	35	17								
		e(L)	E		38	11								
	TU	eP	N	03	35	38								
		e	N		37	54								
	WN	eP?	N	03	36	12								
		eS	N		38	55								
		eL	ZN		42									
		M	ZN		43							8	16	23 15
	GP	e(P)	N	03	36	37								
		eS	N		40	06								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN	2 KM	eP?	X	03	36	41								
		e	X		38	15								
		e	X		40	05								
	RX	eL	E	03	(41)									
	Epicentre:			03	31.9			Tonga Is.						
	2 ON	e(P)	E	03	51	45								
	WN	eP	N	03	52	25								
		eS	N		55	16								
	TU	S	N	03	54	09								
	KM	e(S)	X	03	56	12								
	GP	(S)	N	03	56	21								
	Epicentre:			03	48	13		25S	176W				USCGS	
	2 SU	e	N	03	54	20								
		i	N			44								
		e	N		56	34								
		eL	N		57					14	14			
	ON	eP	E	03	55	31								
		e	E			48								
		eL	E		59	.2								
	WN	eP	N	03	56	15								
		S	N		59	11								
		e	N			28								
		eL	Z	04	01									
		M	ZN		03			15	15	25	15			
	TU	e	N	03	58	01								
		e	N			10								
	CB	e(S)	E	03	59	33								
	KP	eL	Z	04	00									
	KM	eS	X	04	00	07								
	GP	eS	N	04	00	11								
	RX	eL	NE	04	(02)									
		eL	ZN		(04)									
	Epicentre:			03	52	06		25½S	176W				USCGS	
	2 KP	e(P)	Z	05	09	31								
	RX	(S)		05	30±			May be SKS. L-waves follow.						
	Epicentre:			04	57	18		21N	121½E				USCGS	
	2 KP	P	Z	05	54	14								
		e	Z			21								
	KM	e(P)	X	05	54	17								
	RX	eL	N	06	16ca					1	18			
	WN	e(L)	N	06	20									
	Epicentre:			05	42	26		43S	72W	150	km		USCGS	
				05	42	34		21½N	121½E				USCGS	
								Readings might refer to either earthquake.						
	2 SU	e?	N	12	46	30								
		e	N			47								
		e	N		50	15								
	KP	eP	Z	12	48	48								
	WN	eS	N	12	53	03								
	GP	eS	N	12	54	04								
	RX	eL	NE	12	56±									
	Epicentre:			12	46.0			Tonga						
	2 TO	iP	Z	17	18	47	u							
	KP	iP	Z	17	18	49	d							
	TU	eP	N	17	18	54								
		S	N		19	22								
	WN	iP	ZN	17	19	00	us							
		S	N			33								
	CB	iP	E	17	19	02								
		S	E			38								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN	2 ON	P	E	17	19	11								
		S	E			52								
	KM	eP	X	17	19	24								
		S	X		20	18								
	GP	P	N	17	19	29								
		S	N		20	26								
	Epicentre:			17	18	16		39.0S	174.9E	200	km±	NZ(B)		5½ NZ
								Felt: Southern Hawkes Bay to Nelson and Marlborough. Max. Otaki MM 4.						
	2 KP	P	Z	18	38	29	u							
	4 KP	P	Z	01	55	53	d							
		e?	Z		57	53								
	4 ON	P	E	21	57	29								
	KP	P	Z	21	57	42	u							
	TU	e	N	22	01	50								
		e(S)	N		02	02								
	WN	e	N	22	03	16								
		e(S)	N			36								
	RX	eL	ZNE	22	10					2	16	2	16	
	Epicentre:			21	52	30		16S	173W				USCGS	
	5 KP	e(P)	Z	06	05	28								
	RX	eL	NE	06	20									
	Epicentre:			05	58	40		7S	155½E	150	km		USCGS	
	5 KP	P	Z	07	50	51								
	5 SU	e	N	14	33									
	KP	e	Z	14	36	22								
	5 KP	P	Z	15	45	48								
	5 KP	P	Z	18	39	19								
	6 SU	M	N	10	20									
	KP	P	Z	10	20	03	(d)							
	WN	e	N	10	29									
	RX	eL	NE	10	32									
	6 KP	P	Z	11	18	44								
	CB	S	E	11	21	53								
	GP	e(P)	N	11	20	03								
		e	N		22	38								
		(S)	N			40								
	KM	e(S)	X	11	22	36								
	6 KP	P	Z	20	58	23								
		i	Z	21	00	49	d							
	Epicentre:			20	51	19		6½S	155½E				USCGS	
	7 KP	eP	Z	02	38	48								
		e	Z			59								
	Epicentre:			02	34	51		Loyalty Is. region					USCGS	
	7 KP	e	Z	08	45	32								
		e	Z		47	11								
	7 ON	e	E	17	41	04								
	KP	P	Z	17	41	11	u							
		e	Z			24								
		e	Z			36								
	Epicentre:			17	36	19		19S	174W				USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN 8	KP	e?	Z	09	54	37								
		e	Z			52								
8	KP	P	Z	22	52	02								
9	KP	P	Z	06	27	44	d							
		e	Z			50								
	Epicentre:			06	19	54		6S	146½E				USCGS	
9	KP	P	Z	09	39	54								
9	KP	P	Z	13	39	05								
9	ON	iP	E	14	55	05	w							
		e	E			16								
		e(S)	E		56	10								
		e	E		57	23								
	KP	P	Z	14	55	12	u							
		i	Z			13	d							
		e	Z			20								
		e(S)	Z		56	09								
		e	Z		57	41								
	TU	e(P)	N	14	55	13								
		e	N			17								
		e	N		56	11								
		S	N			14								
	WN	eP	N	14	55	47								
		e	N			49								
		e	N		57	18								
		S	N			20								
	CB	e	E	14	56	23								
		e	E			35								
		eS	E		57	37								
		e	E			56								
	KM	eP	X	14	56	24								
		e	X		57	11								
		e	X		58	14								
		eS	X			16								
	GP	P	N	14	56	25								
		eS	N		58	22								
		e	N			23								
		e	N			32								
	Epicentre:			14	53	30		33S	179½W				USCGS	
9	KP	P	Z	23	23	12								
	RX	eLq	E	23	42½									
		eLr	NE		50									
		M	N		54					1	18			
	Epicentre:			23	10	46		59S	7½W				USCGS	
10	KP	P	Z	04	36	34								
10	KP	P	Z	08	49	03								
10	SU	e	N	10	52	33								
	ON	P	E	10	53	58								
	KP	iP	Z	10	54	11	d							
	TO	eP	Z	10	54	20								
	WN	eP	N	10	54	39								
	CB	e(P)	E	10	54	42								
	GP	eP	N	10	55	04								
	Epicentre:			10	50	32		20½S	179W	600	km		USCGS	
10	GP	e(P)	N	13	11	22								
		eS	N		13	22								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN 10	KM	P	X	13	11	29								
		S	X		13	18								
	CB	iP	E	13	11	50								
		S	E		13	55								
	WN	eP	N	13	12	06								
		e	N		13	19								
		e	N		15	50								
	TO	eP	Z	13	12	28								
	RX	eL	NE	13	12½					5	15			
	KP	eP	Z	13	12	39								
		i	Z			43								
		e	Z		15	43								
	ON	eP	E	13	13	00								
		e	E			15								
	Epicentre:			13	09	09		48S	161E					
10	KP	(P)	Z	15	06	10								
10	SU	e	N	23	57	26								
	ON	e	E	23	58	23								
		S	E	24	00	35								
		e	E			49								
	KP	e?	Z	23	58	36								
		i	Z			39								
		i	Z		59	08								
		e	Z	24	01	11								
	TU	eS	N	24	01	37								
		e	N			41								
	TO	eP	Z	23	58	49								
		e(S)	Z	24	01	23								
		e	Z			31								
	WN	eP	N	23	58	49								
		e	N		59	10								
		eS	N	24	02	00								
	CB	eP	E	23	59	13								
		e	E	24	02	04								
		e(S)	E			08								
	KM	e(P)	X	23	59	29								
		e(S)	X	24	02	32								
	GP	eP	N	23	59	35								
		e(S)	N	24	02	43								
	Epicentre:			23	54	46		24½S	179W				USCGS	
11	SU	e	N	01	11	40								
	KP	e	Z	01	13	29								
	TU	eS	N	01	16	12								
	WN	eS	N	01	17	14								
	GP	eS	N	01	18	15								
	RX	eL	NE	01	23									
	Epicentre:			01	09	31		23½S	176W				USCGS	
11	KP	P	Z	12	02	23								
	GP	eS	N	12	05	35								
11	KP	iP	Z	14	31	02	d							
13	KP	i	Z	12	21	44								
13	ON	eP	E	13	00	33								
		S	E		01	59								
	KP	P	Z	13	00	43	d							
		i	Z			46	d							
		e	Z		02	02								
	TU	e(P)	N	13	00	46								
		eS	N		02	17								
	TO	P	Z	13	00	54								
		e	Z		02	36								

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag.
JUN 13		e(S)	Z			40					
		e	Z			45					
	WN	e(P)	N	13	01	19					
		e	N		03	18					
		i(S)	N			20					
	CB	eP	E	13	01	27					
		e	E			57					
		eS	E		03	31					
	GP	eP?	N	13	01	50					
		e	N			53					
		e	N		02	16					
		eS	N		04	17					
	KM	eS	X	13	04	08					
	Epicentre:			12	58	07		Kermadec Is.		USCGS	
				12	58	42		30S 179½W 200 km±		NZ	6.3 m
	13 KP	e(P)	Z	13	26	33					
	13 KP	e?	Z	15	39	52					
	13 KP	iP	Z	16	21	46	u				
		(S)	Z		24	12					
	TO	e(P)	Z	16	21	55					
	TU	e(S)	N	16	24	09					
	13 KP	eP?	Z	18	08	30					
		e	Z			41					
	13 KP	e(P)	Z	23	51	56					
	14 GP	eP	N	00	25	19					
	WN	P	ZN	00	25	20	d	9 7			
		e	N			35					
		e	Z			44					
		iPP	ZN		29	10	d	7 6			
		eSKS	N		35	43					
		e	N		36	20			37 15		
		e(S)	ZN		37	09	d		34 13		
		e(SS)	N		43	49					
		e	N		48	53					
		e	N		49	40			17 15		
		e(Lq)	N		51						
		Lr	ZN		55						
		M	Z		58			33 22			
		M	ZN	01	05			13 15	11 15		
	TO	P	Z	00	25	21	d				
		e	Z			50	d				
	KP	eP	Z	00	25	23					
		e	Z			53					
		e	Z			58					
		e	Z		42	13					
		e	Z			45					
	TU	e	N	00	25	53					
	RX	e(P)	ZN	00	25	24					
		eSKS	NE		35	49					
		e	NE		36	32			21 17		
		e	ZN		38						
		SS	N		44	00			21 22		
		e	N		47	.0					
		e	N		49	52					
		eLq	NE		52	02			51 30		
		eLr	ZNE		56	.6					
		M	ZE		59			11 20		10 21	
	CB	eP	E	00	25	30					
		e	E			59					
	SU	e(P)	N	00	25	58			2 8		
		e	N		26	45					
		i	N			57					

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag.
JUN 14		e	N		30	16					
		i	N		31	10			9 6		
		eL	N	01	00						
		M	N		19				4 15		
	Epicentre:			00	11	57		20½S 68W 100 km		USCGS	7-7½
	14 KP	i	Z	02	12	47					
	14 SU	e(P)	N	14	59	05			3 5		
		e	N	15	01	52			4 10		
	KP	eP	Z	15	01	38					
	WN	iP?	Z	15	01	50					
	RX	e	N	15	15						
	Epicentre:			14	56	57		20S 173½W		USCGS	
	14 KP	e(P)	Z	16	58	09					
	Epicentre:			16	47	04		27N 143½E		USCGS	
	14 KP	e	Z	17	19	29					
	14 SU	iP	N	21	04	26	n				
		iS	N		05	44					
		e	N			57					
	ON	P	E	21	05	44	w				
		eS	E		08	11					
	KP	iP	Z	21	05	59	u				
		i	Z		06	04					
	TU	eP	N	21	06	06					
		eS	N		08	44					
	TO	eP	Z	21	06	12					
		(S)	Z		09	03					
		e	Z		14	48					
		e	Z			54					
	WN	P	ZN	21	06	32					
		e	N			38					
		eS	N		09	36					
	CB	P	E	21	06	36	e				
	KM	e(P)	X	21	06	52					
	GP	P	N	21	06	57					
		eS	N		10	27					
	Epicentre:			21	02	32		23½S 179½W		USCGS	
	15 KP	i(P)	Z	02	50	59					
		e	Z		51	28					
	TO	eP?	Z	02	50	54					
		e	Z			55					
	15 KP	e	Z	19	11	29					
	16 KP	e	Z	01	50	37					
	16 KP	P	Z	02	48	45					
	Epicentre:			02	40	34		4½S 143E		USCGS	
	16 KP	eP	Z	11	30	05					
		e	Z		31	17					
		e	Z		32	00					
	WN	e	N	11	33	08					
	KM	e	X	11	34	10					
	GP	e	N	11	34	16					
	16 KP	e	Z	20	19	24					
	17 KP	iP	Z	10	13	54	d				
	WN	iP	N	10	13	58	s				
	GP	e	N	10	14	05					

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JUN 17	KP	i	Z	12	09	43							
	TU	e	N	12	11	16							
17	ON	P	E	20	51	09							
	KP	P	Z	20	51	27	(u)						
		i	Z		58	06	d						
	TU	P	N	20	51	38							
		eS?	N		56	04							
	TO	P	Z	20	51	39	(d)						
	CB	eP	E	20	51	51							
	WN	eP	ZN	20	51	53							
		e	N			58							
	KM	P	X	20	52	01	sw						
		e	X			09							
	GP	P	N	20	52	11	s						
	Epicentre:			20	46	03		12½S	167½E	200 km		USCGS	
18	KP	e(P)	Z	00	38	52							
	Epicentre:			00	33	33		16S	167E			USCGS	
18	KP	eP	Z	06	58	28							
	RX	e	N	07	04	52							
		eL	NE		09						1	15	
	WN	eL	ZN	07	10								
	Epicentre:			06	50	45		55S	129W			USCGS	
18	ON	eP	E	08	54	45							
	KP	P	Z	08	55	04	(u)						
	TU	e(P)	N	08	55	17							
	TO	P	Z	08	55	17	d						
	GP	eP	N	08	55	49							
	Epicentre:			08	49	55		16S	168E			USCGS	
18	ON	eP	E	15	44	34							
	KP	P	Z	15	44	38							
		i	Z			42							
		e	Z			45							
		e	Z		48	19							
		e	Z			32							
	KM	eP	X	15	44	50							
	GP	e?	N	15	45	13							
	RX	e	NE	15	55	.8							
		e	NE		56	52							
		eSS	N	16	04								
		eLq	E		13								
		eLr	NE		15½								
		M	NE		19						5	22	
		M	N		26				17	20			
	WN	eS	N	15	56	30			3	9			
		e	N		58	11							
		e	N			52							
		eLq	N	16	11½								
		eLr	ZN		16								
		M	ZN		27			12	19	21 19			
	Epicentre:			15	31	25		54N	160E			USCGS	6½-6½
18	KP	eP	Z	16	11	52							
	Epicentre:			15	58	38		54N	161E			USCGS	6½-6¾
19	KP	e(P)	Z	02	16	39							
19	KP	e(P)	Z	03	21	52							
19	KP	iP	Z	04	28	31	u						
	TU	e(P)	N	04	30	13							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JUN 19	WN	e(P)	N	04	31	15							
	GP	e(P)	N	04	32	11							
19	KP	i(P)	Z	05	59	49							
19	KP	e(P)	Z	14	56	45							
19	KP	e	Z	17	15	20							
19	TO	e(P)	Z	18	31	53							
		e	Z		32	25							
		e	Z			30							
	KP	e(P)	Z	18	32	56							
20	KP	e(P)	Z	03	18	47							
20	KP	i	Z	09	31	31							
20	KP	iP	Z	10	07	41	u						
	TO	e(P)	Z	10	07	50							
	GP	e	N	10	12	03							
20	KP	iP	Z	11	23	41	d						
		e	Z			59							
	TO	iP	Z	11	23	42	d						
		e	Z		24	00							
	WN	e(P)	N	11	24	25							
	GP	e(P)	N	11	25	37							
20	KP	e?	Z	11	36	27							
		i(P)	Z			28							
21	KP	P	Z	05	55	04	(d)						
		e	Z		57	07							
	Epicentre:			05	47	27		4½S	151½E			USCGS	
21	SU	i?	N	11	15	40					5	5	
	ON	P	E	11	17	52							
	KP	P	Z	11	18	05							
		i	Z			07	d						
	TU	e(P)	N	11	18	12							
		e	N			26							
	TO	P	Z	11	18	14							
	WN	eL	Z	11	39								
	Epicentre:			11	12	55		17S	174½W			USCGS	
21	KP	iP	Z	13	20	13	u						
21	KP	e?	Z	15	19	27							
	Epicentre:			15	01	45		21S	67W	200 km		USCGS	
21	KP	P	Z	22	17	40							
		e	Z		19	33							
	TO	P	Z	22	17	52							
	GP	e(P)	N	22	18	23							
	RX	eL	N	22	29								
	Epicentre:			22	11	51		11½S	167E			USCGS	
21	ON	P	E	23	28	29	(w)						
		e	E		29	04							
	KP	eP?	Z	23	28	39							
		i	Z			42	d						
		e	Z		29	14							
	TU	e	N	23	28	46							
		e?	N		30	04							
		e	N			27							
		e(S)	N			31							

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN 21	TO	e(P)	Z	23	28	59								
		eS	Z		30	57								
	WN	S	N	23	31	34								
	CB	S	E	23	31	47								
	GP	e(P)	N	23	30	09								
		e	N		32	31								
		S	N			34								
	Epicentre:			23	25	46		29S	178W				USCGS	
22	KP	i	Z	09	03	52								
22	SU	e?	N	14	09	04								
		e(S)	N		10	08				3	5			
	ON	P	E	14	11	38								
	KP	P	Z	14	11	50	d							
	Epicentre:			14	06	50		17S	177W				USCGS	
23	KP	iP	Z	13	43	34	u							
23	KP	i	Z	19	19	22	d							
24	KP	i	Z	03	34	48								
25	KP	iP	Z	02	24	00	u							
25	KP	i	Z	02	40	01	u							
25	KP	e	Z	03	00	44								
25	KP	iP	Z	04	30	14	d							
		i(S)	Z			40								
	TU	e	N	04	30	47								
	WN	e	N	04	30	51								
	CB	e	E	04	30	56								
	KM	e	X	04	31	32								
	GP	i	N	04	31	44								
25	RX	eL	N	08	13±									
25	KP	e	Z	13	47	48								
25	KP	e(P)	Z	14	42	19								
	GP	e	N	14	42	47								
	Epicentre:			14	37	57		5S	152E	150	km		USCGS	
25	TU	eS	N	16	34	47								
	WN	e	N	16	35	47								
		eS	N			54								
	CB	eS	E	16	36	08								
	KM	eS	X	16	36	50								
	GP	eS	N	16	36	55								
26	KP	e	Z	00	18	57								
26	KP	i	Z	01	18	34	u							
26	KP	e	Z	01	32	55								
26	KP	iP	Z	02	50	03	d							
	TU	e(P)	N	02	50	06								
	KM	e(P)	X	02	51	02								
	GP	e(P)	N	02	51	02								
26	TU	eP?	N	04	18	59								
		eS	N		20	36								
		e	N			48								
	KP	eP?	Z	04	19	05								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
		e	Z			14								
JUN 26		e	Z			21								
	GP	P?	N	04	19	56								
		e	N		20	13								
		e	N			23								
		e	N			39								
		S	N		22	52								
	KM	e(P)	X	04	20	19								
		eS	X		22	49								
	WN	eS	N	04	21	46								
	RX	eL	ZNE	04	34									
	Epicentre:			04	17.2							Kermadec Is.	NZ	5.6± NZ
26	TU	e(P)	N	05	03	57								
		eS	N		05	23								
	KP	e	Z	05	03	58								
	GP	eP	N	05	05	05								
		eS	N		07	37								
	WN	eS	N	05	06	32								
		e	N			38								
	KM	e?	X	05	07	30								
		e(S)	X			39								
	Epicentre:			05	01.9							Kermadec Is.	NZ	5.3 NZ
26	KP	eP?	Z	05	26	26								
		e	Z			36								
		e	Z		27	42								
	ON	e(P)	E	05	26	27								
	TU	e(P)	N	05	26	36								
		S	N		28	08								
	GP	eP	N	05	27	54								
		S	N		30	23								
	KM	e(P)	X	05	27	48								
		eS	X		30	15								
	WN	e?	N	05	28	01								
		eS	N		29	17								
	CB	eS	E	05	29	38								
	RX	eL	NE	05	34									
	Epicentre:			05	24	42		31S	179E				NZ	5.6 NZ
26	KP	eP	Z	11	02	14								
26	KP	i(P)	Z	14	04	52	u							
		i	Z		05	22								
26	SU	e(P)	N	22	26	16	s							
		eS	N		27	09								
		i	N			12				10	4			
	KP	P	Z	22	29	13								
		e	Z			25								
	Epicentre:			22	24	54		17S	176½W	350	km		USCGS	
27	KP	i(P)	Z	06	18	57	d							
27	KP	e	Z	11	58	14								
27	ON	iP	E	19	05	59	w							
		e	E		06	12								
		eS	E		07	03								
	TU	iP	N	19	06	01	n							
		e	N			18								
		eS	N		07	07								
		eScS	N		19	38								
	KP	iP	Z	19	06	04	d							
	TO	iP	Z	19	06	14	d							
		i	Z			15	d							
		e	Z		07	06								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN 27		(S)	Z			43								
	WN	eP	N	19	06	39								
		e	N		07	01								
		e	N			23								
		e	N		08	12								
		eS	N			16								
		e	N		15	28								
		e(ScP)	N		16	29				1	1			
		i	Z		18	58	d	19	7					
		iScS	N		19	43	s			7	3			
		e(sScS)	N		20	07								
	CB	eP	E	19	06	49								
		e	E		07	22								
		eS	E		08	32								
	GP	eP	N	19	07	16								
		e	N		09	17								
		eS	N			21								
		eScS?	N		19	48								
		e	N			51								
	KM	eP	X	19	07	17								
		e	X		08	17								
		eS	X		09	11								
	Epicentre:			19	04	27		33S	179W				USCGS	6½-6¾
				19	04	35		33½S	180	100 km±			NZ(D)	7.0 NZ
								Felt from East Cape to Wellington, max. Motu, MM 3.						
27	KP	e	Z	19	43	39								
		e	Z			59								
28	KP	iP	Z	06	28	41	u							
28	TU	e(P)	N	18	29	07								
	KP	eP	Z	18	29	12								
28	CB	P	E	19	52	53	e							
	KM	P	X	19	52	54								
		e	X		53	50								
	GP	P	N	19	52	59								
		e	N		53	11								
	KP	P	Z	19	53	00								
		e	Z			17								
		e	Z			23								
		e	Z			34								
		e	Z		57	52								
		e	Z		58	14								
	WN	P	ZN	19	53	02	(d)							
	TO	iP	Z	19	53	03	d							
		e	Z			54								
		e	Z		55	11								
	TU	P	N	19	53	13								
		e	N			29								
	ON	e	E	19	53	16								
		eL	E	20	16									
	SU	e(P)	N	19	53	38								
		e	N			50								
		i	N		56	17				6	5			
	RX	e	N	20	00	47								
		eSS	N		05					8	18			
		eLq	N		09									
		eLr	ZNE		11									
		M	ZNE		12					11	15	4	15	
		i	Z		17	54								
	Epicentre:			19	44	22		9½S	122½E				USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN 29	KP	eP	Z	01	16	59								
29	SU	e?	N	07	19	47								
		e	N		31	26								
	KP	P	Z	07	23	10								
		e	Z			38								
		PcP	Z		25	39								
		eS	Z		29	25								
		e	Z		35	23								
		i	Z			25	u							
	TO	P	Z	07	23	20								
		e	Z			34								
		e	Z			46								
	GP	eP	N	07	23	43								
	WN	e	N	07	29	03								
		e(S)	N			20								
		eL	ZN		37	35								
	RX	eS	NE	07	29	59					1	18		
		eL	NE		33									
		eL	ZN		36									
	Epicentre:			07	16	07		7S	155½E				USCGS	6-6¼
29	KP	iP	Z	13	30	05	d							
		ipP	Z			47								
		i	Z		31	16								
	TO	e(P)	Z	13	30	12								
	Epicentre:			13	19	47		6N	126½E	150	km		USCGS	
30	KP	eP	Z	07	46	42								
30	TU	eP	N	10	24	45	(s)							
		e	N			48								
		e	N		25	03								
		e	N			15								
		S	N			49								
		e	N		30	42								
		e	N		31	25								
	KP	P	Z	10	24	49	(d)							
		e	Z			54								
		e	Z		25	03								
		e	Z		26	04								
		e	Z		30	45								
		e	Z			53								
		e	Z		31	09								
		e	Z			41								
	ON	eP	E	10	24	55								
		e	E		25	14								
	TO	eP	Z	10	24	59								
		e	Z		25	04								
		e	Z			17								
		eS	Z		26	19								
	WN	eP	N	10	25	28								
		e	N			57								
		S	N		26	59								
		e	N		31									
		i	N		31	35								
	CB	e	E	10	25	55								
		S	E		27	21								
	KM	P	X	10	26	04								
		e	X		28	00								
		eS	X			05								
	GP	eP	N	10	26	06								
		e	N			17								
		e	N		28	03								
		eS	N			06								
	RX	eL	NE	10	30½									

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag.
JUN 30		M	ZN			33					
	Epicentre:			10	23	17	34S 179W			USCGS	5.9 M
30	SU	e(L)	N	13	25	25					
JUL 1	KP	iP	Z	02	38	29½ d					
		iPcP	Z			44					
		pP	Z		40	22					
	TO	P	Z	02	38	34					
		epP	Z		40	29					
	GP	eP	N	02	38	53					
	Epicentre:			02	27	46	28N 139½E 550 km			USCGS	
1	KP	eP	Z	03	11	33					
		e	Z			43					
	ON	eP	E	03	11	36					
	TU	P	N	03	11	(40)					
		S	N		12	(37)					
	TO	eP	Z	03	11	44					
	WN	S	N	03	13	36					
	KM	eS	X	03	14	37					
	GP	e	N	03	14	41					
		S	N			43					
	Epicentre:			03	10	14	35S 179W N			NZ(D)	5.2 M
1	KP	P	Z	13	11	17½					
		i	Z			19					
		iS	Z			44					
	TU	eP	N	13	11	20					
		S	N			47¾					
		i	N			54					
	TO	P	Z	13	11	25½					
		e	Z			55					
	ON	P	E	13	11	28					
		e	E		12	01					
	WN	eP	N	13	11	48					
		e	N		12	36					
		S	N			38					
	GP	eP	N	13	12	21					
		e	N		13	37					
		S	N			39					
	CB	S	E	13	12	50					
	KM	eS	X	13	13	39					
	Epicentre:			13	10	42	37.3S 176.8E 240 km			NZ(B)	4.9 M
1	TU	eP	N	19	58	17					
		S	N		59	14					
	KP	eP	Z	19	58	22					
	TO	eP	Z	19	58	22					
	ON	e(P)	E	19	58	31					
	WN	eS	N	20	00	23					
	GP	eS	N	20	01	27					
	Epicentre:			19	57	03	35S 179W N			NZ(D)	5.0 M
2	SU	eP	N	11	29	16					
		iS	N		30	20		7	5		
		e	N		31	08		6	5		
	ON	eP	E	11	31	13					
	KP	iP	Z	11	31	25	u				
	TO	eP	Z	11	31	32					
	WN	eP	N	11	31	53					
		eS	N		35	13					
	GP	eP	N	11	32	18					
		eS	N		35	56					
	Epicentre:			11	27	45	20S 178½W 650 km			USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag.
JUL 2	KP	P	Z	11	38	01					
	TO	eP	Z	11	38	09					
	WN	eP	N	11	38	31					
		eS	N		41	51					
	SU	eP	N	11	35	49					
		S	N		36	51					
	Epicentre:			11	34	20	20S 178½W 650 km			USCGS	
3	SU	eP	N	17	56	40		10	3		
	ON	P	E	17	59	43					
		ePP	E	18	01	25					
		eS	E		03	19					
		eL	E		04	09					
	AK	iP	N	17	59	58	s	53	4		
		i	N	18	02	53		27	6		
		S	N		03	53		52	10		
		e	N		04	40		130	12		
		M	N		08			135	10		
	KP	P	Z	18	00	04	u				
		i(pP)	Z			47					
		i(PP)	Z			52					
	TU	e(P)	N	18	00	15					
	TO	P	Z	18	00	18	u				
		(pP)	Z		01	01					
		(PP)	Z			04					
		eSS	Z		05	15					
		eL	Z		07	.0					
	WN	P	ZN	18	00	37 (u)	30 6	42	12		
		pP	Z		01	22	59 8				
		i	ZN		05	35	98 10	89	12		
		eL	ZN		06	½	122 20	93	20		
		M	ZN		09		195 14	270	22		
	CB	eP	E	18	00	38					
	KM	eP	X	18	00	50					
	GP	eP	N	18	01	01					
		pP	N			37					
		e	N		06	12					
	RX	eP	N	18	01	16					
		P	Z			17	4 5				
		pP	ZN			59	12 10	14	12		
		e	N		02	42		25	13		
		i	ZE			49	14 12			4	12
		S	NE		06	05		28	16	11	13
		i	ZNE			52	18 15	160	16	33	15
		eL	ZN		10		99 30	90	30		
	Epicentre:			17	55	29	16S 172½E 200 km			USCGS	6.5 NZ
3	KP	P	Z	18	22	44					
	TO	P	Z	18	22	59					
3	KP	eP	Z	18	38	26					
	TO	eP	Z	18	38	42					
4	SU	eP	N	04	56	08		8	5		
		S	N		57	48		7	5		
	KP	P	Z	04	57	50					
		e	Z		58	10					
		e	Z			24					
	TU	eS	N	05	00	21					
	TO	eS	Z	05	00	58					
	WN	eS	N	05	01	23					
	KM	eS	X	05	02	18					
	GP	eS	N	05	02	30					
	RX	eL	NE	05	06			2	18	2	18
	Epicentre:			04	54	14	24½S 177W 100 km			USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
JUL 5	KP	P	Z	14	13	30									
	TO	eP	Z	14	13	38									
	Epicentre:			14	05	42		6S	147E					USCGS	
6	SU	eL	N	06	30										
	KP	P	Z	06	30	32									
		e	Z			42									
	Epicentre:			06	25	11		14½S	168½E					USCGS	
6	WN	eP	Z	09	22	31		6	5						
		eSP	Z			34	06	7	11						
	TO	P	Z	09	22	41									
		epP	Z			24	55								
	KP	iP	Z	09	22	44	u								
		pP	Z			25	00								
		PKKP	Z			39	31								
	KM	eP	X	09	22	47									
	RX	eSP	N	09	34	14					2	12			
	SU	eSKS	N	09	36	21					4	6			
		eSSS	N			49	31				4	7			
	Epicentre:			09	10	22		26½S	61½W	600	km			USCGS	6.3 NZ
6	WN	eP	Z	09	35	48		9	6						
		pP	Z			38	16	11	5						
		SP	Z			47	21	6	10						
	RX	eP	N	09	35	39					3	10			
	TO	P	Z	09	35	52									
		epP	Z			38	07								
	KP	iP	Z	09	35	56	u								
		pP	Z			38	09								
		PKKP	Z			52	42	u							
		(PKPPKS)	Z												
				10	04	43									
	Epicentre:			09	23	27		26½S	61½W	600	km			USCGS	6.4 NZ
6	KP	P	Z	22	14	10									
7	SU	e(S)	N	10	52	45									
		eL	N			57									
	KP	P	Z	10	54	48									
	TO	eP	Z	10	55	03									
7	KP	P	Z	11	08	45									
		e	Z			57									
7	KP	P	Z	12	23	06									
7	KP	eP	Z	13	20	18									
7	KP	eP	Z	15	15	18									
8	KP	P	Z	07	40	32									
8	KP	P	Z	11	05	23									
		i	Z			26									
9	SU	eL	N	09	12						8	10			
	Epicentre:			09	07	12		15S	173W					USCGS	
9	TO	eP	Z	16	18	41									
		epP	Z			19	09								
	RX	eSS	N	16	37	08					2	15			
		Lq	N			46	03				5	25			
	Epicentre:			16	05	18		20½S	68W	100	km			USCGS	6¾

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
JUL 10	TU	eS	N	02	18	37									
	WN	S	N	02	19	43									
	KM	eS	X	02	20	40									
	GP	eS	N	02	20	46									
	Epicentre:			02	13	27		27½S	177½W					USCGS	
10	KP	P	Z	17	59	37									
	Epicentre:			17	51	46		5½S	145½E					USCGS	
11	TU	eP	N	03	12	58									
	SU	eL	N	03	10	.0					6	10			
		M	N			13					18	6			
	Epicentre:			03	07	04		Fiji region						USCGS	
11	SU	e	N	04	54	07									
		eL	N			56	55				8	10			
		M	N			58					15	7			
	ON	P	E	04	55	47									
	TU	eP	N	04	56	01									
		eS	N	05	00	22									
	WN	eP	N	04	56	43½									
		eL	Z	05	01¼			18	20						
	KM	eP	X	04	56	.9									
	GP	eP	N	04	57	01									
	AK	S	N	04	59	38					9	6			
		eL	N	05	02										
	RX	eLq	N	05	02						2	20			
		eL	E			03¾							5	28	
		eL	Z			05½		10	20						
		M	NE			06					6	20	6	20	
	Epicentre:			04	51	30		18½S	169E					USCGS	5.7 NZ
11	TO	eP	Z	12	13	11									
	RX	S	NE	12	21	12					4	10	6	9	
		eSS	E			25	12						3	20	
		Lq	NE			28	54				14	26	3	19	
		eLr	Z			33½		12	20						
		M	NE			35					6	19	4	20	
	WN	eL	N	12	32	45					4	10			
		eL	ZN			35¾		10	16		7	15			
	Epicentre:			12	01	36		36S	78E					USCGS	6¼-6½
12	SU	eP	N	00	25	37									
		S	N			26	35				64	3			
	ON	P	E	00	28	05									
		eS	E			31	12								
	TU	eP	N	00	28	23									
		eS	N			31	38								
	WN	eP	N	00	28	49									
		eS	N			32	35								
	CB	eP	E	00	28	54									
	KM	eP	X	00	29	09									
	GP	eP	N	00	29	14									
		eS	N			33	24								
	Epicentre:			00	24	22		19½S	177½W	400	km			USCGS	6.1 NZ
13	KP	eP	Z	06	22	30									
		i	Z			32									
13	KP	P	Z	12	41	47	d								
		pP	Z			57									
	RX	eL	N	13	17										
		M	N			26					2	20			
	Epicentre:			12	28	45		52N	172½W					USCGS	6-6½

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
JUL 13	ON	P	E	15	27	14									
		eS	E		29	20									
	KP	iP	Z	15	27	29	d								
	TU	e	N	15	27	44									
		S	N		29	50									
	WN	eP	N	15	28	04½									
		S	N		30	44									
	KM	eP	X	15	28	28									
		S	X		31	24									
	GP	eP	N	15	28	30									
		S	N		31	34									
	CB	eS	E	15	30	53									
	Epicentre:			15	24	44		25½S	180	550 km			USCGS		
14	KP	P	Z	00	16	16									
14	ON	P	E	06	02	24									
		S	E		03	41									
	KP	eP	Z	06	02	32									
		e	Z			55									
		eS	Z		03	58									
	TU	eP?	N	06	02	35									
		eS	N		03	54									
	TO	eP	Z	06	02	43									
		eS	Z		04	16									
	WN	eP	N	06	03	01									
		S	N		04	56									
	GP	eP	N	06	03	39									
		S	N		05	56									
	CB	eS	E	06	05	10									
	KM	eS	X	06	05	44									
	Epicentre:			06	00	43		33S	178W	N			NZ(D)		5.7 NZ
14	KP	eP	Z	08	53	48									
		e	Z			57									
	Epicentre:			08	40	48		51½N	172W				USCGS		
14	SU	eP	N	13	01	45				2	1				
		eS	N		02	47				9	5				
		eL	N		03	17				56	8				
	ON	P	E	13	04	49									
		e	E		05	14									
	AK	eP	N	13	05	04				4	4				
		i	N			21				8	4				
		eS	N		08	55									
	KP	P	Z	13	05	11½(u)									
		e	Z		06	16									
	TU	e(P)	N	13	05	21									
	TO	P	Z	13	05	25	u								
		e	Z			30									
	WN	eP	ZN	13	05	44		6	6						
		eS	N		09	56				3	8				
	GP	eP	N	13	06	01									
	RX	eS	N	13	11	14				4	13				
		eL	NE		15					4	25	2	18		
	Epicentre:			13	00	24		16½S	173W	100 km			USCGS		5.8 NZ
14	KP	P	Z	17	29	07									
	TO	eP	Z	17	29	13									
14	ON	P	E	18	18	11									
	KP	iP	Z	18	18	25	d								
	TO	eP	Z	18	18	33									
	WN	eP	N	18	18	53									
	GP	eP	N	18	19	14									
	Epicentre:			18	13	45		21S	177W				USCGS		

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
JUL 14	KP	eP	Z	18	24	15									
	Epicentre:			18	19	35		Tonga region					NZ		
14	KP	P	Z	20	27	21									
14	KP	P	Z	22	41	55									
		pP	Z		42	05									
	Epicentre:			22	31	22		½N	120E				USCGS		
14	KP	eP	Z	23	34	24									
15	KP	eP	Z	16	10	59									
16	KP	P	Z	15	30	19	(d)								
		pP	Z			31½									
	Epicentre:			15	17	27		50½N	177W				USCGS		
16	SU	eP	N	19	16	28						4	5		
		eS	N		18	26						5	5		
		eL	N		19	17						10	8		
	KP	P	Z	19	18	14									
	TO	eP	Z	19	18	38									
	AK	eL	N	19	22										
	WN	eL	ZN	19	25¾							8	15	8	20
	RX	eL	NE	19	26									3	20
		eL	Z		29							5	14		
	Epicentre:			19	13	52		21½S	169E				USCGS		5.6 NZ
17	KP	P	Z	15	11	24									
17	SU	eL	N	07	38½								4	5	
	Epicentre:			07	34	55		Tonga					USCGS		
17	ON	eP	E	22	22	33									
	KP	P	Z	22	22	46									
	WN	eP	N	22	23	20									
		eS	N		26	59									
18	KP	P	Z	03	30	04									
18	ON	eP	E	07	03	52									
		eS	E		06	26									
	KP	iP	Z	07	04	04½	u								
		i	Z			14									
		e	Z			49									
	TO	eP	Z	07	04	14									
	WN	eP	N	07	04	34									
		eS	N		07	37									
		e	N		08	06									
	GP	eP	N	07	04	56									
		eS	N		08	21									
	KM	eP?	X	07	05	17									
		eS	X		08	10									
	CB	eS	E	07	07	47									
	Epicentre:			07	00	36		21½S	179W	600 km			USCGS		
18	ON	eP	E	16	22	54									
	KP	P	Z	16	23	11									
18	ON	eP	E	19	34	11									
	KP	P	Z	19	34	24									
		e	Z			32									
		e	Z		35	43									
	WN	eP	N	19	34	56									
	Epicentre:			19	29	22		Fiji region					USCGS		

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUL 18	ON	eP	E	20	06	18								
		eS	E		15	25								
	KP	P	Z	20	06	24	(d)							
		i	Z			55								
		PP	Z		09	10								
	TU	eP	N	20	06	30								
	KM	eP	X	20	06	30								
	WN	iP	ZN	20	06	32	d	7	8					
		iS	N		15	57	n			7	12			
		i(sS)	N		16	26	n			8	7			
		iPS	Z			46	d	25	10					
		eL	N		27					41	35			
		M	N		32					15	20			
	GP	eP	N	20	06	33								
	RX	S	ZNE	20	15	52		10	18	13	14	12	13	
		PS	ZNE		16	32		6	10	7	19	7	12	
		eSS	E		20	46						5	14	
		eLq	NE		25½					17	25	13	24	
		i	N		27	08				25	20			
		M	NE		28½					85	60	39	50	
		eL	Z		31			12	20					
		M	ZNE		36			26	20	7	20	14	20	
	Epicentre:			19	54	45		15½N		120½E				USCGS 6.5 NZ
18	KP	eP	Z	20	29	20								
19	KM	eP	X	03	53	13								
	ON	eP	E	03	53	16								
	KP	iP	Z	03	53	20	(u)							
		pP	Z			37								
	TO	eP	Z	03	53	21								
	Epicentre:			03	42	02		6½S		105E				USCGS
19	KP	P	Z	13	47	29								
		i	Z			32								
		S	Z		50	07								
	ON	e(P)	E	13	47	43								
		e	E			45								
	TO	eP	Z	13	47	58								
	WN	P	N	13	48	32½								
		S	N		51	30								
	CB	eP	E	13	48	35								
		eS	E		51	36								
	GP	eP	N	13	48	57								
		eS	N		52	20								
	KM	eP	X	13	48	58								
		eS	X		52	01								
	TU	eS	N	13	50	38								
	Epicentre:			13	44	52		23½S		179E	550 km			USCGS
19	WN	P	ZN	15	19	25		9	8	3	7			
		pP	Z		20	23		6	6					
		iPP	Z		23	28		18	6					
		SKS	ZN		29	25		4	8	2	7			
		ePS	ZN		32	00		5	6	2	7			
		eL	N		47					15	30			
		iSKSPKP	ZN		50	44		8	5	6	5			
		eL	Z		55			13	18					
	KP	P	Z	15	19	29								
		pP	Z		20	23								
		ePP	Z		23	31								
		epPP	Z		24	14								
		PKKP	Z		35	59								
		SKKP	Z		39	20								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUL 19		P'P'	Z		44	10								
		SKPPKP	Z		47	32								
		SKSPKP	Z		50	44								
		e	Z		54	11								
	TO	P	Z	15	19	30								
		pP	Z		20	22								
		e	Z		22	40								
		PP	Z		23	30								
	GP	eP	N	15	19	37								
	ON	eP	E	15	19	41								
		ePP	E		23	48								
		eSKS	E		29	58								
	SU	ePP	N	15	24	27						4	6	
		eSKS	N		31	02						6	7	
	RX	SKS	NE	15	29	52						2	10	8 10
		e	N		30	58						10	22	
		e	E		31	32								12 14
		e	Z		33	16		6	12					
		iLq	N		48	52						18	27	
		SKSPKP	E		50	46								9 8
		eL	Z		54			17	20					
	Epicentre:			15	06	10		15S		70½W	200 km			USCGS 7
20	ON	P	E	02	50	57								
	CB	P	E	02	50	52								
	GP	P	N	02	51	01	(n)							
		ePP	N		53	31								
	WN	iP	ZN	02	51	06	d	11	4	1	2			
		PP	Z		53	30		4	2					
	KP	iP!	Z	02	51	06¾	d							
		(pP)	Z			32								
		i	Z		52	53								
		ePP	Z		53	39								
	TO	iP	Z	02	51	07½	d							
		eS	Z		59	17								
	TU	eP	N	02	51	14								
		eS	N		59	28								
	SU	S	N	02	59	19						6	6	
	Epicentre:			02	46	13		6S		110E				USCGS 7.0 NZ
20	ON	eP	E	09	11	41								
	KP	P	Z	09	11	55	(d)							
	TO	eP	Z	09	12	04								
	Epicentre:			09	06	35		15½S		173½W				USCGS
20	ON	P	E	16	56	30								
		S	E		58	51								
	KP	P	Z	16	56	45								
		S	Z		59	23								
	TU	eP	N	16	56	51								
		eS	N		59	25								
	TO	eP	Z	16	56	58								
		eS	Z		59	45								
	WN	eP	N	16	57	16								
		iS	N	17	00	14	n							
	CB	eP	E	16	57	20								
		eS	E	17	00	19								
	SU	eP	N	16	55	11						1	2	
		iS	N		56	17						27	6	
	GP	eP	N	16	57	42								
		S	N	17	00	57								
	Epicentre:			16	53	38		23½S		179E	600 km			USCGS 5.5 NZ
21	ON	eP	E	00	26	49								
	KP	eP	Z	00	26	58								
	KM	eP	X	00	27	01								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag.
JUL 21	GP	eP	N	00	27	23								
		eS	N		30	30								
	TU	eS	N	00	28	16								
	WN	eS	N	00	29	23								
21	KP	eP	Z	00	50	41								
	Epicentre:			00	43	38	9S 151E						USCGS	
21	KP	eP	Z	01	39	54								
		e	Z		40	05								
	Epicentre:			01	32	55	D'Entrecasteaux Is.						USCGS	
21	SU	eP	N	07	45	52								
		eS	N		48	00			14	10				
		eL	N			47			20	12				
		M	N		50				39	8				
		M	N		54				61	6				
	ON	eP	E	07	48	15								
		e	E			37								
		eS	E		52	18								
	KP	P	Z	07	48	35								
	TU	eP	N	07	48	46								
	TO	P	Z	07	48	46	(u)							
	WN	eP	N	07	49	01								
		eL	N	08	00	10								
	KM	eP	X	07	49	11								
	GP	eP	N	07	49	20								
	RX	eS	NE	07	54	32					6	32		
		eL	E		57									
		M	NE	08	00				5	20	3	20		
	Epicentre:			07	43	13	14½S 167E						USCGS	5.7 NZ
21	KP	eP	Z	10	12	04								
	GP	eP	N	10	12	54								
		eS	N		16	29								
	TU	eS	N	10	14	27								
	TO	eS	Z	10	14	54								
	WN	eS	N	10	15	29								
22	KP	P	Z	11	25	48								
		pP	Z		26	02								
	Epicentre:			11	15	33	2N 126½E						USCGS	
22	ON	eP	E	16	38	55								
	KP	eP	Z	16	39	07								
	GP	eP	N	16	40	26								
		eS	N		42	53								
	TU	S	N	16	40	42								
	WN	S	N	16	41	50								
	Epicentre:			16	36	40	30S 178½W						USCGS	
22	KP	eP	Z	19	36	26								
	Epicentre:			19	24	17	53N 153E 650 km						USCGS	
22	KP	P	Z	23	09	52	(u)							
		e	Z		12	01								
	TU	e	N	23	10	.1								
	GP	eP	N	23	10	21								
	WN	e(P)	Z	23	10	32		13	6					
		ePP	Z		11	59		13	6					
		i	Z		19	57		21	18					
		eLr	Z		22½			55	28					
		M	ZN		24			41	20	9	20			
	RX	eP	ZN	23	10	36				2	10			
		S	NE		16	42				16	24	10	23	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag.
JUL 22		eSS	N		20	25				7	14			
		eLq	NE		23					14	34	15	25	
		M	ZNE		27		75	18		49	18	26	18	
		M	ZNE	24	02		15	9		30	15	15	15	
	Epicentre:			23	02	55	5S 152½E 60 km						USCGS	6.5 NZ
23	KP	P	Z	15	00	19½								
	Epicentre:			14	56	38	Tonga						USCGS	
23	SU	P	N	14	58	44				10	5			
		L	N	15	00	16				33	5			
	ON	eP	E	15	00	07								
	TU	eP	N	15	00	21								
		e	N		02	43								
		e(S)	N			58								
	KP	P	Z	15	00	31								
		e	Z		03	46								
	WN	eP	N	15	00	52½								
		S	N		03	58								
	CB	eP	E	15	01	.3								
		eS	E		04	13								
	KM	eS	X	15	04	50								
	RX	eL	NE	15	09					17	35	8	26	
		eL	Z		10		10	18						
		M	NE		11					10	18	10	18	
	Epicentre:			14	56	45	24½S 176W 60 km						USCGS	5¾
24	KP	P	Z	00	40	49								
24	KP	P	Z	02	11	22								
24	KP	P	Z	16	31	50								
	Epicentre:			16	17	30	24½N 94½E						USCGS	
24	GP	eP	N	23	15	13								
	CB	eP	E	23	15	31								
	TO	P	Z	23	15	32								
	KP	P	Z	23	15	38								
	Epicentre:			23	03	08	56½S 28½W						USCGS	
26	KP	P	Z	11	35	14								
27	KP	eP	Z	15	04	17								
		i	Z			22								
28	KP	P	Z	11	04	40								
		e	Z			49								
28	KP	P	Z	12	57	47								
28	KP	P	Z	21	49	03								
29	KP	iP	Z	00	34	51½	(u)							
	Epicentre:			00	30	54	18½S 178W 650 km						USCGS	
29	KP	P	Z	19	01	23								
	Epicentre:			18	54	03	5½S 154E						USCGS	
30	ON	eP	E	00	30	36								
	TU	eP	N	00	30	37								
		S	N		31	46								
	KP	P	Z	00	30	40								
		e	Z		31	59								
	WN	eS	N	00	32	50								
	GP	eS	N	00	33	57								
	Epicentre:			00	29	08	34S 178½W N?						NZ(D)	5.2 NZ

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUL 30	ON	eP	E	12	55	56				
	TU	e(P)	N	12	56	03				
		eS	N		57	32				
	KP	eP	Z	12	56	04				
		e	Z			17				
		e	Z		57	55				
	GP	eP?	N	12	57	22				
		S	N		59	40				
	WN	S	N	12	58	40				
	CB	eS	E	12	58	58				
	KM	eS	X	12	59	36				
	RX	eL	NE	13	04					
	Epicentre:			12	53	56	31½S 177½W		USCGS	
31	KP	eP	Z	05	06	47				
		epP	Z		07	00				
	RX	eL	N	05	25½			2 16		
		eL	ZE		26					
	Epicentre:			04	59	23	5S 152½E		USCGS	
31	KP	P	Z	15	29	11				
31	KP	eP	Z	18	42	37				
	Epicentre:			18	35	12	6½S 154½E		USCGS	
31	KP	PKP	Z	20	12	00				
	Epicentre:			19	53	02	38½N 70E		USCGS	
31	CB	iP	E	20	41	06				
		S	E			26½				
	WN	iP	N	20	41	09¼				
		S	N			32½				
	KP	iP	Z	20	41	22				
		e(S)	Z			58				
	TU	P	N	20	41	27				
		S	N		42	05				
	GP	P	N	20	41	30½				
		iS	N		42	00				
	ON	P	E	20	41	45				
		S	E		42	37				
	RX	e	Z	20	42	53				
		(S)	E		43	04				
	Epicentre:			20	40	31	40S 174E 200 km		USCGS	
				20	40	38	40.1S 173.5E 160 km		NZ(B)	5.6 NZ
							Felt Wellington to Wanganui. Max. Foxton MM 3.			
AUG 1	KP	eP	Z	10	14	26				
1	SU	e	N	10	21					
	KP	P	Z	10	21	27				
		e	Z			47				
		e	Z			56				
		e	Z		22	08				
1	KP	P	Z	13	36	48				
		e	Z		37	12				
1	KP	eP	Z	21	52	50				
		i	Z			54				
	WN	P	N	21	53	23				
		eS	N		56	19				
	CB	P	E	21	53	27				
		eS	E		56	27				
	KM	eP	X	21	53	48				
		eS	X		57	06				
	TU	eS	N	21	55	58				
	Epicentre:			21	49	38	Kermadec Is. region >N? NZ			

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag.
AUG 2	SU	eS?	N	10	05	10					
		e	N			45					
2	KP	eP	Z	12	05	23					
		e?	Z		18	54					
	RX	eL	N	12	18						
		eL	ZNE		21						
		M	N		23				1 14		
	Epicentre:			11	57	56		6½S 154½E		USCGS	
2	KP	P	Z	20	05	36					
		e	Z			41					
	RX	eL	ZNE	20	44	30				7 20	
4	KP	eP	Z	00	42	19					
		e	Z			27					
		e(S)	Z			51					
	TU	e(P)	N	00	42	31					
		(S)	N		43	24					
		e	N			42					
	WN	e	N	00	43	40					
		e	N		44	27					
		S	N			31					
	GP	e	N	00	44	23					
		e	N		45	33					
		S	N			35					
	CB	S	E	00	44	48					
	KM	eS	X	00	45	35					
	Epicentre:			00	41	.4		Kermadec Is. region >N? NZ			
4	SU	iP	N	08	04	(00)	n		8	5	
		i	N			(35)			15	5	
		S	N		05	(09)			30	5	
	ON	P	E	08	05	43					
		eS	E		08	31					
	KP	iP	Z	08	05	56	u				
		i	Z		07	04	u				
		e	Z			12					
		iPcP	Z		09	38	d				
		ePcS	Z		12	43					
	TU	P	N	08	05	58					
		e	N		06	07					
		e(S)	N		08	51					
		e	N		09	12					
		e	N		10	13					
	WN	P	N	08	06	24					
		e	N			30					
		e	N		09	42					
		e(S)	N			55					
		e	N		10	23					
		eScS	N		16	33			3	4	
	KM	eP	X	08	06	42					
		e	X		10	19					
		e(S)	X			28					
	GP	P	N	08	06	49					
		e	N			56					
		e	N		10	24					
		e(S)	N			47					
		e	N		11	19					
	Epicentre:			08	02	17		20½S 178W 600 km		USCGS	
4	SU	i?	N	13	35±						
	KP	P	Z	13	39	52					
5	KP	P	Z	05	27	47					
	Epicentre:			05	16	39		12½N 125E		USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
AUG 5	ON	P	E	10	45	30							
		eP*	E			54							
		eS	E		46	38							
	TU	eP	N	10	45	33							
		eS	N		46	44							
		eS*	N		47	17							
	KP	P	Z	10	45	34							
		e	Z			40							
		e	Z			51							
		e	Z		46	56							
	WN	eP?	N	10	46	11							
		e	N			25							
		eS	N		47	50							
		e	N		48	37							
	GP	e(P)	N	10	46	51							
		eS	N		48	57							
	CB	e	E	10	47	11							
		eS	E		48	09							
		eS*	E		49	13							
	KM	eS	X	10	48	49							
	Epicentre:			10	44	02	33.2S	179.3W	S		NZ(D)		5.4 NZ
5	KP	P	Z	13	59	12							
		e	Z			47							
	GP	e(P)	N	13	59	22							
	Epicentre:			13	48	42	5½N	125½E			USCGS		
5	KP	P	Z	20	03	06	d						
	Epicentre:			19	52	54	14N	142E			USCGS		
6	KP	P	Z	03	56	17	d						
		e	Z			52							
	GP	e	N	03	56	45							
7	KP	eP	Z	19	17	12							
	Epicentre:			19	10	59	10½S	162½E			USCGS		
8	KP	P	Z	01	01	07							
		e	Z			56							
	RX	eL	N	01	40±					1 19			
	Epicentre:			00	47	38	55N	162½E			USCGS		6½
8	KP	eP	Z	24	03	13							
		e	Z			15							
		e	Z		04	25							
	WN	eP	N	24	03	35							
	GP	eP	N	24	03	46							
	Epicentre:			23	56	05	6S	155E	100	km	USCGS		
9	KP	iP	Z	02	44	51	u						
		e	Z		45	21							
	GP	e(P)	N	02	45	00							
	Epicentre:			02	34	43	2N	128E			USCGS		
9	TU	eP?	N	18	13	11							
	KP	P	Z	18	13	45							
	GP	eP	N	18	15	09							
9	KP	iP	Z	18	45	42	u						
	WN	eP	N	18	46	13							
9	KP	P	Z	20	35	39	d						
	GP	e	N	20	36	14							
		e	N			25							
	RX	eL	N	20	46±					2 20			
		eL	Z		52±								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
AUG 9	WN	eL	N	20	51								
	Epicentre:			20	29	28	10S	161E	100	km	USCGS		
9	KP	e?	Z	23	46	47							
	Epicentre:			23	40	03	8½S	159E	100	km	USCGS		
10	KM	eP?	X	00	41	20							
		e	X			25							
	WN	e	Z	00	43	58							
		eS	N		46	00				3 9			
		e	N		47	40				4 9			
		e	Z		48	46			4	10			
	RX	e(S)	ZNE	00	44±					4 10		7 10	
		M	ZNE		45±					15 12		26 11	
	GP	e(S)	N	00	45	06							
	Epicentre:			00	36	35	55½S	146E			USCGS		
11	KP	e	Z	00	48	33							
11	KP	P	Z	01	05	49							
		e	Z			56							
11	KP	eP	Z	02	31	17							
11	KP	eP	Z	15	37	10							
		e	Z			24							
	Epicentre:			15	24	30	44½N	148½E			USCGS		
11	KP	e(P)	Z	16	24	43							
11	ON	eP	E	21	55	25							
		e	E			35							
	KP	iP	Z	21	55	43	u						
		e	Z		58	54							
	WN	eL	ZN	22	06				3	20			
	RX	eL	N	22	06								
		eL	ZNE		08					5 18			
	Epicentre:			21	49	42	11S	163E			USCGS		
12	ON	P	E	10	03	09	(w)						
		e	E			27							
		e(S)	E		07	06							
		eL	E			09							
	KP	P	Z	10	03	24	(d)						
		e	Z		08	07							
		eL	Z			10							
	TU	eP	N	10	03	27							
		eL	N			10							
	TO	e	Z	10	03	.6							
		e	Z		04	01							
		eL	Z			10							
	WN	eP?	N	10	03	51							
		e	N			55							
		eS	N		08	22							
		eL	ZN			10							
		M	ZN			13							
	CB	P	E	10	03	57			135	16	95	16	
		eL	E			10							
	KM	P	X	10	04	16	(sw)						
		e	X			31							
		e	X			37							
		eL	X			12							
	GP	P	N	10	04±								
		eL	N		11±								
	RX	e	N	10	05	50							
		e	N		09	48				12	22		

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
AUG 12		eL	ZNE		12										
		M	ZNE		16			300	32	115	23	48	16		
		M	ZNE		18			160	15	117	16	107	14		
	Epicentre:			09	58	22		16S	177½W					USCGS	6½
	12 SU	e	N	23	27±										
		M	N		29±					77	7				
	KP	P	Z	23	30	11	u								
		e	Z			16									
	13 KP	e(P)	Z	00	52	34									
	13 KP	e(P)	Z	12	25	05									
	13 KP	eP	Z	15	43	37									
	Epicentre:			15	30	42		51½N	176W					USCGS	
	14 ON	eP	E	03	49	53									
	KP	eP	Z	03	50	02									
		e	Z			05									
		e	Z			32									
		e	Z		51	31									
	TU	P	N	03	50	05									
		e	N			20									
		e	N		51	25									
		e(S)	N			28									
	WN	eP	N	03	50	39									
		eS	N		52	28									
	CB	eS	E	03	52	41									
	KM	eS	X	03	53	18									
	14 KP	eP?	Z	04	49	18									
		e	Z			30									
		e	Z			40									
		e	Z		52	43									
	GP	P	N	04	50±										
	Epicentre:			04	39	07		0	125½E					USCGS	
	14 KP	P	Z	07	05	49									
	TU	eP	N	07	05	52									
		S	N		08	19									
	WN	eS	N	07	09	15									
	14 ON	P	E	23	34	12									
		e	E			32									
	KP	P	Z	23	34	24	(u)								
		e	Z			34									
		e	Z		35	01									
	WN	eP?	N	23	34	57									
		eS	N		36	57									
	KM	eS	X	23	37	48									
	Epicentre:			23	32	.4		30S	177E	N?				NZ(D)	5.3 NZ
	15 SU	e	N	09	08	30									
		e	N		09	43				5	5				
		e	N		17	22				11	8				
		eL	N		27										
		M	N		28										
		M	N		32					26	20				
	ON	eP	E	09	09	02									
	KP	P	Z	09	09	07	u								
		e	Z		12	36									
	WN	eP	Z	09	09	16									
		e	N			23									
		e	N			33									
		S	N		19	16				6·	10				

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
AUG 15		eSS	N		24	10					5	9			
		e	N		26	50					4	6			
		eL	N		31										
		M	ZN		40			40	20		14	20			
	RX	eP	NE	09	09	22									
		iS	NE		19	19	se				14	16			
		e	E		20	.1									
		eSS	E		24	32									
		eSSS	E		27	48									
		eL	E		31										
		M	NE		43						28	20	29	19	
	Epicentre:			08	57	04		23N	121E					USCGS	6½-7
	15 SU	P	N	13	16	27	(s)								
		i	N		18	25	n								
	ON	eP	E	13	18	34									
	KP	P	Z	13	18	44									
	WN	eP	N	13	19	16									
		S	N		23	00									
		eL	ZN		26										
	KM	eP	X	13	19	49									
	RX	eL	NE	13	28										
		M	NE		30						8	18	8	18	
	Epicentre:			13	14	26		21S	174W					USCGS	
	15 KP	P	Z	17	09	51									
	15 ON	eP	E	21	34	34									
	KP	P	Z	21	34	46									
	Epicentre:			21	29	42		17½S	177W					USCGS	
	16 SU	eP	N	00	54	00	(n)								
		e	N			35									
		eS	N		56	48					67	9			
		M	N		58						138	7			
	KP	P?	Z	00	55	51									
		e	Z			54									
		eL	Z	01	02										
	TU	e	N	00	56	13									
	WN	eP	ZN	00	56	29		7	9						
		eS	N	01	00	21					13	8			
		eL	ZN		03										
		M	N		06						37	15			
	CB	e	E	00	56	34									
		eS	E	01	00	12									
	KM	e	X	00	56	49									
		eS	X	01	00	38									
		eL	X		03										
	RX	eP	N	00	57	07									
		eS	NE	01	01	26					16	16			
		eL	NE		04										
		M	ZNE		07			28	14		38	14	51	14	
		M	ZN		09			43	13		43	13			
	ON	eL	E	00	57½										
	Epicentre:			00	51	40		21S	169E					USCGS	6
	16 SU	P	N	09	54	49	(n)								
		e	N		55	30									
		e	N			50									
	ON	eP	E	09	57	36									
		e	E		58	16									
		e	E			59									
	KP	iP	Z	09	57	51	u								
	TU	eP	N	09	57	53									
		e	N	10	01	21									
	TO	P	Z	09	57	59									

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
AUG 16	WN	P	N	09	58	19								
		e	N			36								
		eS	N	10	02	19								
	CB	eP	E	09	58	23								
	KM	P	X	09	58	39								
	Epicentre:			09	53	52		18S 178W 350 km					USCGS	
16	KP	eP	Z	11	15	19								
	Epicentre:			11	07	49		5S 152E					USCGS	
16	KP	eP	Z	17	58	14								
17	SU	e(S)	N	01	03	30								
		M	N		05					6	5			
	ON	P	E	01	05	08								
		e	E		06	21								
	WN	e	N	01	06	08								
		e	N		09	21								
	KM	e(P)	X	01	06	33								
		eS	X		10	17								
	RX	eL	NE	01	14					1	19	1	19	
17	ON	eP?	E	21	11	20								
		e(S)	E		16	.5								
		eL	E		19									
	TO	P	Z	21	11	43								
	TU	e(P)	N	21	11	48								
		e(S)	N		17	25								
		eL	N		20									
	CB	e(P)	E	21	11	48								
		eS	E		17	33								
		eSS	E		20									
	WN	eP	ZN	21	11	56	u	7	6	6	6			
		ePP	ZN		13	27								
		S	N		17	54								
		eSS	N		20	30								
		M	N		28					64	15			
		M	N	24	00					45	25			
	KM	P	X	21	11	58								
		e	X		12	45								
		e	X		13	46								
		eS	X		17	55								
		eSS	X		21									
		eL	X		23									
		M	X		27									
	RX	eP	ZN	21	12	16				4	20			
		e	ZNE		13	50				18	15	5	15	
		e	NE		14	56				13	11			
		eS	NE		18	12				58	21			
		e(L)	NE		21	10								
		eL	Z		23									
		M	ZN		30			155	15	165	15			
		M	ZN	24	02					3	20			
	Epicentre:			21	04	40		7½S 156E					USCGS	7¼
18	SU	eP	N	05	40	44								
		e	N		43	05								
		M	N		46					16	5			
	KP	eP	Z	05	42	20								
		i	Z			26								
		e	Z		45	47								
	TO	P	Z	05	42	37								
	WN	P	ZN	05	42	58		2	5					
		S	N		46	42								
		L	N		48									
		M	N		49					6	20			

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
AUG 18	RX	eS	N	05	47	49								
		e	N		49	½								
		eL	ZNE		52						2	15		
18	SU	P	N	06	50	29	n							
		i	N		51	09								
		e	N	07	01	03								
		eL	N		15									
		eL	N		19									
		M	N		22						27	20		
	WN	eP	Z	06	51	50			2	10				
		ePKP	Z		55	.5			1	10				
		e	Z		56	10			2	5				
		ePP	ZN			19			26	8				
		SKS	N	07	02	28					1	11		
		iPS	ZN		05	45	s		10	10	30	9		
		SS	N		11	½						35		
		SSS	ZN		15							30		
		i	N		19	13						25		
		eL	ZN		22					22		50		
		eL	ZN		28							40		
		M	ZN		33				72	22	68	20		
	KP	e?	Z	06	54	24								
		e?	Z		55	21								
		ePKP?	Z		56	01								
		e	Z			03								
		L	Z	07	32									
	RX	e?	ZE	06	57	00								
		e	ZNE			04			11	8				
		eSKS	N	07	02	58								
		ePS	ZNE		06	44					6	12		
		e	NE		07	00					45	22		
		eSS	NE		13							40		
		e	NE		16							30		
		e	ZNE		20							30		
		e	ZNE		24					22		30		
		eL	E		26								40	
		eL	ZNE		30					35		35	35	
		M	ZN		35				93	22	74	23		
		M	ZNE		45				63	17	63	17	35	17
	TU	ePS	N	07	05	17								
		eL	N		22									
	TO	eL	Z	07	27									
	CB	eL	E	07	28									
	KM	eL	X	07	28									
	GP	eL	N	07	28	±								
	ON	M	E	07	30									
	Epicentre:			06	37	13		44½N 111W					USCGS	7.1
18	WN	e	Z	15	45	02	d		2	5				
		e(SKS)	N		51	14					2	4		
		PS	N		54	35	s				3	7		
		eL	ZN	16	20				2	20				
	RX	ePS	NE	15	55	32					2	20		
		e	N	16	13						2	20		
		eL	N		19									
		M	N		24						2	21		
	Epicentre:			15	26	06		44½N 111W					USCGS	6½-7
19	RX	eL	N	05	12									
	Epicentre:			04	04	03		45N 111½W					USCGS	6
20	SU	e(P)	N	02	03	45								
	TO	eP?	Z	02	05	31								
	RX	eL	NE	02	16						1	17		
	WN	eL	Z	02	20									
	Epicentre:			01	59	06		10½S 161E					USCGS	

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te		Mag.
AUG 20	RX	eL		05	09							
20	RX	eL	N	09	16							
		eL	ZNE		20							
	WN	eL	N	09	20							
	Epicentre:			08	54	59		New Britain			USCGS	
20	SU	e(S)	N	09	52	42		Small local shock				
20	RX	eL	N	12	47							
		eL	ZNE		51				1 22			
	WN	eL	ZN	12	56			2 18				
	Epicentre:			12	20	08		29S 78E			USCGS	
21	KM	e(P)	X	08	08	36						
		e	X		10	49						
		eS	X		13	06						
		eL	X		14							
	CB	e(P)	E	08	08	51						
	TO	e	Z	08	09	13						
		e	Z		11	56						
	WN	e(S)	N	08	13	25			8 10			
		eL	ZN		15							
	SU	eL	N	08	26							
	Epicentre:			08	03	15		50½S 139½E			USCGS	5¾-6
21	CB	e(P)	E	09	43	20						
	TO	e(P)	Z	09	43	48						
	WN	e(S)	N	09	47	57						
		eL	ZN		50							
	SU	eL	N	10	00							
	Epicentre:			09	37	49		50½S 140E			USCGS	
22	SU	e	N	20	20	02		Local				
		i(S)	N			15	s					
		i	N			37						
	KP	e	Z	20	23							
24	SU	eP	N	15	45	57						
	ON	e?	E	15	47	39						
		e	E			45						
	KP	P	Z	15	47	52	u					
		e	Z		51	02						
	TO	eP	Z	15	48	03	u					
	GP	e	N	15	48	29						
	RX	eL	NE	15	58							
		M	NE	16	00				3 18	2 18		
	WN	eL	ZN	16	01							
	Epicentre:			15	41	40		10½S 161½E			USCGS	
24	KP	eP	Z	16	46	17						
	Epicentre:			16	40	04		10½S 161½E			USCGS	
24	SU	e(P)	N	21	35	10	n					
		e	N			30						
		e	N		36	38						
		e	N		38	41						
		e	N		40	20						
	ON	e(P)	E	21	36	46						
		e	E			55						
		e	E		38	28						
		e(S)	E		41	24						
	KP	P	Z	21	36	59	u					
		e	Z		40	02						
		e	Z			14						
		e	Z		43	40						
	TO	eP	Z	21	37	09						
	TU	eP	N	21	37	13						

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te		Mag.
AUG 24		e	N		43	24						
		e	N			45						
	CB	eP	E	21	37	22						
		eS	E		42	27						
	WN	P	ZN	21	37	23	u		5 10			
		e	N			32						
		M	ZN		51			140 18	118 15			
	KM	eP	X	21	37	29						
		eS	X		42	50						
		eL	X		49							
	GP	P	N	21	37	40	n					
		eS?	N		43	.0						
		e	N		43	13						
		eL	N		49							
	RX	eP	ZN	21	37	46	(us)	6 12	6 12			
		eS	NE		43	26			31 19			
		e(L)	ZE		46							
		eL	ZNE		48							
		M	E		50					75 19		
		M	Z		54			90 15				
	Epicentre:			21	30	46		10½S 161E			USCGS	7
24	SU	e	N	23	36	47						
	KP	e?	Z	23	38	31						
		i	Z			46						
	Epicentre:			23	32	23		10½S 161½E			USCGS	
24	SU	P	N	23	46	05	(s)					
	KP	eP	Z	23	47	46						
	Epicentre:			23	41	34		10½S 161½E			USCGS	
25	KP	e	Z	12	36	31						
		e	Z		38	02						
	Epicentre:			12	24	18		Northern Chile			USCGS	
25	KP	P	Z	13	47	15						
		e	Z		49	37						
		e	Z			51						
	RX	eL	N	14	00				1 20			
		eL	Z		02							
	Epicentre:			13	40	06		6½S 155E			USCGS	
26	KP	eP	Z	05	00	26						
	Epicentre:			04	53	00		5½S 153½E			USCGS	
26	RX	ePPS	NE	08	53	40						
		eLq	N	09	10	.2			4 36			
		eL	ZNE		16							
		M	N		19				13 20			
		M	ZN		24			12 17	10 17			
	WN	eL	ZN	09	14			12 20				
	Epicentre:			08	25	30		18N 94½W			USCGS	6¾
26	RX	eL	N	11	17							
		eL	ZNE		22				3 24			
		M	ZNE		28				2 18	2 18		
	WN	eL	Z	11	19			3 20				
	Epicentre:			10	27	41		51N 132W			USCGS	
27	KP	eP	Z	05	13	55						
	Epicentre:			05	05	44		5S 150½E 300 km			USCGS	
27	ON	P	E	07	58	13	e					
	KP	P	Z	07	58	26	u					
		e	Z	08	00	33						
		e	Z		01	14						
	Epicentre:			07	50	28		0 122E 200 km			USCGS	

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te		Mag.
AUG 27	SU	eL	N	12	19							
	ON	eL	E	12	21							
	WN	eL	N	12	26							
	RX	eL	NE	12	26				1 16			
27	KP	eP	Z	13	48	24						
	RX	eL	NE	14	10							
	WN	eL	Z	14	12			2 20				
27	SU	eL	N	20	36							
	WN	e	Z	20	42							
	RX	eL	NE	20	42					2 18		
28	KP	P	Z	02	09	50	d					
	Epicentre:			01	56	56		Kurile Is.			USCGS	
28	KP	P	Z	02	43	23	(d)					
		e	Z		46	09						
	TO	P	Z	02	43	32	u					
	GP	eP?	N	02	43	55						
	RX	eL	N	02	56				8 20			
	Epicentre:			02	37	00		9S 158E 150 km			USCGS	
28	SU	e	N	15	55	10						
	ON	e(P)	E	15	56	45						
		e	E			50						
		eS	E	16	00	41						
		eL	E		02							
	KP	P	Z	15	57	09						
	TO	eP	Z	15	57	23						
	TU	eP	N	15	57	24						
	GP	P	N	15	57	53						
	RX	eL	N	16	06							
		eL	ZNE		09							
	WN	e(L)	ZN	16	08							
	Epicentre:			15	52	10		17S 167E			USCGS	
28	TU	eP	N	17	23	11						
		e	N			24						
		i	N			42						
		S	N			44						
	KP	P	Z	17	23	24	d					
		e	Z			30						
		e(Pg)	Z			46						
		e(S)	Z		24	02						
	TO	eP	Z	17	23	30						
		i	Z			33						
		e	Z		24	11						
		e(S)	Z			14						
		e	Z			24						
	ON	eP	E	17	23	41						
		e(P*)	E			55						
	WN	P	N	17	23	50						
		S	N		24	52						
	GP	P	N	17	24	28						
		e	N		25	55						
		eS	N			57						
	KM	e(P)	X	17	24	37						
		eS	X		25	56						
	CB	eS	E	17	25	18						
	Epicentre:			17	22	31		37.4S 179.8E N			NZ(C)	5.3 Mc
29	RX	ePS	N	17	32	06						
		eSS	N		38							
		eSSS	N		43							
		eL	N		53							6½-6¾
	Epicentre:			17	03	10		52N 106½E			USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag.
AUG 29	KP	e	Z	21	25	25					
		e	Z			38					
	Epicentre:			21	20	27	17S 168E			USCGS	
30	KP	eP	Z	02	59	59					
	Epicentre:			02	53	08	8S 156½E			USCGS	
30	KP	P	Z	03	52	20					
		e	Z			24					
		e	Z			45					
	WN	eP	N	03	52	55					
		eS	N		55	50					
	CB	eS	E	03	56	00					
	KM	eS	X	03	56	32					
	GP	e(S)	N	03	56	39					
30	KP	P	Z	18	52	19					
	Epicentre:			18	48	34	23S 171½E			USCGS	
30	KP	e	Z	21	56	50					
	RX	e(SSS)	N	22	12	.3		3 24			
		eL	ZNE		17			2 20			
	Epicentre:			21	45	07	36½S 78½E			USCGS	
31	SU	eL	N	13	28						
	ON	e	E	13	29	05					
	KP	eP	Z	13	29	05					
	RX	e	E	13	38						
31	KP	e(P)	Z	20	38	45					
	Epicentre:			20	33	52	17S 167½E			USCGS	
31	KP	P	Z	17	01	04					
SEP 1	KP	PKP	Z	11	58	26					
2	KP	P	Z	04	05	37					
2	KP	eP	Z	06	29	08					
		e	Z			21					
3	SU	eP	N	02	40	25					
		eS	N		41	40					
	KP	P	Z	02	42	50					
	Epicentre:			02	39	04	20½S 178½W 550 km			USCGS	
3	KP	P	Z	06	37	30					
		ePP	Z		39	49					
	RX	e(S)	E	06	45	50			3 7		
		eLq	N	06	51			8 22			
		M	NE		59			10 19	5 18		
		eL	Z	07	03		11 15				
	WN	eL	N	06	54						
		eLr	Z		58						
		Lmax	Z	07	05		11 18				
	AK	eL	N	06	55			12 20			
	Epicentre:			06	27	30	4½S 123E				6.2 NZ
3	KP	P	Z	06	43	19					
	WN	e(S)	N	06	46	43					
		e	N		47	59					
3	KP	P	Z	07	47	38					
3	SU	S	N	21	52	00		6 5			
		L	N			40		5 12			
		M	N			53½		11 10			

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
SEP 3	KP	eP	Z	21	54	15								
		Epicentre:		21	48	56		15S	175½W					
4	KP	iP	Z	09	00	20	u							
	GP	P	N	09	00	48								
		Epicentre:		08	52	55		4½S	152E	100 km			USCGS	
4	KP	eP	Z	12	32	11								
		e	Z			23								
	ON	eP	E	12	32	17								
		e	E			30								
		S	E		33	40								
	GP	e(P)	N	12	33	40								
		eS	N		35	54								
	TU	S	N	12	34	11								
	WN	S	N	12	34	48								
		eL	N		37½									
	KM	e(S)	X	12	36	03								
	RX	eL	NE	12	41						2 18			
		Epicentre:		12	30	00		31½S	177W				USCGS	
4	KP	eP	Z	17	20	20								
4	KP	P	Z	17	57	53								
		Epicentre:		17	47	15		21½N	142E	250 km			USCGS	
4	KP	P	Z	22	48	53								
5	SU	P	N	03	58	15								
		S	N			26					16 4			
	KP	P	Z	04	02	30								
5	KP	eP	Z	06	17	33								
	GP	e(P)	N	06	18	00								
	RX	eL	N	06	31						3 28			
		eL	NE		36						5 28	3	30	
		eL	Z		39			8	20					
		M	NE		42						3 20	6	20	
	AK	eL	N	06	36									
	WN	eL	N	06	36									
		M	N		40						7 20			
		Epicentre:		06	07	38		1N	129E				USCGS	6.0 NZ
5	RX	P	ZNE	07	04	51		5	4	5	7	2	2	
		S	E		08	32						5	22	
		L	ZN		09	06		15	20	13	24			
	GP	eP	N	07	05	15								
	KM	eP	X	07	05	30								
	WN	P	ZN	07	05	42		2	4	5	6			
		S	N		10	08				4	7			
		SS	N			46				4	10			
		Lq	N		11.7					26	15			
		Lr	Z		15.8									
	KP	eP	Z	07	06	15								
	AK	eL	N	07	14									
		Epicentre:		07	00	26		62S	156E				USCGS	6.1 NZ
5	RX	eL	N	15	39						3 20			
	WN	eL	N	15	40									
5	KP	eP	Z	15	44	39								
	RX	eL	N	16	03									
		eL	Z		09									
	AK	eL	N	16	05									
	WN	eL	N	16	06						4 15			
5	KP	eP	Z	21	41	39								
		Epicentre:		21	28	42		51N	179½E				USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
SEP 5	SU	eP?	N	23	06	03								
		S	N		07	24					10 4			
	ON	P	E	23	08	56								
		S	E		12	07								
	KP	iP	Z	23	09	07½	d							
		e	Z		10	29								
		eS	Z		12	30								
		ePcP	Z			43								
	WN	eP	N	23	09	38								
		eS	N		13	08								
	KM	eP	X	23	10	01								
		eS	X		13	44								
	GP	eP	N	23	10	01								
		eS	N		13	54								
	TU	eS	N	23	12	30								
		Epicentre:		23	05	00		18S	178½W	550 km			USCGS	
6	KP	P	Z	00	38	29								
		i	Z			36								
	WN	eP	N	00	38	43								
		Epicentre:		00	27	59		5½N	126½E				USCGS	
6	KP	eP	Z	04	17	08								
	RX	eL	NE	04	28									
		Epicentre:		04	10	54		10S	160½E				USCGS	
6	ON	P	E	18	09	37								
	KP	P	Z	18	09	51								
	TO	(P)	Z	18	10	(00)								
		(S)	Z		12	(12)								
	WN	e?	N	18	10	12								
		e?	N			23								
		eS	N		13	15								
	KM	eP	X	18	10	44								
		eS	X		14	03								
	GP	eP	N	18	10	48								
		eS	N		14	04								
7	SU	iP!	N	06	13	50								
								Felt Suva. MM4						
8	KP	P	Z	04	21	11								
8	KP	e(P)	Z	10	16	00								
		Epicentre:		10	03	27		36½N	140E	100 km			USCGS	
8	KP	eP	Z	19	32	11								
		pP	Z			25								
		Epicentre:		19	19	32		42½N	142½E	100 km			USCGS	
8	KP	P	Z	20	31	00								
		Epicentre:		20	18	37		58½S	24½W				USCGS	
9	KP	P	Z	05	16	48								
9	KP	P	Z	16	35	02								
10	KP	iP!	Z	05	42	13	u							
		ePP	Z		44	05								
		iPcP	Z			35	u							
		ipPcP	Z			48	u							
		eScP	Z		48	19								
	TO	P	Z	05	42	(20)	u							
	KM	eP	X	05	42	36								
	WN	eP	N	05	42	37								
	GP	eP	N	05	42	43								
	RX	eL	N	05	52½									
		eL	Z		56							9	21	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag.
SEP 10		M	NE		57				6	21	3	2		
	Epicentre:			05	35	04	6½S	154½E					USCGS	6 NZ
	10 RX	P*	ZNE	10	38	33								
		S*	ZNE		39	06								
		M	ZNE		39¾									
	GP	ePn	N	10	39	13								
		eP*	N			31								
		e	N			37								
		e(Sn)	N		40	09								
		e	N			30								
		eS*	N			44								
	KM	ePn	X	10	39	15								
		iP*	X			33								
		e	X			48								
		iSn	X		40	22								
		e(Sg)	X		41	09								
	WN	e(P)	N	10	39	52								
		e	N		40	01								
		Sn	N		41	22								
		e	N		42	07								
		eL	N			22								
		eL	Z			35								
		M	N		43									
		M	Z		43½									
	KP	eP	Z	10	40	29								
		e	Z		42	49								
	AK	eL	N	10	44									
	Epicentre:			10	37	49	46¾S	166½E	S				NZ(C)	5.4 M
	10 KP	eP	Z	14	18	48								
	10 KP	eP	Z	16	25	09								
	Epicentre:			16	18	09	9½S	151½E	100 km				USCGS	
	10 KP	P	Z	23	09	24								
	Epicentre:			22	56	34	47N	152E					USCGS	
	11 SU	eP?	N	02	35	08								
		S	N		36	06				1	4			
	KP	eP	Z	02	36	57								
	11 KP	iP	Z	23	21	23	u							
	12 KP	eP	Z	00	33	36								
	Epicentre:			00	22	01	6S	106E	100 km				USCGS	
	12 SU	eP	N	02	00	41								
		pP	N		01	50				8	5			
		eL	N		10					12	20			
	KP	eP	Z	02	01	56								
		e	Z		02	09								
	TO	P	Z		02(02)									
	GP	eP	N	02	02	19								
	WN	eP	Z	02	02	22		3	5					
		PP	Z		04	10		3	5					
		ScP	Z		06	20		3	5					
		PcS	N		06	25				4	8			
		S	N		08	58				8	10			
		SS	N		12	38								
		SSS	N		13	15				6	10			
		Lq	N		13	50								
		Lr	Z		14.8			13	15					
	RX	S	N	02	09	08				9	24			
		eSS	NE		12	50				6	20	5	20	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag.
		SSS	N		13	41				7	20			
SEP 12		eL	NE		16½					16	32	7	20	
		eL	Z		17		14	25						
		M	NE		22½					24	20	10	20	
	AK	eL	N	02	11									
	Epicentre:			01	53	47	3S	146½E					USCGS	6.4 NZ
	12 KP	eP	Z	07	03	56								
	12 KP	eP	Z	07	09	51								
	Epicentre:			07	01	45	3S	147E					USCGS	
	12 KP	eP	Z	08	55	44								
	12 KP	eP	Z	09	54	40								
		e	Z		55	29								
	ON	eP	E	09	54	41								
	WN	e	N	09	55	49								
		eS	N		56	53								
	TU	eS	N	09	55	54								
	KM	eS	X	09	58	03								
	GP	eS	N	09	58	06								
	Epicentre:			09	53	06	34½S	178W	N?				NZ(D)	5.1 NZ
	12 SU	e(P)	N	11	30	05				6	4			
		eS	N		33	49				6	10			
	KP	eP	Z	11	31	04								
		e	Z		33	50								
	WN	eP	Z	11	31	22								
		PP	N		32	50								
		PcP	N		33	47				4	7			
		e	N		35	30				4	7			
		S	N		37	00				4	7			
		Lr	Z		41.7			11	14					
		M	N		47					24	15			
	GP	eP	N	11	31	33								
	RX	eS	N	11	37	24				3	14			
		eLq	NE		40	31				13	30	10	30	
		eLr	Z		42			13	22					
		M	NE		45					25	20	16	20	
	AK	eL	N	11	41									
		M	N		47									
	Epicentre:			11	24	47	9½S	156E					USCGS	6.3 NZ
	12 KP	P	Z	14	47	46								
	Epicentre:			14	40	10	5S	152½E					USCGS	
	13 KP	P	Z	04	45	47								
		e	Z		46	15								
	Epicentre:			04	38	05	3½S	146½E					USCGS	
	13 KP	P	Z	09	00	32								
	13 KP	eP	Z	22	50	29								
	Epicentre:			22	40	36	1N	129E					USCGS	
	14 SU	P	N	13	17	50				7	3			
		S	N		19	22								
		M	N		21					105	10			
	ON	P	E	13	19	14								
		(S)	E		22	11								
	AK	P	N	13	19	24								
		S	N		22	20								
		eL	N		23.2									
	KP	P	Z	13	19	31								
		e	Z			49								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
SEP 14	WN	P	ZN	13	20	09		4	4	7	5				
		e	N		23	00									
		S	N		23	09				33	12				
		Lq	N		24	28				33	12				
		Lr	Z		24.8					28	12				
	CB	eP	E	13	20	21									
	GP	eP	N	13	20	39									
		eS	N		24	15									
	RX	eL	NE	13	26					19	30	22	33		
		eL	Z		28			33	28						
		M	NE		29					39	18	47	18		
	Epicentre:			13	15	49		24S	176½W					USCGS	6.2 NZ
	14 ON	eP	E	14	12	12									
		e	E			21									
		e	E			25									
		eL	E		14	19									
		M	E		16										
	KP	P	Z	14	12	19									
		e	Z			24									
		e	Z			34									
		eL	Z		15½										
	AK	(P)	N	14	12	28									
		(S)	N		14	13									
	SU	P	N	14	12	30	n			210	10				
	CB	eP	E	14	13	14									
		e	E			51									
		S	E		15	43									
	GP	eP	N	14	13	31									
		e	N			38									
		i	N			59									
		S	N		16	30									
		eL	N		18	27									
	RX	eP	N	14	14	08				29	18				
		eP	Z			13		19	20						
		eP	E			18						11	18		
	Epicentre:			14	09	39		28½S	177W					USCGS	
	14 ON	eP	E	15	01	18									
		e	E			41									
	KP	eP	Z	15	01	20									
		e	Z			28									
		e	Z			37									
	TU	eP	N	15	01.5										
		S	N		03	18									
	WN	eP	N	15	02	09									
		S	N		04	26									
	CB	eP	E	15	02	19									
		eS	E		04	42									
	GP	eP	N	15	02	49									
		eS	N		05										
	Epicentre:			14	58	40		28½S	176½W					USCGS	
	14 KP	eP	Z	16	24	40									
	ON	eP	E	16	24	42									
		e	E			49									
	TU	eS	N	16	26	41									
	WN	eS	N	16	27	49									
	CB	e(S)	E	16	28	06									
	GP	eS	N	16	28	52									
	Epicentre:			16	22	01		28½S	176½W					USCGS	
	14 ON	eP	E	16	58	49									
		e	E		59	00									
	KP	eP	Z	16	58	58									
		e	Z		59	01									

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
SEP 14	WN	eP	N	16	59	39									
		S	N	17	01	58									
	GP	eP	N	17	00	12									
		eS	N		03	01									
	TU	eS	N	17	00	48									
	CB	eS	E	17	02	15									
	Epicentre:			16	56	13		29S	176½W					USCGS	
	14 ON	eP	E	17	08	42									
		i	E			50									
		i	E		09	03									
	KP	eP	Z	17	08	53									
		i	Z		09	05									
		i	Z		09	12									
	TU	eP	N	17	09.0										
		S	N		10	51									
	SU	P	N	17	09	00(n)									
		eL	N		12½										
	AK	eP	N	17	09	08									
		eL	N		11										
		M	N												
	WN	P	N	17	09	42	n								
		S	ZN		12	00		8	4	10	2				
		M	N		15							63	14		
	CB	eP	E	17	09	52									
		eS	E		12	17									
	GP	eP	N	17	10	09									
		e	N			14									
		i	N			21									
		S	N		13	05									
	RX	eLq	NE	17	15.5							32	33	46	28
		eLr	Z		17			23	18						
		M	NE		18							52	20	58	18
		M	Z		19½			83	15						
	Epicentre:			17	06	15		29S	176½W					USCGS	6¼ NZ
	14 KP	eP	Z	17	40	35									
	GP	eP	N	17	41	53									
		eS	N		44	45									
	TU	eS	N	17	42	31									
	WN	eS	N	17	43	40									
	CB	eS	E	17	43	56									
	Epicentre:			17	37	55		Kermadec Is.						NZ	
	14 ON	e(P)	E	19	12	25									
	KP	eP	Z	19	12	27									
	WN	eS	N	19	15	36									
	GP	eS	N	19	16	37									
	14 KP	eP	Z	19	37	37									
	ON	e(P)	E	19	37	43									
	TU	eS	N	19	39	35									
	WN	eS	N	19	40	42									
	GP	eS	N	19	41	48									
	Epicentre:			19	35.0			Kermadec Is.						NZ	
	14 ON	e(P)	E	20	29	59									
	KP	eP	Z	20	30	02									
	SU	eP	N	20	30	06									
		eL	N		33	49									
	TU	eS	N	20	31	56									
	GP	eS	N	20	34	03									
	RX	eL	NE	20	38							3	18	3	18
	Epicentre:			20	27	10		28½S	176½W					USCGS	5½ NZ

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
SEP 14	ON	eP	E	22	26	27								
		e	E			42								
		eL	E		29	24								
	KP	eP	Z	22	26	31								
		e	Z			41								
		i	Z		27	01								
	SU	eP	N	22	26	34				18	5			
		eL	N		30									
		M	N		31					33	14			
	TU	e(P)	N	22	26.6									
		eS	N		28	25								
	WN	eP	N	22	27	21								
		S	ZN		29	35				3	1			
		Lq	N		30	31				19	23			
		Lr	Z		31	30		22	18					
		M	N		33					27	20			
		M	Z		45			19	13					
	CB	eP	E	22	27.5									
		eS	E		29	51								
	GP	eP	N	22	27	48								
		S	N		30	38								
	RX	eLq	NE	22	33.0					9	35	13	35	
		eLr	Z		35			14	22					
		M	ZNE		37			26	16	26	17	22	18	
	Epicentre:			22	23	53		28½S	177W				USCGS	6.0 NZ
	14 ON	eP	E	23	00	05								
	KP	eP	Z	23	00	30								
	WN	eS	N	23	03	13								
	GP	eS	N	23	04	17								
	15 SU	eL	N	01	15					4	10			
	15 ON	eP	E	01	46	27								
	KP	P	Z	01	46	32								
		i	Z		47	13								
	15 ON	eP	E	02	26	51								
	KP	eP	Z	02	26	51								
	GP	eP	N	02	28	09								
		eS	N		30	58								
	TU	eS	N	02	28	48								
	WN	eS	N	02	29	54								
	CB	eS	E	02	30	17								
	Epicentre:			02	24.2			Kermadec Is.					NZ	
	15 ON	eP	E	06	00	53								
		e	E		01	14								
	KP	eP	Z	06	00	55								
		e	Z		01	09								
	SU	e(S)	N	06	01	00				4	5			
	GP	eP	N	06	02	15								
		eS	N		05	12								
	15 ON	eP	E	06	02	23								
		eL	E		04	53								
	KP	P	Z	06	02	24								
		e	Z			42								
	SU	P	N	06	02	25	(n)			122	5			
	TU	eP	N	06	02	25								
		eS	N		04	27								
	AK	e(P)	N	06	02	40								
		L	N		04	40								
	WN	eP	ZN	06	03	04		1	1					
		e	N		03	17								
		S	N		05	36				17	11			

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
SEP 15		Lq	N		06½						340	35		
		Lr	Z		07									
		M	N		10						290	12		
		M	Z		10½			165	18					
		M	N		13						580	12		
	CB	eP	E	06	03.4									
		eS	E		05	53								
		eL	E		07	10								
	GP	P	N	06	03	42								
		e	N			47								
		eS	N		06	37								
		i	N			46								
	RX	P	ZNE	06	04	20	n	9	22		11	20	5	18
		i	NE								10	18	6	18
		Lq	NE		08	46					71	34	230	42
		Lr	Z		09½			49	24					
		M	NE		12						102	19	165	18
		M	ZNE		13½			275	16	218	16	152	16	
	Epicentre:			05	59	42		28½S	177W				USCGS	6¼ NZ
	15 ON	eP	E	06	11	13								
	KP	eP	Z	06	11	18								
		e	Z			24								
	WN	eP	N	06	12	02								
		S	N		14	29								
	GP	eP	N	06	12	43								
		eS	N		15	32								
	TU	eS	N	06	13	21								
	CB	eS	E	06	14	47								
	Epicentre:			06	08	35		28½S	176½W				USCGS	
	15 ON	eP	E	06	20	03								
	KP	eP	Z	06	20	10								
		e	Z			22								
	WN	eP	N	06	20	55								
		S	N		23	25								
	CB	eP	E	06	21	10								
		eS	E		23	40								
	GP	eP	N	06	21	30								
		eS	N		24	26								
	TU	eS	N	06	22	14								
	Epicentre:			06	17	28		28½S	176½W				USCGS	
	15 ON	eP	E	08	02	57								
	KP	eP	Z	08	03	01								
		e	Z			17								
	CB	eP	E	08	03	58								
		eS	E		06	24½								
	GP	P	N	08	04	19								
		S	N		07	09								
	TU	eS	N	08	05	00								
	WN	S	N	08	05	08								
	Epicentre:			08	00	23		28½S	177W				USCGS	
	15 ON	eP	E	10	51	22								
	KP	eP	Z	10	51	24								
		e	Z			42								
	GP	eP	N	10	52	40								
		eS	N		55	40								
	WN	eS	N	10	54	33								
	CB	eS	E	10	54	54								
	AK	eL	N	10	56									
	RX	eL	NE	11	02									
	Epicentre:			10	48	44		29S	177W				USCGS	
	15 SU	iP	N	11	07	06	n							
	ON	P	E	11	08	47								
		i	E	11	08	50								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
SEP 15		S	E		11	21									
		ScS	E		19	30									
	KP	iP	Z	11	09	00	d								
	TU	eP	N	11	09	03									
		eS	N		11	48									
		ScS	N		19	32									
	WN	eP	N	11	09	31									
		S	N		12	36				9	3				
		ScP	N		15	56				6	10				
		ScS	N		19	42				14	5				
		sScS	N		23	55				12	10				
	CB	eP	E	11	09	33									
		eS	E		12	38									
		ScS	E		19	38									
	GP	eP	N	11	09	54									
		S	N		13	19									
	AK	iS	N	11	11	32	s								
		ScS	N		19	36									
	RX	PcS	NE	11	17	02				5	11	8	11		
		ScS	NE		20	05				5	8	12	9		
		sScS	NE		24	16				5	10	9	14		
	Epicentre:			11	05	33		21½S	179½W	600 km		USCGS			6¼ NZ
	15 ON	eP	E	12	02	56									
		e	E		03	13									
	KP	eP	Z	12	03	02									
	GP	eP	N	12	04	12									
		S	N		07	18									
	TU	eS	N	12	05	11									
	AK	eL	N	12	06										
	WN	S	N	12	06	16									
	CB	e(S)	E	12	06	32									
	RX	eL	NE	12	12										
	Epicentre:			12	00	20		28½S	176½W			USCGS			
	15 ON	e(P)	E	12	11	30									
	KP	eP	Z	12	11	33									
		e	Z			44									
	GP	eP	N	12	12	56									
		eS	N		15	49									
	TU	eS	N	12	13	44									
	WN	eS	N	12	14	47									
	AK	eL	N	12	16¾										
	Epicentre:			12	08	.9		Kermadec Is.				NZ			
	15 KP	P	Z	12	58	52									
	Epicentre:			12	54	25		21½S	177½W			USCGS			
	15 ON	eP	E	13	18	.0									
	KP	eP	Z	13	18	02									
	GP	eS	N	13	22	14									
	15 ON	eP	E	13	48	48									
		i	E			56									
		e	E		49	16									
	KP	eP	Z	13	48	54									
		e	Z		49	03									
	GP	eP	N	13	50	14									
		S	N		53	04									
	TU	eS	N	13	50	53									
	AK	eL	N	13	52										
	WN	eS	N	13	52	03									
		e	N			31									
		eL	N		54										
	RX	eL	NE	13	58					4	15	4	15		
	Epicentre:			13	46	17		29S	177W			USCGS			

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
SEP 15	SU	eL	N	14	03	40									
	KP	eP	Z	14	06	21									
	ON	eP	E	14	06	23									
	TU	eS	N	14	08	16									
	WN	eS	N	14	09	23									
	GP	eS	N	14	10	21									
	Epicentre:			14	03	.7		Kermadec Is.				NZ			
	15 ON	eP	E	14	50	52									
	KP	eP	Z	14	50	57									
	TU	eS	N	14	52	49									
	WN	eS	N	14	53	57									
	GP	eS	N	14	55	01									
	Epicentre:			14	48	.3		Kermadec Is.				NZ			
	15 KP	eP	Z	15	32	25									
	ON	eP	E	15	32	32									
	15 KP	eP	Z	19	38	52									
	ON	e(P)	E	19	38	59									
	15 ON	eP	E	22	37	15									
		e	E			22									
		e	E			43									
		e	E		38	13									
	KP	eP	Z	22	37	20									
		e	Z			40									
	GP	eP	N	22	38	41									
		eS	N		41	31									
	TU	eS	N	22	39	30									
	WN	eS	N	22	40	30									
		eL	N		43½							5	15		
		eL	Z		44					4	18				
	SU	eL	N	22	42½							5	10		
	RX	eL	E	22	45									3	20
		eL	N		47							3	20		
	Epicentre:			22	34	42		29S	176½W			USCGS			5½ NZ
	16 ON	eP	E	01	51	40									
	KP	P	Z	01	51	48									
	TU	eP?	N	01	51	48									
	16 ON	eP	E	02	06	08									
	KP	eP	Z	02	06	13									
		e	Z			26									
	TU	eS	N	02	08	36									
	WN	S	N	02	09	11									
	CB	eS?	E	02	09	29									
	GP	eS	N	02	10	15									
	Epicentre:			02	03	24		29S	176½W			USCGS			
	16 ON	eP	E	02	38	26									
		e	E			31									
	KP	eP	Z	02	38	29									
	TU	eS	N	02	40	27									
	WN	S	N	02	41	35									
		eL	N		43	.0									
		M	N		45							3	8		
	CB	eS	E	02	41	53									
	GP	eS	N	02	42	37									
	SU	eL	N	02	43										
	RX	eL	NE	02	46							2	20	3	18
		eL	Z		48					6	15				
	Epicentre:			02	35	59		29S	176½W			USCGS			5.4 NZ
	16 KP	P	Z	06	58	40									

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
SEP 16	ON	eP	E	08	22	51							
	KP	eP	Z	08	22	59							
	TU	eS	N	08	24	25							
	WN	S	N	08	25	31							
	GP	e	N	08	26	36							
16	ON	eP	E	10	10	25							
		e	E			31							
		e	E			42							
		eL	E		13	21							
	KP	eP	Z	10	10	29							
		e	Z			44							
		e	Z		11	01							
	GP	eP?	N	10	11	24							
		e	N			45							
		eS	N		14	34							
	TU	eS	N	10	12	26							
	WN	S	N	10	13	31							
		eL	N		16½				6	15			
		eL	Z		16½		4	18					
	CB	eS	E	10	13	50							
	SU	eL	N	10	14								
	RX	eL	NE	10	18				2	20	5	20	
		eL	Z		21		7	14					
	Epicentre:			10	07	45	29S	176½W				USCGS	5½ NZ
16	ON	eP	E	15	59	40							
		e	E			47							
		i	E	16	00	34							
		eL	E		02	24							
	KP	eP	Z	15	59	45							
		e	Z	16	00	13							
	SU	eP	N	15	59	48			10	4			
		i	N	16	00	50			17	5			
		eL	N		03	30			22	12			
		M	N		05				80	10			
	WN	eP	N	16	00	39							
		S	N		02	57			3	9			
		L	N		04	15			27	30			
		Lr	Z		05	25	22	20					
		M	N		06				30	15			
		M	ZN		07		37	16	33	12			
	GP	eP	N	16	01	03							
		eS	N		04	01							
	RX	eP	N	16	01	43			2	5			
		e	N		05	50			3	8			
		Lq	E		06	54					24	22	
		eL	N		07	17			13	22			
		eL	Z		08½		9	18					
		M	E		10				12	18	29	18	
		M	ZN		13		31	12	28	16			
	TU	eS	N	16	01	50							
	CB	eS	E	16	03	15							
	Epicentre:			15	57	03	28½S	176W				USCGS	5.9 NZ
16	KP	eP	Z	16	16	09							
16	KP	P	Z	18	52	41							
16	KP	eP	Z	22	04	45							
17	KP	eP	Z	03	42	14							
	ON	eP	E	03	42	16							
		e	E		43	42							
	GP	eS	N	03	46	19							
	AK	eL	N	03	47								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
SEP 17	ON	eP	E	04	06	40							
		e	E			56							
	WN	eP	N	04	06	56							
		S	N		09	41							
	KP	e(P)	Z	04	07	04							
	TU	eS	N	04	08	35							
	CB	eS	E	04	10	00							
	GP	eS	N	04	10	50							
17	ON	eP	E	05	31	00							
		e	E			16							
	KP	P	Z	05	31	05							
	TU	eS	N	05	32	59							
	GP	eS	N	05	35	11							
	Epicentre:			05	28.4		Kermadec Is.					NZ	
17	ON	P	E	07	12	59							
	KP	eP	Z	07	13	02							
		e	Z			17							
	GP	eP	N	07	14	25							
		eS	N		17	06							
	TU	eS	N	07	14	53							
	AK	eL	N	07	15½								
	WN	eS	N	07	16	01							
	CB	eS	E	07	(16½)								
	SU	eL	N	07	17								
	RX	eL	NE	07	20						8	20	
		eL	Z		23½		6	12					
	Epicentre:			07	10.3		Kermadec Is.					NZ	
17	KP	eP	Z	07	38	35							
17	ON	eP	E	08	41	44							
		i	E		42	06							
	KP	eP	Z	08	41	50							
	GP	eP	N	08	43	07							
		eS	N		46	00							
	WN	eS	N	08	44	54							
	Epicentre:			08	39.2		Kermadec Is.					NZ	
17	ON	e(P)	E	10	40	30							
	KP	eP	Z	10	40	42							
	WN	S	N	10	43	28							
	GP	eS	N	10	44	32							
17	ON	eP	E	14	10	40							
		e	E			58							
	KP	eP	Z	14	10	45							
		e	Z			55							
	GP	eP	N	14	12	56							
		eS	N		15	01							
	WN	eS	N	14	13	57							
	Epicentre:			14	07	54	28½S	176W				USCGS	
17	ON	eP	E	14	38	49							
		e	E		39	03							
	KP	eP	Z	14	38	55							
		i	Z		39	01							
	SU	e(P)	N	14	39	09							
	GP	eP	N	14	40	12					12	4	
		eS	N		43	10							
	TU	eS	N	14	41	00							
	WN	eS	N	14	42	08							
		e	N			26							
		e	N		43	30					3	7	
		eL	Z		44.5						6	6	
							11	20					

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag.
SEP 17		L	N			46.0			26	11				
		M	ZN			49			25	9				
	RX	S	N	14	44	08	15	9	3	6				
		e	E			45 33					4	8		
		eL	NE			46.4			8	22	10	20		
		eL	Z			50.3	16	14						
	Epicentre:			14	36	11	28½S 176W						USCGS	5.7 NZ
	17 ON	eP	E	14	54	14								
		e	E			38								
	KP	eP	Z	14	54	54								
	TU	eS	N	14	56	29								
	WN	eS	N	14	57	37								
	GP	eS	N	14	58	40								
	Epicentre:			14	51	40	28½S 176½W						USCGS	
	17 KP	eP	Z	16	24	38								
		e	Z			45								
	ON	e(P)	E	16	24	42								
	TU	eS	N	16	26	05								
	17 KP	P	Z	17	16	01								
	ON	e(P)	E	17	16	06								
		e	E			15								
	TU	eS	N	17	18	04								
	SU	eL	N	17	20									
	GP	eS	N	17	20	17								
	Epicentre:			17	13	21	Kermadec Is.						NZ	
	18 KP	eP	Z	03	07	14								
	Epicentre:			03	06.6		Kermadec Is.						NZ	
	18 KP	eP	Z	09	27	20								
		e	Z			41								
	ON	eP	E	09	27	25								
	WN	eP	N	09	28	01								
		S	N			30 24								
	GP	eP	N	09	28	33								
		eS	N			31 27								
	TU	eS	N	09	29	18								
	CB	eS	E	09	30	41								
	RX	eL	NE	09	35									
	Epicentre:			09	24	35	28½S 176½W						USCGS	
	18 ON	eP	E	10	45	37								
		e	E			55								
	KP	eP	Z	10	45	39								
	GP	eP	N	10	46	59								
		eS	N			49 48								
	TU	eS	N	10	47	39								
	WN	eS	N	10	48	44								
	CB	eS	E	10	49.0									
	Epicentre:			10	43.0		Kermadec Is.						NZ	
	18 GP	eP	N	12	13	10								
	WN	eP	N	12	13	24								
	KM	eP	X	12	13	25								
	CB	eP	E	12	13	30								
	KP	P	Z	12	13	39 (u)								
		i(pP)				52								
		e			14	36								
	ON	eP	E	12	13	51								
	Epicentre:			12	01	11	57½S 24W						USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag.
SEP 18	KP	eP	Z	17	00	18¼								
		i	Z			19 u								
	GP	eP	N	17	00	38								
	19 KP	eP	Z	09	12	29								
	19 KP	eP	Z	12	03	41								
		e	Z			45								
		e	Z		04	05								
	19 KP	eP	Z	23	16	44								
	20 KP	eP	Z	06	19	06								
	RX	eL	ZN	06	44									
	Epicentre:			06	07	59	13½S 112½W						USCGS	
	20 KP	eP	Z	14	28	08								
		e	Z			15								
	20 KP	eP	Z	20	55	40								
	ON	e(P)	E	20	55	52								
	TU	eS	N	20	57	42								
	WN	eS	N	20	58	49								
	GP	eS	N	20	59	56								
	Epicentre:			20	53.0		Kermadec Is.						NZ	
	21 GP	eS	N	02	10	05								
	KP	eP	Z	02	15	42								
		i	Z			43 d								
	WN	eL	ZN	02	30						6	18		
	RX	eL	NE	02	31½						3	16	3 12	
		eL	Z			35								
	AK	eL	N	02	32									
	Epicentre:			02	08	28	9½S 149E						USCGS	5¾ NZ
	21 KP	P	Z	02	43	41								
	21 SU	eL	N	11	19									
	KP	eP	Z	11	20	16								
	21 KP	eP	Z	12	29	36								
	21 KP	eP	Z	13	19	15								
		e	Z			34								
	Epicentre:			13	09	36	10S 120E						USCGS	
	21 KP	eP	Z	21	59	00								
		e	Z			21								
	22 KP	P	Z	11	48	30								
	Epicentre:			11	44	15	Samoa region						USCGS	
	22 KP	eP	Z	12	08	27								
	22 KP	eP	Z	18	38	04								
	23 KP	eP	Z	15	15	49								
	23 RX	eL	NE	19	55.9						2	16	4 15	
		eL	Z		56.5				4	12				
	WN	eL	N	20	00.0						3	12		
		eL	Z		00.5				2	10				
	23 KP	iP	Z	22	35	25 u								
		i	Z			35 u								
		e	Z			47								
	Epicentre:			22	23	11	35½N 138½E						USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
SEP 24	KP	eP	Z	08	58	46							
24	ON	eP	E	16	41	00							
	KP	eP	Z	16	41	07							
24	KP	eP	Z	18	55	55							
	ON	e	E	18	56	12							
	WN	eP	N	18	56	36							
		eS	N		58	55							
	GP	eP	N	18	57	06							
		eS	N	19	00	01							
	Epicentre:			18	53.3		Kermadec Is.				NZ		
24	ON	eP	E	19	46	58							
		S	E		48	24							
	KP	eP	Z	19	47	04							
	GP	eP	N	19	48	25							
		eS	N		51	12							
	WN	eS	N	19	50	05							
		eL	ZN		53								
	RX	eL	NE	19	54								
		eL	Z		57								
	Epicentre:			19	44	29	29½S	176½W			USCGS		
25	KP	P	Z	00	24	55							
	Epicentre:			00	14	30	9S	113½E			USCGS		
25	ON	e(P)	E	01	41	43							
	KP	eP	Z	01	41	49							
	GP	eP	N	01	43	09							
		eS	N		45	52							
	TU	eS	N	01	43	39							
	WN	S	N	01	44	48							
		eL	ZN		48		5	20	4	15			
	SU	eL	N	01	45								
	AK	eL	N	01	45								
	CB	eS	E	01	45.2								
	KM	eS	X	01	45	53							
	RX	eL	NE	01	49				2	20	2	20	
	Epicentre:			01	39	09	29S	177W			USCGS		5¼ NZ
25	ON	P	E	02	48	43							
	KP	P	Z	02	48	52	(d)						
		ePP	Z		51	54							
	GP	eP	N	02	49	02							
	WN	eS	N	02	58	51							
		eL	ZN	03	17		10	28	5	15			
	RX	eS	NE	02	59	02			2	16	3	13	
		eSS	N	03	04	26			5	30			
		eL	N		09				3	26			
		M	ZNE	03	24		19	20	7	20	7	20	
	AK	eL	N	03	16								
	Epicentre:			02	36	48	22N	122E			USCGS		6.2 NZ
25	KP	PKP	Z	07	38	20							
	Epicentre:			07	18	40	44½N	39½E			USCGS		
25	KP	P	Z	12	11	46							
25	KP	eP	Z	23	37	08							
	WN	eS	N	23	40	51							
	GP	eS	N	23	41	57							
	Epicentre:			23	34	57	29S	176½W			USCGS		
26	KP	eP	Z	01	21	44							
	GP	eP	N	01	23	12							
		eS	N		25	59							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
SEP 26	WN	eS	N	01	24	56							
	Epicentre:			01	19.1		Kermadec Is.				NZ		
26	KP	P	Z	01	55	19							
26	KP	P	Z	02	14	50							
26	ON	P	E	03	57	54							
	TU	eP	N	03	57	55							
		eS	N		59	09							
	KP	P	Z	03	57	58							
	WN	eS	N	04	00	19							
	GP	eS	N	04	01	22							
26	KP	P	Z	06	20	04							
26	RX	eL	N	09	09								
		eL	Z	09	13								
		M	N		13								
	Epicentre:			08	20	51	43½N	128½W			USCGS		6 NZ
26	KP	P	Z	09	27	22							
26	KP	P	Z	15	35	33							
	GP	eP	N	15	36	16							
27	KP	P	Z	09	49	33							
27	KP	P	Z	10	29	32							
	GP	eP	N	10	29	38							
	Epicentre:			10	20	18	5½S	129½E			USCGS		
27	SU	eP	N	10	53	55							
		e(S)	N		55	02							
29	GP	eP	N	14	35	19							
		e(S)	N		36	45							
		e	N		37	06							
		e	N		25								
	RX	S	NE	14	35	33							
		e	Z		44								
		(Lq)	NE		52								
		(Lr)	Z		36	16							
	CB	eP	E	14	35	41							
		eS	E		37	31							
	KM	e	X	13	35	43							
	KP	eP	Z	14	36	40							
	WN	eL	N	14	39	45							
		e	N		42	37							
	Epicentre:			14	33	20	50S	164E			NZ		
29	AK	eP	N	15	34	(28)							
		eL	N		36	03							
		M	N		40								
	ON	eP	E	15	34	31							
		e	E		35								
		e	E		35	16							
		eL	E		36	40							
	KP	eP	Z	15	34	36							
		i	Z		40								
		e	Z		48								
		eL	Z		38½								
	GP	eP	N	15	34	55							
		e	N		35	10							
		eS	N		39	50							

									1	20			
									8	2			
									24	5			
									1	1	3	6	
							6	5					
									8	15	11	12	
							10	12					
									5	10			
									6	5			
									130	17			
									330	15			

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
SEP 29	SU	e	N	15	35	00			24	4			
		eS	N		36	49			30	4			
		M	N		40				250	12			
	WN	eP	N	15	35	26			3	5			
		S	N		37	46			6	5			
		Lq	N		38.9				43	25			
		Lr	Z		39.7		67	22					
		M	N		42				62	17			
	CB	eP	E	15	35	36							
		eS	E		38	05							
	KM	eP	X	15	35	56							
		eS	X		38	50							
	RX	eP	ZNE	15	36	30	4	16	5	20	1	16	
		eS	NE		39	53			3	1			
		Lq	NE		41	28			39	30	49	26	
		Lr	Z		42½		19	20					
		M	NE		43				49	20	58	20	
		M	N		48				60	14			
	TU	S	N	15	36	40							
	Epicentre:			15	31	57	29S	176½W				USCGS	5¾ NZ
	29 ON	eP	E	15	43	54							
	KP	eP	Z	15	44	00							
	WN	eP	N	15	44	31							
		e	N			54							
		eS	N		47	09							
	GP	eP	N	15	45	22							
		eS	N		48	15							
	TU	eS	N	15	46	00							
	CB	eS	E	15	47	25							
	Epicentre:			15	41	21	29S	176W				USCGS	
	29 ON	eP	E	16	16	31							
		e	E			43							
	KP	eP	Z	16	16	37							
	GP	eP	N	16	17	51							
		eS	N		20	44							
	TU	eS	N	16	18	35							
	WN	eS	N	16	19	42							
	CB	eS	E	16	20.0								
	KM	eS	X	16	20	44							
	Epicentre:			16	13	53	Kermadec Is.					USCGS	
	29 ON	eP	E	17	10	28							
		e	E			42							
		e	E			59							
	KP	eP	Z	17	10	35							
	TO	eP	Z	17	10	56							
	GP	eP	N	17	11	50							
		eS	N		14	40							
	WN	eS	N	17	13	39							
	Epicentre:			17	07	50	29S	176½W				USCGS	
	29 ON	eP	E	17	31	06							
	KP	eP	Z	17	31	10							
	29 KP	eP	Z	17	41	02							
		e	Z			16							
		e	Z			56							
	ON	eP	E	17	41	09							
		i	E			19							
		e	E		42	04							
	TO	eP	Z	17	41	17							
		eS	Z		43	33							
	GP	eP	N	17	42	22							
		eS	N		45	09							
	WN	eS	N	17	44	09							
	Epicentre:			17	38	19	29S	176½W				USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
SEP 29	KP	eP	Z	18	12	05								
	30 KP	eP	Z	04	59	06								
	SU	e(P)	N	04	59	15								
		i	N	05	00	40				5	5			
		eL	N		02	50				8	12			
	GP	eP	N	05	00	27								
		eS	N		03	23								
	AK	eL	N	05	02									
	WN	S	N	05	02	19								
		eL	N		05	15				4	15			
		eL	Z			58		9	18					
	RX	eL	NE	05	07					3	20	4	20	
		eL	Z		10			7	15					
	Epicentre:			04	56	21		28½S	176½W				USCGS	5½ NZ
	30 ON	eP	E	13	34	11								
		e				20								
	KP	eP	Z	13	34	18								
	SU	eP	N	13	34	26				5	2			
		eL	N		38					9	15			
	WN	eS	N	13	37	21								
		eL	N		40.2					5	15			
	AK	eL	N	13	38½									
	RX	eL	NE	13	42					2	18	4	18	
		eL	Z		45			6	15					
	Epicentre:			13	31	30		29S	176½W				USCGS	
	30 KP	P	Z	14	56	04								
	WN	eS	N	14	59	15								
		eL	N	15	02									
	GP	eS	N	15	00	17								
	SU	eL	N	15	01					3	12			
		M	N		02½					6	10			
	30 SU	P	N	20	28	34	(s)			34	4			
		S	N		30	19				22	7			
		eL	N		31.3					21	7			
		M	N		34					52	7			
	ON	eP	E	20	30	22								
		i	E			27	w							
		e	E		31	06								
		eS	E		33	55								
	TO	P	Z	20	30	56								
	WN	P	ZN	20	31	15		3	6	4	4			
		S	N		35	29				4	4			
		eLq	N		37.3					20	21			
		eLr	Z		38			23	20					
	CB	eP	E	20	31	18								
	KM	eP	X	20	31	29								
	GP	eP	N	20	31	31								
		i	N			34								
	RX	eS	N	20	36	24				4	16			
		eLq	E		37¾							10	25	
		Lr	ZN		40			25	24	15	22			
		M	NE		41					20	22	16	19	
	Epicentre:			20	25	58		18S	168E				USCGS	6.1 NZ
OCT	2 SU	e?	N	04	19	20								
		e	N			30				3	6			
		e	N		20	14				5	5			
	KP	e(P)	Z	04	19	46								
		i	Z		21	10	u							
	3 KP	eP	Z	09	18	47								
	Epicentre:			09	08	33		14½S	142E				USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
OCT 3	GP	eP	N	23	18	49								
		e	N		19	22								
		eS	N		20	18								
	RX	S	NE	23	19	10								
		L	NE			43								
	CB	eP	E	23	19	18								
	TO	eP?	Z	23	19	56								
		e	Z		20	01								
	KP	e?	Z	23	20	20								
	KM	e	X	23	20	41								
	WN	eL	ZN	23	24	00				6	15			
	Epicentre:			23	16	51		49½S	164½E				NZ	
6	SU	e(L)	N	15	18					6	5			
7	KP	P	Z	08	51	26	d							
8	SU	eP	N	00	05	55								
		e	N		06	00								
		e	N			10								
	KP	eP	Z	00	08	04								
		i	Z			19								
	TO	e	Z	00	08	21								
	TU	e	N	00	08	32								
	CB	e	E	00	08	38								
	KM	e	X	00	09	00								
	RX	eS	N	00	13	35								
		eL	NE		16									
		eL	ZN		20					1	17			
	Epicentre:			00	03	28		19S	169E				USCGS	
8	KP	P	Z	11	04	03								
		e	Z			28								
		e	Z			38								
		e	Z			42								
	TU	eP	N	11	04	04								
		eS	N			45								
	WN	P	N	11	04	38								
		eS	N		05	48								
	CB	eS	E	11	06	08								
	Epicentre:			11	03	10		35½S	178½E				NZ(D)	
8	KP	eP	Z	16	21	31								
9	GP	e(P)	N	17	53	08								
		e	N		54	35								
		e(S)	N			40								
	CB	e	E	17	53	37								
	RX	e(S)	NE	17	53	48								
	KP	e	Z	17	54	37								
11	KP	eP	Z	10	00	59								
		e	Z		01	04								
	TO	eP	Z	10	01	09								
	Epicentre:			09	53	18		3½S	152E				USCGS	
11	ON	eP?	E	17	53	18								
		e	E			27								
	KP	e(P)	Z	17	53	24								
		e	Z			50								
	WN	eP	N	17	54	00								
		eS	N		56	19								
	GP	eP	N	17	54	30								
		eS	N		57	23								
		e	N			31								
	TU	eS	N	17	55	08								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
OCT 11	CB	e	E	17	56	40								
		e	E			59								
	Epicentre:			17	50	22		28½S	176½W				USCGS	
11	KP	eP?	Z	20	11	08								
	Epicentre:			20	03	10		5½S	147E				USCGS	
11	KP	e(P)	Z	20	06	09								
		i	Z			24								
	GP	e(P)	N	20	07	31								
		e	N		10	22								
		eS	N			24								
	TU	eS	N	20	08	12								
	WN	e	N	20	08	17								
		eS	N		09	20								
	Epicentre:			20	03	25		28½S	176½W				USCGS	
12	CB	eP	E	03	34	07								
	GP	P?	N	03	34	09								
		e	N			15								
	TO	eP	Z	03	34	14								
	KP	eP	Z	03	34	15								
	Epicentre:			03	21	52		2N	98½E				USCGS	
12	KP	e(P)	Z	10	18	07								
	GP	e(P)	N	10	19	26								
		eS	N		22	13								
	TU	e	N	10	20	05								
	WN	eS	N	10	21	09								
	Epicentre:			10	15	17		29S	176½W				USCGS	
12	KP	eP	Z	19	28	55								
		e	Z		31	21								
	Epicentre:			19	21	50		7S	155½E				USCGS	
13	KP	iP	Z	04	34	21	u							
		e	Z		35	04								
	TU	eP	N	04	34	22								
		S	N			53								
	TO	P	Z	04	34	28								
		e	Z			35								
		e	Z		35	10								
	WN	eP	N	04	34	53								
		eS	N		35	46								
	GP	eP	N	04	35	25								
		eS	N		36	46								
		e	N			49								
	CB	eS	E	04	35	59								
	Epicentre:			04	33	41		37.3S	177.0E	280	km		NZ(B)	4.9 NZ
13	KP	P	Z	13	42	22	u							
		e	Z			27								
	TU	e(P)	N	13	42	22								
		eS	N		43	28								
	TO	e(P)	Z	13	42	33								
		e	Z		44	20								
	WN	eS	N	13	44	35								
	GP	eS	N	13	45	41								
14	KP	P	Z	01	19	37								
14	KP	eP	Z	08	14	02								
	Epicentre:			08	01	04		51½N	176W				USCGS	
14	SU	eS	N	20	36	20				5	3			
		e	N		37	03				8	10			
		e	N			35				10	8			
		e	N			50								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
OCT 14	KP	eP?	Z	20	39	13							
		e	Z			16							
		e	Z			19							
	RX	e(L)	N	20	50								
		e	N		50	43			1	20			
	Epicentre:			20	33	59	15S	177W				USCGS	
15	KP	eP	Z	04	30	39							
		e	Z		31	04							
	Epicentre:			04	22	44	5½S	146E				USCGS	
15	SU	e(P)	N	06	25	55							
		e	N		26	09			4	5			
		e	N			45			5	5			
		e(PP)	N		27	50			11	5			
		eS	N		34	04			9	5			
	CB	e?	E	06	26	01							
		e	E			19							
	ON	eP	E	06	26	01							
		e	E		43	34							
		eL	E		47½								
	RX	eP	Z	06	26	02	4	5					
		e	Z			26	5	6					
		e	NE		31	30							
		e(S)	N		34.4				4	20			
		e	ZE		34	35					6	10	
		e(SSS)	N		41	20							
		eL	E		45								
		M	N		50				30	20			
		M	ZE		53		50	22			30	22	
	KP	eP	Z	06	26	06							
		e	Z			11							
		e	Z			28							
		e	Z			39							
	TO	eP	Z	06	26	11							
		e	Z			57							
		e	Z		27	20							
		eL	Z		49								
	WN	eP	N	06	26	12							
		i	ZN			16	5	8					
		eS	N		34	49			10	6			
		e	N		42	15							
		eL	ZN		44								
		eL	N		47								
		M	N	06	50				24	25			
		M	Z		53		22	20					
		M	Z		56		45	20					
		M	ZN		58		20	16	18	16			
	GP	e(P)	N	06	26	14							
	TU	e(P)	N	06	26	20							
	Epicentre:			06	15	32	½N	120½E				USCGS	6.5
15	KP	P	Z	07	36	23	u?						
	Epicentre:			07	31	47	Tonga region					USCGS	
15	KP	P	Z	10	07	04							
	TU	S	N	10	08	42							
15	TO	eP	Z	14	06	21							
	KP	P	Z	14	06	28							
15	TU	e(P)	N	18	08	05							
		e(S)	N			12							
	KP	P	Z	18	08	07							
		e	Z			12							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
OCT 15	WN	S	N	18	10	20							
	GP	eS	N	18	11	26							
16	WN	e	N	01	26	42							
		e	N			49							
	TO	P	Z	01	27	46							
		e	Z			56							
	KP	eP	Z	01	27	56							
		e	Z			25							
	Epicentre:			01	15	08	30½S	69W	100 km			USCGS	
16	KP	P	Z	16	25	37							
		e	Z			46							
		e	Z		26	35							
	Epicentre:			16	14	53	6N	125E				USCGS	
OCT 17	RX	eL	ZNE	01	34								
	WN	e(P)	N	01	35	41							
		M	N		37½						7	8	
17	GP	eP	N	08	39	55							
	CB	e(P)	E	08	40	14							
	TO	eP	Z	08	40	14							
		e	Z			27							
	KP	eP?	Z	08	40	20							
		e	Z			26							
	RX	e	N	08	46								
	Epicentre:			08	35	00	57½S	161W				USCGS	
19	TO	e	Z	01	28	07							
	GP	eP?	N	01	29	10							
		eS	N	01	31	34							
	WN	eS	N	01	30	31							
	CB	eS	E	01	30	52							
	KM	e(S)	X	01	31	34							
	Epicentre:			01	25	36	30S	178W	60 km			USCGS	
19	SU	e(P)	N	02	15	17							
	KP	eP	Z	02	16	29							
	TO	P	Z	02	16	40							
	KM	e(P)	X	02	17	13							
		e(S)	X			20							
	GP	e(P)	N	02	17	36							
		eS	N			21							
	WN	eS	N	02	20	01							
	CB	eS	E	02	20	13							
	Epicentre:			02	12	55	25½S	177½W				USCGS	
19	SU	e(L)	N	04	38	03							
	GP	e?	N	04	43	30							
		e	N			44							
	Epicentre:			04	34	59	22S	176½W				USCGS	
19	SU	P	N	08	30	02	n						
		e(L)	N			33.0					28	14	
	KP	eP	Z	08	30	10							
		e	Z			27							
	TO	e	Z	08	30	38							
		e	Z			32							
		eL	Z			36							
	WN	eP	ZN	08	30	59							
		eS	N			33							
		M	N			37					14	15	
	CB	e	E	08	31	18							
		e(S)	E			33							
		e	E			40							
						50							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
OCT 19	GP	P	N	08	31	27							
		eS	N		34	30							
	KM	eP	X	08	31	28							
		e(S)	X		34	25							
		e	X			29							
	TU	eS	N	08	32	18							
	ON	eL	E	08	33	.0							
	RX	eL	NE	08	36								
		M	NE		38				11	20	23	22	
		M	ZN		42		25	15	23	15			
	Epicentre:			08	27	21	27½S	177W				USCGS	6¼
19	KP	eP	Z	09	18	09							
	WN	eP?	Z	09	19	00							
		e	N			03							
		S	N		21	23							
	GP	e(P)	N	09	19	25							
		eS	N		22	30							
	CB	e?	E	09	19	32							
		e(S)	E		21	42							
		e	E			49							
	KM	e	X	09	19	32							
		e	X		22	34							
		e(S)	X			46							
	TU	eS	N	09	20	18							
	TO	e	Z	09	20	43							
	Epicentre:			09	15	20	28S	176½W				USCGS	
19	SU	e	N	13	54	11							
		e	N			30							
		e	N		55	23							
	KP	iP	Z	13	56	07	u						
	TO	eP	Z	13	56	16							
		e	Z			20							
		eS	Z		59	14							
	WN	P	ZN	13	56	34							
		e(S)	N		59	50							
	CB	eP	E	13	56	38							
	ON	e	E	13	56	53							
	KM	e(P)	X	13	56	53							
	GP	eP	N	13	57	00							
		e	N	14	00	23							
		e(S)	N			40							
	Epicentre:			13	52	40	22S	179½W	600	km		USCGS	
20	KP	iP	Z	12	46	49	u						
	TO	eP	Z	12	46	58							
	WN	eP	ZN	12	47	18							
20	RX	eL	E	18	31						1	20	
20	KP	P	Z	21	25	55							
20	KP	eP	Z	21	44	18							
		e	Z			28							
		e(P)	Z	21	46	43	Could be a separate shock						
		e	Z			54							
	RX	e(L)	E	21	54	54							
		eL	ZE		58						I	22	
21	KP	eP?	Z	06	07	08							
		e	Z			21							
	Epicentre:			06	00	51	10S	162E				USCGS	
21	KP	e	Z	16	16	52							
21	KP	e(P)	Z	20	58	59							
	Epicentre:			20	51	14	4S	154E				USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
OCT 22	RX	e(L)	N	01	49								
22	KP	P	Z	09	29	18							
	TO	e(P)	Z	09	29	28							
	RX	eL	N	09	42						1	24	
23	KP	P	Z	03	50	52							
	Epicentre:			03	43	32	4S	154E	150	km		USCGS	
23	WN	P	N	17	58	21							
		S	N			31							
	KP	eP?	Z	17	58	51							
		e	Z			59							
		e	Z		59	38							
	CB	eS	E	17	58	55							
	GP	eS	N	17	59	34							
	RX	eL	N	18	10						1	16	
23	KP	P	Z	18	45	38							
23	KP	P	Z	18	51	26							
		i	Z			31							
24	KP	eP	Z	15	27	34							
24	KP	PKP	Z	23	59	35	d						
		e	Z	24	02	40							
		e	Z			42							
	WN	PKP?	N	23	59	42							
	Epicentre:			23	40	34	41½N	70E				USCGS	
25	KP	PKP	Z	16	17	27	u						
		e	Z			31							
	TO	e	Z	16	17	30							
	Epicentre:			15	57	51	39N	42E				USCGS	
25	KP	P	Z	17	18	04	d						
		e	Z			16							
	Epicentre:			17	07	41	Talaud Is. Region					USCGS	
26	TO	eP	Z	07	47	29							
		e	Z		48	08							
		e	Z		50	38							
	WN	eP?	Z	07	47	38							
		e	Z			51							
	RX	e	N	07	58	14							
		eL	NE	08	11								
		M	ZNE		22						1	15	
	Epicentre:			07	35	12	37½N	142½E	60	km		USCGS	6.5
26	TO	e(P)	Z	12	09	39							
		e	Z		11	42							
	KM	e(P)	X	12	10	29							
		e	X		13	21							
	GP	eP	N	12	10	32							
		eS	N		13	17							
	WN	e(S)	N	12	12	16							
		eL	ZN		14						3	15	
	CB	e(S)	E	12	12	36							
	RX	eL	E		12	17							
											3	20	
	Epicentre:			12	06	.5	Kermadec Region					NZ	
27	KP	eP	Z	07	05	27							
		e	Z			39							
		e	Z		06	17							
		e	Z			43							
		e	Z		08	19							

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
OCT 27		e	Z			32								
	WN	P	ZN	07	05	41	u							
		e	ZN			57								
		eSKS	N			16 03				4	6			
		e	N			20								
		e	N			17 04								
		i(PS)	Z			44		4	10					
		eSS	N			22								
		eL	N			31								
		eL	Z			35								
		M	ZN			47		15	18	10	19			
	CB	eP	E	07	05	44								
	KM	eP?	X	07	05	49								
		e	X			58								
	GP	eP?	N	07	05	59								
	RX	eP	ZN	07	06									
		e	N			15 34								
		e	NE			16 26								
		e	NE			17 05				10	12	14	12	
		eSS	N			22½								
		eSSS	N			27								
		eL	E			32								
		eL	Z			38								
		M	N			40				16	23			
		M	E			42						18	22	
		M	ZN			50		25	18	25	18			
	SU	i	N	07	12	51								
		eL	N			25								
		M	N			27				15	22			
		M	N			32				9	20			
	ON	eL	E	07	33									
	Epicentre:			06	52	50		45½N	151E	100 km		USCGS		6.5
28	KP	eP	Z	04	12	37								
28	ON	P	E	09	25	43								
	KP	P	Z	09	25	57	u							
		e	Z			26 12								
		e	Z			22								
		e	Z			28 12								
		e(S)	Z			39								
	TO	eP	Z	09	26	06								
		e	Z			08								
		eS	Z			28 56								
	SU	e	N	09	26	10				5	4			
	WN	eP	ZN	09	26	28								
		e(S)	N			29 26								
		e	N			31								
	CB	P	E	09	26	33								
		eS	E			29 33								
	KM	eP	X	09	26	49								
		eS	X			30 09								
	GP	eP	N	09	26	54								
		e	N			30 10								
		eS	N			19								
	TU	eS	N	09	28	38								
	Epicentre:			09	21	51		22S	178½W			USCGS		
28	KP	eP	Z	13	27	13								
	TO	eP?	Z	13	27	22								
		e	Z			30								
29	KP	e(P)	Z	10	48	02								
	Epicentre:			10	35	20		46N	151E			USCGS		

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
OCT 29	KP	P	Z	14	20	30								
29	ON	eP	E	14	22	26	e?							
		e	E			43								
		e(S)	E			25.3								
	KP	eP	Z	14	22	30								
		e	Z			41								
		e	Z			45								
		e	Z			24 48								
	TU	eP	N	14	22	36								
		e	N			24 29								
		e(S)	N			31								
		e	N			25 23								
		e	N			26 08								
	SU	e	N	14	22	41								
		e(S)	N			24 15								
	WN	e(P)	Z	14	23	07								
		i	Z			12								
		e	Z			16								
		e	ZN			25 35								
		eS	ZN			37								
		e	N			26 40								
		eL	ZN			28								
	CB	e(P)	E	14	23	24								
		eS	E			25 54								
	KM	e	X	14	23	48								
		e	X			26 33								
		e(S)	X			40								
	GP	eP	N	14	23	48								
		e	N			26 40								
		e(S)	N			46								
	RX	e	N	14	24	27						2	22	
		eL	NE			28½								
		eL	Z			30								
		M	E			31						9	19	
	Epicentre:			14	19	51		28½S	176½W	60 km		USCGS		5¾
29	ON	e(P)	E	14	42	22								
	KP	P	Z	14	42	29	u?							
		e	Z			44 27								
		e	Z			32								
		e	Z			51								
	Epicentre:			14	30	24		43N	131E	550 km		USCGS		6¼
30	KP	e	Z	00	42	44								
	RX	eL	NE	01	13									
	Epicentre:			00	32	29		8½N	138E			USCGS		
30	KP	P	Z	06	34	23								
		e	Z			33								
		e	Z			35 58								
	RX	e	N	06	47	10								
		eL	N			54								
	Epicentre:			06	24	38		7S	123½E			USCGS		
30	SU	eP	N	07	05	49								
		iS	N			07 00								
	ON	eP	E	07	08	36								
		e	E			15 43								
		e	E			54								
	KP	P	Z	07	08	50								
		e	Z			09 52								
		e	Z			15 50								
		e	Z			16 03								
	TU	e	N	07	08	52								
		e	N			12 25								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
OCT 30	TO	eP	Z	07	08	59								
		e	Z		15	51								
	WN	P	N	07	09	19								
	CB	e(P)	E	07	09	26								
	KM	e(P)	X	07	09	43								
	GP	e	N	07	09	49								
		e	N		16	07								
	Epicentre:			07	04	48		19S 177½W 450 km					USCGS	
30	KP	P	Z	08	53	17								
30	KP	P	Z	11	16	28								
	TO	e	Z	11	17	39								
	Epicentre:			11	10	16		Solomon Is.					USCGS	
30	KP	P	Z	11	39	47								
	Epicentre:			11	27	33		Sandwich Is.					USCGS	
30	SU	P	N	14	00	28				10	4			
		i	N		04	12								
	KP	P	Z	14	02	21	u							
		e	Z			55								
	TO	e?	Z	14	02	28								
	WN	eP	Z	14	02	55								
		eS	N		05	07								
	GP	eP?	N	14	03	32								
		eS	N		07	09								
		e	N			12								
	TU	e	N	14	05	03								
	ON	e(S)	E	14	06	12								
	CB	eS	E	14	06	32								
	KM	e(S)	X	14	07	01								
		e	X			07								
	RX	eL	NE	14	10									
		M	E		12							10	20	
		M	ZN		15				24 16		17 17			
	Epicentre:			13	58	25		23½S 175½W					USCGS	
30	SU	e?	N	21	39	12								
		i	N		40	09								
	ON	e(P)	E	21	41	19								
	KP	P	Z	21	41	30	d							
		e	Z		43	10								
	TU	eP	N	21	41	32								
		eS	N		44	37								
	WN	eP	ZN	21	41	58								
		e?	N		45	23								
		e	N			36								
	KM	e(P)	X	21	42	16								
		e(S)	X		46	02								
	GP	eP	N	21	42	24								
		eS?	N		46	11								
		e	N			36								
	Epicentre:			21	37	35		19S 177½W 600 km					USCGS	
31	SU	iP	N	04	28	29	n							
		S	N		29	29								
	ON	eP	E	04	31	21	w							
		eS	E		34	46								
	KP	P	Z	04	31	35								
		e	Z		33	00								
		e	Z		35	16								
		e	Z			21								
		e	Z		38	16								
	TU	eP	N	04	31	38								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
OCT 31		e(S)	N		35	09								
		e	N			12								
		e	N			23								
		eScS	N		42	02								
	TO	eP	Z	04	31	43								
		e	Z		35	43								
		e	Z		42	07								
	WN	P	ZN	04	32	03								
		eS	N		35	59								
		e	N		36	03								
		e	Z		38	26								
		e	N			32								
		e	Z		42	08								
		eScS	N			14				2	4			
	CB	eP	E	04	32	06								
		eS	E		36	04								
		e(ScS)	E		42	18								
	KM	e(P)	X	04	32	21								
		e(S)	X		36	33								
		eScS	X		42	18								
	GP	eP	N	04	32	28								
		eS	N		36	42								
	RX	eS	NE	04	37	20								
		e	NE		40	01				1	12			
		e	E		42	44						2	10	
	Epicentre:			04	27	12		16½S 178W 450 km					USCGS	6½-6¾
31	SU	e(S)	N	13	01	08								
		e	N			30								
	KP	eP	Z	13	05	29								
		e	Z			39								
	TO	P	Z	13	05	42								
31	KP	P	Z	14	05	25								
	TO	P	Z	14	05	34								
NOV 2	KP	P	Z	07	24	34								
2	ON	eP	E	08	54	39								
	KP	P	Z	08	54	49	u							
	TO	P	Z	08	54	56								
	GP	eP	N	08	55	05								
	Epicentre:			08	43	54		22½N 144½E					USCGS	
2	KP	P	Z	09	13	06								
	TO	eP	Z	09	13	13								
	Epicentre:			09	02	20		22N 144½E 100 km					USCGS	
2	KP	eP	Z	13	29	12								
	Epicentre:			13	15	40		21½N 92½E 100 km					USCGS	
2	KP	P	Z	18	08	43								
2	KP	P	Z	18	38	38								
2	ON	eP	E	20	10	.9								
	KP	P	Z	20	10	58.5								
		PcP	Z		13	07								
		ipPcP	Z			19								
	TO	eP	Z	20	11	07								
	WN	eP	Z	20	11	18								
		ePP	ZN		12	46			3 12		2 8			
		eS	N		17	16					3 10			
		Lq	N		20	47					3 15			
		Lr	Z		23	.0			15 20					
		M	N								13 20			
	KM	eP	X	20	11	.4								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
NOV 2	GP	eP	N	20	11	27							
		e	N			36							
	RX	ePPP	ZNE	20	13	30	2	12	2	12	2	12	
		eS	NE		17	46			4	16	2	12	
		SS	NE		21	14			3	15	4	15	
		eL	NE		23				4	25	3	25	
		eL	Z		24		13	30					
		M	NE		27½				11	20	10	20	
	AK	eS	N	20	16	42							
		eL	N		22								
	Epicentre:			20	03	32	5½S 151½E 60 km				USCGS		6.0 NZ
2	ON	eP	E	21	56	9							
	KP	eP	Z	21	57	00							
	GP	eS	N	22	01	51							
	AK	eL	N	22	02								
	WN	eL	N	22	03	7			5	18			
	RX	eL	NE	22	05				2	30	3	25	
		eL	Z		07		6	20					
		M	NE		08				4	17	4	17	
	Epicentre:			21	53	05	23½S 175½W				USCGS		5.5 NZ
3	KP	P	Z	00	31	17½							
3	KP	eP	Z	09	08	57							
	WN	eP	N	09	09	30							
		eS	N		12	43							
		eL	N		15	55			4	16			
		eL	Z		16	00	3	16					
	SU	eL	N	09	10								
	AK	eL	N	09	13								
	GP	eS	N	09	13	46							
	RX	eL	NE	09	17	5			2	25	3	25	
		eL	Z		19	5	5	18					
	Epicentre:			09	04	58	23½S 175½W				USCGS		
3	RX	P	Z	09	50	20	3	5					
		PcP	Z		51		3	6					
		S	NE		58	32			2	16	2	9	
		PS	NE		59	02			2	12	5	16	
		eSS	NE	10	03	40			1	12	2	12	
		e(L)	N		04½				3	28			
		eL	Z		11								
		M	NE		12				11	18	4	18	
	KM	eP	X	09	50	27							
		e	X			39							
	CB	eP	E	09	50	5							
	GP	eP	N	09	50	33							
	ON	eP	E	09	50	33							
	WN	iP	ZN	09	50	38	3	6					
		e	N			56			2	3			
		PcP	Z		51	16	2	4					
		e	N			44							
		e	Z			56	2	5					
		ePP	N		53	32			2	5			
		PPP	N		55	06			2	6			
		S	N		59	10			2	5			
		e	N	10	02	11			2	6			
		eL	N		09								
		M	N		16				7	14			
	TO	P	Z	09	50	40	d						
	KP	P	Z	09	50	40	d						
		e	Z		51	17							
	AK	S	N	09	59	10							
		eL	N	10	14								
	Epicentre:			09	40	05	10½S 111E				USCGS		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
NOV 3	ON	eP	E	11	31	30							
	KP	P	Z	11	31	42							
	TO	eP	Z	11	31	49							
3	KP	eP	Z	12	46	23							
3	KP	P	Z	15	56	17							
4	KP	P	Z	03	10	55							
4	KP	P	Z	05	27	04							
4	KP	P	Z	17	18	16							
	Epicentre:			17	13	50	Tonga region				USCGS		
4	ON	P	E	18	26	09							
		S	E		28	31							
	KP	P	Z	18	26	24							
		i	Z			27							
	SU	S	N	18	26	25					1	3	
	WN	eP	N	18	26	57							
		eS	N		29	54							
	CB	eP	E	18	27	01							
		eS	E		30	00							
	KM	eP	X	18	27	20							
		eS	X		30	27							
	GP	eP	N	18	27	24							
		S	N		30	43							
	TU	eS	N	18	29	31							
	Epicentre:			18	22	40	Tonga region				USCGS		
4	ON	eP	E	19	11	33							
	KP	P	Z	19	12	00							
	Epicentre:			19	07	36	20S 169½E				USCGS		
4	KP	P	Z	19	30	51							
5	KP	P	Z	05	52	45	u						
		pP	Z		53	04							
		PcP	Z		54	54							
	TO	P	Z	05	52	54							
		pP	Z		53	13							
	Epicentre:			05	45	23	4½S 153E 100 km				USCGS		
5	SU	iP	N	11	53	27					12	3	
	KP	eP	Z	11	55	50							
		e	Z			56							
		i	Z			56	04						
	TO	eP	Z	11	56	08							
	AK	e(P)	N	11	56	10							
		S	N	12	00	15							
		eL	N		03								
	WN	eP	Z	11	56	14					8	5	
		ePP	ZN		57	13					2	5	3	5
		e	ZN	12	02	08					2	5	3	5
		eL	N		05								9	20
		eL	Z		06						6	18		
	GP	eP	N	11	56	32								
		e	N			57								
	RX	ePP	N	11	58	06						2	7	
		S	NE	12	01	54						2	7	2 8
		Lq	E		04	3								5 30
		Lr	ZN		06						8	22	8	26
	Epicentre:			11	50	17	13S 166½E 100 km				USCGS		5.7 NZ	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
NOV 5	KP	eP	Z	12	02	51								
		e	Z		03	12								
5	KP	P	Z	13	47	29								
	TO	P	Z	13	47	40								
5	KP	P	Z	15	11	27								
	Epicentre:			14	59	37		30N 129E 250 km				USCGS		
5	KP	P	Z	17	44	51	u							
	TO	P	Z	17	45	00	u							
	WN	ePP	N	17	46	34				2	5			
		ePPP	N		47	18				2	5			
		eL	N		56					7	15			
	RX	ePP	ZNE	17	47	03		2	10	2	10	2	10	
		S	NE		51	22				1	12	3	10	
		eSS	NE		54	20				1	12	1	12	
		eL	NE		58					5	20	5	20	
		eL	Z		59			3	14					
		M	NE	18	01					10	13	8	13	
	Epicentre:			17	38	08		9S 157½E				USCGS		6.2 NZ
5	KP	P	Z	18	04	44								
5	KP	P	Z	18	27	54								
5	KP	eP	Z	21	57	40								
	RX	eL	ZNE	22	09									
6	KP	P	Z	01	14	12								
		ePcP	Z		16	56								
	RX	ePP	ZNE	01	16	29		2	9	2	9			
		eS	NE		20	34				1	15	1	14	
	Epicentre:			01	07	31		9S 157½E				USCGS		
6	KP	P	Z	01	18	16								
		e	Z			30								
	TO	eP	Z	01	18	26								
	WN	S	N	01	24	00				3	4			
		eL	N		27.0					6	20			
		eL	Z		27.6			4	15					
	RX	eL	NE	01	27¾					4	17	3	18	
	Epicentre:			01	11	36		9S 157½E				USCGS		
6	KP	P	Z	01	36	46								
6	KP	P	Z	08	12	40								
6	SU	eP	N	11	45	19				4	1			
		eL	N		48.7					7	8			
	KP	eP	Z	11	46	56								
	WN	P	N	11	47	37								
		S	N		50	49								
	GP	eP	N	11	48	11								
		S	N		51	55								
	TU	eS	N	11	49	45								
	CB	eS	E	11	51	05								
	KM	eS	X	11	51.8									
	RX	eL	NE	11	56					3	20	3	18	
	Epicentre:			11	43	06		24S 174½W				USCGS		
7	KP	1PKP2	Z	02	53(31)		u							
	Epicentre:			02	32	07		36½N 2½E				USCGS		
7	SU	P	N	22	18	15				18	5			

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
NOV 7		S	N		20	10				24	8			
		L	N		21	38				57	10			
	KP	eP	Z	22	20	07								
	ON	eP	E	22	20	07								
		eL	E		24	09								
	WN	S	N	22	24	04								
		eL	N		27						9	12		
		eL	Z		27½			10	16					
	AK	L	N	22	24.8									
	GP	eP	N	22	25	05								
	RX	eL	N	22	28½						7	23		
		M	N	22	32						22	19		
	Epicentre:			22	16	15		23½S 175½W				USCGS		6 NZ
8	KP	P	Z	09	15	57								
8	ON	P	E	14	07	38								
		e	E		08	27								
	KP	iP	Z	14	07	45	u							
		PP	Z		11	10								
	TO	P	Z	14	07	52								
	CB	eP	E	14	07	57								
	WN	eP	ZN	14	07	59								
	Epicentre:			13	54	55		44N 140½E				USCGS		
8	KP	eP	Z	14	33	15								
	Epicentre:			14	27	37		13S 167E 100 km				USCGS		
8	KP	eP	Z	16	43	59								
	Epicentre:			16	36	16		4½S 154E				USCGS		
8	KP	P	Z	21	05	00								
9	RX	eL	N	04	34.0						3	20		
		eL	E		35								2	15
		eL	Z		35.7			7	20					
	WN	eL	ZN	04	36.7			2	7		6	10		
	AK	eL	N	04	39									
10	KP	P	Z	04	04	32								
	TO	P	Z	04	04	43								
	WN	P	N	04	04	59								
10	TO	eP	Z	10	05	11								
	KP	eP	Z	10	05	15								
10	KP	P	Z	16	47	47								
		PcP	Z		50	12								
	TO	eP	Z	16	47	58								
	Epicentre:			16	40	45		7S 156E				USCGS		
12	GP	e(P)	N	00	27	45								
		e	N		28	00								
		e	N			21								
		e(S)	N		29	18								
		e	N			39								
	RX	e?	N	00	27	48								
		e	E			50								
		e	N		28	02					3	3		
		e	Z			04								
		e	ZN			16								
		eL	ZNE			33		3	8	2	8	3	9	
	KM	e	X	00	28	23								
		e(S)	X	00	29	05								
	CB	e	E	00	28	28								
		e(S)	E		29	47								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
NOV 12	KP	eP	Z	00	29	16								
12	CB	iP	E	05	33	22	w							
		S	E			42								
	WN	iP	N	05	33	26½	su							
		S	N			48½								
	TO	iP!	Z	05	33	32½	d							
		(S)	Z			56								
	KM	iP	X	05	33	38	sw							
		iS	X		34	11	sw							
	KP	iP	Z	05	33	42½	d							
		e	Z			56								
		S	Z		34	15								
	GP	P	N	05	33	45								
		iS!	N		34	23								
	TU	P	N	05	33	46								
		S	N		34	27								
	Epicentre:			05	32	56		40.4S	173.5E	170 km		NZ(B)		5.5
								Felt: Wellington and suburbs. MM 3.						
12	KP	P	Z	18	07	13								
	GP	eP	N	18	08	10								
12	KP	P	Z	18	20	02								
12	TO	eP	Z	20	36	20								
	GP	P	N	20	36	52								
	Epicentre:			20	30	12		11S	166½E				USCGS	
13	SU	e(P)	N	10	07	56				1	2			
		iS	N		09	01	n			9	3			
	ON	P	E	10	09	11								
		S	E		11	37								
	KP	P	Z	10	09	27½								
		i	Z			30								
		S	Z		12	07								
	TO	eP	Z	10	09	39								
		eS	Z		12	31								
	WN	eP	N	10	09	58								
		eS	N		12	55								
	KM	eP	X	10	10	18								
		eS	X		13	25								
	GP	eP	N	10	10	23								
		eS	N		13	40								
	TU	eS	N	10	12	09								
	CB	eS	E	10	13	00								
	Epicentre:			10	06	14		23S	179E	600 km			USCGS	
13	KP	P	Z	15	24	17								
14	KP	eP	Z	10	42	04								
	Epicentre:			10	33	56		3S	148½E				USCGS	
14	ON	P	E	11	51	32								
	KP	P	Z	11	51	42½								
		i	Z			45½								
		e	Z		53	10								
	TU	eP	N	11	51	45								
		eS	N		53	21								
	GP	eP	N	11	52	46								
		eS	N		55	21								
	KM	eP	X	11	52	48								
		eS	X		55	11								
	CB	eS	E	11	54	37								
15	KP	e	Z	17	29	09								
		PKP_2	Z			31								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
NOV 15		ePP	Z		33	20								
		e	Z			42								
	GP	$ePKP_2$	N	17	29	20								
	KM	$ePKP_2$	X	17	29	24								
	RX	$ePKP_2$	Z	17	29¼									
		iSS	NE		52	28					18	17	4	15
		PSS	ZNE		53	22			5	15	12	16	8	13
		SS_2	NE		58	14					3	14	2	14
		eL	ZN	18	28				8	20	3	22		
		M	NE		50						15	19	6	18
	TO	$ePKP_2$	Z	17	29	27								
		ePP	Z		33	20								
	ON	PKP_2	E	17	29	29								
	AK	eSS	N	17	52	50								
		eL	N	18	33									
		M	N		50									
	WN	eSS	N	17	52	59					3	10		
		eL	N	18	30									
		M	N		47						15	20		
	Epicentre:			17	08	41		37½N	20½E				USCGS	6.6 NZ
15	KP	P	Z	23	54	28								
16	KP	P	Z	01	11	47								
		pP	Z		12	15								
	Epicentre:			00	59	22		35S	70W	100 km			USCGS	
16	KP	eP	Z	10	54	05								
16	ON	P	E	15	32	12								
	KP	eP	Z	15	32	21								
		i	Z			23	u							
	TU	eP	N	15	32	24								
		S	N		33	56								
	TO	P	Z	15	32	32								
		eS	Z		34	12								
	GP	eS	N	15	35	51								
16	KP	eP	Z	23	54	02								
16	KP	P	Z	24	00	58								
	Epicentre:			23	50	35		18N	147E				USCGS	
17	KP	eP	Z	02	46	14								
	Epicentre:			02	32	37		11S	66½E				USCGS	
17	KP	P	Z	07	39	03								
	TO	eP	Z	07	39	11								
17	KP	P	Z	13	09	10								
17	KP	P	Z	15	26	56								
	Epicentre:			15	16	59		9S	119E				USCGS	
17	KP	P	Z	17	31	52								
	TO	eP	Z	17	31	59								
	Epicentre:			17	23	28		5S	141E				USCGS	
17	TU	eP	N	23	12	56								
		eS	N		14	10								
	KP	eP	Z	23	13	00								
		e	Z			11								
		e	Z		14	06								
		e	Z			19								
	TO	eP?	Z	23	13	14								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
NOV 17		e	Z			21									
		eS	Z		14	36									
	WN	S	N	23	15	19									
		e	N			34									
	CB	eS	E	23	15	41									
	KM	eS	X	23	16	21									
	GP	eS	N	23	16	24									
	Epicentre:			23	11	20		34S	178W	S				NZ(D)	5.4 NZ
19	KP	eP	Z	05	29	43									
	GP	eP	N	05	30	39									
		eS	N		34	09									
	TU	eS	N	05	32	03									
	SU	eL	N	05	33										
	WN	eS	N	05	33	08									
	CB	eS	E	05	33	28									
	Epicentre:			05	25	53		24½S	177W					USCGS	
19	ON	iP	E	11	16	09	e								
		eL	E		25	.0									
	KP	eiP	Z	11	16	25	u								
		ePP	Z		18	33									
		ScP	Z		22	03									
		eS	Z			56									
		esS	Z			49									
	CB	P	E	11	16	33									
		eS	E		22	47									
		eSS	E		26	15									
	KM	eP	X	11	16	37									
		i	X			50									
		pP	X		17	19									
		eS	X		22	52									
	AK	e	N	11	16	40									
		S	N		22	23									
		eSS	N		25	32									
		eL	N		26	20									
	WN	iP	ZN	11	16	41	d	8	5	6	5				
		ei	Z		17	04		4	4						
		pP	ZN			21		15	6	11	5				
		(pPcP)	Z		19	00									
		iS	ZN		22	56		6	6	30	8				
		i	N		23	38				52	10				
		sS	N		24	10									
		eSS	N		26	.4				12	7				
		SSS	N		27	19				36	10				
		eL	N		27	.6				55	35				
		eL	Z		29			14	18						
		M	N		29½					26	18				
	GP	P	N	11	16	47	n								
		i	N		17	14									
		PcS	N		22	14									
		eS	N		23	13									
	RX	iS	N	11	23	12				21	14				
		i	N			54				15	13				
		SS	N		26	39				22	17				
		SSS	N		27	34				52	18				
	Epicentre:			11	08	32		5½S	146E					USCGS	6.9 M
20	ON	P	E	00	22	48									
	KP	eP	Z	00	22	59									
	TU	eS	N	00	24	26									
	WN	eS	N	00	25	35									
	GP	eS	N	00	26	40									
20	KP	P	Z	03	15	10									

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag.
NOV 20	KP	iP	Z	11	04	27½	u								
	GP	eP	N	11	04	57									
	Epicentre:			10	56	59		4½S	153E	100	km			USCGS	
20	SU	i(P)	N	15	19	01				4	3				
	KP	P	Z	15	22	09									
	TO	eP	Z	15	22	18									
	Epicentre:			15	16	45		15½S	174W					USCGS	
21	KP	P	Z	00	45	46									
21	KP	P	Z	09	29	13									
		e	Z			23									
21	KP	P	Z	17	16	19									
21	KP	eP	Z	17	35	03									
21	SU	P	N	23	28	00				3	3				
		e	N			40				12	3				
		eL	N		29½					24	5				
22	KP	P	Z	05	40	43									
22	KP	P	Z	12	56	34½									
		e	Z			36									
		e	Z		57	15									
	GP	eP	N	12	56	51									
	Epicentre:			12	47	56		3S	140E					USCGS	
22	SU	eL	N	15	07					5	6				
		M	N		10					21	5				
22	SU	e(P)	N	15	37	41									
		S	N		38	25				16	5				
		M	N		41					48	5				
	KP	eP	Z	15	40	52									
		e	Z			58									
22	SU	e	N	15	57	35									
		M	N		59½					40	6				
	ON	eP	E	16	00	18									
	KP	P	Z	16	00	38									
		i	Z			49									
22	KP	eP	Z	16	33	46									
	RX	S	NE	16	39	16				3	14	3	10		
		eL	NE		41	34				10	22	3	22		
		eLr	Z		43	00		12	20						
		M	NE		44					7	20	8	20		
	WN	eL	N	16	42½					5	18				
		M	N		48					4	10				
	Epicentre:			16	26	34		54S	136W					USCGS	6.0 NZ
22	SU	P	N	19	36	01				7	2				
		iS	N		37	06	n			68	6				
		eScS	N		48	53				12	5				
	ON	iP	E	19	37	54½	w								
		sP	E		40	10									
		S	E		38										
	KP	iP	Z	19	38	09	u								
		sP	Z		40	21									
		eS	Z		41	10									
	TU	eP	N	19	38	14									
		eS	N		41	08									

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
NOV 22	WN	P	N	19	38	39							
		esP?	N		41	06			3	5			
		S	N			50			5	5			
	CB	eP	E	19	38	44							
		eS	E		41	59							
	KM	P	X	19	38	59							
		eS	X		42	25							
	GP	eP	N	19	39	04							
		e	N			11							
		S	N		42	36							
	RX	sP	N	19	41	57			3	6			
		e	N		44	26			3	6			
		e	E		50	18					3	8	
	Epicentre:			19	34	55	21½S	178½W	550 km		USCGS		6 NZ
22	KP	iP!	Z	19	45	30	u						
		S	Z			57							
	TU	eP	N	19	45	34							
		s	N		46	01							
	ON	P	E	19	45	42							
		eS	E		46	17							
	WN	P	N	19	45	59							
		S	N		46	47							
	GP	eP	N	19	46	33							
		S	N		47	47							
	CB	S	E	19	47	00							
	KM	eS	X	19	47	36							
	Epicentre:			19	44	56	37.5S	176.5E	240 km		NZ(B)		5 NZ
22	SU	e(P)	N	22	43	58							
		M	N		45½				130	6			
	ON	eP	E	22	46	47							
	KP	eP	Z	22	47	09							
	Epicentre:			22	42	49	19½S	175½E			USCGS		
23	KP	eP	Z	14	51	30							
	Epicentre:			14	41	42	½S	128½E			USCGS		
23	SU	e	N	16	16	00			19	7			
		e(S)	N			54							
	ON	P	E	16	18	44							
		e	E		19	30							
		eS	E		21	49							
		eL	E		22	.8							
	AK	P	N	16	19	02							
		eS	N		22	18							
		eL	N		24								
		M	N		27								
	KP	P	Z	16	19	06							
		e	Z			07							
		e	Z			16							
	WN	eP	N	16	19	45							
		e	N		20	45			4	5			
		S	ZN		23	50			4	11			
		eL	N		26¾				5	10			
	GP	eP	N	16	20	01							
	RX	eS	N	16	25	06			2	12			
		e	NE			49			3	9	6	9	
		eLq	E		27¾						4	16	
		Lr	ZN		28	.8	7	18	6	16	7	14	
	Epicentre:			16	14	47	20S	174½E			USCGS		5.5 NZ
23	KP	eP?	Z	21	17	24							
		i	Z			31							
	Epicentre:			21	05	18	24½N	122E			USCGS		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
NOV 24	ON	eP	E	12	44	26							
	KP	eP	Z	12	44	42							
	WN	eS	N	12	48	14							
	Epicentre:			12	41	00	25S	176W				USCGS	
24	ON	eP	E	14	07	50							
	KP	P	Z	14	08	00							
	Epicentre:			14	04	17	19S	178½W	550 km			USCGS	
24	KP	e(P)	Z	15	09	04							
	Epicentre:			14	57	15	17½N	120E				USCGS	
24	KP	P	Z	18	31	39							
24	SU	e	N	21	42	58							
	KP	P	Z	21	44	17½							
25	SU	e	N	15	37	.7							
26	KP	P	Z	00	11	18							
26	SU	e(P)	N	00	43	31							
		S	N		44	25				3	3		
	KP	eP	Z	00	46	23							
26	KP	eP	Z	00	51	43							
	Epicentre:			00	41	35	1½N	127½E				USCGS	
26	KP	eP	Z	06	12	19							
		e	Z			57							
		e	Z		14	06							
26	GP	eP	N	07	17	53							
		e	N			59							
	KP	eP	Z	07	17	53							
		i	Z		18	07							
		ePP	Z		20	44							
	CB	eP	E	07	17	.9							
	KM	eP	X	07	17	.9							
	ON	eP?	E	07	17	57							
		e	E		18	05							
	WN	eP	N	07	18	.0							
		eLq	N		37	.2							
		eLr	Z		43	.4					6	22	
		M	ZN		48						20	20	
	RX	S	N	07	26	36					8	20	
		PS	ZE		27	41					2	9	
		Lq	N		34	.5					6	24	
		eLr	ZE		40	.3					7	20	
		M	ZNE		43						8	26	
	Epicentre:			07	06	19	13	30			4	30	
							20	22	4	22	10	22	
							5½S	102½E			USCGS		6.2 NZ
26	SU	eL	N	07	43	.0							
		M	N		45						10	11	
	KP	eP	Z	07	45	08					47	8	
		e	Z			23							
	WN	e	N	07	46	18							
		eL	Z		57½						9	18	
	AK	eL	N	07	50								
		M	N	08	00								
	RX	Lq	E	07	55½								
	Epicentre:			07	39	49	15½S	175W				4	18
												USCGS	5.7 NZ
26	ON	eP	E	10	11	43							
	KP	eP	Z	10	11	48							
		e	Z			56							
		e	Z		12	05							

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
NOV 26	KP	P	Z	16	10	16								
	Epicentre:			16	06	03		Tonga region					USCGS	
26	KP	eP	Z	16	41	04								
		i	Z			16								
26	ON	eP	E	23	20	9								
	KP	P	Z	23	20	58								
		i	Z		21	08	u							
		ePP	Z		24	02								
		e	Z			22								
	KM	eP	X	23	21	0								
	GP	eP	N	23	21	0								
	WN	ePP?	Z	23	24	22		2	4					
		S	N		30	16				4	7			
		ePS	N			53				3	8			
		e	N		35	55				3	7			
		eL	N		40					28	50			
		M	N		53					7	20			
	RX	S	NE	23	29	43				7	26	9	28	
		eSS	N		34	20				3	7			
		Lq	N		37	36				10	22			
		eLr	ZE		42			17	30	7	30			
		M	NE		47					5	20	7	22	
	Epicentre:			23	09	32		5½S	103E				USCGS	6.5 NZ
26	WN	P*	N	23	59	33	n							
		S*	N			58								
	KP	ePn	Z	23	59	43½								
		i	Z	00	00	21								
		eS*	Z			44								
	KM	e(Pn)	X	23	59	46								
		(Sn)	X	00	00	20½								
	TU	ePn	N	23	59	49								
		Sn	N	00	00	28								
	GP	P	N	23	59	53								
		S	N	00	00	35								
	ON	ePn	E	00	00	06								
		e	E		01	14								
	Epicentre:			23	58	59		40.1S	173.2E		S		NZ(C)	5.1 NZ
27	SU	eP	N	10	43	42				6	4			
		S	N		44	51				6	5			
	ON	eP	E	10	45	40								
	KP	P	Z	10	45	54½								
		e(PP)	Z		46	41								
		S	Z		48	56								
	GP	eP	N	10	46	58								
		eS	N		50	41								
	WN	eS	N	10	49	55								
	Epicentre:			10	42	10		22S	177½W	250 km			USCGS	5.5 NZ
27	KP	eP	Z	13	42	15								
27	KP	eP	Z	19	03	18								
	Epicentre:			18	51	27		5½S	103E				USCGS	
28	TU	eP	N	00	18	02								
		S	N			49								
	KP	P	Z	00	18	05	d							
		e	Z			12								
	ON	P	E	00	18	06	e							
		e(S)	E			57								
	WN	eP	N	00	18	39								
		S	N		19	58								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
NOV 28	KM	eS	X	00	20	56								
	GP	eS	N	00	21	03								
	Epicentre:			00	16	59		35½S	180					5.3 NZ
28	SU	eP	N	02	46	48					8	5		
	ON	eP	E	02	49	44								
		e	E		50	14								
	AK	eP	N	02	49	50					5	5		
		S	N		53	40					7	8		
		L	N		57	0					7	10		
		M	N		59						10	11		
	KP	P	Z	02	50	04	d							
		e	Z			17								
	WN	P	ZN	02	50	39			2	6		2	6	
		(pP)	ZN			58			3	7		3	7	
		iS	N		54	45						4	6	
		i	Z		55	21			4	6				
		SS	N		55	55						6	8	
		Lq	N		57	0						6	20	
		Lr	ZN		57	50			16	15		9	15	
	GP	eP	N	02	51	03								
	RX	e	NE	02	56	0							2 12	
		eSS	NE		56	44						3	10	6 10
		eL	NE		58½							8	30	4 25
		M	NE	03	00							6	14	13 14
	Epicentre:			02	45	45		19½S	174½E				USCGS	6 NZ
28	KP	P	Z	12	47	52	u							
		i(pP)	Z		48	00	d							
		e	Z			32								
	WN	P	Z	12	47	52	d							
	RX	eS	N	12	58	10						1	6	
		eLq	N	13	12							1	30	
		M	NE		17							2	22	2 20
	Epicentre:			12	34	53		28½S	71W				USCGS	6.5 NZ
28	ON	eP	E	21	23	36								
	KP	P	Z	21	23	55	u							
		i	Z			57	d							
		ePP	Z		24	41								
	GP	eP	N	21	24	37								
	Epicentre:			21	18	32		14½S	168E				USCGS	
28	SU	e(P)	N	22	42	30								
	KP	eP	Z	22	44	50								
		PP	Z		45	23								
	GP	P	N	22	45	34								
	Epicentre:			22	39	13		13S	167½E				USCGS	
29	KP	P	Z	01	35	22								
		i	Z			23								
	Epicentre:			01	30	52		21S	177W				USCGS	
29	KP	eP	Z	05	49	42								
		esP	Z		50	39								
	WN	eS	N	05	52	55								
	Epicentre:			05	46	56		26½S	178W	300 km			USCGS	
29	TU	P	N	17	57	36								
		S	N			48								
	KP	iP	Z	17	57	47	u							
		i	Z			54								
	WN	ePn	N	17	57	55								
		eP*	N			59								
		i	N		58	06								
		iS	N			23								
		e	N			34								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag.
NOV 29	GP	eP	N	17	58	34								
		S	N		59	29								
		Epicentre:		17	57	19	39.5S	176.5E	S				NZ(C)	4.9 NZ
							Felt: Dannevirke MM 3							
							Eketahuna (1)							
							Waipawa (1)							
29	RX	S	N	19	28	40			2	10				
		Lq	N		30	06			9	20				
		eLr	ZE		31½		7	15			4	18		
		M	NE		33		8	12	14	10	15	9		
	WN	eL	N	19	30				6	20				
		eL	Z		33		4	8						
		M	N		35				11	8				
		M	Z		36		6	7						
	AK	eL	N	19	32									
		Epicentre:		19	17	40	57S	147½W					USCGS	5.7 NZ
30	KP	iP!	Z	13	39	10½	d							
		S	Z			30½								
	TU	P	N	13	39	14								
		S	N			35								
	WN	P	N	13	39	32½								
		iS!	N		40	10	s							
	ON	P	E	13	39	33								
		iS	E		40	10	e							
	CB	eP	E	13	39	39								
		S	E		40	23								
	KM	eP	X	13	40	06								
		S	X			59								
	GP	P	N	13	40	06								
		S	N		41	10								
		Epicentre:		13	38	44	38.6S	175.9E	190 km				NZ(B)	5 NZ
DEC 1	KP	PKP	Z	12	59	30								
		e	Z			38								
		e	Z			51								
		Epicentre:		12	38	46	38N	21½E					USCGS	
1	KP	P	Z	13	54	48	d							
1	RX	e	ZN	15	04	08								
		e	ZNE			20								
		e?	N		06	.9								
		e(L)	E		07	40								
		e	N			54								
		M	ZN		10		90	18	65	18				
	GP	eP?	N	15	04	36								
		e	N			38								
		eL	N		10									
	KM	eP	X	15	04	54								
		eL	X		10									
	CB	eP	E	15	05	03								
	WN	eP	ZN	15	05	07	4	6	5	4				
		e	N		06	53								
		e	N		08	40								
		eS	N		09	28			3	7				
		eL	ZN		11				50	15				
		M	N		14									
	KP	eP?	Z	15	05	33								
		e	Z			36								
		e	Z			41								
		eL	Z		15									
		Epicentre:		14	59	40	63S	154E					USCGS	
1	KP	eP	Z	15	50	45								
		Epicentre:		15	38	07	31½S	67½W	200 km				USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag.
DEC 1	KP	P	Z	18	21	47	u							
		Epicentre:		18	11	49	5N	125E	400 km				USCGS	
1	KP	eP	Z	19	04	08								
		e	Z		05	10								
		Epicentre:		18	54	48	9S	124½E					USCGS	
2	CT	eP	Z	07	41	22								
		e	Z			35								
	KP	e?	Z	07	41	24								
		e	Z			36								
		e	Z			45								
		e	Z		47	29								
	RX	eL	N	07	58						1	20		
		eL	Z	08	07									
	WN	eL	Z	08	10									
		M	Z		12						1	19		
		Epicentre:		07	30	05	5S	104E	150 km				USCGS	
2	ON	eP	E	09	44	07								
		e	E			25								
		e	E		52	22								
	CB	eP?	E	09	44	15								
		e	E			18								
	KP	P	Z	09	44	16								
		e	Z			25								
		e	Z		46	47								
	RX	eP	Z	09	44	18					3	6		
		eS	ZNE		52	23								
		eScS	N		54	16								
		eL	NE		58½						28	20		
		eL	Z	10	04									
		M	ZE		10						40	18	25	19
	CT	eP	Z	09	44	20								
		e	Z			58								
	WN	e?	N	09	44	21								
		e	ZN			29	d							
		eS	N		52	40								
		e	N			51								
		eScS	N		54	15						6	8	
		eL	N	10	00									
		eL	Z		07									
		M	ZN		11						30	19	12	16
	GP	eP	N	09	44	22								
	KM	eP?	X	09	44	22								
		e	X		52	33								
	TU	e	N	09	44	30								
		Epicentre:		09	34	00	1S	123E					USCGS	
2	KP	eP	Z	20	06	24								
		e	Z			27								
		e	Z		07	00								
		e	Z			42								
		e	Z			59								
	CT	eP	Z	20	06	30								
		Epicentre:		19	57	55	4½S	140E					USCGS	
2	KP	eP	Z	23	03	57								
		Epicentre:		22	52	45	52N	174E					USCGS	
3	RX	eL?	ZE	01	33									
3	KP	P	Z	02	07	37								
	RX	eL	ZNE	02	40						1	18		
3	KP	P	Z	08	55	32								

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag.
DEC 3	SU	e?	N	13	17	42					
		e	N			20					
		e	N			26					
	ON	e?	E	13	21	13					
		e	E			17					
		e	E			25	37				
	KP	eP	Z	13	21	29					
		e	Z			34					
		e	Z			28	46				
	WN	e?	N	13	22	14					
		eL	ZN			30		2 20	2 20		
	RX	eL	ZNE	13	32				1 20		
	Epicentre:			13	16	26		16½S 177½W			USCGS
4	KP	P	Z	01	11	25	(u)				
	Epicentre:			01	06	00		15S 174W			USCGS
4	KP	P	Z	07	05	44					
4	KP	P	Z	08	38	33					
4	SU	e	N	09	27	19					
	KP	eP	Z	09	27	40					
		e	Z			57					
	Epicentre:			09	24	04		21S 178½W 650 km			USCGS
4	TU	e(P)	N	18	10	18					
		e(S)	N		11	10					
	KP	P	Z	18	10	22	u				
		e	Z			45					
	ON	eP	E	18	10	25					
	CT	eP	Z	18	10	32					
		e	Z			41					
		e	Z		11	41					
	WN	e	N	18	11	23					
		e	N		12	17					
		e	N			54					
		e	N		13	04					
	CB	e	E	18	12	39					
		e	E		13	07					
	GP	e	N	18	13	22					
		e	N			28					
4	KP	P	Z	20	14	25					
5	KP	eP	Z	22	11	35					
	Epicentre:			22	01	10		Philippine Is.			USCGS
6	KP	P	Z	17	21	51					
		e	Z		22	00					
	Epicentre:			17	14	20		New Britain			USCGS
7	KP	P?	Z	01	19	45					
	Epicentre:			01	12	05		6S 146½E 100 km			USCGS
7	SU	P	N	03	03	15	(s)				
		e	N		04	16					
		e	N			31					
	ON	e?	E	03	05	41					
		eS	E		08	39					
	KP	P	Z	03	05	48	(u)				
	GP	eP?	N	03	06	42					
		eS	N		10	31					
	CB	eS	E	03	09	54					
	KM	eS	X	03	10	21					
	Epicentre:			03	01	44		18S 178W 600 km			USCGS

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag.
DEC 7	KP	P	Z	04	33	59					
	KP	P	Z	05	27	23					
		e	Z			51					
	Epicentre:			05	15	24		32½N 139½E			USCGS
8	KP	P	Z	04	40	21					
		e	Z			27					
	RX	e	N	04	54				1 20		
	Epicentre:			04	30	06		1S 124E			USCGS
8	KP	ePKP	Z	13	53	31					
	Epicentre:			13	33	59		42N 44½E			USCGS
9	SU	M	N	12	24				10 5		
9	KP	eP	Z	12	49	44					
	WN	e	N	12	51	37					
	CB	e	E	12	52	00					
	GP	e	N	12	52	41					
9	SU	P	N	14	05	46	s				
		S	N		06	49					
	KP	P	Z	14	08	51					
		e	Z		09	58					
	Epicentre:			14	08	28		17S 177½W 450 km			USCGS
10	RX	eL	ZNE	03	05				6 22		
	WN	eL	ZN	03	08						
10	RX	eL	ZNE	14	46						
11	KP	P	Z	00	41	01	u				
		e	Z			10					
	CT	P	Z	00	41	06	d				
		e	Z			15	u				
	RX	eL	N	00	58				1 17		
	Epicentre:			00	31	40		5S 130E			USCGS
11	SU	e	N	01	40	28					
		e	N			37					
		e	N		42	55					
	ON	e	E	01	46	37					
	WN	eL	ZN	01	50						
	RX	eL	ZNE	01	51						
	Epicentre:			01	38	33		23S 175W			USCGS
11	WN	eL	N	03	51						
	RX	eL	ZNE	03	52						
11	RX	eL	N	09	56						
		e	E		60						
	WN	eL	N	09	59						
11	SU	e?	N	10	09	20					
		e	N			32					
		e	N		13	16					
	WN	eL	ZN	10	21						
	RX	eL	ZNE	10	22						
	Epicentre:			10	07	12		23S 175W			USCGS
12	KP	P	Z	01	56	34					
		e	Z			37					
12	KP	e	Z	06	19	06					
12	KP	P	Z	19	49	07					

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
DEC 13	SU	e	N	17	38	20								
		e	N		40	32								
	ON	eP	E	17	40	56								
	KP	P	Z	17	41	09	d							
	KM	e	X	17	42	08								
	GP	e	N	17	42	13								
	WN	e	N	17	48									
	RX	eL	ZNE	17	52									
	Epicentre:			17	36	07		18S 173½W				USCGS		
13	KP	P	Z	19	12	07								
13	KP	eP	Z	19	27	38								
14	TU	P	N	06	25	07	(s)							
		e	N			16								
	KP	iP	Z	06	25	22	d							
		e	Z			32								
		e	Z			47								
	WN	eP	N	06	25	45								
		eS	N		26	26								
	ON	eP	E	06	25	51								
		e(S)	E			32								
		e	E			36								
	CB	eP?	E	06	26	06								
		e	E			12								
		eS	E			51								
	GP	e(P)	N	06	26	26								
		eS	N		27	31								
	KM	e	X	06	26	36								
		e(S)	X		27	27								
		e	X			29								
	Epicentre:			06	24	52		38.6S 177.7E				NZ(C)		5.1 NZ
								Felt: Opotiki MM 2						
14	KP	P	Z	07	22	29								
14	TU	e(P)	N	11	14	04								
		eS	N		15	16								
	ON	eP	E	11	14	05								
		e	E			09								
	KP	eP	Z	11	14	06								
		e	Z			22								
	GP	e	N	11	15	30								
		eS	N		17	28								
	WN	eS	N	11	16	21								
	CB	eS	E	11	16	51								
	KM	eS	X	11	17	24								
	RX	eL	ZNE	11	21					1	18			
	Epicentre:			11	12	30		34S 178W				NZ(D)		5.2 NZ
14	TU	e(P)	N	12	58	50								
		eS	N		59	59								
	KP	eP	Z	12	58	51								
		e	Z		59	05								
		e	Z			11								
	ON	eP	E	12	58	51								
		e	E			58								
		e	E		59	12								
	WN	e?	N	12	59	38								
		eS	N	13	01	07								
	GP	e	N	13	00	24								
		eS	N		02	13								
	CB	eS	E	13	01	27								
	KM	eS	X	13	02	08								
	RX	eL	ZNE	13	05					2	16			
	Epicentre:			12	57	20		34S 178W				NZ(D)		5.5 NZ

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
DEC 14	CB	eP	E	18	08	47								
		eScS	E		18	27								
	KP	P	Z	18	08	48	u							
		e	Z		09	11								
	KM	e(P)	X	18	08	52								
	WN	eP	N	18	08	55								
		e	Z		09	24								
		S	N		17	19								
		e	N		18	12								
		eScS	N			35								
		e	N		19	13								
		e	N			30								
	GP	eP	N	18	08	57								
	RX	eS	N	18	17	14								
		e	N		18	04								
		e	N		22									
		eL	NE		24½									
	Epicentre:			17	58	31		5N	126E	150	km		USCGS	
14	CB	e	E	21	59	20								
	KP	P	Z	21	59	25	u							
	WN	e	N	21	59	49								
	Epicentre:			21	49	10		1N	125E				USCGS	
14	KP	eP	Z	22	13	59								
		e	Z		14	12								
	RX	eSSS	N	22	25	10								
		eL	N		28									
		M	ZN		56				6	18		4	18	
	WN	eL	N	22	48									
	Epicentre:			22	00	50		52½N	168W				USCGS	
14	KP	eP?	Z	22	21	03								
		e	Z			08								
	WN	e(S)	N	22	23	28								
14	KP	P	Z	22	29	14								
		e	Z			25								
	WN	e?	N	22	29	38								
14	RX	eP	ZNE	23	33	39			10	5				
		e	Z			56								
		(SKS)	ZN		43	14						20	24	
		e(S)	E			26								20 10
		eSS	E		53									
		eL	ZNE	24	00									
		M	ZN		07				50	18		43	18	
	GP	eP	N	23	33	46								
		eS	N		43	25								
	KM	eP	X	23	33	56								
		eS	X		43	40								
	WN	eP	ZN	23	33	58			16	5				
		e	N		35	30								
		S	N		43	49						10	6	
		e	N		48	55						12	20	
		eL	ZN	24	02									
		M	ZN		04				16	20		23	20	
	CB	e(P)	E	23	34	03								
		eS	E		43	51								
	KP	P	Z	23	34	14	u							
		e	Z		44	23								
	ON	e(P)	E	23	34	27								
		eL	E	24	05									
	SU	e?	N	23	39	37								
		eL	N	24	12									
	Epicentre:			23	21	56		59½S	31W				USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
DEC 15	KP	e?	Z	00	00	38								
		e	Z			51								
		e	Z		03	34								
		e	Z		04	21								
	15 KP	e	Z	02	26	38								
		e	Z			48								
	15 KP	e(P)	Z	05	14	35								
	Epicentre:			05	04	14		17N 145E					USCGS	
	15 KP	eP	Z	05	35	24								
	15 KP	eP?	Z	09	40	56								
	Epicentre:			09	30	22		5½N 125½E					USCGS	
	15 KP	P	Z	12	28	07								
		e	Z			15								
	RX	eL	ZNE	12	56							2	20	
		M	N		58									
	Epicentre:			12	15	45		59S 24W					USCGS	
	15 KP	P	Z	14	49	49	d							
		e	Z			51								
	WN	iP	N	14	49	53	n							
		e	N		50	02								
		S	N			18								
	CB	eP	E	14	50	07								
		e	E			11								
		S	E			44								
	ON	eP	E	14	50	27								
		e	E			40								
		e(S)	E		51	24								
		e	E			34								
		e	E			39								
	KM	eP?	X	14	50	29								
		e	X			34								
		e	X			44								
		e(S)	X		51	21								
		e	X			41								
	GP	e(P)	N	14	50	31								
		e	N			55								
		eS	N		51	23								
	Epicentre:			14	49	20		39.6S 176.2E					NZ(C)	5.1 NZ
								Felt: Southern Hawkes Bay and Taihape area. Max. Taihape MM 5.						
	16 KP	P	Z	11	34	39								
	Epicentre:			11	21	47		47½N 152E					USCGS	
	16 ON	e(P)	E	16	49	09								
	KP	eP	Z	16	49	24								
	WN	eP	N	16	49	52								
	17 KP	eP	Z	02	43	04								
	Epicentre:			02	31	02		21½N 121E					USCGS	
	17 SU	e	N	02	57	56								
	ON	e?	E	02	59	20								
		e	E			36								
		e	E		01	53								
	KP	eP	Z	02	59	31								
		e	Z			53								
	GP	eP	N	03	00	40								
		e	N			48								
		eS	N		04	11								
	WN	eS	N	03	03	12								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
DEC 17	CB	eS	E	03	03	26								
	KM	eS	X	03	04	09								
	Epicentre:			02	55	58		24S 177W				100 km		USCGS
	17 KP	eP	Z	04	28	44								
		e	Z		29	06								
	17 KP	eP	Z	05	17	07								
	Epicentre:			05	04	46		40½N 142½E					USCGS	
	17 CT	eP	Z	06	05	22								
		e	Z			33								
	TO	eP	Z	06	05	23								
		e	Z			33								
	KP	eP?	Z	06	05	24								
		e	Z			35								
	Epicentre:			05	53	46		5½S 102½E					USCGS	
	17 SU	e(P)	N	09	47	40								
		e(S)	N		48	19								
	KP	eP	Z	09	52	05								
		e	Z			09								
	TO	eP	Z	09	52	18								
	CT	eP	Z	09	52	19								
	17 KP	eP?	Z	16	59	23								
	RX	e	E	17	08	20								
		eL	ZNE			18								
		M	ZE			21				5	20		2 20	
	WN	eL	ZN	17		18								
		M	N			22					1 15			
	Epicentre:			16	48	55		36½S 101½W					USCGS	
	18 KP	P	Z	09	19	07								
	18 ON	eP	E	09	58	16								
		e	E		59	35								
	KP	P	Z	09	58	26								
		i	Z			27								
		e	Z			40								
		e	Z		59	40								
		e	Z	10	01	15								
		e	Z		02	35								
	TU	eP	N	09	58	28								
		e	N		59	50								
		e	N			52								
	SU	e(P)	N	09	58	34								
	TO	eP	Z	09	58	35								
		e	Z			38								
		e	Z	10	00	14								
	WN	eP?	N	09	58	58								
		e	N		59	00								
		e	N	10	00	51								
	CB	e(P)	E	09	59	07								
		e	E	10	01	03								
	GP	e(P)	N	09	59	31								
		e	N	10	01	48								
	KM	e(P)	X	09	59	34								
		e	X		01	37								
	Epicentre:			09	57	07		18S 178½E				60 km		USCGS
	18 KP	eP?	Z	16	37	58								
		e	Z		38	02								
	RX	eSKS	N	16	49	08					1	9		
		ePS	N		51½									

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
DEC 18		eSS	N			57							
		eSSS	N	17	01								
		eL	N			12			1	18			
		eL	ZNE			17							
		M	ZN			20			3	19			
	WN	eL	ZN	17	18								
		M	N			21			2	17			
	Epicentre:			16	24	50	53N	168½W				USCGS	
	18 KP	eP	Z	18	41	29							
	18 KP	eP	Z	19	02	31							
	19 KP	eP	Z	09	13	57							
	20 KP	e	Z	02	55	17							
	20 KP	P	Z	06	27	42							
	20 ON	eP	E	08	07	23							
		e	E			26							
		e	E			45							
		e	E		08	56							
	TU	eP	N	08	07	27							
		e	N			38							
		e(S)	N	08	08	48							
		e	N			58							
		e	N		09	30							
	KP	eP	Z	08	07	29							
		e	Z			38							
		e	Z		09	08							
	TO	e?	Z	08	07	37							
		e?	Z			41							
		e	Z			48							
		e	Z			55							
		e	Z		08	00							
		e	Z		09	21							
	WN	e?	N	08	08	15							
		e	N			27							
		eS	N		09	55							
		e	ZN		10	43							
	CB	e	E	08	09	17							
		eS	E		10	15							
		e	E			25							
	KM	e	X	08	10	57							
		e	X			05							
	GP	eS	N	08	11	01							
		e	N			09							
	RX	eL	NE	08	14								
		M	ZN			16							
	Epicentre:			08	05	.6	32½S	178W				NZ(D)	5.8 NZ
	20 KP	P	Z	09	43	06							
		e	Z			13							
		e	Z			34							
	20 KP	P	Z	09	55	38							
		e	Z			46							
	20 KP	eP?	Z	10	45	56							
		e	Z		46	04							
	20 KP	P	Z	13	04	34							
		e	Z			49							
	CT	eP	Z	13	04	38							
	Epicentre:			12	53	37	10½N	126½E				USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
DEC 20	TU	e	N	14	21	29							
	KP	eP	Z	14	21	44							
	CT	eP	Z	14	21	55							
	TO	eP	Z	14	21	56							
	Epicentre:			14	16	52	17½S	174½W				USCGS	
	20 KP	eP	Z	20	58	34							
	RX	eL	N	21	10								
	21 RX	eL	ZNE	01	40								
	WN	eL	Z	01	46								
	21 ON	e?	E	10	23	27							
		e	E			31							
		e	E			55							
		eL	E		26								
	KP	eP	Z	10	23	32							
		e	Z			47							
		eL	Z		28								
	CT	eP	Z	10	23	47							
	TO	eP	Z	10	23	48							
		eL	Z		29								
	WN	eP?	N	10	24	17							
		e	N			20							
		eS	N		26	53							
	CB	e	E	10	24	32							
		eS	E		27	14							
	GP	e(P)	N	10	24	50							
		eS	N		28	01							
	KM	e	X	10	24	58							
		e	X		27	58							
	RX	e	N	10	25	25					2	20	
		e	N		29	36							
		eL	ZNE		31								
		M	NE		33						30	20	55 20
	TU	e(S)	N	10	25	49							
	Epicentre:			10	20	33	27½S	176W				USCGS	
	21 ON	e(P)	E	11	17	08							
		e	E			16							
		e	E			40							
		eL	E		20								
	KP	eP	Z	11	17	13							
		e	Z			20							
		e	Z			33							
		eL	Z		22								
	CT	eP	Z	11	17	27							
	TO	e	Z	11	17	32							
		e	Z		19	55							
		eL	Z		23								
	WN	e	N	11	18	01							
		eS	N		20	34							
	GP	eP?	N	11	18	32							
		e	N			37							
		eS	N		21	40							
	TU	e(S)	N	11	19	27							
	CB	eS	E	11	20	54							
	KM	eS	X	11	21	43							
	RX	eL	ZNE	11	25								
		M	E		26								40 20
	Epicentre:			11	14	17	27½S	176W				USCGS	
	21 KP	e	Z	11	38	23							
		e	Z		40	16							
	Epicentre:			11	19	14	14N	52E				USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
DEC 21	KP	P	Z	12	42	14				
21	KP	eP	Z	13	48	06				
22	KP	eP	Z	00	28	50				
22	KP	eP	Z	04	36	26				
22	KP	e?	Z	17	32	36				
		e	Z			51				
	Epicentre:			17	20	19	37½N 141½E		USCGS	
23	KP	eP	Z	04	34	01				
	CT	e	Z	04	34	31				
		e	Z		36	51				
	WN	e	N	04	34	56				
		eS	N		37	19				
	GP	eS	N	04	38	21				
	RX	eL	ZNE	04	42					
	Epicentre:			04	31	00	28S 176W		USCGS	
23	WN	e	N	06	40					
	RX	eL	NE	06	40					
23	KP	e	Z	14	02	02				
		e	Z			25				
	ON	e(P)	E	14	02	15				
		eL	E		06					
	CT	e	Z	14	02	19				
		e	Z			31				
		e	Z		04	51				
	WN	e?	N	14	02	44				
		e	N			47				
		eS	N		05	22				
	GP	e(P)	N	14	03	20				
		eS	N		06	29				
	CB	eS	E	14	05	41				
	RX	e	N	14	08	00				
		eL	ZNE		10					
	Epicentre:			13	59	02	27½S 176W		USCGS	
24	RX	eL	ZNE	01	20					
24	KP	eP	Z	09	17	17				
	TO	e	Z	09	17	35				
		e	Z		19	57				
	CT	e?	Z	09	17	39				
		e	Z			48				
	GP	e	N	09	18	42				
		eS	N		21	40				
		e	N			58				
	WN	eS	N	09	20	36				
	RX	eL	NE	09	25					
	Epicentre:			09	14	24	27½S 176½W		USCGS	
24	KP	eP	Z	13	19	25				
		e	Z			45				
	CT	eP?	Z	13	19	28				
		e	Z			33				
	Epicentre:			13	08	34	9N 126½E		USCGS	
25	KP	e(P)	Z	03	51	54				
	SU	e	N	03	51	55				
	CT	e?	Z	03	52	07				
		e	Z			30				
		e	Z		54	41				

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag.
DEC 25	TO	e(P)	Z	03	52	11					
	WN	e(P)	N	03	52	40					
		eS	N		55	11					
		eL	ZN		58						
	GP	eP	N	03	53	11					
		eS	N		56	17					
		e	N			24					
	KM	e	X	03	53	33					
		e(S)	X		56	13					
	TU	eS	N	03	54	03					
	CB	e(S)	E	03	55	32					
	RX	eL	NE	03	59						
		eL	Z	04	01						
	Epicentre:			03	48	58		27½S 176W		USCGS	
25	KP	P	Z	10	31	51	u				
		e	Z			54					
		e	Z		32	24					
		e	Z			33					
	CT	eP	Z	10	31	51					
		e	Z		32	21					
	TO	eP	Z	10	31	51					
		e	Z		32	21					
	KM	e	X	10	32	07					
	RX	e	N	10	44	30					
	Epicentre:			10	18	35		25½S 67W		USCGS	
26	KP	e	Z	16	18	12					
		e	Z			24					
	CT	e	Z	16	18	40					
		e	Z		21	01					
	TO	e	Z	16	18	54					
	WN	e	N	16	19	02					
		eS	N		21	33					
	ON	eL	E	16	22						
	GP	eS	N	16	22	38					
	RX	eL	NE	16	26						
26	KP	eP	Z	22	15	44					
	RX	eL	N	22	50						
	Epicentre:			22	02	35		53N 160E		USCGS	
27	RX	eL	N	05	40						
	Epicentre:			05	01	55		52½N 160E		USCGS	
27	KP	ePKP	Z	05	43	02					
		e?	Z		47	10					
		e	Z			30					
	Epicentre:			05	22	39		35N 26E		USCGS	
27	CT	eP	Z	12	51	24					
		e	Z			16					
		ipP	Z		53	34	d				
		e	Z	13	01	05					
	TO	eP	Z	12	51	26					
		e	Z		53	35					
		epP	Z		01	03					
	KP	P	Z	12	51	30					
		e	Z			50					
		ipP	Z		53	38	d				
	RX	e?	N	13	01						
	Epicentre:			12	39	09		28S 63W 650 km		USCGS	
27	KP	P	Z	13	08	26	u				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
DEC 27	KP	e?	Z	16	06	17							
		e	Z			50							
	RX	eSKS	NE	16	17	24							
		eS	NE			18 32			4	17			
		ePS	N			20 00							
		eSS	E			25 20					4	24	
		e	N			42			8	27			
		eSSS	N			28 48			5	30			
		eL	E			35							
		eL	ZN			40							
		M	N			42			8	25			
		M	ZN			51	15	19	11	19			
	WN	e(S)	N	16	17	55			3	8			
		eSSS	N			28							
		eL	ZN	16	40								
		M	N			41			7	23			
		M	N			51	4	18	7	18			
	TO	eL	Z	16	50								
	Epicentre:			15	52	55	56N	162½E					USCGS
28	KP	eP	Z	07	33	40							
		e	Z			53							
	RX	eSKS	N	07	44	41							
		e(PS)	N			47			6	20			
		eSS	N			52							
		eSSS	NE			56			2	21			
		eL	E	08	02								
		eL	ZN			06							
		M	ZN			27	12	17	9	17			
	WN	eL	N	08	03								
		M	ZN			10	3	20	5	20			
	Epicentre:			07	20	32	52½N	160E					USCGS
28	KP	eP	Z	10	16	27							
		e	Z			54							
		e	Z		17	05							
	Epicentre:			10	03	08	22½S	67½W	100	km			USCGS
28	KP	eP?	Z	13	17	38							
		e	Z			53							
	RX	eL	N	13	58								
		M	ZN	14	10				1	17			
	Epicentre:			13	04	30	52½N	160E					USCGS
28	KP	eP?	Z	13	33	51							
		e	Z			53							
		e	Z			54							
	WN	eP	N	13	34	26							
	Epicentre:			13	29	15	18S	170E					USCGS
29	KP	P	Z	07	14	10							
		e	Z			15 03							
	CT	eP	Z	07	14	14							
		e	Z			26							
		e	Z			15 11							
	Epicentre:			07	04	14	2S	126E					USCGS
29	KP	eP	Z	17	19	03							
		e	Z			23							
	CT	e?	Z	17	19	16							
		e	Z			34							
		e	Z			22 53							
	WN	e?	N	17	19	37							
		e	N			40							
		e	N			46							
		e(S)	N			23 27							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
DEC 29		e	N			34							
		e	N			56							
	GP	e(P)	N	17	20	10							
		e(S)	N			24 26							
	KM	e(P)	X	17	20	16							
		e?	X			24 22							
		e	X			28							
	RX	eL	NE	17	28								
		eL	Z		31								
	Epicentre:			17	14	40	21½S	174W					USCGS
29	KP	eP	Z	20	44	58							
		e	Z			45 13							
		e	Z			46 16							
		e	Z			47 04							
	Epicentre:			20	35	08	18N	145E	350	km			USCGS
29	KP	P	Z	21	37	00 (d)							
		e	Z			30							
		e	Z			56							
	CT	eP	Z	21	37	08							
		e	Z			19							
	Epicentre:			21	27	17	8½S	122E					USCGS
29	CT	iP	Z	23	58	27 u							
	KP	iP	Z	23	58	44 d							
		e	Z			51							
	TU	eP	N	23	58	50							
		eS	N			59 17 (s)							
	WN	P	N	23	58	52 (s)							
		S	N			59 18							
	CB	P	E	23	58	57½ e							
		e(Pg)	E			59 04							
		eS	E			27							
		e	E			35							
	ON	eP	E	23	59	15							
		eP*	E			25							
		e(S)	E			55							
		eS*	E			60 10							
		eSg	E			24							
	KM	eP	X	23	59	22							
		e	X			26							
		ePg	X			45							
		eS	X			60 08							
		e	X			16							
		eSg	X			44							
	GP	eP	N	23	59	26							
		ePg	N			44							
		e	N			60 15							
		eS	N			18							
	RX	e	NE	24	01	50							
		e	N		03								
	Epicentre:			23	58	17	39.3S	174.9E	S		NZ(B)		•5.6 NZ
							Felt: Taranaki and northern Wairarapa. Max. New Plymouth and Ohakune MM4.						
30	CT	eP?	Z	02	39	39							
	KP	e?	Z	02	39	53							
	RX	eL	ZNE	02	50								
30	KP	e	Z	07	38	56							
	RX	eL	N	07	51								
30	KP	e?	Z	14	06	34							
		e?	Z			48							
	Epicentre:			13	55	45	6S	105½E	150	km			USCGS

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
DEC 30	ON	e	E	23	32	15								
		eS	E		33	34								
	KP	P	Z	23	32	25	u							
		e	Z		34	02								
	TU	eP	N	23	32	27								
		eS	N		33	54								
	WN	e	N	23	32	58								
		eS	N		34	53								
	GP	e	N	23	33	33								
		eS	N		35	48								
	CB	eS	E	23	35	04								
	Epicentre:			23	30	33		32S	180	400	km			5.5 NZ
31	KP	P	Z	10	38	04								
		e?	Z		45	27								
	CT	P	Z	10	38	11	(u)							
	CB	e	E	10	38	15								
	WN	e	N	10	38	16								
	GP	e	N	10	38	19								
	RX	eS	N	10	45	35				1	20			
		e(L)	N		51	12				1	15			
		eL	N		56									
	Epicentre:			10	29	23		3S	139½E				USCGS	

APIA AND AFIAMALU

Date	Stn	Phase		h	m	s		Date	Stn	Phase		h	m	s	
JAN 1	AF	P?	Z	02	27	40		JAN 14	AF	iP!		13	19	58	
		S	Z		28	06				iS!			21	47	
	AF	iP	Z	07	26	07			AA	eP	NE	22	00	21	
		eS	ZN		29	09				eS	NE		01	07	
	AA	e	NE	07	27	39		15	AF	iP!	ZN	21	23	24	
	AF	iP	Z	07	51	08				i	Z		24	58	
		eS	ZN		52	39				iS!	ZN		25	46	
	AA	eP	NE	07	51	10				(ScP)	Z		31	00	
	AA	P	NE	11	49	18		16	AF	eP		15	18	43	
		S	NE		50	23				eS			19	58	
	AA	P	NE	19	13	04			AF	P		20	41	51	
		S	NE			55				S			44	22	
3	AF	eiP	Z	15	46	51	d	18	AA	eP	NE	22	25	12	
		S	Z		47	52				i	NE			18	
										iS	NE		26	38	s
	AF	P		17	10	31									
		eS			11	41		19	AA	eP	E	10	49	25	
4	AF	eP	Z	03	34	03			AA	P	NE	14	23	46	
		e	Z		35	15				S	NE		24	09	
		S	Z			28									
	AA	eP	NE	03	34	07		23	AA	P	NE	11	59	50	
		eS	NE		35	22				S	NE	12	00	15	
5	AF	eP	Z	09	50	(52)		24	AA	eP	NE	15	53	02	
		eL	Z		54	00				iS	NE			50	s
	AA	P	NE	09	50	32									
		S	NE		51	02		26	AA	iP	NE	05	49	29	ne
										iS	NE		50	14	s
	AF	iP!	Z	13	55	(25)									
		iS!	Z			35			AA	P	NE	07	36	24	
		e	Z			59				S	NE		37	07	
	AA	P	NE	13	55	26									
		S	NE			49		27	AA	P	NE	14	57	46	
										e	N		58	10	
6	AF	iP	Z	15	00	37	d			S	NE			27	
7	AA	e	NE	02	30	10		28	AA	eP	NE	07	00	40	
10	AF	P	Z	03	10	40		30	AA	eP	NE	18	13	51	
		S	Z		11	48				eS	NE		17	09	
	AF	P	Z	06	05	57			AA	P	NE	20	26	36	
		eP	NE	06	05	58				S	NE		27	01	
11	AA	eP	NE	01	02	35		FEB 2	AA	eP	NE	03	23	28	
	AF	P	Z	09	50	32				eS	NE		25	46	
		S	Z		51	02		4	AA	eP	N	08	38	56	
	AA	eP	NE	13	27	55			AA	P	NE	09	23	00	
		eS	NE		29	15				S	NE			24	
12	AF	P	Z	09	50	32		6	AA	P	NE	09	08	(02)	
		S	Z		51	02				S	NE		09	19	
13	AF	P	Z	17	08	45		7	AA	eP	NE	09	50	(01)	
		S?	Z		10	50					E		53	13	

Date	Stn	Phase		h	m	s	
FEB 8	AA	eP	NE	15	48	54	
		eS	NE		51	04	
	AA	P	NE	12	24	00	
		S	NE			19	
	AA	P	NE	12	30	02	
		S	NE			18	
11	AA	iP	NE	21	37	22	n
		S	NE		37	42	
		Felt: Apia, MM 2.					
13	AA	eP	NE	01	48	24	
		eS	NE		50	42	
	AA	eP	NE	15	11	02	
		eS	NE		12	34	
16	AA	eP		07	57	05	
		eS			59	37	
17	AA	P	NE	12	45	53	
		iS	NE		46	14	s
18	AA	eP	NE	02	00	04	
		eS	NE		02	09	
20	AA	eP	NE	12	03	57	
		eS	NE		04	29	
23	AA	eP	E	02	06	15	
25	AA	eP	NE	03	03	31	
		iS	NE		04	43	s
	AA	eP	NE	10	04	45	
		iS	NE		06	10	s
26	AA	e(P)	NE	07	10	09	
	AA	P	NE	21	05	01	
		S	NE			21	
28	AA	eP	N	05	58	46	
		eS	N	06	02	10	
	AA	eP		06	52	07	
MAR 2	AA	P	NE	15	21	39	
		S	NE		22	30	
3	AA	P	N	20	53	07	
		S	N			28	
4	AA	P	N	18	56	53	
		S	N		58	12	
	AA	P	N	23	53	47	
		S	N		54	07	
5	AA	eP?	N	03	03	29	
	AA	eP	N	03	44	19	
		eS	N		45	39	

Date	Stn	Phase		h	m	s	
MAR 5	AA	P	N	11	59	41	
		S	N	12	00	13	
6	AA	eP	NE	11	25	08	
		S	NE			38	
	AA	eP	NE	11	28	10	
		S	NE			41	
		L	NE		29	.2	
	AA	P	NE	20	47	25	
7	AA	P	NE	14	47	00	
		S	NE			34	
		L	NE		48	.3	
	AA	iS	NE	14	50	22	(ne)
8	AA	P	NE	02	59	28	
		S	NE			48	
	AA	eP	NE	17	12	08	
9	AA	P	NE	11	26	45	
		S	NE		28	08	
11	AA	P	N	00	31	21	
		i	N			40	
		iS	N			42	
	AA	eP	NE	07	15	23	
		eS	NE		16	16	
		L	NE		17	.6	
	AA	(P)	NE	14	11	30	
		S	NE		12	23	
	AA	P	NE	16	50	16	
		S	NE			37	
12	AA	eP	NE	20	04	59	
		eS	NE		05	19	
		eL	NE		06	.5	
13	AA	eP?	NE	00	46	13	
		eS?	NE		49	07	
	AA	P	NE	01	04	40	
		S	NE			57	
	AA	eP	NE	04	00	49	
		S	NE		01	17	
		e	NE		03	25	
	AA	eP	NE	16	42	18	
		S	NE		43	44	
	AA	iP	N	17	50	41	
		S	N			52	
14	AA	P	N	03	02	45	
		S	N		03	18	
	AA	P	NE	07	01	13	

Date	Stn	Phase		h	m	s	
MAR 14	AA	iP	NE	17	05	23	n
		iS	NE			45	
15	AA	P	NE	16	09	08	
		S	NE			39	
	AA	P	NE	21	29	41	
		iS	NE		30	32	
16	AA	eP	NE	22	11	53	
		S	NE		14	30	
19	AA	e	E	18	52		
20	AA	P	NE	02	12	23	
		S	NE		13	30	
	AA	P	NE	13	07	26	
		S	NE			46	
	AA	P	NE	18	43	48	
		S			44	31	
	AA	eP	NE	23	17	(00)	
		eS	NE		18	40	
21	AA	P	NE	04	29	18	
		S	NE		30	45	
	AA	P	NE	19	49	22	
		S	NE		51	11	
22	AA	P	NE	07	06	04	
		S	NE			10	
23	AA	iP!	NE	13	24	53	ne
		S	NE		25	18	
24	AA	P	NE	00	42	35	
		S	NE			58	
25	AA	eP	NE	00	02	24	
		S	NE		04	07	
26	AA	P	NE	02	30	43	
	AA	eP	NE	11	48	03	
		eS	NE		50	21	
27	AA	P	NE	09	27	30	
		S	NE		28	11	
28	AA	P	NE	05	41	06	
		S	NE			34	
	AA	iP	NE	19	49	14	ne
		iS	NE		50	50	(ne)
29	AA	P	NE	17	28	56	
		S	NE		29	41	
30	AA	eP	NE	18	20	13	
		S	NE			48	
		eL	NE		21	.6	
	AA	eP	NE	18	23	(39)	
		S	NE		24	18	

Date	Stn	Phase		h	m	s	
MAR 31	AA	P	NE	07	21	14	
		S	NE			32	
	AA	eS	NE	07	29	46	
		e(S)	NE	07	30	55	
		e(S)	NE	07	31	58	
		eP	NE	07	33	49	
		S	NE		34	04	
		P	NE	13	18	50	
		S	NE		19	25	
		Aftershocks of 07 21					
APR 1	AA	e(P)	NE	12	12	40	
		e(S)	NE			55	
2	AA	P	NE	21	50	24	
		S	NE		51	42	
	AA	P	NE	22	50	49	
		S	NE		51	07	
	AA	P	NE	22	59	10	
		S	NE			35	
3	AA	P	NE	04	56	59	
		S	NE		57	19	
4	AA	P	E	21	07	17	
		S	E		08	12	
5	AA	P	NE	05	14	07	
		S	NE			30	
	AA	P	NE	21	10	22	
		e(S)	E		15	19	
	AA	eP	NE	23	37	08	
6	AA	P	NE	02	20	53	
		S	NE		21	12	
	AA	eP	NE	03	17	50	
		S	NE		18	06	
	AA	(P)	NE	07	00	40	
		S	NE		02	20	
	AA	P?	NE	09	41	05	
		S	NE		42	32	
7	AA	eS	NE	00	58	08	
8	AA	P	NE	01	27	40	
		S	NE		31	06	
	AA	P	NE	04	19	50	
		S	NE		20	40	
	AA	iP	NE	08	02	34	ne
		iS	NE		03	11	
		Felt: Apia					
	AA	iP	NE	15	41	27	ne
		iS	NE			46	
	AA	P	NE	16	16	25	
		S	NE			45	

Date	Stn	Phase		h	m	s	
APR 10	AA	eP	NE	23	52	58	
		S	NE		53	48	
		eL	NE		55.3		
11	AA	iP	NE	17	56	26	sw
		iS	NE			46	
12	Samoan earthquake at 06-04 not recorded owing to electric power failure.						
	AA	eP	NE	15	32(15)		
	AA	iP!	NE	20	54	38	ne
13	AA	P	NE	01	06	22	
		S	NE			44	
	AA	P	NE	20	02	10	
		S	NE			35	
14	AA	P	NE	05	31	41	
		S	NE			59	
	AA	e(P)	NE	16	02	02	
		e	NE			32	
		S	NE		03	37	
15	AA	eP	NE	23	55(22)		
		eS	NE		57	30	
16	AA	P	NE	04	28	02	
		S	NE			42	
	AA	eP	NE	07	30	20	
		iS	NE		32	36	e
	AA	P	NE	15	38	28	
		iS	NE			50	
	AA	P	NE	16	23	02	
		e	E		33	16	
17	AA	eP	NE	00	54	13	
	AA	P	NE	10	33	54	
		S	NE		35	38	
18	AA	P	NE	17	58	01	
		S	NE			16	
19	AA	P	NE	07	03	55	
		S	NE		04	24	
	AA	eP	NE	11	06	28	
		S	NE		07	32	
	Samoan earthquake at 19-43 lost during record changing.						
20	AA	P	NE	03	35	22	
21	AA	P	NE	01	30	17	
		S	NE		32	18	
	AA	P	NE	16	25	52	
		S	NE			21	
		L	NE		26.1		

Date	Stn	Phase		h	m	s	
APR 22	AA	P	NE	16	05	35	
		S	NE			54	
23	AA	(S)	NE	03	54	37	
	AA	P	NE	07	35	56	
		S	NE		36	30	
	AA	eP	NE	20	20	45	
		iS	NE		21	00	
24	AA	eP	NE	02	29	18	
		S	NE		30	23	
	AA	P	NE	08	45	27	
		iS	NE		46	01	
	AA	eP	NE	12	45	52	
		iS	NE		46	24	
	AA	eP	NE	18	02	19	
		eS	NE		05	33	
26	AA	P	NE	05	18	23	
		iS				45	
	Felt: Apia						
	AA	P	NE	05	52	13	
	AA	P	NE	20	52	07	
		eS	NE	21	01	36	
		eSS	NE		06	06	
		eL	E		12		
27	AA	P	NE	09	58	09	
	AA	iP	NE	18	25	10	s
		S	NE			40	
28	AA	eP	NE	11	22	06	
30	AA	P	NE	21	37	51	
		S	NE		38	12	
	No records from May 2 - 4.						
MAY 4	AA	(S)	NE	22	47	08	
6	AA	iP	NE	09	(04)		ne
		S	NE		(05)		
		S-P	=	23 sec			
	AA	P	NE	17	(31)		
		S	NE		(33)		
		S-P	=	1 min. 36 sec.			
7	AA	eP	NE	00	41	49	
		S	NE		42	13	
		eL	E		43.2		
	AA	S	NE	00	44	36	
9	AA	P	NE	05	26	21	
		S	NE			43	
	AA	P	NE	13	41	06	
		S	NE			27	

Date	Stn	Phase		h	m	s	
MAY 10	AA	eP	NE	23	00	21	
		S	NE		01	51	
11	AA	P	NE	08	55	35	
		S	NE		56	03	
		eL	NE		56.7		
11	AA	eP	NE	08	57	33	
		eS	NE			59	
		eL	NE		58.9		
	AA	eP	NE	09	00	47	
		eS	NE		01	13	
		eL	NE		01.9		
	AA	(P)	NE	09	03	03	
		(S)	NE			31	
12	AA	P	NE	17	57	18	
		S	NE		58	03	
	AA	P	NE	20	51	01	
		S	NE			21	
13	AA	P	NE	00	51	38	
		eS	NE		53	45	
	AA	(S)	NE	01	04	14	
	AA	P	NE	09	52	26	
		iS	NE			45	
14	AA	P	NE	04	22	13	
		iS	NE			47	
	AA	P	NE	09	37	42	
	AA	P	NE	09	43	06	
		S	NE			32	
	AA	eP	NE	10	46	24	
	AA	eP	NE	11	53	24	
	AA	eP	NE	13	23	40	
15	AA	e(S)	NE	09	26	46	
	No records from May 15 - 18						
19	AA	iP	NE	08	36	16	sw
		iS	NE			48	
22	AA	iP	NE	06	23	10	(ne)
		iS	NE			31	
	AA	eP	NE	07	03	19	
		eS	NE		08	17	
	AA	eP	NE	08	40	44	
		S	NE		41	11	
23	AA	e(S)	NE	06	09	05	
		e	NE		11	11	

Date	Stn	Phase		h	m	s	
MAY 23	AA	P	NE	15	31	18	
		S	NE			38	
24	AA	eP	NE	04	41	44	
		eS	NE		43	35	
	AA	P	NE	19	29	53	
25	AA	S	NE	05	06	01	
	AA	P	NE	18	03	55	
		S	NE		04	37	
26	AA	eP	NE	04	24	17	
28	AA	P	NE	04	06	30	
		iS	NE			52	
	No records from May 28 - 31.						
JUN 1	AA	eP	NE	01	43	46	
		S	NE		44	39	
	AA	iP	NE	02	37	31	ne
		iS	NE			47	
2	AA	P	N	01	44	56	
		S	N		45	15	
	AA	eP	N	03	26	18	
		eS	N		28	15	
	AA	eP	N	03	34	51	
		eS	N		36	55	
	AA	(S)	N	03	38	39	
	AA	eP	N	03	51	15	
		eS	N		53	16	
	AA	eP	N	03	55	02	
		eS	N		57	12	
	AA	P	N	08	41	40	
		S	N		42	15	
	AA	(S)	N	12	48	02	
3	AA	P	NE	03	05	03	
		iS	NE			23	
	AA	P	NE	17	37	58	
		iS	NE		38	18	
	AA	P	NE	18	28	35	
		S	NE			54	
4	AA	P	NE	01	53	58	
		S	NE		55	33	
	AA	P	NE	15	43	17	
		S	NE		44	29	
	AA	P	NE	21	37	45	
		S	NE		39	34	

Date	Stn	Phase		h	m	s	
JUN 4	AA	P	NE	21	53	09	
		iS	NE			37	(n)
5	AA	P	NE	03	29	20	
		S	NE		30	18	
	AA	P	NE	07	49	05	
		S	NE		50	41	
6	AA	P	NE	10	15	10	
		iS	NE			32	
	AA	P	NE	19	35	53	
		iS	NE		36	15	
7	AA	eP	NE	02	39	20	
	AA	eP	NE	17	37	43	
		S	NE		38	30	
	AA	P	NE	23	13	05	
		S	NE			48	
9	AA	P	NE	03	42	47	
		iS	NE		43	06	
	AA	P	NE	13	37	01	
		S	NE		38	29	
	AA	eP	NE	14	58	28	
		eS	NE	15	02	02	
10	AA	eP	NE	01	00	06	
		iS	NE			29	(ne)
	AA	P	NE	10	52	51	
		S	NE		54	38	
	AA	P	NE	23	58	31	
		S	NE	00	00	45	
11	AA	eP	NE	01	12	04	
		eS	NE		13	53	
13	AA	eP	NE	13	02	41	
		eS	NE		05	50	
	AA	e(P)	NE	16	21	53	
		e(S)	NE		24	16	
14	AA	eP	NE	14	58	33	
		S	NE		59	36	
	AA	P	NE	21	05	48	
		S	NE		07	51	
	AA	P	NE	22	45	17	
		S	NE			38	
16	AA	eP	NE	11	30	32	
		eS	NE		32	58	
17	AA	eP	NE	10	10	13	
		S	NE			56	
	AA	eP?	E	10	54	48	

Date	Stn	Phase		h	m	s	
JUN 17	AA	P	NE	20	50	35	
20	AA	eP	NE	10	06	31	
		eS	NE		08	22	
21	AA	P	NE	11	00	26	
		S	NE		01	15	
	AA	(S)	NE	11	18	17	
23	AA	eP	NE	13	42	19	
		S	NE		44	02	
	AA	iP	NE	19	14	48	sw
		iS	NE		15	14	
25	AA	P	NE	02	55	56	
		iS	NE		56	19	
	AA	P	NE	04	07	56	
		iS	NE			21	
26	AA	P	NE	02	47	10	
		iS	NE		48	15	
	AA	eP?	NE	04	20	(34)	
		eS	NE		23	43	
	AA	P	NE	05	12	05	
		S	NE			38	
	AA	P	NE	05	28	30	
		S	NE		31	13	
	AA	P	NE	22	26	29	
		S	NE		27	42	
27	AA	iP	NE	06	02	05	
		iS	NE			22	
	AA	eP	NE	19	09	(13)	
		S	NE		12	45	
		ScS	NE		20	20	
28	AA	P	NE	06	26	40	
		S	NE		28	12	
	AA	P	NE	19	54	13	
29	AA	eP?	E	07	22	(14)	
		eS	NE		27	33	
	AA	P	NE	07	32	35	
		S	NE		33	42	
30	AA	P	NE	10	28	08	
		eS	NE		31	47	
JUL 2	AA	eP	NE	11	29	58	
		S	NE		31	38	
	AA	P	NE	11	36	31	
		S	NE		38	12	
3	AA	P	NE	17	58	46	
		S	NE	18	02	25	

Date	Stn	Phase		h	m	s	
JUL 3	AA	P	NE	17	59	33	
		S	NE	18	03	28	
		ScS	E		11	00	
4	AA	eP	NE	04	57	00	
		S	NE		58	58	
	AA	eP	NE	05	10	07	
		(S)	NE		11	37	
	AA	P	NE	15	12	58	
		S	NE		13	23	
	AA	P	NE	15	47	18	
		S	NE			42	
5	AA	P	NE	11	15	41	
		S	NE		16	16	
9	AA	eP	NE	01	56	12	
		S	NE			33	
	AA	P	NE	09	07	40	
		S	NE			58	
	AA	P	NE	11	04	49	
		S	NE		05	07	
	AA	P	NE	12	06	24	
		S	NE			42	
10	AA	eP	NE	02	17	02	
		eS	NE			28	
	AA	eP	NE	05	20	43	
		S	NE		21	04	
10	AA	P	NE	17	30	38	
		S	NE			56	
	AA	P	NE	21	47	44	
		S	NE		48	04	
11	AA	eP	NE	04	56	10	
		e(S)	NE	05	01	52	
	AA	P	NE	17	38	03	
		S	NE			37	
12	AA	P	NE	00	26	17	
		S	NE		27	45	
13	AA	eP	NE	12	39	34	
		e(PPP)	NE		43	44	
	AA	P	N	15	27	45	
		S	N		30	08	
14	AA	eP?	E	08	51	42	
	AA	P	NE	18	17	10	
		eS	NE		19	01	
	AA	e(P)	NE	18	23	03	
		e(S)	NE		24	42	

Date	Stn	Phase		h	m	s	
JUL 17	AA	P	NE	05	58	57	
		S	NE		59	23	
18	AA	P	NE	07	03	06	
		S	NE		04	59	
	AA	iP	NE	14	13	07	ne
		S	NE			25	
	AA	P	NE	20	06	28	
		(pP)	E		07	18	
		S	NE		15	37	
19	AA	(P)	E	13	48	05	
		eS	E		49	39	
	AA	e	E	15	23	25	
20	AA	P	E	02	52	07	
	AA	iP	E	09	07	23	e
		S	E			48	
	AA	P	E	16	56	25	
		S	E		58	36	
21	AA	P	NE	01	55	59	
		S	NE		56	19	
	AA	e(P)	NE	07	47	49	
		e(S)	E		51	45	
		e	E		54	27	
	AA	P	NE	10	11	45	
		S	NE		13	53	
22	AA	P	NE	07	14	17	
		S	NE			32	
	AA	P	NE	15	47	40	
		S	NE		48	37	
23	AA	P	NE	14	54	16	
		S	NE			42	
	AA	eP	NE	14	59	27	
		S	NE	15	01	26	
		ScS	NE		12	33	
24	AA	e	E	01	55	23	
25	AA	P	NE	02	25	06	
		S	NE			28	
	AA	P	NE	18	28	07	
		S	NE			27	
26	AA	P	NE	05	45	43	
		S	NE			58	
27	AA	eP	NE	14	59	45	
		S	NE	15	00	15	
28	AA	P	NE	02	16	10	
		S	NE			32	

Date	Stn	Phase		h	m	s	
JUL 29	AA	iP	NE	00	32	53	(sw)
		S	NE		34	24	
	AA	eP	NE	11	08	41	
		S	NE		09	00	
	AA	P	NE	16	52	45	
		iS	NE		53	18	(s)e
30	AA	eP	NE	12	58	27	
		eS	NE	13	01	25	
31	AA	P	NE	13	45	28	
		S	NE			55	
AUG 1	AA	iP	NE	10	16	52	(sw)
		S	NE		17	18	
		Felt: Apia, MM 3					
	AA	eP	NE	21	52	38	
		eS	NE		54	52	
2	AA	P	NE	22	33	16	
		iS	NE			33	se
4	AA	P	NE	08	04	30	
		iS	NE		06	11	
5	AA	P	NE	17	16	24	
		S	NE		17	10	
6	AA	P	NE	09	32	07	
		iS	NE			28	(w)
7	AA	P	NE	08	56	08	
		S	NE			27	
8	AA	iP	NE	22	19	42	s(w)
		S	NE		20	02	
10	AA	P	NE	11	32	30	
		S	NE		33	03	
11	AA	P	NE	06	56	51	
		S	NE		57	10	
	AA	iP	NE	21	55	06	e
12	AA	eP	NE	09	59	50	
		e(S)	NE	10	00	52	
		L	NE		01	.0	
		M	NE		02	.3	
	AA	eP	NE	10	05	.4	
13	AA	P	NE	10	08	55	
		S	NE		09	16	
14	AA	eP	NE	09	23	26	
		S	NE			45	
	AA	eP	NE	10	27	29	
		S	NE			49	
	AA	P	NE	16	41	21	
		S	NE		42	18	

Date	Stn	Phase		h	m	s	
AUG 14	AA	P	NE	18	18	06	
		S	NE			54	
15	AA	P	NE	09	08	48	
		PcP	E		09	10	
		S	E		18	26	
		ScS	E		19	19	
		SS	E		22	39	
		L	E		34		
		M	E		44		
	AA	eP	NE	13	16	23	
		e	NE			41	
		S	NE		17	47	
		L	NE		18	.1	
	AA	eP	N	21	32	28	
		eS	N		34	01	
16	AA	P	NE	00	56	15	
		S	NE	01	00	09	
		L	NE		01	.4	
	AA	P	NE	04	15	38	
		S	NE			57	
	AA	iP	NE	09	55	19	sw
		iS	NE		56	36	ne
17	AA	P	NE	01	03	47	
		S	NE		05	28	
	AA	iP	NE	05	13	03	sw
		S	NE			28	
	AA	eP	NE	18	22	35	
		(S)	NE		23	00	
		L	E		24	.6	
	AA	P	NE	20	40	34	
	AA	eP	NE	21	11	08	
		PP	NE		12	07	
		eS	NE		16	21	
		eSS	NE		18	08	
		L	NE		18	.4	
		L	E		19	.2	
		M	NE		21		
	AA	iP	NE	21	23	42	sw
		S	NE			56	
18	AA	eP	NE	05	43	14	
		e	NE		44	23	
	AA	P	NE	06	49	34	
		PcP	E			53	
		e(S)	NE		59	51	
		eL	NE	07	10	.4	
19	AA	eP	NE	12	02	49	
		(S)	NE		03	37	
	AA	e	NE	12	06	48	
		(S)	NE		07	09	

Date	Stn	Phase		h	m	s	
AUG 19	AA	P	NE	17	14	29	
		e	E			45	
		S	NE		15	50	
		e	NE		23	07	
20	AA	P	NE	12	24	31	
		S	NE		25	14	
21	AA	P	NE	06	10	06	
		S	NE			30	
	AA	P	NE	16	43	33	
		S	NE		45	56	
22	AA	iP	NE	10	59	21	
		S	NE			42	
23	AA	P	NE	00	55	06	
		S	NE		56	03	
	AA	(P)	NE	03	03	49	
		(S)	NE		05	05	
	AA	eP	NE	20	16	53	
		eS	NE		17	44	
24	AA	P	NE	00	46	47	
		S	NE		47	16	
	AA	P	NE	07	49	52	
		S	NE		50	13	
	AA	eP	NE	15	47	(18)	
	AA	P	NE	20	53	28	
		S	NE		55	06	
	AA	eP	NE	21	36	26	
		PP	E		37	25	
		e(S)	NE		41	.2	
		eL	NE		42	.2	
		M	NE		46		
26	AA	e?	E	11	01		
27	AA	P	NE	07	57	02	
		PP	NE		58	47	
		S	E	08	04	23	sw
29	AA	iP	NE	20	53	20	e
		S	NE			41	
30	AA	P	NE	04	05	38	
		S	NE		06	10	
	AA	P	NE	06	23	18	
		S	NE			57	
	AA	P	NE	11	25	52	
		S	NE		27	54	
31	AA	eP	NE	09	16	34	
		S			25	13	
	AA	eP	NE	12	14	42	
		S	NE		15	20	

Date	Stn	Phase		h	m	s	
SEP 2	AA	iP	NE	07	14	55	n
		S	NE		15	15	
3	AA	P	NE	02	41	13	
		S	NE		42	51	
	AA	P	NE	21	49	45	
		S	NE		50	15	
		L	NE		50	.9	
	AA	P	NE	21	52	20	
		S	NE			46	
		L	NE		53	.7	
4	AA	e	E	08	33	25	
5	AA	iP	E	23	07	00	w
6	AA	eP?	E	04	16	32	
	AA	e(S)	E	18	07	10	
	AA	P	E	18	09	24	
		S	E		11	31	
8	AA	P	E	04	19	14	
		S	E		20	47	
9	AA	P	E	19	13	23	
		S	E			43	
11	AA	P	NE	02	34	37	
		S	NE		35	57	
	AA	P	NE	12	29	39	
		S	NE		30	11	
	AA	P	NE	23	32	48	
		S	NE		33	21	
12	AA	eP?	NE	02	01	48	
		e(P)	NE		02	14	
		S	E		07	50	
		e(SS)	E		11	.4	
		L	E		17	.3	
14	AA	P	N	13	18	33	
		S	N		20	35	
		L	N		21	.2	
	AA	eP	N	14	13	20	
		i(P*)	N			47	
		S	N		16	10	
		i	N			22	
		L	N		17	.2	
	AA	(P)	N	14	24	48	
	AA	eP	N	15	02	36	
		eS	N		05	02	
	AA	eS	N	17	02	35	
	AA	eP	N	17	09	56	
		i	N		10	18	
		S	N		12	36	

Date	Stn	Phase		h	m	s	
SEP 14	AA	i	N			53	
		L	N		13.1		
	AA	eS	N	17	42±		
	AA	eP	N	22	27	30	
		eS	N		30	16	
		eL	N		32		
	AA	e(P)	N	23	00±		
15	AA	eP	NE	06	03	16	
		S	NE		05	55	
		L	NE		06.4		
	AA	e	NE	06	18	50	
	AA	eP	NE	08	04	18	
		eS	NE		06	48	
	AA	P	NE	11	08	03	
		iS	NE		09	56	ne
		ScS	NE		19	25	
	AA	eS	NE	12	59	48	
	AA	eP	NE	13	50	15	
		eS	NE		52	38	
	AA	e(S)	NE	19	42	15	
16	AA	e	NE	02	08±		
	AA	eS	NE	02	42	26	
	AA	eP	NE	06	56	46	
		S			58	16	
	AA	eP	NE	10	12	06	
		eS	NE		14	07	
	AA	eP	NE	16	00	40	
		eS	NE		03	14	
		L	NE		03.9		
	AA	P	NE	19	57	17	
		S	NE			37	
17	AA	P	NE	05	08	08	
		S	NE			45	
	AA	e(S)	NE	07	16	47	
	AA	eS	NE	08	45	32	
	AA	(S)	NE	10	09	40	
	AA	(S)	NE	10	47	34	
	AA	eP	NE	14	39	37	
		eS	NE		42	28	
		L	NE		43.2		
	AA	P	NE	14	55	23	
		e(S)	NE		57	59	

Date	Stn	Phase		h	m	s	
SEP 17	AA	P	NE	17	22	02	
		S	NE			35	
18	AA	e(P)	N	09	28±		
		eS	N		30	52	
19	AA	P	NE	06	26	07	
		S	NE			52	
	AA	P	NE	09	27	06	
		S	NE			40	
21	AA	P	NE	02	41	08	
		S	NE		42	18	
	AA	eiP	NE	11	15	16	
		S	NE			34	
22	AA	P	NE	11	44	58	
		S	NE		45	27	
24	AA	P	NE	05	54	20	
		S	NE			46	
25	AA	P	NE	01	42	06	
		S	NE		45	30	
	AA	P	NE	02	48	33	
27	AA	eP	NE	11	30	09	
		S	NE		31	05	
	AA	P	NE	19	11	19	
		S	NE			42	
28	AA	e	E	01	45	18	
		e	E		47	08	
29	AA	eP	NE	15	35.7		
		eS	NE		38.4		
		eL	NE		38.9		
	AA	eP	NE	15	45.2		
		eS	NE		47.8		
	AA	eS	NE	15	51.2		
	AA	eS	NE	16	20.7		
	AA	eP	NE	17	10.0		
		eS	NE		12.6		
30	AA	P	NE	05	01.3		
		S	NE		04.8		
		L	NE		05.9		
	AA	eP	NE	13	36.3		
		eS	NE		38.7		
		eL	NE		41		
	AA	e(P)	E	14	58		
		eS	NE	15	00.5		
		eL	NE		03.6		
	AA	eP	NE	16	23.7		
		S	NE		24.7		

Date	Stn	Phase		h	m	s	
SEP 30	AA	iP	NE	20	30	31	
		(PP)	E		31	31	
		eS	E		34	22	
OCT 3	AA	P	NE	01	26	38	
		S	NE			58	
	AA	P	NE	03	39	18	
		S	NE			33	
	AA	P	NE	09	23	20	
		S	NE			54	
	AA	eP	NE	10	16	22	
		i	NE			50	
		S	NE		18	52	
4	AA	eP	NE	21	41	38	
					43	10	
6	AA	P	NE	12	40	24	
		S	NE			52	
8	AA	P	NE	00	08	02	
		S	E		10	46	
9	AA	P	NE	16	10	22	
		e	NE			42	
		S	NE		13	32	
11	AA	iP!	NE	07	49	47	sw
		iS!	NE		50	14	sw
	AA	eP	NE	17	54	07	
		eS	NE		56	41	
	AA	P	NE	20	07	01	
		S	NE		09	35	
12	AA	eP?	E	10	19±		
		eS	E		21	35	
14	AA	eP	NE	20	35	26	
		eS	NE		36	23	
		L	NE		37.1		
15	AA	eP?	NE	06	26	46	
		ePcP	NE		27	10	
	AA	eP	NE	07	35	02	
		eS	NE		36	41	
	AA	P	NE	12	09	18	
		S	NE			37	
16	AA	iP	NE	13	39	40	ne
		S	NE		40	05	
18	AA	P	NE	10	53	47	
		S	NE		54	17	
19	AA	P	NE	02	16	10	
		S	NE		18	17	
	AA	eP	NE	04	37	36	
		S	NE		39	13	

Date	Stn	Phase		h	m	s	
OCT 19	AA	P	NE	08	30	50	
		e	E		31	46	
		S	NE		33	22	
		e	NE			38	
		L	E		34.2		
		M	NE		36		
	AA	e(S)	NE	08	45	37	
		e	NE		46	08	
	AA	eP	NE	09	18	58	
		e	NE		20	29	
		S	NE			47	
	AA	P	NE	13	55	10	
		S	NE		57	04	
	AA	P	NE	18	07	56	
		iS	NE		08	44	sw
20	AA	P	NE	12	45	13	
		S	NE		46	52	
	AA	eP	NE	21	24	24	
		S	NE		26	13	
21	AA	P	NE	09	03	07	
		S	NE			30	
22	AA	eP	NE	01	31	29	
		S	NE		32	09	
		eL	NE		32.5		
	AA	e	NE	01	35±		
	AA	iP	NE	03	32	49	
		S	NE		33	10	
	AA	iP	NE	09	24	28	ne
		S	NE			46	
	AA	eP	E	10	04	30	
		eS	NE		06	08	
23	AA	e(P)	NE	11	55	27	
		e(S)	NE		58	57	
	May be separate shocks						
27	AA	eP	NE	00	24	33	
		S	NE			56	
28	AA	eP	NE	09	25	26	
		eS	NE		27	32	
29	AA	eP	NE	14	23	34	
		eS	NE		26	16	
30	AA	iP	NE	04	36	45	ne
		S	NE		37	06	
	AA	iP	NE	07	06	36	n(e)
		i	NE			48	
		i	NE			58	
		iS	NE		08	01	(s)
	AA	eP	NE	08	48	36	
		iS	NE		49	00	

Date	Stn	Phase		h	m	s	
OCT 30	AA	eP	NE	14	00	58	
		S	NE		02	45	
		eL	NE		03.6		
		M	NE		05.5		
	AA	iP	NE	21	39	34	(e)
		S	NE		41	05	
31	AA	iP!	NE	04	28	48	
		iS	NE		30	06	
		(ScS)	E		40	15	
		Felt: Apia, MM 2.					
	AA	P	NE	05	02	08	
		iS	NE			32	(w)
	AA	P	NE	14	03	43	
		S	NE		05	20	
NOV 2	AA	P	NE	18	04	42	
		S	NE		05	23	
	AA	P	NE	18	35	20	
		iS	NE		36	15	
	AA	P	NE	21	55	36	
		S	NE		57	23	
		eL	NE		58.5		
3	AA	eP	NE	09	07	30	
		S	NE		09	16	
		eL	NE		10.5		
	AA	P	NE	09	51	53	
		e	E		58	34	
	AA	P	NE	14	46	49	
		iS	NE		47	40	(w)
		eL	NE		48.5		
	AA	P	NE	15	52	38	
		iS	NE		53	27	s(w)
4	AA	eP	NE	17	15	45	
		eS	NE		17	03	
	AA	eP	E	18	26	08	
		eS	E		28	18	
	AA	(S)	E	19	30	36	
	AA	eP	E	20	03	33	
		eS	E		05	38	
	AA	e(P)	E	21	56	11	
		eS	E		57	41	
5	AA	P	E	11	55	06	
		(pP)	E			14	
		S	E	12	00	25	
6	AA	eP	NE	11	45	39	
		eS	NE		47	24	
7	AA	P	NE	21	18	46	
		S	NE		19	10	

Date	Stn	Phase		h	m	s	
NOV 7	AA	S	NE	21	45	35	
		eL	NE		46.6		
	AA	eS	E	21	48	(05)	
		L	E		48.8		
	AA	eP	NE	22	18	45	
		eS	NE		20	20	
		L	NE		20.9		
		M	NE		23		
8	AA	eP	E	02	20	12	
		eS	E		21	40	
	AA	P	E	14	06	25	
	AA	S	E	14	36	10	
		eL	E		37.1		
	AA	eS	E	14	38	36	
		L	E		39.1		
10	AA	eP	NE	00	58	(04)	
		S	NE			18	
12	AA	eP	NE	09	23	30	
		eS	NE			48	
	AA	e(P)	NE	17	40	35	
		e(S)	NE		42	02	
	AA	eP	NE	18	06	43	
		eS	NE		08	50	
13	AA	P	NE	10	08	58	
		S	NE		11	08	
14	AA	P	NE	04	39	04	
		iS	NE			38	n
	AA	eP	NE	11	53	24	
	AA	eP	NE	20	23	50	
		eS	NE		25	32	
	AA	e?	NE	23	10	44	
		eP	NE		11	47	
		S	NE		13	31	
15	AA	S	N	08	06	46	
17	AA	eP	NE	13	04	49	
		S	NE		05	21	
	AA	eP	NE	23	15	48	
		eS	NE		19	13	
18	AA	eP	NE	05	29	30	
		eS	NE		31	13	
19	AA	eP	NE	05	28	40	
		S	NE		30	40	
	AA	eiP	NE	11	16	27	
		pP	NE			42	
		sP	NE			54	
		PP	NE		17	32	

Date	Stn	Phase		h	m	s	
NOV 19	AA	S	NE		22	44	
		eL	NE		26.1		
20	AA	P	NE	01	46	14	
		S	NE			34	
	AA	iP	NE	15	17	31	
		iS	NE			56	
		Felt: Apia					
	AA	eP	NE	17	51	35	
		eS	NE		53	08	
22	Fiji shock at 19 - 34 lost during change of paper.						
23	AA	eS	N	16	18	15	
	AA	P	N	19	12	30	
		S	N			55	
24	AA	eP	NE	02	35	33	
		S	NE		36	02	
	AA	P	NE	12	43	49	
		S	NE		45	44	
	AA	eP	NE	14	06	17	
		iS	NE		07	50	(s)w
	AA	eP	NE	21	42	39	
		iS	NE		44	10	n
25	AA	eP	NE	07	32	09	
		S	NE			37	
26	AA	eP	NE	06	09	51	
		S	NE		10	22	
	AA	eP	NE	07	18	53	
	AA	iP	NE	07	40	45	(w)
		eS	NE		41	27	
		eL	E		42.1		
		L	N		42.3		
	AA	eS	NE	07	44	12	
		eL	NE		44.4		
	AA	P	NE	16	08	14	
		iS	NE		09	46	
	AA	eS	NE	16	17	16	
	AA	eP	NE	22	33	35	
		S	NE			54	
	AA	eP	NE	23	21	59	
27	AA	eP	NE	07	40	25	
		S	NE		42	06	
	AA	iP	NE	10	44	32	
		S	NE		46	11	
	AA	P	NE	12	07	16	
		iS	NE			37	

Date	Stn	Phase		h	m	s	
NOV 28	AA	eS	NE	02	49	10	
	AA	e(P)	NE	07	36	22	
		eS	NE		39	07	
	Possibly two shocks.						
	AA	e?	NE	09	20	16	
		e(P)	NE			45	
		eS	NE		23	03	
	Probably two superimposed shocks.						
	AA	eP	NE	21	42	55	
		S	NE		43	32	
	AA	iP	NE	22	44	03	(n)e
29	AA	eP	NE	01	33	56	
		eS	NE		35	37	
	AA	P	NE	05	50	02	
		S	NE		52	22	
DEC 2	AA	eP	NE	04	21	18	
		eS	NE		23	24	
	AA	P	NE	08	21	11	
		S	NE			29	
	AA	P	NE	09	44	50	
3	AA	eP	NE	13	18	02	
		S	E			55	
		L	NE		19.2		
4	AA	P	NE	01	07	02	
		iS	NE			33	(sw)
	AA	eP	NE	09	26	18	
		S	NE		28	02	
	AA	P	NE	13	11	39	
		S	NE			58	
	No records December 6 - 7.						
7	AF	iP	ZN	03	03	41	(dn)
		S	ZN		05	10	
7	AF	iP	ZN	04	32	37	
		S	ZN		34	19	
9	AA	iP	NE	14	06	06	ne
		iS	NE		07	22	(w)
	AF	iP	ZN	14	06	02	d
		iS	ZN		07	18	
9	AA	eP	NE	14	30	14	
		S	NE			36	
	AF	P	ZN	14	30	14	d
		S	ZN			34	
10	AA	P	NE	03	57	18	
		iS	NE			40	
11	AA	eP?	E	00	41	51	
	AF	P?	Z	00	41	47	

Date	Stn	Phase		h	m	s	
DEC 11	AF	P	ZN	03	41	00	
		S	ZN		42	45	
	AA	eP	NE	10	09	36	
		eS	NE		11	13	
		eL	NE		12		
	AF	P	ZN	10	09	32	
		S	ZN		11	15	
		eL	N		12.2		
	AA	iP	E	17	31	02	e
		iS	E			23	
	AF	iP	ZN	17	31	00	
		iS	ZN			21	
12	AA	eP	NE	11	14	38	
		S	NE			58	
	AA	eP	NE	14	13	42	
		eS	NE		14	01	
	AA	P	NE	17	34	55	
		S	NE		35	17	
13	AA	eP	NE	07	52	24	
		S	NE			37	
		eL	NE		53		
	AA	P	NE	16	04	41	
		iS	NE		05	12	w
	AA	eP	NE	17	37	11	
		S	NE			52	
14	AA	P	NE	05	19	50	
		S	NE		20	10	
	AA	P	NE	18	09	01	
		(PcP)	NE			10	
		e(S)	E		19	16	
15	AA	P	NE	08	58	38	
		iS	NE			58	
16	AA	P	NE	03	40	44	
		S	NE		41	16	
	AA	P	NE	13	21	38	
		S	NE			58	
	AA	eP	NE	16	47	55	
		S	NE		49	36	
17	AA	P	NE	02	58	42	
		S	NE	03	00	35	
	AA	e	NE	09	48	33	
		e(S)	E		49	25	
18	AA	P	NE	09	59	03	
		S	NE	10	00	32	
	AA	P	NE	20	15	40	
		eS	NE		17	58	
19	AA	P	NE	02	19	35	
		S	NE		20	04	

Date	Stn	Phase		h	m	s	
DEC 19	AA	P	NE	09	11	50	
		S	NE		13	18	
	AA	eP	NE	13	44	18	
		eS	NE		45	18	
20	AA	P	NE	06	27	12	
		eS	NE		29	16	
	AA	eP	NE	08	07	22	
		eS	NE		10	23	
	AA	P	NE	11	35	38	
		S	NE			57	
	AA	P	NE	14	18	02	
		eS	NE		19	07	
	AA	eP	NE	20	54	49	
		e(S)	NE		55	57	
	AA	iP	NE	23	00	43	s
		S	NE		01	03	
21	AF	P	Z	10	15	32	
		S	Z		16	30	
	AA	eP	NE	10	15	35	
		eS	NE		16	26	
	AF	iP	Z	10	23	51	d
		S	Z		26	(33)	
	AA	P	NE	10	23	55	
		S	NE		26	34	
		L	NE		27.5		
	AF	P	Z	10	36	40	
		S	Z		38	12	
	AA	P	NE	10	36	54	
		e	NE		38	25	
		S	NE		39	18	
	AF	iP	Z	11	17	34	(u)
		S	Z		20	13	
	AA	eP	NE	11	17	39	
		eS	NE		20	08	
		L	NE		20.5		
	AF	e(P)	Z	11	30	40	
		S	Z		32	03	
	AA	e(S)	NE	11	32	10	
	AA	P	NE	17	51	08	
		S	NE			36	
	AF	iP	Z	17	51	08	
		iS	Z			35	
22	AF	iP	Z	00	22	06	u
		iS	Z			33	
23	AA	eP	NE	04	34	22	
		eS	NE		36	42	
	AF	eL	N	04	50±		
		eL	Z		54±		
	AF	P	ZN	14	02	17	
		S	ZN		04	49	
		eL	ZN		07.9		

Date	Stn	Phase		h	m	s	
DEC 23	AA	eP	NE	14	02	23	
		eS	NE		04	46	
24	AA	P	NE	01	06	16	
		eS	NE		07	30	
	AA	eP?	N	09	17	51	
		eS?	N		20	42	
	AA	P	NE	23	02	51	
		S	NE		03	13	
25	AA	eP	NE	03	52	24	
		eS	NE		54	55	
27	AF	iP	Z	05	45	42	(d)
		S	Z		46	06	
	AA	P	NE	05	45	45	
		iS	NE		46	08	
	AF	iP	Z	19	12	27	d
		S	Z		13	10	
	AA	P	NE	19	12	28	
		iS	NE		13	11	(e)

Date	Stn	Phase		h	m	s	
DEC 29	AA	P	NE	08	50	33	
		S	NE			57	
	AF	P	Z	08	50	44	
		S	Z		51	05	
	AA	eP	E	17	16	36	
		eS	E		17	53	
		eL	E		18.7		
	AF	P	Z	17	16	46	
		S	Z		18	06	
		eL	Z		18.3		
30	AF	iP	Z	07	36	25	(d)
		iS	Z		37	43	
	AA	eP	NE	07	36	27	
		eS	NE		37	48	
	AA	iP	NE	13	09	16	
		S	NE			38	
	AF	iP	Z	13	09	14	
		S	Z			(37)	
	AA	e(P)	NE	23	34	32	
		e(S)	NE		37	47	

RAOUL ISLAND

The amplitudes quoted in this section of the report are in millimetres, read directly from the viewing screen of a projector magnifying eight times.

Many small local earthquakes have been omitted from this list, which includes all shocks reported by the USCGS or BCIS, and such other activity as appears likely to have been recorded by stations beyond the New Zealand network.

Date	Phase	h	m	s	A
JAN 2	P	18	24	58	2.4
	S		25	31	5
4	iP	09	58	32	14
	S		55	35	
4	P	15	37	14	4.5
	e(S)		36		10
4	iP	19	23	03	10
	S		11	25	
4	eP?	21	32	04	
	P		16		1.5
	S		45		8
5	iP	06	14	41	3.6
	S		50		6
5	e(P)	09	49	42	5
5	S	14	05	15	6

Date	Phase	h	m	s	A
JAN 7	i	02	38	44	6
7	(P)	16	08	06	
	eP			12	
	S			27	5
	i			38	10
7	e	21	44	52	4.2
14	iP	02	04	04	4.5
	eS			55	
14	e	08	59	55	
14	P	19	13	43	3.8
	i			52	2.3
	eS		15	19	
15	iP!	21	21	48	
17	iP	08	01	43	7
	iS		02	04	17

Date	Phase	h	m	s	A
JAN 17	i(P)	17	15	32	13
	i(S)			50	16
18	eP	22	25	34	
	S		27	27	9
	e		31	42	6
21	iP	09	32	19	15+
21	iP	19	56	22	
21	eP	20	00	39	
	eS			56	
29	P	14	07	18	8
	S			31	25
29	eP	16	05	32	
	S		06	01	10
30	iP!	18	11	07	50+
	Felt: Raoul I. MM 3.				
31	e(S)	05	50	38	3
FEB 8	iP	15	54	38	¾
	i			48	¾
	iS		55	01	1½
	i			32	⅔
11	eP	19	59	27	
	e(S)			38	6
12	e(P)	10	12	33	
	e(S)			24	
13	iP	01	47	00½	45
	i			23	20
	S		48	11	25
13	e(P)	19	37	12	4.5
13	e	21	13	14	
14	iP	10	22	30	5.5
	eS		23	09	4
17	iP	08	00	53	9
	iS		02	00	11
20	e(S)	23	08	15	
20	e(S)	12	22	06	
21	e(P)	09	01	13	
	eS			29	
21	iP	15	54	28	5
	e			34	
	epP?		55	23	
22	iP	17	21	58	6.5
	iS		22	06	12
22	iP	18	45	35	2.6
	epP?		46	24	
FEB 23	iP	07	51	23	4
	S			43	15
MAR 6	iP	00	26	18	3
	S			26	5
6	iP	01	55	27	50+
	iS			34	80+
6	iP	02	17	17.5	14
	eS			26	34
6	iP	09	58	31	5
6	iP	19	21	06	10
6	iP	21	08	44	21
	iS		13	46	3
6	eP	22	13	50	4
7	iP	04	21	47	14
	S			54	24
7	iP	05	24	35	3.6
	S			50	18
7	eP	09	25	36	
7	P	11	46	21	8
	S			29	14
7	iP	14	39	46	5
	e(S)		40	01	3
7	e(P)	16	01	31	4
	S			43	8
7	iP	16	09	14	4
	S			27	58
8	P	07	04	29	26
	e(S)			46	16
8	P	09	05	49.5	3.5
8	eP	16	37	54	
9	iP	13	42	23	14
	S			35	46
9	iP	15	49	24	10
	S			32	22
9	P	19	00	24.5	6
10	e(P)	02	58	36	
10	e(P)	18	04	42	
10	eP	17	25	46	
12	eP	17	02	29	
13	eP	00	43	59	11

Date	Phase	h	m	s	A
MAR 13	eP	04	54	34	
16	iP!	07	45	55.5	
16	eP	09	54	12	
16	eP	12	19	37	
	eS			44	
16	i(P)!	22	08	47	
18	eP	22	10	51	
20	eP	01	13	40	
20	eP	01	50	21	
20	eP	03	08	20	
20	eP	03	13	19	
20	eP	04	09	05	
20	eP	18	45	35	
	eS			50	3.2
20	P	23	16	07	
21	eP	03	17	39	
21	eP	04	29	50	
	eS		31	47	
21	eP	05	01	16	
	eS		02	03	
21	eP	15	30	05	
21	iP	19	49	00	16
	S		50	38	13.5
22	iP	11	59	10.5	4
	S			27.5	28
22	e(P)	18	19	39	1.8
	i(S)		20	50.5	4
22	iP	18	42	51	2.6
24	eP	18	06	31	2.9
25	eP	00	02	37	4.0
	eS		04	37	1.8
25	eP?	02	02	46	1.9
	e(P)			57	4.6
25	eP	04	22	38½	10+
25	e	04	32	53	3¼
25	eP	18	38	42	5
26	e	02	21	51	2¼
26	e?	02	30	48	1.9
MAR 26	e(P)	10	22	26	5
26	iP	11	46	26	11½
30	iP	11	38	42¾	6
30	eP	19	01	35	2½+
31	eP	00	23	38	4½
APR 1	eP	07	29	21½	2.2
	eS			53½	8
1	iP	18	59	13	7+
1	eP	19	18	44	3
	e		20	42	6
	eS		21	08	3½
2	eP	00	49	20	5½
2	eP	06	07	45	2½
2	eP	10	26	04	2
	eS		27	05	3¾
2	eP	21	50	17	7±
	e(S)		51	44	
3	e	12	30	39½	3½
5	iP	20	55	34	(16)
6	eP	08	03	04	20
6	eP	17	20	36	8½
6	eP	17	53	09	4
6	e	22	24	08½	2
	e(S)		25	05	3
6	iP	23	26	41	11+
8	eP	01	24	41	
8	eP	08	04	36	2.3
8	e(P)	11	26	35	2
	e(S)		27	23	4
8	eiP	20	14	51	
9	iP	00	51	28	8
10	eP	05	49	11	60
11	eP	04	04	45	10
11	eP	04	07	43½	(19)
11	eP	04	36	54	(10)
12	eP	07	02	28	7+
	eS			48½	36+

Date	Phase	h	m	s	A
APR 12	eP	07	50	50½	10+
23	eP	03	49	05½	6
24	eP	08	50	45	4
	eS		51	20	10
24	eP	17	58	42½	
25	eP	23	01	17½	13
26	eP	07	21	30	7
26	eP	20	52	29	1.7
27	eP	05	06	56	1.5
27	e(P)	15	30	10	10½
27	eP	15	37	17½	3½
MAY 11	e(P)	01	52	16	
13	eP	18	07	41	3
	eS		08	17±	18±
14	iP	18	40	55	
14	eP	20	46	38	7½
JUN 2	eP	03	24	18	3¼
	eS		25	07	5
2	e	03	28	30±	2
2	eP	03	33	01	5
	e			46	6
2	e	03	37	40±	1.4
2	eP	03	49	18½	4½
	eS		50	05½	14
2	eP	03	53	12	5
	eS		54	00	10
2	eP	12	46	32	0.8
	eS		47	57	1.7
2	e(P)	15	01	20	1
4	e(P)	19	10	53	5½
4	e(P)	21	16	34	5½
6	iP	11	16	56	?
7	e(P)	08	01	09	1
9	eP	14	55	04	1
	eS			53	7
10	eP	23	57	06	4±
	e		58	20	3
11	eP	01	11	20±	1
	e		12	08	1.8
JUN 12	iP	11	44	47	90
12	eP	12	14	45	1.8
	e(S)		15	17	2
12	e	17	13	20	1.5
13	eP	(12	59)	40	3
	eS	(13	00)	23	6
13	eP	16	(21)	17	6
	eS		(22)	24	2.3
14	eP	(15	00)	34	3½
14	eP	21	04	22	4
	eS		05	44	3½
15	e	18	24	30	2.2
20	eP	03	17	21	1.2
	eS		18	30±	1.2
20	eP	10	06	(07)	2.3
			07	(45)	2.5
20	e	22	01	(17)	1.4
21	eiP	23	26	05½	12
22	eP	03	01	08	3
22	eP	17	54	48	1
26	eP	05	01	20	
26	iP	05	24	36	
JUL 8	eP	01	35	41	2
8	eP?	08	50	29½	1.8
8	e(P)	16	50	22	3
12	eP	18	30	46	3
	eS		31	18	6
13	e(P)	06	41	35±	4½
13	eP	15	25	56	43
14	eP	06	01	46	7
14	e(P)	15	42	57	5
16	eP	23	33	41	4
18	eP	07	02	33	20
	eS		04	06	20
19	eP	13	46	28½	11
20	eP	16	55	21	11
21	iP	00	25	19	6
	eS			34	12½

Date	Phase	h	m	s	A
JUL 21	eP	10	09	52	2.1
	eS		10	40	4
22	eP	16	37	01	12
	eS			12	60
23	e(P)	14	53	02	
23	eP	14	58	00	40
23	eP	15	11	07	4
24	eP	16	30	14	4
	eS		31	16	4
28	eP	05	09	15±	2.5
	eS			39	5
30	eP	12	54	38	13
	eS		55	03	83
30	eP	13	05	40±	2.2
	eS			58	5
AUG 1	eP	13	03	24	2.0
2	eP	03	10	45	2.0
4	e	00	42	44	4½
4	eP	08	04	22	3
	eS		06	03	4½
4	eP	08	43	54	2
	eS		44	17	3
7	e(P)	15	34	10	2½
8	e(P)	00	52	49	1½
	e(S)		53	12	3
9	eP	20	04	38	2.3
11	e(P)	15	31	46	1.8
	e(S)			58	5
11	e	15	39	44	5
13	e	11	30	32	5
13	e	13	35	11	3
13	e	20	36	12	2½
13	eP	20	52	08	1.5
	eS			59	3
14	eP	01	00	41	2.5
14	eP	03	49	55	2½
	eS?		50	07	4½
14	eP	07	04	15	1.8
14	eP	21	10	18	2.2
14	e(P)	23	34	02	2½
AUG 15	e(P)	06	50	35	2½
15	eP	13	16	25	1.7
	eS		17	54	4½
16	e(S)	09	58	03	3
17	eP	01	03	06	3½
	eS			19	4½
17	e(P)	12	21	01	2.3
17	e(P)	14	05	08	1.4
17	e(P)	16	41	38	1.3
17	e(P)	16	57	48	1.6
17	eP	21	11	13	1.6
20	eP	04	55	21	4
20	eP	05	13	50	3
21	eP	10	48	46	2.0
21	eP	16	41	02	5
	eS			36	5½
21	eP	17	44	01	5
22	eP	20	43	44	1.2
22	eP	23	29	34	1.8
23	eP	16	09	34	2.0
24	e(P)	16	18	15	2.0
24	e	20	55	01	1.1
24	e	21	36	37	0.9
24	eP	23	44	27	1.4
	eS		45	00	1.5
25	eP	05	39	43½	
28	e(P)	17	24	27	1
	e(S)		25	53	1.2
28	eP	18	03	29	0.8
30	eP	11	24	09	2½
	eS		25	00	5
SEP 2	eP	17	43	12	2¾
3	e	02	42	54	2.0
3	e	09	01	48	1.5
3	e	14	17	00	1.8
4	eP	12	30	39	3½
	eS		31	07	4½

Date	Phase	h	m	s	A
SEP 6	e(P)	18	08	20	1.8
10	e	03	51	48	2.0
10	eP	05	41	53	1.7
11	eiP	12	17	55	4
	e		18	16	6
	e			41	3
11	e(S)	13	57	53	4½±
11	e(P)	18	10	41	1.8
12	e(P)	03	02	00	2.1
12	e(P)	09	53	31	0.8
	e		54	06	1.6
	e		55	04	1.1
12	e(P)	14	54	20	1.4
12	e(P)	15	43	23	1.7
12	e(P)	23	03	02	2.5
13	e(P)	21	24	38	1.2
14	iP	15	26	54	15±
14	iP	15	40	46	10
14	eP	15	44	37	3½
14	eP	15	48	26	1.6
14	iP	15	56	28	(68)
14	eP	16	22	28	9
	eS			42	30
14	eP	16	26	18	6
	eS			32	17
14	iP	16	56	37	84+
14	iP	17	06	38	
14	eiP	17	38	20	62±
14	eP	19	10	09	7
	eS			33	25
14	eP	19	35	27	
	eS			45	28
14	eP	19	49	15	6
	eS			30	18
14	eP	20	27	38	6
	e(S)			46	11
14	iP	22	24	15	75±
14	eP	22	38	30	5½
	eS			47	19
SEP 14	eP	22	57	48	10
	eS			59	30
14	eP	23	08	39	5
	eS			55	18
14	e(P)	23	54	23	2½
	e			44	4
	e(S)		55	00	12
15	eiP	01	31	20	11
	e(S)			31	42
15	iP	02	24	36	13
	eS			48	44
15	eP	03	40	35	3½
	eS			50	12½
15	eP	03	44	58	2.2
	eS		45	19	8
15	eP	04	02	14	2½
	eS			42	4½
15	eP	04	16	57	26
15	eP	04	35	30	17
15	eP	04	55	06	3¼
	eS			19	10
15	eP	05	04	55	3
	eS		05	17	7±
15	e(P)	05	21	50	4½
15	iP	05	57	13	6
	e	06	09	09+	45+
15	eP	06	17	57	9±
	eS		18	01	88±
15	eP	06	41	28	4½
	e(S)			55	18
15	iP	06	51	38	44
15	e	07	08	31	3±
	e		09	51	8
15	eP	07	20	38	4½
	eS			51	11±
15	iP	08	00	45¼	
15	eP	09	23	14	6±
	e?		24	04	12±
15	e	09	44	09	2¾
15	e	09	52	48	2
15	e	09	54	46	2
15	e(P)	09	58	12	1.8
	e(S)			25	2

Date	Phase	h	m	s	A
SEP 15	e(P)	10	14	43	2.2
15	eP	10	49	11	17
	eS			22	48±
15	eP	10	01	07	4½
	eS			24	10½
15	eP	11	05	42	1.8
	e			51	4½
	e		06	07	7½
15	eP?	11	07	10	5
	e(P)			26	19±
	On coda of previous shock.				
15	e(P)	11	08	50	3¾
	e(S)		09	06	12
	On coda of previous shock.				
15	e	11	29	30	1.2
	e?		30	15	1.2
15	eP	11	38	04	1.4
	e(S)			21	3
15	e	11	41	41	1.5
15	e	11	43	11	1.4
15	eP	11	44	56	2½
	eS		45	18	3¾
15	eP	12	00	51	14
	eS		01	08	42
15	eP	12	07	41	2.1
	eS			51	9
15	eP	12	09	24	3½
	eS			45	7
15	e	12	15	14	7
15	eP	12	16	25	4
	e(S)			44	9
15	iP	12	26	06	12
	eS			18	27
15	eP	12	32	54	1.6
	eS		33	02	4
15	eP	12	43	16	3½
	eS			27	19
15	eP	12	53	42	1.4
	eS			54	2½
15	eP	12	56	41	1.3+
	e(S)			53	4
15	e(P)	12	58	56	1.7
15	eP	13	15	49	7
	eS		16	05	18
SEP 15	eP	13	32	28	5½
	eS			38	14
15	e	13	42	56	4½
15	eP	13	46	42	24±
	e(S)		47	03	63±
15	e(P)	14	00	57	1.1
	e(S)		01	37	1.1
15	eP	14	04	02	16+
	eS			16	40
15	eP	14	20	50½	
	eS		21	05	
15	eP	14	28	03	9
15	eP	14	48	37	40±
15	e	15	29	36	5
	e		30	36	18
15	eP	15	35	35	2.2
	eS			49	10
15	e	18	49	15	4½
15	e	19	31	00	10
15	eP	19	36	40	6½
	eS		37	02	19
15	e	20	23	34	6½
15	eP	22	35	09	11±
	eS			28	34
15	eP	23	04	15	1½±
	e			33	3½
	e		05	05	5
16	eP	01	29	15	3½
	eS			39½	8½
16	eP	02	03	07	12
	e(S)			58	60±
16	eP	02	34	45	5½
	eS		35	00	23
	e(S)		36	21	
16	eP	08	21	28	1.8
	eS			50	4½
16	eP	10	08	12	24
	eS?			30	80
16	eP	15	57	33	70±
17	eP	03	20	55	10
	eS		21	16	19½

Date	Phase	h	m	s	A
SEP 17	eP	03	39	39	4½
	eS		40	07	6
	e		41	11	1.6
17	eP	04	04	23	11½
	e(S)			34	31
17	eP	05	28	48	14
	e(S)		29	04	30±
17	eP	07	10	49	40±
17	eP	08	39	33	55±
17	iP	10	38	08	54
17	eP	14	08	30	3¾
	eS			55	12
17	eP	14	36	42	15
	eS		37	05	28
17	eP	14	52	12	26
17	e	16	24	18	1.8
17	eP	17	13	49	5
	eS		14	01	18±
18	iP	09	25	03	62±
18	eP	10	43	21	38½
19	iP	19	31	57½	18
20	eP	20	53	30	9½
24	P	16	38	46	
	(S)		39	02	11
24	P	18	53	33	
	(S)			41	12½
24	P	19	44	55	
	e		45	06½	
	(S)			22½	13½
29	e?	14	34	(41)	0.4
29	P	15	32	23	
	i			25	
	i			28	85+
29	eP	15	41	49	
	i			52½	
	i			58	38
29	eP	16	14	13½	
	e			19½	
29	iP	17	08	17	
	e			25½	36
29	P	17	38	45	
	e			49	
	S			58	39

Date	Phase	h	m	s	A
SEP 30	P	04	56	53	
	e		57	08	
	e			12	
	(S)			20	31
30	eiP	13	32	59	24
30	P	14	53	54	
	e		54	05	
	S			15	19½
30	P	16	31	03½	
	e			11½	
	S			23	16.1
30	eP	20	30	10	
OCT 18	P	12	17	47½	
	e		18	05	
	S			15½	10.5
19	P	01	26	04	
	e			09	
	S		26	18½	21.5
19	P	02	14	12½	
	S			53½	
	e		15	03½	7.5
19	P	08	27	53½	
	e		28	04½	
	(S)			10	52±
19	eP	09	15	54	
	i			56	
	e		16	04	
	(S)			12	26
19	P	13	54	36	
	S		56	06	2.8
26	iP	12	07	02½	
	e			08½	
	e			12½	
	S			21	44½
28	P	09	23	47½	
	S		25	09½	2.3
29	iP	14	20	14½	
	i			15½	
30	eP	07	07	04½	
	e			24	
	S		08	55	3.0
30	P	13	59	55	
	S	14	01	00½	5.0
30	P	21	39	54½	
	S		41	50½	2.0
31	P	04	29	59½	
	S		32	11½	
	e			22½	7.0

Date	Phase	h	m	s	A
NOV 6	P	11	44	38	
	eS		45	42½	
	i			44	11
7	P	22	17	46	
	S		18	53	3.9
14	P	11	50	29½	
	eS		51	07	3.6
14	e	23	12	12½	1.1
16	eP	15	31	24	
	eS		32	06½	1.5
16	P	18	32	26½	6
17	eP	23	12	10½	
	e			20½	
	e			32½	
	(S)			51	6
20	P	17	51	10	
	S		52	29	1.5
NOV 21	e?	17	16	19	1.1
22	P	19	36	32½	
	S		38	05½	9.5
	e		40	34½	
	e		42	37½	
26	eP	16	07	55	
	S		09	18	2
27	e(P)	07	40	01½	
	S		41	25	1.5
27	e(P)	10	43	59	
			45	16½	2.8
29	iP	05	47	31½	
	S		48	02½	29
DEC 4	eP	09	(26)	05½	
	S			46½	2.3

SCOTT BASE

Date	Phase		h	m	s	
JAN 1	eiP	Z	07	36	19	
	ePcP	Z			59	
	S	ZNE		45	13	
	iP	Z	07	59	49	d
3	eP	Z	04	28	09	
	eiP	ZNE	11	29	58	u
	PcP	Z		30	10	
	iP	Z	15	55	19	u
	iP	Z	22	20	05	d
4	iP	Z	03	28	09	
	iP	Z	03	42	13	
	e	Z	10	07	08	
	iP	Z	21	20	25	
	e(PP)	Z		23	49	
5	iP	Z	09	46	24	u
	iP	ZNE	09	56	24	usw
	PcP	ZN		57	22	
	PP	ZN		58	34	d
	iPPP	ZN		59	48	
	S	NE	10	04	07	
	(PS)	NE			42	
	ScS	N		06	00	

Date	Phase		h	m	s	
JAN 5	Lr	Z		13	22	
	eiP	ZNE	14	59	58	
	PcP	Z	15	00	14	
8	P	ZNE	22	47	52	
	(PcP)	Z		48	06	
10	iP	Z	06	14	23	d
	iP	Z	23	29	27	d
11	e	Z	12	53	13	
	i	ZNE			49	
	eP	Z	13	35	54	
13	P	Z	01	28	42	
	e	Z			53	
	eP	ZE	07	45	55	
	PcP?	Z		46	00	
	e	E		47	15	
	P	Z	09	15	06	u
	S	ZN		27	09	
14	e	Z	21	10	54	
	e	ZNE		11	28	
15	P	N	21	29	00	
16	P	Z	11	01	35	

Date	Phase		h	m	s	
JAN 17	eP	Z	09	37	48	
	(PcP)	Z		38	07	
	eP	Z	11	41	57	
18	iP	ZN	22	32	39	dn
	e	Z		33	46	
	i	Z		34	18	d
20	eP	Z	16	57	37	
21 - 25: Microseism storm.						
26	e	Z	05	58	23	
	iP	Z			25	d
28	eP	Z	10	14	52	
	e	Z		15	13	
	e	ZNE	12	56.9		
29	e?	Z	01	40	54	
30	e	N	18	17.7		
	iS	N		26	43	s
FEB 1 - 6: Microseism storm.						
7	(P)	ZE	09	49	47	
	iP	ZNE			57	d
	iPP	ZE		53	36	w
	e(S)	Z	10	00	46	
	eS	N			54	
	eSS	NE		07	13	
	eLq	N		19.1		
	eLr	ZE		19.5		
	iP	Z	16	56	30	
8	iPKP	Z	01	22	20	
	e	Z		24	43	
	e	Z		26	47	
	iP	Z	05	54	58	u
	(PcP)	Z		55	51	
9	iP	ZNE	21	24	49	d
	PcP	Z		25	10	
12	iP	ZNE	17	12	53	u
13	iP	Z	15	18	24	
14	eP	Z	04	47	53	
15	e(P)	ZN	04	07.7		
	eS	N		13	50	
	eP	Z	04	50	37	
	e	Z			50	
	ePcP	Z		52	25	
	eS	NE		56	57	
	Lq	E		59.9		
	e?	Z	09	02	50	

Date	Phase		h	m	s	
FEB 17	ePKP	Z	12	22	15	
18	eP	Z	02	06	09	
19	i!	Z	04	26	33	
	i!	Z	06	22	04	
	Probably artificial.					
20 - 21: Microseism storm.						
22	e	Z	10	36	46	
	eP	Z	10	38	47	
23	iP	Z	22	29	59	u
25 - 28: Microseism storm.						
MAR 1	eP	N	17	01	19	
	epP	NE		01	32	
	e	N		01	40	
	e(PP)	N		04	54	
	PPP	N		06	09	n
	e	N		09	34	
	eS	N		10	37	
	e(SP)	E		11	18	
	e(PS)	NE		11	30	
	e	N		14	26	
	eLq	N		25.5		
2	eLr	NE	09	55.5		
3 - 4: Microseism storm.						
6	e?	Z	22	28.7		
8	i	Z	14	06	20	
	i	ZNE			24	
9	e	Z	06	04	22	
	e	Z	22	48	53	
10	e	Z	05	56	35	
	e	Z	08	05	36	
	i	Z	10	07	11	u
	i	ZN			21	u
	e	Z		56	52	
	e	Z	14	49	54	
12	eP	Z	01	41	55	
	e(PP)	E		45	36	
	e(S)	E		52	26	
	e(S)	Z			34	
12	P	Z	09	12	00	
	e	Z		13	51	
	e	Z		18	28	
	i	Z	15	45	39	
	e	Z	19	50	32	

Date	Phase		h	m	s	
MAR 13	eiP	Z	16	49	48	
14	iP	Z	07	06	34	d
16	eP	Z	22	17	11	
	i				13	
17	e(PP)	Z	08	44	12	
	iP	Z	13	07	14	d
18	e	ZNE	12	37	16	
19	i	ZN	22	03	07	
20	P	Z	02	20	33	
21	eiP	Z	04	36	39	u
	iPcP	Z		37	17	
	ePP	Z		38	34	
	e(PPP)	Z		39	36	
	e?	Z	14	38	06	
	iP	ZNE	19	55	52	
	ePcP	Z		56	39	
	e	Z	20	01	56	
	e	Z		03	06	
	e(S)			03	46	
22	e	ZNE	03	29	32	
23	eP	Z	06	11	04	
	i	ZNE			11	u
	e	Z	09	03	50	
	eiP	ZN	13	34	37	d
23	iP	ZNE	19	31	49	
	eS	E		33	33	
	eL	E		38.0		
24	e	Z	12	05	46	
	e	Z	17	15	55	
	e(P)	Z	17	23	06	
	e	ZNE	20	59	36	
25	iP	Z	00	09	19	
26	iP	ZE	02	35	28	u
	iP	Z	05	36	58	u
	i	Z	11	53	30	
	e	Z	13	14	15	
28	iP	Z	15	01	17	d
	ePP			05.1		
	e			22.1		

Date	Phase		h	m	s	
MAR 28	eP	ZNE	19	56	13	
	i	Z			14	u
	ipP	Z		58	04	u
	i	Z			08	d
	i	E			10	w
	e(PP)	N		58.5		
	i(ScP)	E		59	52	e
	eS	N	20	03	22	
	i(SP)	NE			38	ne
	ei	ZN	10	25	34	ds
	e	Z	15	34	28	
	e	Z	17	14	56	
	e	ZN		42	49	
30	e	Z	13	12	34	
	e	Z	16	24	20	
	iP	Z	18	29	21	
	e	Z			32	
31	eiP	ZNE	07	31	18	
	i	Z		54	39	
APR 1	iPKP	ZNE	00	53	29	
	eP	Z	14	19	02	
	eP	Z	14	58	21	
	i(pP)	ZNE			43	
	eiP	Z	19	26	00	
	eP	Z	22	57	56	
	e(pP)	Z		58	09	
	eiP	Z	23	45	04	d
	e	N		45	14	
2	e	ZNE	06	46	44	
	e	Z	11	40	37	
	eP	Z	12	12	20	
	e	Z	17	04	08	
	e	Z		20	25	
	e	Z	21	58	11	u
3	e?	ZNE	09	00	27	
	e	ZE	10	45	42	
	eP	Z	19	46	55	
	e	NE		47	03	
4	e(PKP)	NE	03	28	04	
	e	Z			23	
	e	E	16	53	27	

Date	Phase		h	m	s	
APR 5	i	ZN	03	19	51	d
	iPKP	Z	11	07	35	d
	e	ZNE	15	23	49	
	eiP	ZNE	21	16	08	d
	epP	Z			46	
	iP	ZNE	23	41	00	
6	eP	ZNE	14	24	01	
	ePcP	NE		24	34	
	ePP	N		26	54	
	eS	NE		33	22	
	ePKKP	N		43	.1	
	eLr	N		49	.0	
	eL	NE		57	.5	
7	e	ZE	06	48	57	
	e	Z	10	55	32	
8	iP	ZNE	01	31	15	dne
	ipP	ZE		32	44	de
	iScP	Z		35	46	u
	iP	ZNE	08	11	50	dne
	epP	N		12	10	
	ePcP	Z		12	21	
	e	Z		12	59	
	e(S)	Z		18	16	
	iP	ZNE	11	53	01	
	e	ZE	12	02	.2	
	eL	ZN		06	.0	
9	eiP	ZNE	04	54	22	d
	iP	ZNE	06	28	07	d
	ePcP	Z		29	22	
	eS	ZE		35	.9	
	eL	N		45	.0	
	e	ZE	13	55	25	
	i	ZNE			30	u
10	iP	ZNE	05	55	59	d
	ePcP	Z		56	59	
	epP?	Z		57	56	
	epPcP?	Z		59	14	
	iScP	Z		59	58	
	iS	N	06	02	47	
	eP	ZE	13	45	24	
	e	Z	22	12	00	
11	eP	Z	00	01	44	
	eP	ZNE	11	41	.0	
	e	ZNE	12	02	13	
	eP	ZNE	18	06	29	
	ePcP	Z		07	05	

Date	Phase		h	m	s	
APR 12	eL	N	15	55	.8	
	eP	Z	21	04	36	
	eS	N		13	29	
15	eP	Z	05	05	38	
	iPKP	Z	19	30	32	u
	iSKP	Z		33	53	u
16	eP	Z	01	22	11	
	iP	ZNE	07	36	08	
	ePcP	Z			43	
	epP	Z		37	52	
	iP	ZE	16	26	57	
	e(PcP)	Z		27	05	
17	eP	Z	01	00	04	
18	iP	ZNE	06	29	28	d
	e(PcP)	Z			45	
	i(pP)	Z			48	
	e	E			52	
19	iP	ZNE	07	35	16	u
	ePP	Z		37	24	
	ePPP	Z		38	39	
	eS	E		42	.8	
	eLr	NE		51		
	eP	Z	11	14	45	
	iP	ZNE	19	53	33	d
20	iP	Z	03	39	16	d
	eS	NE		48	42	
	ePKP?	Z	19	45	.2	
21	iP	ZE	01	36	32	d
	iPcP	Z		37	22	d
	epP	Z		38	21	
	iSKP	Z	13	05	19	u
	eP	ZNE	15	28	44	
	eS	E		32	04	
	eLr	NE		33	.0	
22	eiP	Z	07	43	56	
	epP	Z		44	43	
	ePKP	Z	11	14	18	
	eSKP	Z		17	35	
	eP	ZNE	20	36	25	
	ePcP	Z		37	21	
	ePP?	Z		38	20	
	eL	N		50	.0	
24	iP	ZNE	18	06	37	d
	ipP	N			59	u
	ePcP	N		08	07	
	ePP	N			37	

Date	Phase		h	m	s	
APR 24	e(pPP)	N			54	
	ePPP	N	09	27		
	eS	ZNE		13	30	
	eScS	N		16	.6	
	eSS	NE		17	11	
	eLr	N		19	.9	
	eP'P'	Z		37	53	
25	iP	ZNE	00	24	14	d
	eS	E		27	.9	
	eLr	E		29	.0	
26	eP	NE	20	54	41	
	ePKP	NE		58	11	
	ePP	NE			55	
	epPP	NE		59	25	
	iSKS	NE	21	05	12	s
	eSKKS	NE			58	
	iS	N		06	25	n
	e(SP)	E		07	27	
	e(PPS)	N		09	24	
	eSS	NE		13	43	
	e(sSS)	N		14	31	
	eP'P'?	NE		18	.1	
	eLq	NE		24	.0	
27	iP	ZNE	09	59	43	d
	eS	Z	10	08	31	
	iP	ZNE	12	59	24	d
28	ePP	Z	11	28	.2	
	eSKP	Z		31	45	
	eLr	NE	12	00	.5	
	eP	Z	13	12	23	
	eSKP	Z	14	40	39	
	eP	Z	16	09	40	
29	e	Z	16	54	10	
	eP	Z	16	59	34	
30	e	ZE	07	17	49	
	iP	ZNE	13	34	02	
	eS	E		40	40	
	iP	Z	13	39	17	
MAY 1	iP	ZE	15	08	26	d
	e	ZNE	16	39	50	
	e	ZNE		59	47	
2	i	ZN	23	10	08	us
	Probably artificial.					
3	iP	ZE	03	12	35	d
4	iPKP	ZNE	07	34	49	u
	ePP	ZNE		37	10	
	eSKP	N		38	.3	
	EPKS	ZN		38	34	

Date	Phase		h	m	s	
MAY 4	ePPP	N		39	32	
	eSP	N		47	09	
	ePS	ZN			18	
	eSPP	N		48	28	
	eSS	E		54	.5	
	eSS	N		55	00	
	eLq	E	08	08		
	eLr1	ZN		16	.5	
	eLr2	N	09	04		
	eP	Z	10	22	28	
	Probably artificial.					
	eP	Z	22	54	14	
5	ePKP	Z	19	23	29	
	eSKP	Z		26	52	
6	eP	NE	11	36	28	
	e(S)	N		39	17	
	eP	N	14	13	34	
	eP	NE	14	46	26	
	eP	N	17	38	44	
	ePcP	N		39	10	
	eP	NE	19	04	29	
7	eP	NE	00	15	15	
	eP	NE	09	15	.7	
	eP	NE	11	29	.1	
	eP	NE	20	34	13	
	ePcP	N			33	
	ePP	N		37	33	
8	PKP	ZNE	11	53	57	
	eSKP	ZNE		57	16	
10	e	Z	14	56	09	
	eiP	ZE	23	07	33	u
11	eiP	Z	02	00	23	d
14	iP	ZE	01	01(21)		d
	iP	ZNE	04	31(34)		d
	ePKP	ZNE	06	56(10)		
	eSKP	ZNE		59	24	
	eiP	ZNE	09	43(21)		u
	iP	ZNE	10	51	47	u
	eiP	ZNE	11	59(10)		d
	eP	Z	12	55(09)		
	eiP	ZNE	13	29(17)		u

Date	Phase		h	m	s	
MAY 16	iP	ZNE	06	27	52	dw
	e(PcP)	N		28	18	
	Possibly pP					
	ePP	N		30	49	
	iS	ZNE		37	25	n
	eScS	NE		37	57	
	Possibly sS					
	e(SS)	NE		41	29	
	eLr	N		51.4		
17	ePKP?	Z	19	34	51	
18	eP	ZNE	05	51	36	
	eP	ZN	19	08	22	
	e(pP)	ZN		09	16	
	ePcP	ZN		10	16	
19	eiP	ZNE	08	45	50	d
20	iP	ZNE	01	00	49	d
	eSKP	Z	10	35.8		
	eP	Z	12	42	51	
	ePKP	ZN	19	54.0		
	ePKP	Z	20	08	39	
	eSKP	Z		12	10	
21	eP	Z	00	03	09	
	Possibly artificial					
	eiP	ZNE	02	24	39	d
	iP	ZNE	11	45	28	u
	e(PP)	Z		47	25	
	eP'P'	Z	12	13	34	
22	eP	ZNE	07	04	18	
	iPcP	Z		06	36	u
23	e	Z	21	27	20	
	Possibly artificial					
24	eiP	Z	04	48	21	u
	e		10	21	12	
	ePKP	Z	19	36	21	
	ePP	ZNE			41	
	eSKS	Z		42	26	
	eSKKS	E		43	28	
	eSP	E		46	04	
	e(PKKP)	Z		47	15	
	eSKKP	Z		51	22	
	eP'P'	ZNE		55	07	
	eLr	ZE	20	09.0		
25	eP	Z	05	13	25	
	eP	Z	21	36	49	
	eP	ZN	23	22	28	
	eS	N			56	
	Possible local shock, shallow, distance 2.2°					

Date	Phase		h	m	s	
MAY 26	eP	Z	04	30.6		
	e(PKP)	Z		31	33	
	ePP	ZNE			40	
	e(PPP)	Z		34	07	
	e(SKP)	Z			44	
	ePKKP	Z		42	36	
	ePKKP	Z			50	
	ePKP	Z	06	55(02)		
	eP	Z	21	53	52	
27	ePKP	ZNE	05	09	33	
	eP	Z	16	44	08	
	eP	Z	17	04	42	
	e	N	20	24	54	
	e	N		52	24	
28	iP	ZNE	01	58	09	
	ePP?	ZN	04	48	44	
	eP	ZE	08	37	54	
	eS	ZNE		38	28	
	e	NE			53	
	eL	NE		39	28	
	Local, distance 2°±					
	iP	ZNE	22	38	53	de
	iP	ZNE	22	47	58	u
	i(PcP)	Z		48	21	u
	eP	ZNE	23	43	08	
29	iP	ZNE	06	11	22	us
	iS!	ZNE			25	
	Very local.					
	iP	ZNE	10	52	41	dnw
	epP	Z		53	05	
	ePP?	Z		54	51	
	ePPP?	Z		56	20	
	iS	ZNE	11	00	44	ne
	eScS	E		02	09	
	eSS	Z		04	45	
	eP'P'	Z		22.4		
	e	ZNE	12	31	54	
	iP	ZNE	12	38	12	unw
	ePKP	Z	18	48	33	
30	eP	Z	07	25	57	
31	eP	ZNE	09	39	35	
	ePcP	Z			47	
	eS	E		48	41	
	e(SKS)	Z		49	49	
	eSS	E		55	21	
	ePKP	Z	12	35	18	

Date	Phase		h	m	s	
JUN 1	iP	ZNE	05	42	30	u
	eP	ZNE	12	43	10	
	iP	ZNE	17	18	40	d
	ePP?	N		21	28	
	e(S)	Z		28.9		
2	P	ZNE	02	08	30	
	e	Z		12	34	
	ePP	ZE	02	55	45	
	eP	ZNE	03	32	35	
	ePcP	Z		33	34	
	eS	E		40.4		
	iP	ZNE	03	41	18	d
	ePcP	Z		42	17	
	ePP	Z		43	19	
	ePPP	Z		44	13	
	eS	E		49	04	
	iP	ZNE	03	57	36	u
	iP	ZNE	04	01	29	d
	ePcP	Z		02	36	
	eS	N		09	11	
	ePP	Z	05	15	30	
	iP	ZNE	05	50	43	d
	ePcP	Z		51	44	
4	eP	Z	19	17	45	
	Probably artificial					
	iP	ZNE	21	44	18	de
	eP	ZNE	22	02	52	
	eP	Z	22	31	51	
	Probably artificial					
5	eP	Z	06	09	47	
	iP	ZNE	07	56	18	d
	iP	ZNE	09	34	18	u
	eP	Z	18	41	35	
6	eP	Z	10	25	12	
	eP	ZNE	11	25	06	
	eP	E	21	02	42	
7	eP	Z	02	44	33	
	eP	ZNE	07	23	36	
	eP	Z	17	46	31	
8	eP	Z	09	55	54	

Date	Phase		h	m	s	
JUN 8	eP	ZE	14	24	23	
	i(S)	E		36	50	w
	eP	ZNE	15	59	03	
	eS	ZNE			38	
	Local, distance 2°±					
9	eP	Z	06	25	52	
	eP	ZE	06	31	25	
	eP	ZNE	07	38	20	
	eP	ZNE	08	46	52	
	eP	ZNE	12	10	20	
	iP	ZNE	15	01	48	u
	eP	ZNE	23	18	50	
	ePP	Z		20	34	
	eS	E		25	29	
	eSS	E		28.5		
	eLq	E		32.7		
10	ePKP	ZN	04	35	22	
	iP	ZNE	10	59	31	u
	ePcP	Z	11	00	15	
11	eP	ZE	00	04	14	
	eScP	Z		08	20	
	iP	ZNE	01	19	08	d
	e(S)	Z		27	03	
	eP	ZNE	23	44(14)		
12	eP	Z	11	53	24	
13	ePKP	ZE	22	16	25	
	eP	ZE	22	28	43	
14	eP	ZNE	00	23	45	
	i	ZE			47	de
	i	NE			50	w
	ePP	Z		26	39	
	eS	ZNE		33	29	
	e(PS)	E		34	11	
	e(PPS)	ZN			23	
	eSS	E		38	26	
	ePKKP	Z		42	30	
	eSKKS	Z		49	32	
	eP'P'	ZNE		50	42	
	eSKSP'	Z		54	11	
	eP	ZNE	15	06	59	
	ePKP	Z	21	08	09	
	iP	ZNE	21	11	36	dne
	iPcP	Z		12	31	u
	ePP?	Z		13	40	

Date	Phase		h	m	s	
JUN 15	ePP?	Z	02	57	3	
17	iP	ZNE	20	56	30	dn
	PcP	Z		57	00	
18	eP	ZNE	06	57	16	
	ePP	Z		58	09	
	ePcP	Z	07	00	23	
	eS			01	38	
	eL			06	5	
	iP	ZNE	09	00	19	d
	ePKP	ZNE	15	50	39	
	iSKP	ZE		54	04	u
	SKP	ZNE			10	
	eSKS	Z		57	55	
	iSKKS	Z	16	00	06	
	eSP	Z		02	46	
	ePKP	ZNE	16	17	52	
	ePP	Z		20	15	
	eSKP	Z		21	14	
	iSKP	ZNE		21		u
	ePPP	E		23	13	
	eSKS	E		25	2	
19	iP	ZNE	06	05	16	u
20	eP	ZNE	06	59	41	
	eS	ZNE	07	00	16	
	Local, distance 2°±					
	iP	ZNE	10	13	02	
21	eP	Z	03	39	9	
	eP	Z	05	59	02	
	iP	ZE	11	23	17	u
	ePcP	Z			57	
	eL?	E	12	06	5	
	eP	Z	14	25	40	
	eP	Z	15	13	17	
	eP	ZNE	16	57	42	
	eS?	E	17	01	20	
	eL	NE		03	9	
	M	E		07	5	
	e(T)	E		18	57	
	L-waves strongly developed.					
	eP	ZNE	22	22	39	
	e(PcP)	Z			53	
	iP	ZNE	23	34	41	u
	ePcP	Z		35	58	
	eP	ZNE	23	41	47	
23	eP?	Z	13	49	10	
	eP	Z	21	52	07	

Date	Phase		h	m	s	
JUN 25	ePKP	ZNE	07	06	57	
	ePKP	ZE		07	47	
	eP	ZE	14	46	17	
26	iP	ZE	02	55	21	u
	eP	Z	04	47	49	
	eP	ZNE	05	32	55	
	eP	ZNE	14	03	22	
	iP	ZE	22	34	31	d
	ePcP	Z		35	06	
	epP	Z			36	
27	iP	ZNE	19	12	42	usw
	iPcP	Z		14	19	d
	ePP	N			28	
	epPcP	Z			42	
	eScP	Z		17	53	
	i	N		19	12	n
	iS	ZNE			14	dse
	eSP	N			24	
	eSS	N		22	22	
	ePKKP?	Z		35	46	
	eP'P'	ZNE		43	08	
	iPKP	ZNE	19	30	35	
	ePP	Z		32	52	
	eSKP?	Z		33	52	
28	eP	Z	06	33	53	
	epP	Z		35	51	
	iP	ZNE	19	54	49	ue
	ePcP	Z		55	05	
	iPP	Z		57	31	d
	eS	N	20	04	0	
	e(SKS)	NE		04	41	
	eP'P'	Z		22	13	
29	eP	Z	07	27	28	
	ePcP	Z			45	
	eS	NE		36	44	
	eSKS	N		37	6	
	eL	E		51	0	
	iP	ZNE	13	32	17	d
30	ePKP	Z	07	45	50	
	iP	ZNE	10	31	29	
	ePcP	Z		33	12	
	eL	E		43	8	
JUL 1	eP?	Z	05	37	03	
	eP	Z	08	39	15	
	eP	ZN	10	44	23	
	i(PP)	ZN		46	41	
2	e	ZNE	03	46	10	
	e	ZNE		49	35	

Date	Phase		h	m	s	
JUL 2	P	ZNE	11	34	59	
	P	ZNE	11	41	33	
	(P)	ZNE	20	22	18	
3	e	ZNE	02	40	00	
	e	ZNE	06	37	53	
	e	ZNE	09	03	40	
	e	ZNE	10	05	24	
	e	ZNE			48	
	iP	ZNE	18	05	28	u
	PP	E		08	26	
	S	E		14	40	
	SS	E		18	21	
	Lg	E		22		
	eP'P'	ZNE		28	10	
	eSKPP'	ZNE		34	38	
	iP	ZNE	18	06	08	u
	PP	E		09	25	
4	iP	ZNE	05	03	36	u
	PP			05	17	
5	P	ZNE	14	17	11	
6	e	Z	03	16	06	
	e	Z			12	
	e	Z	04	47	10	
	P	Z	06	35	41	
	iP	ZE	09	20	43	d
	iS	E		28	34	d
	P'P'	Z		48	22	
	iP	ZE	09	32	54	d
	iS	E		41	30	
	P'P'	Z	10	01	25	
	SKPP'	Z		03	57	
7	e	ZNE	01	36	21	
	e	ZNE	08	20	57	
8	e	ZNE	01	13	00	
	e(P)	ZNE	05	57	50	
	e(P)	ZE	10	16	29	
	e	ZE	11	39	34	
	P	ZE	13	15	44	
	e(P)	ZE	14	15	48	
	e	ZE	16	56	48	
	(P)	ZE	19	49	23	

Date	Phase		h	m	s	
JUL 8	P	ZN	02	44	31	
9	P	ZNE	16	17	05	
	pP	E			32	
	sP	ZE			46	
	(pPcP)E			18	27	
	(sPcP)E				44	
	PP	E		20	36	
	S	NE		26	50	
	SS	E		31	44	
	e	ZE	22	45	41	
10	e	ZE	01	22	34	
	e	ZE		49	54	
	eP	Z	04	24	58	
	P	ZNE	16	05	58	
11	e	Z	02	39	39	
	iP	Z	03	17	23	u
	iP	ZN	05	01	36	u
	e	ZN		55	47	
	P	ZNE	08	29	31	
	P	ZNE	10	32	56	
	P	ZN	12	11	08	
	PcS	ZN		16	43	
	S	N		18	51	
	SKS	N	18	50	37	
	SKKS	ZNE		59	29	
12	P	Z	00	35	09	
	PcP	N			52	
13	PKP	ZN	12	47	54	
	PKS	ZN		51	17	
	P	ZN	15	33	12	
14	e	ZNE	01	44	01	
	P	ZNE	13	09	40	
	(P)	ZE	22	42	(47)	
15	(P)	ZNE	10	13	(15)	
	(P)	ZNE	17	57	(18)	
16	e	ZNE	06	57	(04)	
	e	ZNE	08	01	(54)	
	P	ZE	19	23	(27)	
JUL 18	(P)	ZN	05	53	51	
	P	ZN	07	09	30	

Date	Phase		h	m	s	
JUL 18	e(P)	ZNE	13	39	17	
	e	NE			44	
	P	ZNE	20	08	20	
	(sP)	Z		09	25	
	e	Z		10	48	
	SKS	NE		18	43	
	S	N		19	28	
19	(P)	ZNE	00	46	50	
	P	ZNE	03	54	03	
	PcP	Z			22	
	iP	ZNE	13	53	34	u
	iP	ZNE	15	18	10	e
	pP	ZNE		19	02	
	iS	NE		28	10	w
	PPS	E		29	10	
	isS	E			43	w
	sSS	ZNE		36	40	
	Lq	E		42		
20	iP	ZNE	02	52	12	ue
	P	ZN	16	02	(56)	
	e	ZNE	21	41	(37)	
	e	ZNE		42	11	
21	e	ZNE	01	47	(00)	
	iP	ZNE	07	53	43	d
	e	ZNE	09	34	43	
22	e	ZNE	03	14	27	
	P	ZNE	11	28	02	
	e	Z		29	00	
	P	ZNE	16	45	24	
	PKP	ZNE	19	42	18	
	(SKP)	ZNE		44	42	
	P	ZNE	23	13	56	
	PcP	ZNE		14	17	
	S	NE		23	24	
	(ScS)	NE			56	
	P	ZNE	15	06	08	
	e	ZNE			24	
	S	NE		13	45	
	e	ZNE	15	19	09	
24	iP	Z	23	11	30	d
	e	E		15	16	
	iPcS	Z		16	48	u
25	e	ZNE	03	22	16	
	e	ZNE			33	
	e	ZNE			42	
	e	ZNE	03	30	25	

Date	Phase		h	m	s	
JUL 25	iP	ZNE	12	12	09	d
	e	ZNE	19	14	55	
26	e	ZNE	19	08	48	
27	e(P)	ZNE	08	50	23	
	e(P)	ZNE	20	31	55	
	(S)	ZNE		32	34	
	e	ZNE	23	23	37	
	e	ZNE			44	
28	(P)	ZNE	08	39	26	
	e	Z			35	
	e	NE			44	
	e(P)	Z	17	52	(14)	
	e	ZE			28	
	e	ZNE			47	
	e	Z	20	28	(42)	
	e(P)	Z	22	54	(15)	
29	e	Z	00	12	(14)	
	iP	Z	00	41	(05)	d
	P	ZNE	04	39	25	
	P	ZNE	05	19	37	
	(P)	ZNE	20	56	55	
30	(PKS)	ZNE	00	24	06	
	(P)	ZNE	07	49	31	
	P	ZNE	13	02	37	
	e	ZNE	13	50	07	
	(P)	ZNE	22	01	44	
	e	ZE	22	31	28	
31	P	ZE	02	03	19	
	PKP	ZE	20	12	10	
	iP	ZNE	20	47	35	
	pP	Z		48	17	
	PKP	ZNE		50	44	
AUG 1	e(P)	ZNE	02	23	40	
	i	ZNE			46	w
	e(P)	Z	05	44	08	
	iP	ZNE	10	12	23	u
2	e(P)	ZNE	02	33	51	
	e	E			57	
	P	ZNE	12	09	21	

Date	Phase		h	m	s	
AUG 2	e	ZNE	12	41	54	
	P	ZNE	20	20	30	
	e	ZNE	22	11	11	
3	e	ZNE	00	33	17	
	e	ZNE	02	57	32	
	e	NE	15	37	30	
	P	ZNE	15	44	21	
	P	ZNE	16	17	37	
4	iP	ZE	08	11	18	de
	PcP	Z		13	10	
	(ScP)	Z		15	07	
	S	E		18	40	
	ScS	E		20	12	
	eP	ZE	22	11	09	
5	e	ZNE	02	53	39	
	e	ZNE	03	12	11	
	e	ZNE	05	35	35	
	P	ZNE	10	53	55	
	e	ZNE	13	50	42	
	P	ZNE	14	01	26	
	e	ZNE	17	03	52	
6	(P)	ZNE	03	47	32	
	(P)	ZNE	06	38	39	
	e	ZNE	09	00	27	
	e	ZNE	11	03	27	
7	e	ZNE	02	37	12	
	e(P)	ZNE	06	29	54	
	e	ZNE	10	50	41	
	(PKS)	ZN	11	06	24	
	e	ZNE	14	21	50	
	e(P)	ZNE	16	37	47	
	e	ZNE		40	26	
	P	ZNE	19	21	59	
	e	ZE	22	16	47	
8	PKP	ZNE	01	06	53	
	e	ZNE	02	34	40	

Date	Phase		h	m	s	
AUG 8	eP	ZNE	07	32	38	
	e(P)	ZNE	10	59	29	
	P	ZNE	15	48	40	
	e	ZNE	19	41	35	
	e	ZE	23	10	27	
	e	ZE			48	
9	e(P)	ZE	00	07	27	
	e	ZE	02	17	34	
	iP	ZE	02	47	09	d
	(P)	ZE	05	02	(14)	
	e	ZN	07	56	39	
	e	ZN	11	16	16	
	e	Z	14	38	38	
	e(P)	ZN	17	29	39	
	(P)	ZN	20	20	41	
	P	ZN	20	40	22	
	e(P)	ZN	22	44	06	
10	iP	ZNE	00	41	45	d
	i	ZNE			57	d
	(PP)	E		42	19	
	S	E		46	21	
	(SS)	E		47	27	
	L	ZNE		49		
11	iP	ZNE	20	00	36	de
12	iP	ZNE	04	17	57	u
	ePKKP	ZNE		36	39	
	P	ZNE	10	08	44	
	e	E		09	51	
	(PP)	ZE		10	(30)	
	e	ZE		12	57	
	(PcS)	Z		13	24	
	(S)	E		18	00	
	e(ScS)	E			25	
	e	E		21	49	
	L	E		26		
	P'P'	ZNE		37	55	
13	eSKKS	Z	01	08	54	
	ePKSPKS	Z		12	29	
	e	Z		22	02	
14	iP	ZNE	04	52	(36)	d
	e	ZNE	13	24	54	
	(P)	ZNE	20	05	00	

Date	Phase		h	m	s	
AUG 14	(P)	ZNE	20	15	22	
15	iP	ZNE	03	36	56	d
	e	Z		37	57	
	eP	ZNE	09	11	13	
	e	Z		14	09	
	e	Z			24	
	PP	ZE		15	20	
	iSKS	NE		21	43	s
	(SKKS)Z			22	12	
	e	Z			57	
	PS	ZE		24	23	
	L	E		45.5		
	iP	ZN	13	24	16	u
16	P	ZNE	01	01	29	
	e?	ZNE		03	45	
	S	E		09	29	
	iP	ZNE	10	03	12	d
	e	ZNE	12	31	16	
	e	ZNE			52	
17	iP	ZNE	01	11	06	d
	(P'P')ZNE			40	51	
	e	ZNE	19	06	26	
	e	ZNE	19	50	34	
	iP	ZNE	21	15	59	
	(PcP)ZNE			16	59	
	S	NE		25	15	
	ScS	NE		26	06	
	e	E		28	00	
	SS	E		29	25	
	ePKKP?NE			33	44	
	Lq	E		34.8		
	P'P'	ZNE		43	57	
18	e	ZN	00	15	52	
	e	ZNE			57	
	e	Z		19	35	
	iP	ZNE	00	41	59	
	(S)	ZN		50	49	
	(ScS)	ZE		51	50	
	P	ZNE	05	48	17	
	e(PKP)Z		06	56	32	
	iPKP	ZNE			38	u
	(PP)	ZNE		59	05	
	PKS	ZNE	07	00	04	
	(PKS)E				55	
	PPP	ZN		01	53	
	SKS	NE		03	34	
	SKKS	NE		06	09	
	PKKS	Z		08	27	
	PS	ZNE		09	16	
	PPS	ZNE		11	00	
	e	Z		12	44	

Date	Phase		h	m	s	
AUG 18	SS	E		17	08	
	(P'PKS)E			19	08	
	SSS	E		21	48	
	L	E		39		
	iPKP	ZNE	08	15	36	
	iPKP	ZNE	15	45	22	
	(PKS)	ZNE		58	53	
	e	ZNE		20	25	
20	eP	NE	02	10	27	
	eP	ZNE	07	31	23	
	eP	ZNE	12	29	26	
21	e	ZNE	01	45	08	
	ePKP	ZN	07	32	21	
	eP	ZNE	08	09	21	
	i	ZN			28	d
	PP	ZN		10	19	
	(S)	N		14	41	
	L	ZNE		17.5		
21	P	ZN	08	11	40	
	PPP	N		12	54½	
	L	ZNE		20		
	ScS	ZNE		23	31	
	P	ZNE	09	43	55	
	PPP	Z		45	13	
	e(SS)	E		51	38	
	eLq	NE		52		
	eP	ZN	16	49	28	
22	eP?	Z	02	10	53	
	P	Z	20	29	07	
	P	ZNE	20	58	38	
	Local? Possibly artificial.					
	iP	ZNE	21	39	58	
23	e	ZN	03	44	47	
	e	NE			50	
	e	Z			52	
	e	Z			58	
	Possibly local.					
24	eP	ZN	15	52	37	
	e	Z			45	
	eP	ZNE	21	41	43	
	e	N		44	48	
	e	Z		45	34	
	e(PPP)	N		45.9		
	e(ScP)	Z		46.6		
	eS	ZNE		50	45	
	eSS	ZNE		55.1		
	eSSS	E		58.5		

Date	Phase		h	m	s	
AUG 24	eL	ZNE	22	01		
	eP'P'	ZN		10	13	
	eP	ZN	23	43	27	
	eP	ZN	23	52	36	
25	eP	ZNE	12	35	34	
26	eP	Z	05	04	33	
	ePKP	Z	08	43.9		
	ePP	ZNE		44	27	
	e(PPP)Z			46	53	
	e	E		54	40	
	e(PKKP)Z			55	20	
	eSS	Z	09	00	22	
	e(P'P')Z			02	58	
	eLr	E		18.1		
	ePKP	ZNE	10	47	05	
	eSKP	ZN		50	40	
	eL	E		33.0		
27	eP	ZNE	05	16	48	
	eP	ZNE	08	02	30	
	(pP)	Z		03	47	
	eP	ZNE	13	45	57	
	e	ZNE	22	19	10	
	Probably local.					
28	eiP	ZNE	02	47	54	du
	eP	ZNE	04	10	41	
	eS	ZNE		11	19	
	Possibly artificial.					
	iPKP	ZNE	12	27	14	u
	eP	ZNE	16	02	26	
	(PcP)	ZNE		03	11	
29	eP	Z	03	32	11	
	eP	ZNE	14	24	30	
	ePKP	Z	17	22	19	
	i	ZNE			33	u
	e(PP)	ZN		25	13	
	e(PKS)	ZNE		26	10	
	eP	ZNE	21	30	43	
30	eP	Z	18	58	10	
	eP	ZN	21	54	39	
	e	ZN			55	
	eL	E	22	14	45	
	ePKP	Z	23	56	05	
31	eP	Z	13	34	52	

Date	Phase		h	m	s	
SEP 1 - 2	Microseism storm.					
3	iP	ZN	02	48	12	
	iP	ZNE	06	39	25	u
	eP	ZN	21	59	31	
4	eP	ZNE	09	04	24	
	eP	ZNE	12	38	39	
	eP	ZNE	23	31	53	
5	eP	ZNE	06	19	58	
	iP	ZNE	07	04	21	u
	eL	NE		10		
	eP	Z	15	47	04	
	iP	Z	23	14	24	
	eipP	Z		16	16	du
6	eP	Z	00	40	45	
	e	ZNE	12	30	53	
	e	ZNE		31	28	
	eP	ZNE	18	15	24	
	PcP	Z		16	17	
	eP	ZNE	19	06	58	
	e	ZNE	23	45	19	
	e	ZNE			52	
7	e	ZNE	17	56	35	
	e	ZNE	18	38	35	
	e	ZNE	23	40	34	
8	P	ZN	01	12	54	
	eP	ZNE	13	20	47	
	iPP	ZNE		22	40	u
	eP	ZNE	19	31	47	
	e(PKKP)ZN			54		
	iP	ZNE	20	29	44	d
	e	Z		31	31	
9	e	Z	02	04	37	
	eP	ZNE	20	00	56	
	e	ZNE		01	33	
10	iP	ZNE	05	46	29	d
	eP	Z	10	44	12	
	ePcP	Z		47	09	
11	P	ZNE	20	29	17	

Date	Phase		h	m	s	
SEP 12	eP	ZNE	00	33	51	
	P	ZNE	01	52	46	
	pP	ZNE		53	27	
	P	ZNE	02	05	36	
	PcP	ZE			49	
	e	E		06	37	
	e	Z		07	16	
	PP	ZE		08	25	
	e	E		09	00	
	P	ZNE	07	13	34	
	PcP	ZE			47	
	e	ZN		14	04	
	eP	ZNE	08	59	23	
	P	ZNE	11	35	32	
	PcP	ZNE			46	
	e	Z		36	09	
	P	ZNE	14	51	49	
	eP	ZNE	17	12	10	
13	eP	ZNE	04	49	51	
	P	ZNE	22	53	04	
	e	ZNE			42	
	iP	ZNE	13	25	19	u?
	e	NE			32	
	e	NE			45	
	e(S)	Z		33	04	
	eiP	ZNE	14	18	37	n
	(PcP)	E		19	26	
	S	ZNE		25	24	
	PS	ZNE			48	
	(PPS)	NE		26	19	
	e	N			56	
	(ScS)	NE		28	05	
	SS	ZNE		29	04	
	SSS	E			58	
	e	NE		30	13	
	Lq	E		31		
	Lr	ZNE		32	.4	
14	iP	ZNE	15	07	38	d
	i	N			41	n
	P	ZNE	16	31	07	
	P	ZNE	17	05	09	
	iP	ZNE	17	15	13	uw
	S	NE		22	25	
	e	E		24	00	
	e	E		25	06	
	SS	E		26	06	
	SSS	E		27	09	
	L	E		30		
	P	ZNE	17	46	52	
15	P	ZNE	01	39	55	

Date	Phase		h	m	s	
SEP 15	eP	ZNE	06	07	11	
	e	ZNE			18	
	iP	ZNE	06	08	39	u
	S	ZNE		15	56	
	PS	ZNE		17		
	(ScS)	NE		18	22	
	SS	ZNE		19	42	
	SSS	ZNE		20	25	
	Lq	NE		22	.5	
	P	ZNE	06	12	41	
	P	ZNE	06	17	44	
	P	ZNE	06	26	27	
	e	ZNE			36	
	P	ZNE	08	09	20	
	P	ZNE	10	57	41	
	e	ZNE			49	
	iP	ZNE	11	14	25	u
	PcP	Z		15	18	
	pP	Z		16	23	
	PP	Z			41	
	e	Z			44	
	ScP	Z		18	15	
	S	NE		21	40	
	ScS	ZNE		23	17	
	sScS	E		27	20	
	P	ZNE	12	09	20	
	e	ZNE			29	
	P	ZNE	13	04	18	
	P	Z	13	55	14	
	e	ZE			20	
	P	ZNE	14	12	35	
	e	ZNE			42	
	e	ZNE			53	
	P	ZN	14	57	12	
	e	ZNE			24	
	P	ZE	22	43	39	
	e	ZE			48	
16	P	ZNE	02	12	29	
	e	Z			36	
	e	Z			45	
	P	ZNE	02	44	52	
	e	ZNE		45	00	
	P	ZNE	10	16	43	
	e	ZNE		17	00	
	eS	N		24	00	
	P	ZNE	16	06	03	
	S	ZNE		13	17	
	(SS)	E		16		
	(SSS)	E		17		
	L	E		19	.3	

Date	Phase		h	m	s	
SEP 17	P	ZNE	05	37	20	
	i	ZNE			36	
	P	ZNE	07	19	20	
	e	ZNE			27	
	P	ZNE	08	48	08	
	P	ZN	14	16	57	
	P	ZNE	14	45	11	
	e	ZE			23	
	PP	N		47	10	
	PPP	N		48	11	
	e	N		50	52	
	S	E		52	13	
	P	ZNE	15	00	42	
	e	ZNE			50	
	P	ZNE	17	22	18	
	e	ZNE			29	
	e	ZNE			35	
18	eP	ZNE	03	13	45	
	P	ZNE	09	33	34	
	e	ZNE			43	
	eP	ZNE	10	51	(54)	
	iP	ZNE	12	09	26	d
	S	E		16	17	
19	P	ZNE	19	38	27	
	iP	ZN	23	22	11	
20	P	ZNE	06	19	47	
21	P	ZNE	02	29	37	
	P	ZNE	13	21	02	
23	eP	ZNE	20	56	45	
24	eP	ZE	19	02	12	
	e	ZE			20	
	P	ZNE	19	53	22	
	e	ZNE			43	
25	P	ZNE	00	26	08	
	P	ZNE	01	48	03	
	eP	ZNE	02	51	03	
	PP	ZNE		55	02	
	P	ZE	23	43	55	
26	PKP	ZNE	08	40	00	
	P	ZNE	10	29	53	
27	eP?	ZN	07	28	06	
	e	ZN		35	32	

Date	Phase		h	m	s	
SEP 27	iP	ZN	10	31	59	
29	iP	ZNE	15	40	55	d
	e	ZNE		41	14	
	(ScP)	Z		46	12	
	S	ZNE		48	10	
	e	NE		49	18	
	(ScS)	E		50	49	
	Lq	NE		54	.2	
	P	ZN	15	50	18	
	e	ZNE			25	
	e	ZN			40	
	S	NE		57	35	
	(PS)	E		58	21	
	e	E		59	47	
	(ScS)	E	16	00	49	
	L	E		07	.1	
	eP	ZNE	16	22	59	
	P	ZNE	17	16	46	
	P	ZNE	17	47	26	
30	P	ZNE	05	05	30	
	P	ZNE	13	40	29	
	e	Z			37	
	e	ZE			47	
	P	ZNE	15	02	21	
	P	ZNE	16	39	31	
	P	ZNE	20	36	08	
	S	ZNE		44	23	
OCT 4	P	ZE	17	40	37	
	e	ZE		41	14	
	e(P)	ZE	17	45	15	
5	PKP	Z	18	48	36	
6	iP	ZNE	05	56	42	u
7	ePKP	ZNE	08	50	05	
	(PKS)	ZE		53	13	
8	iP	ZNE	00	13	32	
	ePKP	ZE	02	54	25	
10	eP	ZNE	21	01	59	
	e	ZNE		02	31	
11	(P)	ZNE	11	01	09	
	P	ZNE	17	59	23	
	e	Z			31	
	e	Z			41	
	P	ZNE	20	12	25	
	e	Z			34	

Date	Phase		h	m	s	
OCT 12	P	NE	03	34	44	
	S	NE		45	21	
	P	ZNE	03	55	34	
	PcP	ZN		56	04	
	P?	Z	10	24	(14)	
	e	ZNE			21	
	P	ZNE	19	33	14	
14	eP	Z	07	31	10	
	eP	Z	11	08	07	
	P	ZE	20	44	32	
15	e(P)	ZE	04	33±		
	P	ZNE	06	27	55	
	(PP)	N		29	52	
	S	ZNE		38	10	
	L	ZNE	07	04.1		
	P	ZNE	14	02	15	
16	iP	ZNE	01	25	54	u
	P	ZNE	16	27	40	
17	P	ZNE	01	27	01	
	iP	ZNE	08	40	11	ds
	S	E		44	28	
18	e(P)	ZNE	20	01	40	
	Possibly artificial.					
19	P	NE	01	34	15	
	P	ZNE	02	22	19	
	(PcP)	Z		23	09	
	iP	ZE	04	44	45	d?
	P	ZNE	08	36	24	
	S	ZNE		43	47	
	ScS	E		46	13	
	SS	E		47	15	
	L	E		50.2		
	P	ZNE	09	24	25	
	e	Z			34	
	iP	ZNE	14	01	32	d
	P	ZNE	16	04	09	
	S	NE		11	06	
	PS	ZNE			20	
	e	N			36	
	e	E			49	
	SS	E		14	41	
	(SSS)	E		15.7		
	L	E		18		
20	eP	NE	21	48±		
21	e(PcS)	E	06	15	37	

Date	Phase		h	m	s	
OCT 22	P	Z	09	34	28	
23	P	ZNE	03	54	58	
24	PKP	ZNE	23	59	51	
25	e(P)	ZNE	02	00	48	
	PKP	ZNE	07	11	11	
	eP	ZNE	18	44	26	
26	e(P)	ZNE	04	53	46	
	e	ZNE		54	47	
27	ePKP	ZE	06	31	23	
	PKP	ZNE	07	11	41	
	PKKP	ZE		21	31	
29	iP	ZNE	14	28	48	d?
	e	E		29	27	
	(PcP)	E		30	23	
	S	ZNE		36	02	
	iPKP	ZNE	14	48	18	d
	P	ZNE	22	09	40	
30	(P)	ZNE	00	01	09	
	P	ZNE	00	45	22	
	P	ZE	05	33	41	
	P	ZNE	06	36	20	
	P	ZNE	07	14	12	
	pP	ZE		15	38	
	pPP	ZE		18	17	
	eP	ZNE	11	21±		
	P	ZNE	11	35	29	
	P	ZNE	14	08	02	
	S	E		15	48	
	ScS	E		17	52	
	iP	ZNE	21	46	47	
31	iP	ZNE	04	36	50	d
	S	NE		44	46	
	ScS	E		46	05	
NOV 2	ePP	ZNE	09	01	50	
	iP	ZNE	20	14	57	d
	S	E		24	19	
	iP	ZNE	22	02	41	u
3	eP	ZNE	00	44	42	
	P	ZNE	09	14	34	

Date	Phase		h	m	s	
NOV 3	iP	ZNE	09	51	35	e
	S	E	10	01	02	
	ScS	E			46	
	e	E		02	24	
	e(P)	ZNE	12	31	35	
4	P	ZE	17	23	43	
	iP	ZE	18	32	01	d
	P	ZE	19	17	31	
	P	ZE	22	03	11	
5	P	ZNE	05	56	50	
	P	ZNE	12	00	50	
	P	ZNE	17	49	20	
6	P	ZE	01	18	42	
	P	ZN	01	22	46	
	iP	ZNE	11	52	41	u
7	ePKP	Z	02	51	36	
	P	ZNE	08	28	50	
	P	Z	22	25	52	
8	P	ZE	02	27	12	
	e	Z			24	
	PKP	ZNE	14	13	53	
	(PP)	ZNE		15	36	
	P	ZNE	14	38	07	
9	eP	ZE	04	25	12	
	S			30	26	
	eL			33		
	eP?	ZE	19	56	(50)	
10	iP	ZNE	04	09	30	u?
	iP	ZNE	08	19	40	u?
	iP	ZNE	16	52	07	d?
	e	ZNE	17	07	55	
12	P	ZE	18	12	46	
	P	ZNE	20	41	09	
13	P	ZNE	10	14	58	
14	eP	Z	02	24±		
	(P)	Z	04	48	59	
	P?	ZNE	10	45	42	
	(PP)	ZNE		49	13	
	e?	ZNE		53	34	

Date	Phase		h	m	s	
NOV 14	(P)	Z	18	59	06	
	e	ZNE			11	
	eP	ZE	20	31±		
	eScS?	ZNE		40	15	
	P	ZE	23	19	04	
15	iPKP	ZNE	10	44	17	d
	PKP	ZNE	17	28	11	
	PP	ZNE		30	53	
	(SKP)	E		31	23	
	(PKS)	NE			58	
	e	E		32	07	
	e	NE			48	
	e	E		33	01	
	PPP	E		34	23	
	SKKS	E		37	29	
	PKKP	Z			41	
	SS	E		49.1		
16	P	ZNE	01	09	38	
	eP	ZNE	23	56	12	
17	P	ZE	02	44	54	
	P	Z	10	10	29	
	P	Z	15	28	35	
	e(P)	Z	15	42	15	
	eP	Z	17	35	08	
	P	Z	23	19	33	
18	P	ZE	05	36	39	
19	P	ZE	05	35	20	
	iP	ZE	11	20	05	
	PcP	E			35	
	e	E		21	14	
	PcS	E		25	17	
	S	E		29	10	
	PS	E		30	13	
	SS	E		33	30	
	L	E		40.5		
	e(PKKP)	Z	12	10	26	
20	e	ZNE	00	29±		
	Disturbed by change of records.					
	e?	Z	01	51	56	
	eP	ZNE		52	00	
	e	ZNE			24	
20	P	ZNE	11	08	30	
	P	ZNE	15	27	24	
22	iP	ZN	12	59	46	u?

Date	Phase		h	m	s	
NOV 22	P	ZN	16	32	55	
	S	E		38	07	
	SS	E		50	33	
	e(ScS)	Z		44±		
	iP	ZE	19	43	36	
	PcP	Z		44	23	
	PP	Z		45	23	
	ScP	Z		47	32	
	S	ZE		50	54	
	ScS	E		52	25	
	P?	Z	22	52	49	
	P	ZE			53	
24	e(P)	ZE	09	41	13	
	eP	ZE	12	50	27	
26	P	ZE	00	53	56	
	iP	ZNE	06	08	15	d
	P	ZNE	07	18	27	
	PcP	ZNE			38	
	e(pP)	ZNE			49	
	L	E		45±		
	P	ZNE	16	15	48	
	P	ZNE	23	21	32	
	PcP	ZNE			44	
	S	NE		31	31	
	L	E		48		
27	P	ZNE	10	51	30	
	PcP	ZE		52	30	
	eP	E	19	03±		
28	P	NE	02	55	45	
	e(PKS)	N	03	43	19	
	P	NE	12	46	08	
	S	E		55		
	eL	E		11.5		
	(P'P')	NE		14	16	
	iP	NE	22	49	53	
29	P	NE	19	23	15	
	e	NE		25	10	
	(PcP)	NE		26	20	
	S	NE		27	51	
	eL	NE		28.6		
DEC 1	iP	ZNE	15	03	20	
	S	E		06.5		
	Lq	E		08.0		
	Lr	ZNE		09.3		
2	iP	ZNE	09	46	15	
	PcP	ZNE			25	
	S	NE		56	30	
	PS	E		57	16	
	(PPS)	NE		58±		
	SS	E	10	01	22	
DEC 3	eP	ZE	02	03	27	
8	P	ZN	04	42	19	
10	P	Z	03	01	00	
	eL	E		04.7		
11	eP?	Z	00	43	29	
	PcP	ZE			38	
11	P	ZE	01	48	26	
13	(PP)	ZNE	05	55	25	
	Possibly artificial.					
	P	ZNE	17	46	25	
14	eP	ZN	11	21±		
	iP	ZNE	18	10	59	u
	ScS	NE		21	22	
	S	NE		22	20	
	iP	ZNE	22	01	32	d
	ePKP	Z	22	20	05	
	iP	ZNE	23	29	54	dn
	iPcP	ZN		31	44	d
	e	E		33	09	
	e	Z		34	54	
	S	NE		36	24	
	SS	N		39	31	
	(ScS)	E			44	
	L	N		46.8		
	e	Z		59	16	
	e(SKKS)	E	00	01±		
15	(P)	ZNE	07	09	14	
	e	ZNE			25	
	iP	ZNE	12	23	48	u
	e(P)	ZNE	13	04	39	
	eP	ZNE	19	50	43	
	(PcP)	ZNE		52	37	
16	(P)	Z	23	24	12	
	e	N			46	
17	P	ZN	03	05	19	
	PcP	Z		06	21	
	eP	ZN	06	06±		
	P	ZN	16	58	31	
18	ePKP	Z	16	44±		
	ePKS	ZN		47	24	
20	eP	Z	08	14	13	
21	iP	ZNE	10	29	42	d?
	S	E		37	10	
	L	E		43±		

Date	Phase		h	m	s	
DEC 21	P	Z	11	23	23	
	e	ZNE			42	
	S	NE		30	45	
	ScS	E		33	14	
	L	E		36.7		
23	eP	Z	04	40±		
	P	ZNE	14	08	10	
24	P	ZE	09	23	36	
	eP	Z	13	21	55	
25	P	ZN	03	58	11	
	e	ZNE			23	
	P	ZNE	10	30	05	
26	eP	ZE	12	18	07	
	P	ZE	16	24	30	
DEC 27	iP	ZE	12	49	28	d
	ePKP	Z	16	12	14	
28	ePKP	Z	07	39	45	
	eL	E	08	25.5		
	P	ZNE	10	14	45	
29	eP	ZN	11	12	12	
	i	ZNE			16	
	e	ZN			22	
	P	ZNE	17	24	34	
	P	ZNE	21	38	50	
30	P	ZNE	00	05	44	
	P	ZNE	14	07	33	
31	P	ZNE	10	41	15	

HALLETT

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

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JAN 1	eP	Z	07	35	42						
	S	ZE		43	37						
	Lq	NE		48.8							
	Lr	Z		51.2							
	P	Z	07	59	14						
	eS	NE		07	04						
	L	ZNE		12±							
2	e(L)	ZN	08	28.5							
	e	ZE	20	48							
3	e	Z	04	53							
	P	ZNE	11	30	08	1.5	8	0.7	10		
	PP	Z		34	03						
	S	NE		40	20			2.5	15	1.2	15
	SS	NE		46	01			1.6	10	1.5	20
	e	Z			13						
	Lq	N		52	48			2.3	20	3.2	20
	Lr	Z		56	26	4	20				
4	e	Z	01	57	41						
	P	ZE	03	27	58						
	SS	ZE		42	14	1.6	25			2.2	22
	L	ZNE		50.3		3.5	20	2.0	20	2.7	20
	(PP)	ZN	04	22	02						
	e(SKS)	E		28	16						
	Lq	NE		49							
	Lr	Z		50.2		4.9	20	2.0	20	3.2	20

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JAN 4	i	Z	06	43	48	u						
	eL	Z	21	40								
	eL	ZNE	23	21								
5	P	ZN	09	45	52							
	eS	NE		54	49				1.1	15	0.9	18
	iP	ZNE	09	55	43	d			2.1	16		
	e	N		56	21				1.7	10		
	PP	N		57	40				2.2	12		
	PPP	N		58	28				2.4	10		
	e	NE	10	00	33							
	ScP	Z			46							
	iS	NE		02	50	sw			11.5	16	4.8	12
	ScS	NE		05	21							
	SS	N		06	32				3.5	14		
	SSS	NE		07	25				3.6	16	6	30
	Lq	NE		10	58				12	25	12	20
6	eP	Z	04	58	26							
	L	ZNE		09.5			2.0	20	1.3	20	1.5	20
	P	Z	14	59	51							
	L	ZNE	15	36.2								
7	L	ZNE	03	22								
	eL	ZNE	05	43								
8	PKP	Z	01	53	07		1.4	8				
	PP	N		54	25				1.0	14		
	e	E	02	03	22							
	PS	ZN			39		1.5	20				
	PPS	Z		05	06							
	(SS)	Z		09	58							
	Lq	N		24								
	Lr	Z		32								
	L	NE	09	03	08							
	eL	ZNE	23	11			13	20	10	20	4	20
10	P	Z	23	22	37							
	e	Z		28	48							
11	e	E	07	47	02							
	e(SKS)	ZE		50	02							
	e	E		56	20							
	e	Z			39							
	L	ZN	13	55								
	L	ZNE	15	16								
	eP?	Z	16	01	55							
	e	Z		02	34							
12	i	Z	04	55	04	u						
12 - 17												
17	eL	ZE	15	05.8								

Constructional activities and blasting at the camp interfere with recording. Instruments clamped on Jan. 14, 15 and 16 as a safety measure.

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JAN 18	e?	Z	15	15	21							
	eL	ZN		18								
	eL	Z	20	04.5								
	iP	ZN	22	32	04	us	3.5	8	2.7	10		
	pP	Z		33	28							
	PP	Z		34	30		4	13				
	(ScP)	Z		36	30							
	S	ZN		39	08		1.8	12	3.5	10		
	ScS	N		41	08							
20	P	Z	10	34	20							
	eS	NE	17	06(34)								
	SS	NE		11	08							
	Lq	NE		19	05							
22	PP	ZNE	05	29	45		4.5	20	3	20	3.2	20
	PPP	Z		32	04		5.5	14				
	e	Z		34	48		5	12				
	SKS	NE		35	39				8.5	22	6.2	23
	SKKS	ZN		36	39		3.4	15	5	17		
	S	NE		37	29				8.2	22	19	22
	PS	ZN		39	14		25	25	17	25		
	PPS	ZN		40	15		14	25	9	21		
	e	ZNE		42	09		9	20	10	20		
	SS	ZNE		45	12		15	25	14	18		
	SSS	ZE		49	02		8.5	25				
	Lr	ZN	06	02	54		39	20	21	20		
23	eLr	ZNE	08	32	24		2	45	1.5	45		
24	P	ZNE	00	42	16							
	PcP	ZNE		45	04		1.8	15	2.0	18	2.4	18
	S	ZE		48	19		1.0	15				
	L	ZN		51.6			3.0	20	2.0	20	1.8	20
	PP	Z	05	28	09		1.0	25				
	PS	ZN		37	13		1.3	18				
	eLr	ZN	06	01.5			1.5	40				
	e	ZN	16	15								
	iPKP	ZNE	20	14	50	d	7	12	1.6	14	1.9	10
	PKS	ZNE		18	02		3.5	11	2.0	11		
	PPP	ZN		19	44		2	10	1.2	10		
	SKS	N		22	10				1.8	10		
	SKKKS	N		25	16				1.8	14		
	SS	ZE		34	01		1.7	15			2.6	15
	SSS	Z		39	13		1.8	8				
	P	ZNE	20	42	55		1.3	18	2.3	18		
	ePP	Z		45	15							
	S	Z		51	25		1.0	20				
	L	ZNE	21	02								
25	e(S)	NE	16	12	30				3.0	15	6	15
	e	Z			57		4.5	15				
26	e	N	19	07	40				1.8	15		
28	L	ZNE	00	25	19				2.4	20	1.6	20
	iP	ZNE	10	15	04	d	1.8	8	0.8	7		
	PcP	Z			23							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JAN 28	PP	Z	10	17	16							
	PPP	Z		19	30							
	iS	ZNE		24	03	ue	1.7	13			1.4	15
	ScS	ZNE			38		2.5	22	1.7	20	5.0	25
	SS	NE		28	52							
	SSS	N		31	.6							
	Lq	NE		33	.6				1	20	3.5	18
	Lr	Z		34	.7		2.7	20				
	(P'P')	Z		42	25							
29	e	Z	08	20								
	e	Z	11	47								
	eL	ZNE	21	19			1.5	20				
	e	Z	22	01								
	e	ZE	22	15								
	e	Z		32								
	PKP	Z	23	44	40		1.5	12				
	PKP_2	ZE		46	27							
	PKS	ZE		48	36		1.7	9			1.2	10
	PP	ZE		50	11		2	10			2.5	13
	SKS	Z		51	13		2	10				
	PcPP'	Z		53	18		2.4	15				
	PPP_a	ZNE		55	47		2.2	15	1.0	15	1.3	15
	SKKS	Z		57	03		2.2	14				
	SKKKS	ZNE		58	15		1.7	12			1.2	11
	SS	Z	00	13								
	SSS	ZNE		20			1.3	35	1.6	35	3.0	35
30	P	ZE	00	29	52		2.5	20			2.2	16
	S	ZNE		38	22		1.8	13	1.2	12	3	14
	eSS	ZNE		42	27							
	Lq	NE		46	.0				3	20	3	20
	Lr	Z		48	.5		6	20				
	e	Z	03	13								
	P	Z	16	27	09							
	PcP	ZE			37		1.1	10			1.2	9
	ePP	Z		30	32		1.0	10				
	S	ZNE		36	30		1.1	11	1.4	11	2.1	15
	ScS	ZNE		37	07		1.1	10	1.7	10	2.2	12
	L	Z		46	.5							
	iP	ZN	18	16	59	us	4	18	1.7	11		
	PP	Z		18	27		1.7	8				
	PcP	ZN		18	50		4.1	11	2.3	10		
	PPP	Z		19	45		1.1	11				
	PcS	Z		21	47		2.4	10				
	S	ZNE		22	36		2	15	3.5	16	1.3	15
	ScS	ZNE		26	19		4.5	15	2.0	17	1.8	12
	sScS	ZNE		27	10		2.0	13	2.0	17	3.5	22
	L	ZNE		33	.6		2.5	20	1.5	20	2.5	20
	eL	ZN	21	33								
	PPP	Z	22	39	52		1.7	16				
	e	E		52	27						2.5	15
	SS	Z		53	38		2.4	16				
	e	Z		56	07		2.5	20				
	L	ZNE	23	12	.0		2.5	20	1.6	20	1.7	20
31	eL	ZNE	00	25	.0		2.5	20	1.8	20	1.6	20

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JAN 31	L	ZNE	10	00	.6	2.4	16	2	20	4	17
FEB 1	e(P)	Z	08	57	13	1.7	8				
2	e	ZE	19	30							
3	Lq	NE	11	11	55			5.5	18	5.0	18
	Lr	Z	11	12	19	3.5	17				
3	e	NE	17	23							
7	P	ZNE	09	50	04	30	16	3.5	12	12.75	13
	PP	ZNE		53	38	10.5	13			15.5	14
	PPP	Z		56	03	19	19				
	SKS	ZNE	10	00	36	7	11	8.5	14	27	15
	S	ZNE		01	08	33	20	37½	23	30	20
	PS	ZNE		02	08	20	17	10	14	10	15
	SS	ZNE		07	20	30	25	17.5	20		30
	SSS	ZNE		11	06	31	24			11.5	20
	L	ZNE		14	30	110	20	40	20	100	20
	(P)	Z	11	08	51	11.2	12				
	PKP	Z(E)		12	24	13.5	15				
	PP	ZNE		12	55	10.5	16	12	18	17.5	17
	PPP	ZE		15	15	18.5	16			15	16
	SKS	ZNE		18	56	12	15	8.5	16	11.5	16
	S	ZNE		21	23	11	16	5.5	15	6.5	19
	PS	NE		22	37			12	17	12	17
	PPS	ZNE		23	53	8	16	7	19	7.5	14
	e	ZE		26	12	11.5	15			6.5	15
	e	Z		27	20	5.5	18				
	e	ZE		28	00	13.5	15			8	15
	e	E		28	43					9	16
	SS	ZNE		29	41	15	20	7	20	7½	18
	SSS	ZNE		33	20	13.5	16	6	16	15	16
	Lq	NE		37	.5			10.5	20	10	20
	Lr	Z		38		10.5	20				
	eL	E	22	37							
8	eL	ZNE	02	19		2.1	20				
	e(S)	ZNE	16	08	18						
	Lq	NE		12	.5			1.6	20	2.1	20
	Lr	Z		13	.8	2.3	20				
9	(SS)	ZN	05	20	20						
	Lq	NE		34	.3						
	Lr	Z		39	.1	3.5	20				
	eL	ZN	06	43							
11	e?	Z	21	06							
12	S	NE	17	19	18			2.7	20		
	eSS!	E		22	23					2.5	5
	L	ZNE		37	.5	2.3	20	2.3	20	3	20
13	Lq	NE	20	11	.8			1.6	20	2.0	20
	Lr	Z		13	.6	2.3	20				
14	eS	NE	04	58	26			1.5	12	2.0	13
	SSS	NE	05	07	11						
	L	ZNE		10	21	3.5	20	2.3	20	3.5	20

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
FEB 15	P	ZNE	04 08 07	9.5	14	7	13	4.5	5
	PcP	ZN	09 17	9.5	12	6	14		
	PP	ZNE	10 00	11	12	8	14	5.2	10
	ePPP?	Z	11 25	7	10				
	PcS	ZNE	13 19	7.5	12	4.7	10	3.5	10
	S	ZNE	15 21	7	14	15.8	15	21.5	17
	e?	Z	17 20	4.2	10				
	ScS	NE	17 50			9	13	23.5	18
	SS	ZNE	18 45	16.5	15	13	16	19.5	18
	Lq	NE	21 35			19.5+	20	24+	20
	Lr	Z	23 22	16+	20				
15	P	ZNE	04 51 20	22	15	25.5	15	9	13
	PcP	E	52 46					16	13
	PP	NE	53 32			10	12	11.5	15
	ePPP?	ZN	54 31	20	12	14	12		
	e?	E	55 30					13	13
	PcS?	N	57 01			11.5	11		
	S	ZNE	58 07	14	12	24.5	20	33	20
	ScS	ZNE	05 01 09	18.5	13	17	15	37	15
	SS	ZNE	01 47	21.5	15	10.5	18	50	20
	L	ZNE	04±	95	20	41.5	20	40	20
16	L	ZNE	01 23.5	5	20	7	20		
17	PP	Z	12 24 16						
	ePS?	Z	34 03						
	PPS	ZNE	35 11						
	ePPPa?	ZE	39 20						
	SS	ZNE	41 02	2.5	28			3	28
	SSS	ZNE	45 34	2.0	20				
	Lq	NE	55.5			3	20		
	Lr	Z	59.6	3.5	20				
	SKS	(ZN)E	13 12 57					2.5	20
	PS	E	16					2.5	17
	PPS	E	17 07					3	14
	L	Z	58						
19 - 21				Microseism storm makes records illegible from about 19d 12h to 21d 23h.					
23	e(P)	Z	02 09 46						
	S	ZNE	18 26	3.5	12	4	20		
	ScS	N	02 19 31			4.5	20		
	SS	Z	22 56						
	SSS	ZE	26 28	4.5	26				
	L	ZNE	30 12	11	20	4.5	20	4.7	20
25	eL	Z	20 52.5						
	P	ZNE	23 45 34	7.5	11	5	11	3	10
	S	ZNE	49 39	3.5	6			8	20
	L	ZNE	50 30	15.5	20	11.5	20	13	17
27	e	ZN	15 45						
MAR 1	P	ZNE	17 00 58	7	10	1.7	9	1.7	10
	PcP	ZNE	01 19	7.5	10	3	13	3	10
	PP	ZE	03 48	5.2	8			3	7
	(PPP)	Z	05 13	5.5	8				
	e?	ZNE	06 25	5	16	2.5	12	3	16
	e?	Z	07 13	9.5	12				
	S	ZNE	10 31	10.5	16	20.5	16	12.5	17

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
MAR 1	SS	ZNE	15 38	13.5	16	13	16	11	16
	SSS	ZNE	18 38	14	17	12	18	16.5	16
	Lq	NE	20 08			110+	20	130+	20
	Lr	Z	21 10	110+	20				
2	P	Z	09 25 07	1.3	12				
	S	ZNE	34 02	1.5	12	2.3	16	2.5	16
	SS	ZNE	38 00	2.5	30	2.6	31	2.5	25
	SSS	ZE	41 52	2.5	20			2.5	18
	L	ZNE	47	12.5	20	5.5	20	6	20
3 - 4				Microseism storm					
6	i(P)	Z	01 34 44 d						
12	S	ZNE	01 51 47	2.3	12	3	11	3.5	11
	SS	ZNE	57 03	2.5	23	2.4	22		
	L	ZNE	02 03 19	4.5	20	3	20	4.5	20
14	e(L)	Z	07 28						
17	P	Z	08 39 43	1.4	12				
	PP	ZN	43 42	2.5	15				
	eSKS	Z	50 17	1.6	12				
	PS	Z	52 34	2.5	10				
	SS	ZNE	58 19	2.3	24			3	20
	SSS	ZNE	09 02 25	2	18			2.5	18
	L	ZNE	08.5	4	20	2.6	20	2.5	20
	eL	Z	10 43.5	3.5	20				
	eL	ZNE	13 23	3	20	2.5	20	2.5	20
	eL	ZNE	15 25.5	4.5	20	2.5	20	4.5	20
20	L	ZNE	01 54.2	3	50	8	50	9	50
23	eS	ZNE	06 12 48	9.5	15	7.5	18	13.5	18
	SS	ZNE	16 02	6	8	6	8	6	8
	S	ZNE	19 33 54	15.5	19	11	19	13.5	16
25	ePP?	Z	15 02 00						
	e?	Z	05 00						
	PcS	NE	06 00			5	20	1.5	12
	S	ZNE	15 06 42	6.3	20	4	12	3	20
	SS?	Z	10 40	2.75	12				
	e?	Z	11 20	3.5	10				
26	eL	ZNE	02 55						
27 - 28				Records obscured by heavy microseisms.					
29	eL?	ZE	23 02	2	20			2	20
30	eP?	Z	12 24 50						
	e?	Z	17 35 38						
31	S	E	07 38 52					4	14
	(SSS)	ZE	45 50					3	16
	L	ZNE	49.5	8	20	9.4+	20	3	20
APR 1	eL	ZNE	01 49	3	20				
	S	NE	14 25 09			1.7	12	6	14
	eSS?	N	28						
	L	NE	29.3			6.5	20	11.5	20

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
APR	4	e	Z	08	03	04							
	4	eL	ZE	23	36	.7		1.0	10			1.6	15
	5	eL	ZNE	12	14	.5		1.5	20			1.8	20
	5	e(S)	ZNE	20	50	13		1.0	10	1.0	10	1.4	12
		L	ZNE	21	10	.5		1.5	10	3.0	12	2.5	12
	5	iP	Z	21	15	29	u						
	5	e(L)	ZNE	23	14	.5		3.5	15	4.5	17	4.5	15
	5	iP	ZNE	23	40	31	u	2.9	16				
		ePP?	Z		43	13							
		S	ZNE		49	50		2.5	15	1.1	12	1.0	12
		ScS	NE		50	43				1.6	10	1.8	15
		SS	ZNE		54	13		1.5	30	1.4	30	1.0	12
		Lq	NE	00	01	48				3.7	20	3.5	20
		Lr	Z		02	00		8.5	20				
	6	P	ZE	14	23	45		3.5	10				
		S	ZNE		32	48		5	20	2.5	16	7	10
		ScS	NE		33	29				3	20	5	30
		SS	ZNE		37	13		6	30	3.5	25	6.5	19
		SSS	Z		39	43		4	22				
		L	ZNE		43	.1		19.5	20	9	20	6.5	20
		P'P'?	Z		52	03							
	6	eL	ZE	21	43	.8		1.6	20			1.5	20
	6	e	Z	22	40	.5							
	7	eP	Z	07	28	28							
	8	iP	ZN	01	30	32	u	2.1	9	1.5	8		
		PcP	Z		32	25		2.4	8				
		S	ZNE		36	08		2.5	15	3.1	17	5	16
		L	ZNE		39	.5		6.3	20	2.2	16	4	16
	8	e	Z	07	49	40							
		L	ZNE		51	.3		4.8	18	3	20	5	18
	8	iP	Z	08	11	15	u						
	8	iP	ZE	11	53	25	u	3.3	6			3	10
		e(PP)	Z		55	25		3.5	10				
		e	ZNE	12	01	34		2.5	18			2.5	18
		eSS?	E		03	25						3.4	8
		e	ZNE		04	38		4	14				
		L	ZNE		07			15	20	9	20	12	20
	9	i(P)	Z	00	58	43	d						
	9	P	Z	04	53	45							
		eL	ZN	05	11	.7							
	9	P	Z	06	28	23		4.1	10				
		S	ZNE		36	21		4.5	11	7.2	20	23.5	20
		e	E		38	58						4.5	16
		SS	NE		40	13		12	22	7	22	10.5	25
		SSS?	ZE		42	39		5.1	19			3.7	18
		Lq	N		42	.7				16	20		
		L	ZE		45			30.5	20				
	9	PKP?	Z	18	26	41		2	20				
		PP	E		27	25							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
APR	9	PPP	ZE	18	29	43		1.1	15				
		(SKS)	Z		31	29		2.5	15				
		PS?	ZE		36	23							
		PPS	ZE		37	43		2	14				
		PPPS?	ZE		38	42		2.4	18				
		PSPS	ZE		43	53							
	10	e	Z	01	26	48							
	10	iP	ZNE	05	55	18	u	2.4	10				
		PcP	Z		56	38							
		pP	Z		57	21							
		ScP	Z		59	34							
		S	ZNE	06	01	30		2.4	10	4.0	17	2.5	15
		pPcS	E		02	24						2.5	9
		ScS	E		04	09						4.1	12
		sS	ZNE		04	43		3	20	2.5	11	5.5	17
		SS?	N		05	30				2.0	10		
		ScS	E		06	45						1.9	10
		sScS	ZNE		07	40		2.5	18	1.1	18	3.6	16
		(L)	ZNE		10	.2		2.6	20			2.0	20
	11	eP?	Z	00	01								
		eL	Z		17								
	11	SS	Z	09	57	56		1.3	18				
		eSSS	Z	10	02	23							
		L	ZE		09								
	11	eP	Z		11	40	45						
		SS?	Z			55	30						
		L	ZNE	12	03	.7		3.5	20	2.0	20	2.1	20
	11	eL	ZE	15	39	.8							
	11	P	Z	18	05	40							
		L	ZNE		22	.7		2.7	20			1.8	20
	12	L	Z	06	39	.5							
		iP	Z	08	22	43							
		e	Z		23	23							
		PP	ZE	10	13	31		1.4	12			1.5	10
		sPP	ZE		14	08		1.5	10			1.5	8
		PPP?	E		16	31						1	10
		SKS	E		19	30						1.1	8
		S	E		20	23						2	12
		sS	E		21	16						2	12
		PS	ZE		22	45		1.0	14				
		PPS	E		23	30							
		PKKP	Z		24	10		1.5					
		sSS	ZNE		28	54		1.5	14.5	1.5	20	2	18
		L	ZE		45	.5		1.5	20			1.2	20
	12	eP	Z	15	33	53							
		PcP	Z		34	20		1.5	8				
		pPcP	Z		35	10		1.0	8				
		PP	Z		36	38		1.0	14				
		(pPPP)	Z		39	20		1.5	10				
		S	E		42	46						1.4	14
		ScS	ZNE		43	15		1.2	16	2.0	17	3.0	20
		sS	NE		44	06						2.5	18
		PS	E		45	36						1.2	10
		e	ZE		46	21		2.0	10			2.0	15
		sSS	ZNE		48	25		1.8	24			1.8	17
		SSS	ZN		50	33				1.5	20		
		L	ZNE		51	.3		20	20	11	20	18	20

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
APR	12	P	ZN	21	04	00		4	12	1.5	10		
		e(?)	Z		04	56		3.3	16				
		PcP	Z		04	56		2.0	12				
		PP?	Z		06	08		1.3	8				
		PcS?	Z		08	43		1.6	11				
		S	ZNE		12	14		2.5	10	1.6	10	1.5	10
		(SKS)	ZNE		12	28		2.2	25	6	27	3.0	25
		ScS	E		13	32						1.9	24
		SS	Z		15	51		2.0	27				
		SSS	ZN		16	35		2.0	24				
		L	ZNE		19	.2		8.4	20	4.5	20	18.1	20
	13	L	ZE	01	48	.5		2.5	36			3.0	36
	14	L	ZNE	00	48	.5		2.0	20			2.0	20
	14	L	ZE	03	45			1.5	20			1.4	20
	14	eL	ZE	08	25								
	15	e(L)	ZNE	01	11	.5							
		e(L)	ZNE	05	12								
	16	iP	Z	07	35	29	d						
		sScS	E		48	24							
		P	Z	16	26	37							
		S	NE		37	11				1.0	10	1.2	10
		sS	NE		37	31						2.5	8
		e(L)	ZN		54	.5							
	17	eP	Z	17	22	02							
	18	e	ZNE	00	44	49		1.7	24				
		e	ZNE		50	12		3.5	30				
		e	ZNE	01	15	10		2.5	30				
	18	P	Z	06	29	00							
		(PcP)	Z		29	17							
		S	ZNE		38	00		1.1	13			1.0	6
		ScS?	ZNE		38	36		1.0	9			1.0	8
		L	ZNE		47	.8		2.0	20				
	19	P	ZE	07	35	34		1.5	12			1.1	10
		i	Z			52	u						
		S	ZNE		43	11		3.7	17	4.8	20	12	18
		SKS	Z		43	36		5	16				
		ScS	ZNE		45	00		1.2	18	1.8	18	2.0	18
		SS	ZNE		46	50		2.2	24			2.5	20
		SSS?	E		47	46						2.0	27
		Lq	N		48	.5				5.5	20		
		Lr	ZE		49	.8		10.8	20			9.0	20
	19	eP?	Z	15	05	26							
		eS?	Z		15	21							
	19	L	ZE	16	04			2.0	20				
	19	e	Z	19	53								
	20	iP	ZE	03	38	46	u	2.4	12			0.8	10
		PcP	ZN		39	00		3.2	20				
		PPP?	ZE		43	43		1.3	14			1.1	9
		iS	ZNE		47	41	s	4.4	16	5	12	3.5	16
		ScS	ZNE		48	41		2.0	20	5.5	22	2.0	20
		SS	ZNE		52	10		3.5	40			2.6	30

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
APR	20	sSS	ZNE		53	40		3.2	30			1.5	21
		L	ZNE		55	.5		4.5	20	3.5	20	2.0	20
	20	L	ZE	05	09	.1		2.5	20			2.0	20
	20	eP	Z	17	08	34							
	21	eP	ZNE	15	27	31				2.1	22	1.0	14
		S	NE		29	26				13	20	25	20
	22	L	ZE	19	51	.5		3.5	20			2.5	20
	22	P	Z	20	36	29		2.0	8				
		S	ZNE		44	25		5.0	21	3.6	14	8.0	22
		ScS	NE		46	11				1.4	12	1.5	14
		SS	ZNE		48	06		3.0	18	1.5	17	4.0	14
		SSS	ZE		50	23		3.0	24			3.0	17
		Lq	N		50	.4				6	20		
		Lr	ZE		52	.9		10.5	20			9.5	20
	23	eP?	Z	06	55	38							
		S?	Z		56	40							
	23	e?	Z	21	13	48							
	24	SS?	Z	10	04	04							
		SSS?	Z		08	18							
		L	ZNE	10	21	00		5.6	20	1.7	20	4.5	20
	24	iP	ZNE	18	05	51	us	13	8	6.5	8	3.0	6
		PP	Z		07	18		5.5	10				
		PcP	ZNE		07	32		11	11	6.5	10	3.5	10
	24	PPP?	Z		08	12		7.1	10				
		e	ZN		08	43		5	13	4.1	12		
		PcS	ZNE		11	22		6	11	4.5	11	3.0	11
		S	ZNE		12	07		16.5	16	25.5	15	12	15
		SKS	ZE		12	34		12.4	18			15.5	18
		SS	ZN		15	10		22	22	29.2	22		
		Lq	E		15	.6						36.5	20
		Lr	ZN		16	.5		55	20	25	20		
	24	eP?	Z	19	13	19							
		L	ZNE	20	34			4.2	20				
	25	eP	Z	00	23	00							
		e(S)	ZNE		25	.2		13	20	6.5	20	19.5	20
	25	eL	ZNE	01	39			3.0	20	1.6	20		
	25	eL?	Z	02	07	.5							
	25	P	Z	05	33	27							
		eL	ZN	06	01								
	25	eL?	Z	18	48	.5							
	26	eP?	Z	05	20	30							
	26	eL	ZNE	06	12	.8		2.0	20			1.5	20
	26	P	Z	20	54	25		2.0	10				
		pP	ZNE			55		16.5	14	3.5	16	5.5	12
		sPcP?	N		55	28				1.1	14		
		e(PKP)	ZNE		58	08		4.5	15	1.5	14	3.1	12
		PP	ZNE			32		24	13	7.25	13	9.8	14
		pPP	ZNE		59	01				13	12	17	12

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
APR 26	PPP?	ZNE	21 00 18	11.5	11	4.5	16	7.0	14
	e?	N	02 43			6.5	12		
	(SKKS)	ZNE	04 48	15.5	20	26	20	45.5	17
	S	ZNE	05 28	18.6	19	25.5	20	35	16
	sS	ZNE	07(32)	52±	18	18	20	31	20
	PKKP	Z	10 28						
	SS	ZNE	12 40	31	11	55	30	32	15
	sSS?	ZE	14 54	28	22			24	20
	SSS	ZNE	(16)	26.5	20	31	35	35	22
	L	ZNE	20.8	45±	20	34	20	19	20
27	P	Z	09 59 24	1.5	16				
	PcP	Z	10 00 00	2.0	16				
	S	ZNE	08 20	3.2	14	3.5	12	3.4	12
	ScS	ZNE	09 04	4.5	16	3.0	18	5.0	18
	SS	ZNE	12 23	2.2	42	3.5	20		
	SSS	ZNE	13 55	3.2	23	3.0	22	4.2	24
	L	ZNE	16.2	6.0	20	4.0	20	3.5	20
27	eP?	Z	20 59 32						
28	eP?	Z	01 55 41						
	S?	ZE	02 02 40	3.0	27			1.5	17
	Lq	NE	18.3			2.2	20	2.3	20
	Lr	Z	20.6	3.0	20				
28	eP	Z	11 23 42	2.5	17				
	PP	ZE	28 11	4.5	22			3.0	20
	PPP	Z	30 18	2.5	20				
	SKS	ZNE	34 27	1.7	22	1.2	16	7.0	20
	SKKS?	ZNE	35 10	3.5	18	1.4	20	4.0	20
	S?	E	36 11					3.2	12
	PS	ZNE	37 18	10.5	16	1.6	22	9.0	19
	PPS	ZNE	38 17	6.0	30			10	22
	SS?	ZNE	42 31	3.0	28	1.6	21	7.1	28
	SS	ZNE	43 35	34	25	6.5	24	31	21
	SSS	ZNE	47 07	10	16	2.0	20	9.0	20
	SKKS	ZNE	50 34	7.0	22			4.5	22
	Lq	N	54.1			6.5	20		
	Lr	ZE	59.5	38	20			32	20
28	eP?	Z	13 11 21	3.0	26				
	S?	ZNE	19 37	5.5	22	2.5	20	3.0	21
	L?	ZNE	32	5.5	20	2.0	20	3.3	20
29	L	ZNE	00 52.4						
29	eP	Z	09 19 12						
	S	Z	30						
30	P	Z	13 34 45						
	PcS	Z	39 41						
	L	E	51.8						
MAY 1	P	Z	04 10 00						
1	L	ZNE	07 54.2	7.5	20	3.6	20	5.0	20
1	L?	Z	09 40.1						
1	P	Z	15 07 56						
3	iP	Z	03 12 01 u						
3	L	ZE	05 30.8	3.0	20			2.6	20
3	L	ZNE	13 43.5	2.5	20	2.0	20	3.5	20

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
MAY 4	P	ZNE	07 31 22	11.2	42	4.0	46		
	iPKP	ZNE	34 41 d	13	11	2.0	8	2.5	11
	PP	ZNE	36 31	30	20	20.5	20	7.5	20
	L	ZNE	57±	20	20	130±	20	160±	20
4	eP?	Z	10 23 09						
4	eP?	Z	17 02 54						
5	e?	Z	06 14 07						
5	ePP?	Z	19 23 17						
	eLq	E	56.8					1.0	20
	Lr	ZN	20 02.9	4.0	20	2.5	20		
5	e?	Z	20 43 48						
6	eP	Z	11 35 55						
	S	NE	40 04			3.5	17	2.0	15
	(SS)	NE	40 33			2.5	14	2.0	14
	L	E	41.5					5.0	20
6	eP	Z	14 12 56						
	eS	N	20 31			1.5	12		
	eL	NE	(29)			1.6	20	1.6	20
6	P	Z	17 38 09						
6	P	Z	19 04 03						
	eL	NE	23.5			1.5	20	1.5	20
7	P	Z	00 14 43						
	S	NE	23 57			2.5	22	1.2	16
	ScS	NE	24 32			3.6	30	2.0	18
	SS	NE	28 20			2.5	18		
	SSS?	NE	31 21			1.0	24	1.2	26
	L	ZNE	(35)	10	20	4.5	20	4.5	20
7	P	Z	09 15 02						
	eL	ZN	38.2	2.0	20				
7	eP	Z	11 28 33						
	SS	Z	42 32	1.0	18				
	L	ZNE	50.1	2.5	20	1.4	20		
7	eP?	Z	13 56 27						
7	P	Z	20 33 55						
	L	ZNE	55.9	2.5	20			1.0	20
8	eL	Z	07 47						
8	L	Z	09 38.3	1.5	20				
8	L	ZN	12 35.1	2.5	20	2.5	20		
8	e?	Z	16 12 53						
9	eP?	Z	12 08 14						
10	e(L)	ZNE	04 37						
11	e?	Z	17 27 52						
11	P	Z	19 32 24						
12	ePP	Z	05 18 43						

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
MAY 12	(PKS)	Z	05 19 44		3.4	12				
	ePPP?	ZN	20 55		1.5	13	1.2	12		
	SKS	ZN	23 50		1.0	17	1.3	16		
	PS	ZNE	28 38		4.0	15	2.5	15	1.2	11
	PPS	ZN	30		3.0	16	2.1	14		
	SS	ZNE	35 52		5.0	24	7.0	29	3.5	17
	ScSScS	ZE	38 28		1.8	18			2.5	17
	eSSS	ZNE	40 48		2.0	17	1.5	15	3.0	17
	Lq	E	51.5						3.2	25
	Lr	ZNE	55.7		19	20	9.5	20	6.0	20
12	P	Z	08 16 28							
	eL	Z	35.7		1.0	20				
12	P	ZNE	09 58 53		11	9	2.4	10	5.0	10
	PcP?	ZNE	59 25		4.0	16	2.0	8		
	PP	ZNE	10 01 49		4.2	10	1.2	10	3.4	9
	PPP	Z	03 00		3.6	13				
	S	ZNE	08 50		5.0	12	21.7	15	18.5	16
	SS	ZNE	13 50		3.0	13	11.5	15	7.5	15
	L	ZNE	18.2		110	20	25	20	90	20
	P'P'	Z	25 49							
12	e?	Z	17 59 14							
12	(PKKP)	Z	22 11 14							
12	(PKKP)	Z	22 18 52							
	L	ZNE	59		4.0	20	2.7	20	2.5	20
13	eP?	Z	11 02							
13	P	Z	16 43							
14	P	Z	04 31 00							
14	PKP	Z	06 56 24							
	PKS	Z	59 54							
	eL	ZNE	07 47.6		9.5	20	5.0	20	8.0	20
14	e?	Z	08 44 07							
14	iP	Z	09 42 45	u						
	Lq	E	56.9						4.5	20
	Lr	ZN	58.5		4.4	20	2.5	20		
14	P	Z	10 51 12							
	L	ZN	11 07.1							
14	P	Z	11 58 34							
	Lq	E	12 12.7						3.2	20
	Lr	ZN	14.5		4.4	20	2.5	20		
14	P	Z	13 28 41							
	Lq	E	42±						3.5	20
	Lr	ZN	44.6		4.5	20	3.4	20		
15	i?	Z	02 36 03	u						
15	P?	Z	18 27 17							
16	iP	ZNE	06 27 21	u	9.5	20				
	PP	ZN	29 47							
	S	ZNE	36 23		8.5	16	13	26	12.5	20
	ScS?	ZE	37							
	SS	ZNE	40 47		11	38	8.5	36	7.0	30
	SSS	ZN	43 11		3.2	24	3.4	26		
	Lq	ZNE	44.1		19.5	20	9.5	20	9.5	20

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
MAY 16	eP	Z	07 41 06						
	L	ZN	08 38	2.5	20				
17	eP?	Z	21 36 48						
18	P?	Z	05 51 07						
19	e?	Z	05 48 37						
19	eP	Z	08 03 47						
19	P	Z	08 45 11						
19	e(PKP)	Z	15 36 43						
	L	ZE	16 21.6	2.5	20			1.9	20
20	P	Z	01 00 41						
	S	ZE	09 09	3.0	40			2.0	32
	L	ZE	20	2.6	20			3.0	20
20	eP?	Z	09 41 41						
20	eP?	Z	10 35(22)						
	(L)	NE	40 31						
20	PP?	Z	11 44 27						
20	(P)	Z	12 43 32						
21	P?	Z	02 24 07						
21	P	ZNE	11 45 45	1.5	12				
	PcP	ZN	46 01	1.7	18				
	S	ZNE	55 02	1.7	16			4.0	16
	ScS	NE	55 47			3.5	18	2.2	16
	SS	Z	58 50						
	L	ZNE	12 07.5	3.5	20	2.0	20	3.5	20
22	P	Z	07 03(29)						
	PcP	Z	06 42						
	S	ZNE	09 02					1.0	12
	SS?	ZE	10 33						
	L	ZNE	11.7	3.0	20	2.0	20		
24	P?	Z	04 47 43						
24	eP	ZNE	10 19 55						
	(S)	ZNE	21 37						
24	e(PKP)	Z	13 34 03						
24	P	ZE	19 31 52	3.0	12			1.5	15
	PP	ZE	36 24	7.0	16			5.6	16
	PPP	ZE	38 30	4.0	15			4.0	16
	SKS	ZNE	42 16	4.3	18			13.4	12
	PS	ZNE	45 31	17.5	21	4.1	22	14.5	20
	SS	ZNE	51 11	12	22	4.0	17	24	20
	SSS	ZNE	55 38	13	24	5.5	15	7.4	20
	Lq	ZNE	20 02	12.5	40	18	40	7.5	34
	Lr	ZNE	08.5	17	20	6.5	20	17.5	20
26	PP	Z	04 31 07						
	SKS	NE	37 27						
	(PS)	ZE	40 11						
	SS?	E	45 48						
	Lr	Z	05 02.5						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY	26	L?	Z	07	47	00						
	26	L	ZE	09	53							
	28	e?	NE	19	44	23						
	29	P	ZNE	10	52	01	7.6	12				
		pP	Z		52	31	4.5	11				
		S	NE		59	29			7.5	15	16	16
		ScS	E	11	01	45					5.7	17
		SS	NE		03	15					5.0	15
		Lq	ZNE		05	.2			4.0	20	6.0	20
		Lr	Z		08	.2	7.5	20				
	31	P	ZN	09	39	03	1.9	10				
		S	ZNE		47	50	3.0	14			2.0	12
		ScS	NE		48	37					3.5	12
		SS	ZN		52	17						
		Lq	NE		56	.5			3.5	20	3.0	20
		Lr	Z		59	.5	7.0	20				
	31	P?	Z	12	48	06						
JUN	1	P	Z	05	42	00						
	1	e?	Z	06	28	03						
	1	P	Z	12	42	39						
		S	ZE		51	00	1.2	10			1.3	8
		sS	ZE		53	38	1.0	10			1.2	8
		L	Z	13	10	.6						
	1	P	Z	17	18	08	1.5	12				
		PcP	Z		18	31	1.0	10				
		S	ZNE		27	05	1.1	8			1.1	12
		sS	ZE		27	32	1.5	10			1.5	8
		SS	ZE		31	30	1.0	14				
		Lq	E		35	.7					2.3	20
		Lr	ZN		38	.5	3.0	20	1.7	20		
	2	eL	Z	00	45		1.0	20				
	2	eL	Z	03	26	.2	1.5					
	2	eP	Z	03	31	56	3.0	20				
		PcP?	Z		33	14	1.5	21				
		S	ZNE		39	01	3.0	16	5.0	19	4.5	20
		SS	ZNE		42	41	1.5	22	1.5	20	2.0	15
		(SSS)	ZNE		44	30	3.0	22				
		L	ZNE		46	.2	10.0	20	7.5	20	8.2	20
	2	P	Z	03	40	36						
		L?	ZNE		55	.6	9.5	20	5.0	20	5.5	20
	2	eP	Z	03	56	55						
	2	P	ZNE	04	00	47						
		S?	E		08	07					5.5	16
		ScS?	E		09	36					3.5	14
		SS?	E		11	03					3.0	16
		L?	ZNE		16	.2	9.5	20	6.0	20	9.0	20
	2	ePP	Z	05	15	03	1.5	13				
		PPP	Z		17	05	1.5	16				
		(PS)	ZNE		24		2.0	13			1.5	17
		SS	ZNE		29	03	1.0	15	2.0	15	1.5	14
		SSS	N		32	56			2.0	21		
		L	ZNE		37	±						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN	2	e?	Z	12	53	47						
		eL	Z	13	07	±						
	3	L	ZE	04	31	.5						
	3	eL	Z	06	47	±						
	4	eL	Z	02	48							
	4	P?	Z	17	03	48						
	4	eP?	Z	19	04	12						
		S	ZNE		06	07	2.5	10	1.5	10	1.5	10
	4	S	E	22	10	14					1.5	12
		(SSS)	E		16	29					1.5	14
		L	ZNE		22		2.5	20	1.5	20	1.5	20
	5	eL	Z	06	32	.1	1.0	20				
	5	L	ZE	21	26	.5	2.5	20			2.0	20
		e?	Z	22	27	41						
	6	eP	ZNE	01	38	33	1.7	16	1.8	15	0.8	15
		S	ZNE		40	06	12.7	17	11.5	17	7.5	16
	6	eL	ZE	10	42		1.5					
	7	L	Z	03	01	.2						
	7	eL	Z	04	36	.8						
	7	eP	Z	08	47	25						
		PP?	Z		51	09						
		(PS)	ZE	09	00	14	1.0	20				
		L	Z	09	25	.7	1.5	20				
	7	e(L)	Z	10	02		1.5	20				
		(L)	Z		11		0.8	20				
	7	L	ZNE	14	34	.4	1.7	20				
	8	eP?	Z	09	31	23						
	8	eP	Z	14	24	47						
	9	eP	Z	01	50	44						
	9	P	Z	03	31	49						
	9	(S)	ZNE	04	48	55	1.0	14	2.1	17	2.0	16
	9	(Lq)	NE	10	43	.5			1.2	20	1.2	20
		(Lr)	Z		44	.8	1.5	20				
	9	e?	Z	15	12	05						
		eL	ZNE		33	.3						
	9	P	Z	23	19	35						
		PcP?	Z		21	39	1.2	6				
		S	E		26	46					2.8	12
		S	ZN		26	50			2.7	21		
		e(ScS)	E		29	24					1.7	10
		SS	ZNE		30	36	1.7	20	1.5	21	7.0	27
		Lq	E		31						16.0	20
		Lr	ZN		33	.5	11.5	20	8.5	20		

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUN 10	e	NE	02	24	8							
10	e?	Z	03	11	31							
10	eP?	Z	03	19	45							
10	PKP	Z	04	35	35							
	eL	NE	05	32					1.5	20	2.5	20
10	P	Z	10	58	54							
10	e	E	13	19	02							
10	e?	Z	14	24	21							
10	e	E	17	22								
10	eP?	Z	18	49	35							
11	e	NE	05	51	33							
11	P?	Z	23	44	52							
14	iP	ZNE	00	24	00	d	87±	15±	12±	12	24±	10
	PcP	ZNE		24	32		46	8	35	13	15.5	10
	PP	ZNE		26	56		24	14±	10±	10	14.5	12
	S	ZNE		(34)			37	21	55	22	65	20
	SS	ZNE		(38)					55	20	42	16
15	eP?	Z	09	22	45							
17	eL	Z	11	21.5			1.2	17				
17	iP	Z	20	56	54	u						
18	eP	Z	06	57	05							
	(PcP)	Z	07	01	19		1.0	15				
	S	ZNE		02	03		2.0	21	3.0	14	1.9	13
	SS	ZNE		03	20		8.4	18	24	21	12.7	19
18	Lq	N	13	11.4					3.0	20		
	Lr	ZE		12.3			2.0	16			2.5	16
18	e?	Z	14	44	02							
18	ePKP	Z	15	50	32							
	PP	ZN		52	33		3.0	16	1.5	15		
	PS	ZNE	16	02	41		3.0	20	2.4	16	1.2	22
	PPS?	ZNE		03	30		1.6	12				
	(PPPS)	ZNE		04	51		2.1	14	2.0	12	1.8	15
	(ScSP')	ZNE		06	20		3.0	17	2.4	24	1.7	12
	SS	ZNE		09	30		3.0	26	9.0	31	6.0	23
	(PSPS)	E		10	35						4.5	20
	(SKKKS)	ZNE		12	11		4.0	20	4.7	24		
	SSS	ZNE		30	00		2.6	21	3.7	20	4.5	22
	Lq	NE		24	00				15.5	20	5.0	20
	Lr	Z		31.2			28.5	20				
19	(P'P')	Z	02	16	02							
	L	ZE		27±			2.0	20			1.8	20
19	eP?	Z	10	34	55							
19	eL	Z	12	58.5								
20	e?	Z	03	57	09							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUN 20	P	Z	10	12	25							
20	eP?	Z	18	09	43							
20	P	Z	19	00	33							
21	L	ZNE	17	01.9			8.5	20	19	20	12.2	20
21	e?	ZNE	18	52.7								
21	P?	Z	22	22	07							
	(PcP)	Z		22	20							
	eL	Z		42.7			1.5	20				
22	eL	Z	05	06	37							
22	eP?	Z	07	56	39							
22	e?	Z	14	32	37							
23	eL	ZE	15	30±								
25	eP?	Z	01	14	46							
25	L	ZE	06	17.5								
25	eL	ZNE	08	14.5			2.0	20			1.4	20
25	e?	Z	12	50	11							
25	P	Z	14	45	47							
	(SKPP')	ZE	15	16	03							
	L	ZNE		24			2.0	20			2.0	20
25	e?	Z	22	07	13							
26	e(L)	ZN	05	51								
26	eP?	Z	11	02	42							
27	e?	Z	03	50	33							
27	P	ZNE	19	11	58		3.4	8			2.2	10
	(PP)	ZNE	19	12	40		13	10	6.0	12	2.5	10
	PPP?	Z		13	30		7.5	8				
	PcP	ZNE		14	17		10.5	11	10.0	10	6.0	10
	S	ZNE		17	40		26	13	40	14	52.5	14
	SS	ZNE		21	00		25±	18	13	14	38.5	12
	L	ZNE		22±			10	20	13	20	13	20
27	PKP	Z	19	30	36							
28	iP	Z	01	27	18	u						
28	iP	ZNE	19	54	33	d	4.2	8			2.0	9
	PcP	ZNE		55	16		3.5	10			2.0	10
	S	NE	20	03	34				4.0	14	3.0	12
	ScS	ZNE		04	03		3.3	11	5.0	12	9.5	16
	SS	ZNE		07	44		3.5	36	3.0	20	4.5	18
	SSS	ZNE		21	34		3.0	42	5.5	41	5.0	25
	Lq	N		14					10.5	20		
	Lr	NE		15			13.5	20			9.0	20
	PKP	Z		21	42							
29	eP	Z	04	50	26							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUN 29	eP	Z	06	00	43							
	(S)	NE		04	29				2.5	24	1.0	16
	e(L)	ZE		06	04						1.0	20
29	P	ZN	07	27	00		1.5	13				
	iS	ZNE		35	45		2.5	12	2.2	12	4.9	11
	ScS	ZNE		36	54		1.7	12	2.0	14	2.3	12
	SS	ZNE		40	06		2.2	12	1.8	18	1.6	20
	SSS	E		43	29						1.5	20
	Lq	NE		44	.4				3.5	20	3.0	20
	Lr	Z					5.0	20				
29	iP	Z	13	32	01	u						
30	eP?	Z	05	57	10							
30	P	Z	10	30	46							
	e(SS)	E		39	16							
	Lq	NE		40	.7				3.2	20	2.0	20
	Lr	Z		41	.4		4.5	20				
30	eL	ZE	23	36			1.0	20			1.0	20
JUL 1	PP	Z	02	47	41		1.2	11				
	SKS	ZN		54	19		1.0	18	0.7	12		
	eSKS	ZE		55	30		1.0	12				
	PKKP	ZNE		59	08		1.5	12	2.4	25	1.2	20
	SS	NE	03	02	06				1.1	16	1.2	15
1	P	Z	08	39	32							
	i	Z		40	24							
1	P	Z	10	44	36		4.4					
1	eP	Z	11	38	00							
2	P	Z	11	36	07							
2	P	Z	11	42	41							
3	P	Z	04	03	32							
3	iP	ZN	18	04	53		5½	12	2.7	11		
	pP	ZNE		05	34		15	12	11½	12	3.7	8
	e	ZN		07	44		18	15	10	14		
	iS	ZNE		12	47		50½	22	94	27	19	20
	e	E		13	26							
	iSS	ZNE		17	19		49½	17	45	15	26½	17
	eLq	E		20	.0						48	40
	Lr	ZN		22						33		
	eP'P'	Z		35	30							
4	eP	E	05	02	58							
	pP	Z			28							
5	P	Z	15	33	41							
6	eP?	ZNE	09	21	02½	u	11½	12	3	12		
	pP	ZE		23	14		1.7	4			1.0	3
	PP	ZNE		24	16		8	16	2	18	2¾	16
	e	ZNE		28	38		3½	14	2¼	13	2.4	8
	iS	ZNE		29	58		12	6	12½	17	10	12
	eSP	ZNE		30	34		6½	16	6	16	8½	22
	iS	NE		33	44				11	20	14	16
	SS	ZE		35	14		8½	28			19	24
	PKKP	Z		40	08							
	P'P'	Z		48	26							
	epP'P'	Z		50	48							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUL 6	iP	ZNE	09	34	14½	u	21	10			8	8
	pP	ZE		36	20		6½	12			7	10
	PP	ZE		37	28		11	16			5½	12
	iS	ZNE		43	10		11	17	10	16	13½	15
	SP	ZE		43	51		7½	20			11	20
	isS	ZNE		46	47		10	14	13½	22	24½	14
	SS	ZNE		48	11		10	22	14	21	19	23
	P'P'	Z	10	01	35							
	e	Z		02	51							
	epP'P'	Z		03	55		9	12				
7	eL	N	06	04	½							
	eL	E		05								
	M	NE		07					2.7	16	3	17
	eL	Z		09								
9	eP	Z	02	44	58							
9	iP	ZNE	16	17	20	d	7½	12	1¼	12	3½	12
	pP	Z			48							
	sP	Z		18	03		9	12				
	PP	Z		20	36		2.7	10				
	iS	NE		27	17				6½	18	8½	14
	PS	ZN		28	10		5	24	7	20		
	eSS	N		33	00				4	30		
10	eP	Z	04	23	56							
	eL	ZE		50								
11	eP	Z	03	16	44							
11	iP	Z	05	00	57							
	eS	E		08	42						1.0	8
	Lq	E		14	24						2.5	26
	Lr	ZN		17	18		3¾	26	2.0	28		
11	eP	ZE	12	11	26		2	8			1¼	10
	S	ZNE		19	18		3	14	7½	22	9½	26
	SS	ZNE		23	06		4	24	8½	18	5	22
	Lq	N		25	28				18	50		
	Lr	ZE		28	45		24	18			23	14
12	iP	Z	00	24	10							
12	iP	Z	00	33	05							
	iP	Z		33	05							
	eL			46	½							
13	iPKP	Z	12	47	46						3.5	16
	iSS	E	13	06	37						1.25	8
	Lq	E		21	59							
14	iP	Z	13	09	58		1.25	8				
	PP	Z		12	10		0.75	8				
	PPP	Z		13	25		0.75	8				
	PcS	Z		14	42		1.0	8				
	S	ZN		18	09		1.5	20	2.5	22		
	SS	Z		21	43		1.25	16				
	Lq	E		24	29						1.5	32
	Lr	ZN		26	57		4.5	28	3.5	34		
14	eP?	Z	15	19	50							
14	iP?	Z	20	19	24							
14	eL	N	21	47	00				0.8	18		
	eL	ZE	21	48	06		1.25	22			1.5	22

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 14	eP	Z	22	43	27	1.0	5				
	eL	Z	23	11½		1.0	28				
	eL	E		13½						1.7	22
16	eP	Z	19	23	01						
	eL	E		39	36					1.5	18
17	eL	Z	19	36	18						
	eL			39	33						
18	iP	Z	18	30	03						
18	iP	ZE	20	08	05	4	8			2.5	8
	PP	Z		11	51						
	SKS	ZNE		18	26	18½	16	20	22	26½	16
	PS	ZNE		20	06	17½	28	6	14	30	20
	SS	NE		25	22			25	20	31	18
	eSSP	Z		25	37	12	28				
	SSS	ZNE		28	56	15	20	7	16	19	20
	P'P'	Z		32	42	22½	22				
	Lq	ZNE		33	36	14	30	23½	26	16	24
	Lr	ZNE		36	54	40	40	24½	42	21	44
19	iP	ZNE	15	18	22	34	19	7	12	15	9
	pP	ZNE		19	14	37	20	6	12	16	14
	PP	ZNE		21	31	12	12			12.5	9
	pPP	ZNE		22	35	19.5	20	6	16	11	20
	S	ZNE		33	48	1		19	16	31	12
	SSS	ZNE		37	36	8½	16			8½	16
	i	N		38	09			6½	20		
	Lq	ZNE		40	17	30	30	31½	27	25½	28
	Lr	ZNE		43	51	27	28	11½	25	24	24
19	iP	Z	15	47	42						
20	iP	ZNE	02	52	01	21½	1	5½	11	3	9
	i?	ZNE		54	40	4½	14	1.5	8	2	14
	PP	Z		54	58	3½	1				
	S	ZE	03	01	34	1.9	16			2.5	16
	SS	ZNE		05	48	2.25	23	3	20	6	20
	SSS	ZNE		09	32	2.5	23	1.5	17	3.5	16
	Lq	ZN		11	45	3.5	22	3.5	20		
20	eL	Z	13	55							
20	iP	Z	17	01	38						
	S	ZNE		08	05	1.1	14	2.25	14	1.1	10
21	eL	ZNE	01	11	00						
21	iP	ZNE	07	53	08	0.5	9	0.75	9		
	PP	Z		55	24	1					
	S	E	08	01	12					1.0	16
	eSSS	E		07	41					1.0	16
	eLq	E		08	03					2.5	24
	eLr	ZE		11	00	2.5	28			3.5	16
21	eL	ZE	10	15							
21	eSKS	E	12	54	04					1.2	14
	ePS	ZE		57	01	1.0	14			0.6	10
	PPS	E		58	02					1.2	12
	SS	ZE	13	02	45	1.7	8			1.5	16
	eL	ZE		20	15	1.25	22			1.0	20
22	eL	ZE	03	22	46	1	24			1	22

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUL 22	iP	Z	11	27	45		0.5	9	0.75	9		
22	eP	ZNE	23	13	31		7.5	16	2.6	16	1.5	16
	ePP	Z		15	29		2.3	16				
	PPP	Z		17	13		1.7	12				
	S	ZNE		22	24		8.5	18	19.5	24	7.5	20
	SS	ZNE		26	48		7	25	12	23	6.5	20
	SSS	ZNE		29	37						3.5	16
	Lq	ZNE		30	21				3.5	20	6.5	22
	Lr	ZNE		33	49				18.5	18	10	1.9
	P'P'	Z		41	48							
23	eL	ZE	04	36	25							
	iP	ZN	15	05	27		2.4	10	1	8		
	PP	ZE		07	23						1	8
	PPP	Z		08	06		0.9	7				
	S	ZNE		12	27		4.5	14	7.5	14	7	12
	SS	E		15	37						2.0	14
	Lq	E		17	00						6.5	25
	Lr	ZN		19	08		7.2	28	5.0	32		
24	ePPP	Z	01	47	00							
	PS	ZNE		53	48		1.4	16	1.3	16	1.8	16
	SS	NE	02	00	59				2	24	3	24
	e	Z		15	00							
	Lr	ZNE		19	10		7	20	3.5	20	4	20
24	iP	Z	23	12	12	u	2	7				
	PcP	Z		13	25		1.8	8				
	PP	Z		14	06		1.7	8				
	PPP	Z		15	23		1.2	10				
	ScP	Z		17	09							
	S	N		19	19					20		
	eLq	ZNE		23	53						2.5	14
	eLr	ZNE		27	45						5	16
25	eP	Z	01	32	31							
	e	Z		36	08							
	eL	ZNE		37	48		6	18	22.5	17	12.5	14
25	eL	E	12	32	04							
26	ePP	Z	19	58	32							
27	eL	ZE	06	15	00						1	18
27	eL	ZE	07	15	00							
28	eL	ZNE	11	13	42		2.5	16	2.1	16	3.0	17
29	iP	Z	04	37	08	d						
29	iP	Z	05	18	18	(d)						
	e	ZNE		19	55		1.2	10	1.2	12	0.7	12
	L	ZNE		20	21		4	20	25	19	3	13
30	eP	Z	13	01	53							
	eS	ZNE		08	15		1.2	8	0.8	15	1.7	9
	eSS	ZNE		11	16		0.8	8	1	8	1	9
	eL	ZNE		13	38		1.1	20	1.1	20		
31	iP	Z	02	03	57	u						
	pP	Z		04	34							
31	eP	Z	05	10	24							
	eL	ZN	05	38	21		0.8	20	0.7	20		

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 31	eL	Z	15	54	07	0.7	18				
31	ePKP	Z	20	12	13						
31	iP	Z	20	46	48 d						
	eL	Z		56	40						
AUG 1	iP	Z	10	12	46 d						
2	eP	Z	12	08	50						
	S	E		17	33					0.7	10
	eL	ZN		34	12	0.7	20	0.5	20		
2	eP	Z	20	20	43						
	i	Z		20	50 d						
	eLq	ZE		28	28	0.5	16			0.9	21
	eLr	ZE		36	26	0.8	20			1.3	18
3	eP	Z	02	55	07	1	1				
	eL	ZNE	03	42	16			1.4	16	1.2	12
3	eP	Z	15	37	45						
	eLq	N		55	43			0.8	20		
	eLr	ZE		56	35	2.5	20			1.75	20
3	iS	E	16	23	56 u					2.3	13
	eLq	N		28	07			2.0	20		
	eLr	ZE		29	10	6.5	17			6.5	17
4	iP	Z	03	12	05 u						
4	iP	ZN	08	10	38.3u	1.1	4	0.7	4		
	PcP	Z		11	41						
	pP	Z		12	24	0.7	8				
	PP	Z		12	47	0.5	7				
	ScP	Z		14	42	0.7	7				
	S	ZNE		17	25	1	12	1.8	14	2.5	14
	ScS	E		19	28					0.7	12
	SS	ZNE		20	37	0.9	14	1.8	14	0.6	12
	eL	E		24	22					1.2	19
4	eP	Z	15	43	34						
	e	Z		47	17						
4	eL	NE	19	06	32			1	15	0.6	15
5	eP	Z	05	29	39						
	eL	Z	06	01							
5	e	Z	10	21	38						
	eL?	Z	11	02							
5	eP	Z	11	42	34						
5	eP	Z	14	01	08						
	eL	Z		28	32						
6	e	P	03	46	37						
6	e?	Z	04	08	52						
6	eP	Z	18	35	37						
	e(L)	ZE		38	47						
6	e?	Z	21	19	00						
7	eL?	ZNE	07	26±							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 7	PKS	ZNE	11	06	08						
	PPP	Z		08	20						
	(PKKS)	Z		15	55						
	(PPPa)	ZE		19	18						
	eL	Z		45	52						
7	eP?	Z	16	00	20						
	e	Z		02							
7	i(P)	Z	16	13	33						
7	e	Z	18	59	20						
7	iP	Z	19	21	24 d						
	PcP	Z			47						
7	PKP	Z	22	04	50						
	PKS	Z		08	02						
7	e	Z	23	15	12						
8	eP	Z	01	06	44						
	eL	Z		46	47	2	20				
8	eP	Z	15	49	22						
	eL	ZE	16	11							
8	eS?	E	20	28	34						
	eL	ZE		36	35	1.8	20				
9	iP	Z	00	06	57.5u						
	pP	Z		07	06						
	e	Z			40						
9	iP	Z	02	46	05 u						
9	e	Z	05	20	04						
	eL	ZNE		33							
9	e	Z	19	14	53						
9	e?	Z	20	04	12						
	e	Z			23						
9	iP	Z	20	39	47 u						
	pP	Z		40	00						
	ePcP	Z			27						
	eLr	ZN		58	16						
10	P	ZN	00	41	05	0.8	6				
	PP	Z			34						
	PPP	Z			40						
	eL	ZN		44	55	8.5	15	12	15		
10	iP	Z	20	16	37 u						
11	eP	Z	02	29	29						
11	eP?	Z	08	23	51						
11	iP	Z	22	00	01 d						
	epP	Z			16						
	PcP	Z			47						
	e	Z		01	26.5						
	eS	ZE		08	32						
	eSS	Z		12	29						

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
AUG 11	eSSS	Z	22	14	39							
	e(Lq)	E		15	36							
	eL	Z		17			2.8	20				
12	eL	ZE	01	27								
12	eP	Z	04	18	21							
	eL	ZNE		53								
12	eP	Z	06	38	21							
12	eP	ZNE	10	08	09		4	12				
	PcP	Z			52		2.1	7				
	PP	ZN		10	16		2.4	6	3.2	6		
	PPP	ZE		11	04		4.8	13	1.9	8		
	iS	ZNE		15	48	nw	31	18	70	15	29	22
	ScS	N		18	19				8	11		
	SS	ZNE		19	46		14	16				
	Lq	NE		22	00				8	30		
	Lr	ZNE		24	25		68	20	45	20		
14	iP	Z	04	51	07	d						
	ePcP	Z			28							
	ePP	Z		53	45							
	eS	Z	05	00	53							
	eL	Z		05	17							
14	e	Z	07	42	49							
15	e	Z	03	02	49							
15	eiP	Z	03	37	38	d						
15	eiP	ZNE	09	10	48	usw	5.7	10			1.8	10
	epP?	Z		11	11							
	iPP	ZNE		14	48				7	12	8.2	16
	SKS	ZNE		21	15				19	14	26	20
	eS	NE		22	30		6	22	14	17	15	20
	PS	E		23	40						38	20
	SS	ZE		29	00						31	20
	SSS	Z		33	00		25	22				
	SKKS	E			58							
	P'P'	Z		36	48		49	24				
	eLq	NE		39	20							
	eLr	ZNE		42			68	20	38	20	42	24
15	eP	Z	13	23	39							
	iS	E		31	07	e					2.9	12
	(PPS)	N			56							
	eiScS	E		34	44	d						
	e(SSS)	Z		36	08							
	eLq	E			12						2.5	20
	eLr	ZNE		39	06		6	18				
15	iP	ZNE	01	00	46	dn	1.5	8				
	PcP	Z		02	05							
	iPP	ZN			54	u	2.6	10				
	ePPP	Z		03	46							
	eS	ZE		08	06							
	eScS	ZNE		10	35	e					4.5	15
	SS	E		11	40						3.0	13
	SSS	E		13	18						13.5	22
	eLr	ZNE		15	40		16	15	12	14	21	15
16	iP	Z	10	02	32	u						

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
AUG 17	iP	Z	01	10	24.5	u						
	e	Z			52							
	eL	Z		25								
17	iPKP	Z	01	52	55							
	ePKS	Z		56	25							
	ePPP	Z		59	24							
	eL	ZNE	02	49			1.5	20			1.2	20
17	ePKP	Z	04	48	40							
	eL	ZE	05	06	54		1.2	18			1.2	18
17	eiP	ZNE	21	15	23	use	12.1	17	5.6	18		
	PcP	ZE		16	44		7.8	12			2.4	10
	ePP	ZE		17	49							
	PPP	ZE		19	00		4.5	17			2.9	9
	PcS	ZE		20	15		7.4	12				
	iS	ZNE		24	14	une					36	15
	iSSS	ZE		31	46	w					88	46
	e(Lq)	NE		32	00				35	55	63	32
	ePKKP	Z		34	47		75	26				
	eLr	ZNE		35			50+	20	43	18	40	20
18	iP	Z	00	41	43	u						
	pP	Z		42	23							
	(pPcP)	Z			31							
18	eP	Z	00	47	29							
	ePP	Z		51	33							
	ePPP	Z		52	24							
18	e?	Z	03	05	30							
	e	Z		09	06							
18	eP	Z	05	47	34							
	eScS	Z		56	52							
	eLr	ZN	06	02								
18	iP	ZE	06	53	23	u	2.7	22				
	ePKP	ZNE		56	23		11.5	10			3.0	9
	iPP	ZN		58	41	de					7.8	8
	ePKS	Z		59	55							
	ePPP	Z	07	01	19							
	eL	Z		07	37							
18	ePKP	Z	08	15	28							
18	ePKP	Z	09	00	59							
18	eiPKP	ZNE	15	45	17	u	1.4	7				
	iPP	ZNE		47	24	d						
	ePKS	ZNE		48	47	ue	3.1	10			2.6	11
	eSKKS	E		54	38						1.6	12
	e(PSPS)	NE	16	05	10				2.6	50	6.5	42
	eScSScS	E		07	29						3	18
	eSSS	ZE		09	25							
	eL	ZNE		26	27		7.1	20	3.0	20	5.7	20
19	ePKP	Z	04	23	13							
	eSKKS	Z		40	20							
	eL	ZNE	05	04								
19	eP?	Z	07	15	45							
	S?	Z		16	21.5							
19	e	Z	21	06	31							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
AUG 19	e	Z	21	55	10							
20	e	Z	02	09	32							
	e	Z			43							
20	e	Z	05	30	34							
	e	Z		31	51							
20	eP	Z	07	31	28							
	ePP	Z		34	12							
	eL	ZNE	08	00								
20	e	Z	09	06	08							
20	e	Z	10	34	12							
20	eP	Z	12	29	40							
	eS	NE		37	32							
	eSS	Z		40	10							
	eSSS	Z		43	00							
	eLq	N		43	48							
	eLr	ZNE		46	33		3.8	16	3.4	20	3.5	16
21	iP	ZNE	08	08	52	dnw			3	12	3.6	15
	pP	Z		09	10							
	ePP	ZN			15				1.7	7		
	ePPP	N			42				2.0	8		
	i	Z		11	09							
	PcP	NE			55				5.5	6	3.5	7
	iS	ZNE		13	24	use			14	15	26	13
	eSS?	ZE		14	21							
	eL			16					57.5	20	66	
21	e	Z	09	40	45							
21	eP	ZNE	09	43	25							
	pP?	Z			32							
	ePP	Z		44	12							
	iS	NE		48	00	se			8	13	15	11
	eSS	NE			52.5							
	eL	NE		51								
22	e	Z	02	11	04							
22	eP	Z	21	40	11							
23	e	Z	03	44	23							
	e	Z		47	17							
23	e	Z	04	49	18							
	e	Z		50	51							
	e	Z		51	07.5	d						
23	e	Z	05	56	52							
23	e	Z	12	37	23							
	e	Z			42							
	e	Z		38	07							
23	e	Z	19	32	22							
23	ePKP	Z	22	41	02							
24	eiP	ZNE	15	52	03	d						
	pP	Z			11							
	PcP	Z			43							
	ePP	Z		54	20							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
AUG 24	S	E	16	00	27						2.0	15
	eL	ZN		16	12		1.5	20				
24	iP	ZNE	21	41	09	une	23	15	10	15	4.2	20
	ePcP	ZN			57				8	13		
	iS	ZNE		49	35	e					44	22
	ScS?	E		50	44						20	20
	SS	NE		53	35				16	21	34	23
	eSSS	Z		55	55							
	Lq	NE		57	06						1.55	37
	eLr	ZNE	22	00			65	20	30	20	33	18
25	e	Z	06	19	19							
25	e	Z	08	57	30							
25	eP	Z	12	35	50							
	epP	Z		36	00							
	eL	Z	13	07								
25	eP	Z	13	50	59							
	epP	Z		51	12							
	eL	Z	14	11	07							
25	eP	Z	18	03	18							
25	e	Z	19	47	35							
26	eP	Z	05	04	02							
26	e	Z	05	29	17							
26	eP	Z	08	40	13							
	ePP	ZE		44	32		4.0	15				
	e	Z			43							
	ePPP	Z		46	43		1.8	15				
	SKS	E		50	36						2.5	18
	eSKKS	E		51	30							
	eS	N		52	22							
	iPS	ZE		53	54	de	4.6	20			5.2	17
	ePKKP	Z		55	14							
	SS	ZNE	09	00	15	ue	5.4	25	3.3	18	11.0	25
	Lq	N		12	06				11	43		
	Lr	ZNE		17	00		17.0	20	5.0	20	15.0	20
26	ePKP	Z	10	47	04							
	eSS	NE	11	06	50							
	eSSS	Z		11	28							
	Lq	E		21	10						4.0	43
	Lr	ZNE		27	04		17	20	9.2	20	7.0	20
27	eP	Z	05	16	18							
27	eP	Z	08	02	13							
	epP	Z		03	01							
27	eL	ZNE	12	36	58							
27	eP	Z	13	46	13							
	epP	Z			38							
	eS	ZNE		53	56						5.8	24
	eL	ZNE	14	01			3.0	18	2.5	18	4.4	15
27	eL	Z	20	53								
28	iP	Z	02	47	21	u						

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
AUG 28	eL	ZNE	03	06								
28	e	Z	03	27	50							
28	iP	Z	16	01	47.5	u						
	epP	Z		02	18							
	eS	ZNE		09	29							
	eL	ZNE		28			2.1	17				
28	e	Z	20	07	34							
29	e(P)	Z	14	23	12							
	e(S)	Z		24	08							
	eL	NE		24	48				3.6	20		
29	iPKP	Z	17	22	27	d						
	i	Z			33	u						
	iPP	NE		24	58	e			2.0	10	2.4	10
	ePKS	NE		25	56				3.5	10	5.5	10
	ePPP	E		27	16							
	PPS?	E		36	07							
	eSKKS	E		41	28							
	(PSS)	NE		42	43							
	(PKPPKS)	NE		43	12							
	eL	NE	18	13								
29	P	Z	21	30	03							
30	eP	Z	21	54	55							
	ePcP	Z		56	33							
	e(S)	E	22	03	06							
	eLq	N		09	06				10	44		
	eLr	ZNE		11	39		12	15	8.5	17	9	18
SEP 1	ePKP	Z	11	57	20							
	eL	ZN	13	02								
1	e	Z	19	14	38							
2	e	Z	02	42	15							
2	ePKP	Z	09	49	32							
3	eP	ZN	06	39	08		4.0					
	ePcP	Z			38							
	PP	Z		41	28							
	S	N		48	50				4.0	24		
	eSS	ZNE		53	30				6.5	27	5.3	22
	eSSS	Z		56	47							
	eLq	NE		58	50							
	eLr	ZNE	07	03	06		12	20	7.0	20	6.3	20
3	e	Z	20	10	15							
3	eP	Z	21	58	47							
	eL	Z	22	20								
4	e	Z	08	56	49							
4	eP	Z	09	03	53							
4	e	Z	10	24	35							
4	eL	Z	12	50	40		1.8	18				
4	eP	Z	23	32	11							
	pP	Z			17							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
SEP 4	eS			39	53							
	eL	Z		47	23		2.5	20				
5	eP	Z	06	19	37							
	pP	Z			44							
	ePP	Z		22	31							
	eS	E		29	30							
	eSS	E		34	19							
	eSSS	Z		38	10							
	eLq?	NE		41	51							
	eLr	ZNE		45	22		9.3	20	4.5	20	6.8	20
5	iP	ZE	07	03	20	u						
	ePP	Z		04	03							
	ePPP	Z		04	48							
	iS	ZNE		05	30	nw	24	28	5.3	22	14	28
	eL	ZNE		07	07		24	12	24	12	65	12
	ePcP	Z		08	58							
5	e	ZNE	15	38	26							
5	eLq	E	16	13	41							
	eLr	ZNE		18	35							
6	eP	Z	00	40	25							
6	eP	Z	04	21	17							
	(pP)	Z			35.5							
	eL	ZNE		49								
6	e	Z	09	19	37							
6	eP	Z	13	31	08							
	e(PP)	Z		35	44							
6	e	Z	14	26	13							
6	eP?	Z	18	07	32							
6	e	Z	19	07	12.5							
7	e	Z	02	34	39							
7	e	Z	10	57	01							
	e	Z		58	02.5							
7	e	Z	21	34	30							
8	eP	Z	13	21	29							
	eL	ZNE		39	46							
8	iP	Z	20	27	27	d						
	PcP	Z		28	52							
9	e	Z	10	10	46							
	e	Z			52							
9	e	Z	20	01	17							
	e	Z		02	18							
9	e	Z	20	39	14							
9	e	ZNE	20	42	15							
10	P	Z	05	45	57							
	e	Z		46	09							
	i	Z			38	u						

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
SEP 10	eL	ZN	06	02	39		2.5	10				
10	eP?	Z	06	32	50							
	e	Z		33	02							
	e	Z			19							
10	e(P)	Z	10	43	28							
	e(Lq)	E		48	26							
	eL	ZN		50	14							
10	iP?	Z	19	28	49	u						
11	e	Z	03	09	02							
11	e	Z	06	41	42							
11	e	Z	20	38	02							
	e	Z			18							
	i	ZNE		40	18	use	4.7	18	3.1	17	5.5	15
	e	Z		48	51							
	e	Z		51	06							
12	iP	Z	01	52	02	u						
	ePcP	Z			30.5							
12	eP	Z	02	05	09							
	pP	Z			22							
	PcP	Z			52							
	eS	NE		14	16				5.0	23	7.6	23
	ScS	N		15	31				3.0	17		
	eSS	ZNE		18	58.5				5.8	30		
	SSS	ZNE		22	27.5							
	eLq	NE		23	46							
	eLr	ZNE		25	20							
12	e	Z	05	06	23							
12	eP		07	13	06							
	eLr	ZNE		37	33		3.6	20	2.0	20		
12	e	Z	08	48	18							
12	P	Z	11	35	00							
	iS	NE		43	37	e					8.0	16
	eScS	E		44	46							
	SS	E		47	36							
	Lq	NE		51	06							
	Lr	Z		53	12		7.0	20	3.6	20	10.5	20
12	eP	Z	17	12	44							
12	e	Z	20	20	40							
13	eP	Z	22	52	43							
	eL	ZN	23	25								
14	eP	Z	13	24	34.0							
	ePP	Z		26	30							
	e	Z		29	11							
	eS	ZNE		31	57		7.8	28	13.4	18		
	eSS	Z		35	20							
	eLr	ZN		38	20		20	20	13.4	20		
14	iP	ZNE	14	17	55	usw	36	20	27	20		
	eS	Z		24	37							
	e(SS)	Z		26	43							
	eSSS	Z		28	00							
	eLq	ZNE		31	16		130+					

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
SEP 14	eP	Z	15	06	57							
14	eP	Z	16	31	16.5							
14	eP	Z	17	04	26.5							
14	eiP	Z	17	14	28	d						
	e(PcP)	Z		16	17							
14	P	ZN	22	32	05		3	10				
	iS	ZNE		38	44	es	4.4	15	16	15	15	15
	iScS	ZNE		42	10	e	7.4	20			22	17
	eLr	ZNE		44	17		14.2	20	16	17	8.5	20
15	e	Z	01	39	12							
15	e	Z	06	06	29							
15	iP	ZNE	06	07	59	us						
	e	Z		11	42							
	iS	ZNE		18	11		67	18				
	eL	ZNE		20								
15	eP	Z	06	16	54							
15	eP	Z	06	25	43							
15	eP	Z	08	08	36.5							
	epP?	Z			41							
15	eP	Z	10	56	57							
15	iP	ZN	11	13	46.5	u	3.8	5				
	PP	ZN		15	26		4.5	11				
	sP	Z		16	36		5.12					
	ScP	Z		17	48							
	iS	ZNE		20	24	se	5	15	8.4	15	21	15
	eScS	NE		22	20						21	12
	esS	NE		23	38						18	10
	sScS	E		26	34						11	12
15	eP	Z	12	08	36.5							
	eL	Z		22								
15	eP	Z	13	03	38							
15	eP	Z	13	54	30							
	epP	Z			46							
	eS	NE	14	01	10							
	eSS	E		04	31							
	eL	ZN		07								
15	eP	Z	22	43	06							
	eL	ZNE		57								
16	eP	Z	02	11	52							
	eL	Z		33								
16	eP	Z	02	44	17							
	eS	E		50	49							
	ScS	E		54	07							
	eL	ZNE		57			3.2	20				
16	e	Z	06	34	59							
16	eP	Z	10	16	00							
	e	Z			38							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
SEP 16	iS	ZNE		22	15	e					3	12
	iScS	ZE		26	07	e	2	17			3.2	17
	eLq	E		27	17						3.6	15
	eLr	ZNE		28	59		2.2	20	1.8	20		
16	eP	ZN	16	05	19							
	iS	ZNE		12	01	dnw			9	16	14	19
	iScS	ZE		15	24	e					19	24
	eSSS	E		16	27							
	Lr	ZNE		18	18		19	20	9.2	20	9	17
17	eL	Z	03	42								
17	eL	Z	05	49								
17	e	Z	07	18	36							
	eL	ZNE		25								
17	e	Z	08	47	24							
17	eL	Z	14	26								
17	iP	Z	14	44	27	u						
	iS	NE		55	01	e			5.5	15	7	14
	eScS	NE		54	39						7	24
	eSSS	E		55	35							
	eLr	ZNE		57	39		8	20	5	20		
17	eL	ZNE	17	28								
17	eP?	Z	02	57	57							
18	eP?	Z	09	32	51	u						
	eS	E		39	23							
	eL	ZNE		46								
18	iP	ZN	12	10	08	un	2.6	15				
	pP	Z			18							
	epP	ZN		12	08							
	ePPP	Z			45							
	eS	ZNE		17	20							
	eScS	E		20	00							
	eSS?	E			13							
	eSSS	ZNE		21	27							
	Lr	ZNE		24	30		3.5	20	3.6	20	2.7	20
20	eP	Z	06	19	39							
	eS	N		29	16							
	eLq	N		39	19							
	eLr	ZNE		43	06		2.5	17			2.6	17
20	eP	Z	23	24	45							
	i	Z			51.5d							
21	eP	Z	02	19	04							
	eS	N		27	50							
	eSS	E		32	04							
	eL	ZNE		38	36		3.0	20				
21	e	Z	08	33	37							
21	eP	Z	13	20	44.5							
	i?	Z		21	51	u						
22	e	Z	13	17	30							
22	e?	ZE	19	15								

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP 23	e	Z	20	55	53						
	eL	ZNE	21	00	.5	3.4	20				
24	e	Z	09	17	30						
24	eP	Z	19	52	39						
	eScS	E	20	02	48						
	eL	ZNE		06	28						
25	eP	Z	00	25	56						
	ePcP	Z		26	15.5						
	eL	E		50							
25	eP	Z	01	47	19						
	eS	E		53	55						
	eScS	E		57	18						
	e(Lq)	E		58	.5						
	eLr	N	02	00	.5						
25	eP	Z	02	50	36						
	PP	ZNE		54	20						
	PPP	E		56	49						
	SKS	NE	03	01	16					2.9	12
	S	E		02	09					2.4	15
	PS	E			47.5					2.1	10
	eScSP	E		03	32						
	PPPS	E		04	35					3.4	12
	PKKP	N		06	58						
	SS	NE		09	01			4.5	18		
	eScSScS	N		14	33						
	P'P'	N		15	18			3.5	22		
	eLr	ZNE		23		30	20	13	20	9.1	20
25	eP	Z	23	42	38						
	eL	Z		57							
26	e	Z	02	21	07						
26	eP?	Z	06	54	45						
26	eP	Z	08	37	03						
	ePKP	Z		39	53						
	eSS	NE		58	39						
	eLq	NE	09	11	56						
	Lr	ZNE		17	14	9.1	20	4.5	20	6	20
26	eiP	Z	10	30	08						
27	eL	Z	07	40							
27	eiP	Z	10	31	40						
	pP	Z			47						
	ePcP	Z		32	17						
27	eP?	Z	12	26	27						
27	eP	Z	16	02	14						
	pP	Z			22						
	eL	ZE		17							
27	eL?	ZNE	20	14							
28	eP?	Z	09	05	28						
28	eL?	ZNE	12	16							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
SEP 29	eP	Z	11	34	29							
	pP	Z			41							
	PcP	Z			52.5							
29	eP	Z	14	38	45							
29	iP	Z	15	40	11	un						
	iS	ZN		46	52	nw			27	25	32	18
	ScS	N		50	00						57	32
	e(SSS)	N			50						37	18
	Lr	N		53	30				27	20	33	20
30	ePPP	Z	03	50	40							
30	eP	Z	05	04	38							
	iS	NE		11	26	e					3	15
	eSS	E		14	03							
	eScS	E			43							
	eSSS	NE		15	50							
	eLr	ZNE		17	38		3.5	20	2.4	20	2.0	20
30	eP	Z	13	39	40							
	e	Z		40	23							
	iS	E		46	27.5	e					2.5	15
	ScS	E		49	47							
	e(SSS)	Z		49	53							
	eLq	E		50	50							
	eLr	ZNE		52	08		2.7	20				
30	eP	Z	15	01	37							
	eL	ZNE		15			1.5	20				
30	eP	Z	16	38	38							
	eL	ZNE		50								
30	iP	ZNE	20	35	28	u	2.5	12				
	ePcP	Z		36	24							
	ePP	Z			48							
	iS	ZNE		42	57	dn?	3.2	13	4.7	17		
	sS	Z		43	27							
	eScS?	ZN		44	52							
	eSSS?	Z		47	13							
	eLq	N		49	01						5.7	30
	Lr	ZN		51	42		8.4	20	7	22	5.6	18
OCT 1	P?	Z	06	31	54							
	i(pP)	Z		32	06	u						
1	eP?	Z	09	45	56							
	i(pP)	Z			06	u						
2	e(P)	Z	04	18	35							
	eL	Z		43.5								
2	e(P)	Z	19	43	23							
	eL	ZE		52								
2	eL?	Z	20	03								
3	eP	Z	14	12	10							
3	eL	ZNE	22	13								
3	eP	Z	23	21	59							
	eL	ZNE		26								
3	P	Z	11	04	18							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT 5	ePKP	Z	18	47	43							
	ePKP	Z		48	17							
	ePKS	Z		52	02							
	eL	Z		19	35							
5	PKP	Z	20	53	44							
6	iP	Z	05	56	23	u						
6	e	Z	06	40	09							
6	e	Z	17	38	58							
6	e	Z	21	09	55							
7	iPKP	Z	08	50	20	u						
	PKP	Z			42							
	e	Z		52	24							
	eL	Z	09	44								
7	e	Z	12	56	36							
8	iP	Z	00	12	52	u						
	ipP	Z		13	04	u						
	e	Z			10							
	e(PcP)	Z			28							
	S	ZN		20	24							
	eL	ZN		28	00		2.7	30	2.2	30		
8	eP?	Z	04	06	38							
8	eL	Z	03	35								
9	P?	Z	13	56	21							
	pP?	Z			37							
9	P?	Z	17	09	59							
	i	Z		10	06	u						
10	eP?	Z	16	41	25							
11	e	Z	09	55	00							
11	e?	Z	09	44	45							
11	ePKP	Z	10	02	02							
	i	Z			07	u						
11	eP	Z	10	04	34							
11	i?	ZNE	11	01	44	ume	5	20	3	15	3.5	15
	e	Z		06	52							
11	i	Z	12	09	50	u						
	i	Z			56	u						
	e	ZNE		11	31							
	e	Z		15	08							
11	P?	Z	13	36	48							
11	eP	Z	17	58	41							
	eL	ZE	18	12								
11	e	Z	20	14	46							
	eL	ZE		24	56							
11	eP	Z	20	14	15							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT 12	eP	Z	03	34	40							
	iS	ZN		44	41	n						
	e(SS)	E		50	20							
	eL	ZNE	04	01	.5		4.5	2.5	1.5	25	3.5	25
12	iP	Z	03	55	19	d						
	ePcP	Z			50	u						
	e	Z		56	00							
12	eP	Z	10	23	32							
	eL	Z		36								
12	eP	Z	19	32	41							
14	e	Z	07	28	19							
14	iP	Z	07	30	34	d						
14	P'P'	Z	08	38	39							
14	eP?	Z	17	57	01							
	e	ZN		58	50							
14	eP	Z	20	44	01							
	e(Lq)	E		58	36							
	eL	Z	21	02								
15	eP	Z	04	34	37							
15	eiP	ZNE	06	27	38	ue	5.6	15				
	epP	Z			48							
	ePP	Z		30	49							
	iS	NE		37	33	sw					18	20
	PS	N		38	40							
	eSS	ZNE		42	32							
	eSSS?	Z		46	07							
	eLq	NE		48	36				35	38	30	30
	eLr	ZNE		51	40		100	20	37	20	67	20
15	iP?	Z	14	02	57	u						
16	eiP	Z	01	26	21	u						
	i	Z		31	23.5	u						
16	iP	Z	16	27	24	d						
	e	Z		56								
16	e	Z	19	20	32							
17	ei(P)	ZE	01	25	59	d						
	(L)			28	22		13.5	18	15	18		
17	iP	ZNE	08	39	26	de						
	PP	Z			32							
	PPP	Z		40	49							
	eS	E		43	08							
	L	ZNE		44	02		6.7	20			5.5	18
18	eP?	Z	14	08	58							
19	P	Z	02	21	37							
19	iP	ZNE	08	35	40	d						
	pP?	Z			56							
	ePPP	Z		37	40							
	eScP	Z		41	07							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT 19	iS	ZNE		42	16	w	7.6	15	8.4	16	16	17
	e	Z		43	44							
	eScS	ZNE		45	31							
	eSSS	E		46	21							
	(Lq)	E		47	04						11	18
	(Lr)	ZNE		48	51		14.5	20	10	20	12	20
19	eP	Z	09	23	42							
19	iP	Z	14	00	52	u						
19	iP	ZNE	16	04	51	unw	8.2	16	4.5	20		
	pP	Z		06	02							
	iPP	ZN			53	u	8.2	19				
	PcS	N		09								
	iS	ZNE		12	19	s	10	34	29	28	9.5	25
	iScS	ZNE		14	48.5		3.5	17				
	iSS	ZN		16	00	d?	9.6	25	7.5	22		
	eSSS	E		17	07							
	eLq	E		18	10						23	25
	Lr	ZNE		20	39		33	20	19+	20	29+	20
20	eL	Z	18	42								
20	iP	Z	21	48	03	d						
	eL	Z	22	08								
21	P	Z	06	11	17							
22	e	Z	02	02	49							
22	eP	Z	09	33	50							
	eL	Z		51								
23	eL	ZE	00	45								
23	iP	Z	03	54	28	d						
23	P?	Z	09	12	14							
23	e	Z	17	13	02							
	eL	ZNE	18	05	51							
24	ePKP	Z	15	53	22							
24	ePKP	Z	23	59	51							
	eL	ZN	00	51								
25	eP?	Z	07	11	23							
25	e?	Z	18	44	41							
26	ePKP	Z	07	54	22							
	eL	Z	08	32								
27	eL	ZNE	07	09								
27	ePKP	Z	07	11	33							
	ePP	Z		13	02							
	PS	ZNE		23	40				12	23	5.1	18
	e(PcPP')Z			25	28							
	SS	ZNE		29	15		7.8	12	16	32		
	PKPPKS	Z		33	48		6.5	30				
	L	ZNE		47	37		26	25	16	25	8.4	22
29	e	Z	01	27	42							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT 29	eP?	Z	08	00	40							
29	iP	ZNE	14	28	05	us	4.2	14	2	14		
	epP?	Z			19							
	ePPP	Z		30	14							
	ePcS?	Z		31	50							
	iS	ZNE		34	41	s			10.7	13		
	iScS	ZNE		38	11	ue	11	20			12	30
	(Lq)	N		38	56				3.2	25		
	Lr	ZNE		40	09		9.0	20	4.0	20	6.0	20
29	ePKP	Z	14	48	10							
29	eP	Z	22	09	28							
	eS	E		14	51							
	eL	ZNE		18	21		2.4	20			2.1	20
30	eP	Z	00	45	00							
	ePcP	Z			19							
	eL	ZN	01	13			2.5	20				
30	e	Z	06	36	03							
	eL	Z	07	00								
30	eP	Z	07	23	34							
	ePcP	Z		14	56							
30	eP	Z	11	36	11							
	epP	Z			20							
	eL	ZNE		50								
30	P	ZNE	14	07	21							
	ePP	Z		09	14							
	iS	NE		14	32	w					5.1	13
	iScS	Z		17	19	e					2.5	12
	SS	E		18	14							
	eSS	ZE		18	43							
	eLr	ZNE		22	28		7	18	4	15	4.7	15
31	eP	Z	04	36	13							
	ePcP	Z		37	50							
	ePPP	Z		40	46							
	iS	ZNE		43	33	nw	2.0	15	3.0	15	7.2	15
	iScS	E		45	18	w					3.0	8
	esS	N		46	14							
	eSS	E		47	32							
	e(SSS)	E		50	11							
31	e	Z	17	14	40							
	e	Z			57							
	e	Z		15	06							
31	eP?		20	33	58							
31	eP?		22	32	03							
NOV 2	eP	Z	08	57	28							
	eL	Z	09	29								
2	e?	Z	09	41	25							
2	eSKS?	Z	13	39	50							
2	eiP	Z	20	14	29	u						
	epP	Z			41							
	iS	ZNE		23	28	de	5.2	15			4.6	12
	iSS	ZNE		27	47	un	7	28	5	20		

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
NOV 2	eSSS	Z		30	57							
	e(Lq)	N		34	30				4.5	28		
	Lr	Z		36	30		12.7	20	5.0	20		
2	eP?	Z	20	34	23							
2	eP	Z	22	02	02							
	epP?	Z			25							
	iS	ZNE		09	27	e					2.6	17
	eSS	Z		12	51							
	eSSS	Z		17	58							
	eL	ZNE		19.5			3	18	2	20	1.5	18
2	eP?	Z	22	39	44							
3	P	Z	00	44	37							
	eL	Z	01	20								
3	eP	Z	09	13	56							
	iS	ZNE		21	11	e					1.7	15
	eL	ZNE		28.5					3.1	18		
3	iP	ZNE	09	59	25	dw	5	7			2.1	7
	ePcP	Z			44							
	ePP	Z		54	27							
	ePPP	Z		55	35							
	iS	ZNE	10	00	44	n			4.1	8		
	eScS	NE		01	26							
	SS	ZNE		05	22				6.2	20	16.5	18
	eSSS	E		09	01							
	Lr	ZN		13	20		14	20	3.5	20	13.2	30
3	eP?	Z	10	19	19							
3	eP	Z	19	26	04							
	eS?	Z			12							
4	eP	Z	17	23	16							
	eL	Z		40								
4	eP	Z	18	31	18							
4	P	Z	18	16	48							
	e	Z		17	10							
	eL	Z		32								
4	eP?	Z	22	02	49							
5	eP?	Z	09	51	38							
5	iP	Z	12	00	14	u						
	ipP	Z			25	u						
	iS	NE		08	26	n			2.4	25		
	eSSS	E		15	20							
	e(Lq)	E		17	11						4.0	25
	eLr	NE		18	16				3.2	20	4.8	20
6	eP	Z	01	18	07							
	ePcP	Z			36							
	eS	E		26	42							
	eL	ZNE		37	20		3.3	20				
6	eP	Z	01	22	09							
	eS	E		30	59							
6	eP	Z	11	51	56	u?						
	epP?	Z		52	18							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
NOV	6	ePcP	Z			54							
		eS	N		59	05							
		eLr	Z	12	05	50		1.7	18				
	6	eP?	Z	21	09	38							
	7	eP	Z	08	28	14							
	7	P	Z	22	25	13							
		epP?	Z			34							
		iS	N		33	26	sw			3.6	12	5.6	12
		esS?	N		33	17							
		ScS	E		35	08							
		SSS	E		37	00							
		Lr	ZNE		40	20		6.0	20				
	7	eP	Z	23	45	46							
	8	ePKP	Z	14	13	44							
		ePP	Z		15	02							
		ePS	Z		24	08							
		ePKKS	Z	14	27	58							
		eP'P'	N		32	19							
		eL	Z		50	.5							
	8	P	Z	14	37	30							
	9	P	Z	04	24	55							
		eS	N		29	47							
		eL	ZNE		31	16		17	18	17	15	18.5	13
	9	e	Z	19	56	00							
		e	Z	20	09								
	10	eP?	Z	08	03	10							
	10	iP	Z	16	51	35	d						
		eL?	Z	17	10								
	10	eL	ZNE	21	58								
	11	eP	Z	18	40	03							
	12	e	Z	05	49	58							
	12	e	Z	13	05	31							
	12	e	Z	15	35	15							
	12	iP	Z	20	40	32	d						
	14	P?	Z	02	23	35							
	14	eP	Z	10	45	20							
		eL	Z	11	07								
	14	eP	Z	20	30	34							
		eL	Z		45								
	14	e	Z	21	56	11							
	14	eP	Z	23	18	19							
		eL	Z		34								
	15	eiPKP	Z	10	44	18	d						
		ePKP	Z			31							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
NOV	15	e?	Z			52							
		ePP	Z		46	18							
		ePKKS	Z		57	17							
		eL	NE	11	25								
	15	PKP	ZNE	17	28	18							
		ePP	Z		30	15							
		PKS	NE		31	31							
		eSKS?	Z		36	24							
		ePS	N		38	12				2.6	12		
		PPS	N		42	06				3.5	17		
		eSS	N		47	02							
		PKPPKS	NE		50	03				19	20	17	22
		eL	NE		16	.5				60	18	52	20
	16	eiP	Z	01	09	57	u						
		ePcP	Z		10	24							
	16	iP	Z	09	57	20	d						
		(pP)	Z			27.5							
	16	ePKP	Z	10	40	12							
		ePPP	Z		42	22							
		L	Z	11	11	58		1	20				
	16	iP	Z	23	56	00	u						
		ePcP	Z			46							
	17	iP	Z	02	45	07	u						
		eL	E	03	19								
	17	e?	Z	06	09	29							
	17	eL	Z	11	53			2	18				
	17	eP	Z	17	34	43							
	17	iP	Z	23	18	49	u						
		eL	Z		30								
	17	eP?	Z	23	26	04							
	18	eP	Z	05	36	00							
		eL	Z		53								
	19	eP	Z	05	35	00							
		iS	ZNE		41	40	nw						
		eL	ZNE		48	23							
	19	eiP	ZN	11	19	27		6.2	10				
			Z			46.5							
		i	ZE		20	08.5	d	9.2	10				
		ePP	E		22	06							
		ePcS?	Z		24	02							
		ePPP?	Z		23	45		4.0	12				
		iS	ZN		28	30	sw			13	15	23	15
		ScS	N		29	01				19	25		
		iSS	ZNE		32	46	n			13	23		
		SSS	ZNE		36	15.5		13	20				
		eLq	NE		38	05				24	28	67	25
		eLr	ZNE		41			22	20	19	20	21	20
	20	eL	ZNE	00	50								
	20	eP	Z	15	26	41.5							
	21	eL	ZE	10	57								

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
NOV 21	iP	Z	16	12	21	d						
	i	Z			27	u						
	i	Z			33	u						
22	eP	Z	16	32	38							
	PP	Z		33	40							
	iS	ZNE		37	30	s			7.5	10		
	L	ZNE		38	38		18	18	32	20	27	15
22	P	Z	19	42	57							
	ipP	Z		43	10	u						
	iPcP	Z		44	01	u						
	PP	Z		45	05							
	PcS	Z		47	07							
	iS	ZNE		49	42	n			5.6	17		
	iSS	Z		52	51	n			4.0	18		
23	e	Z	06	43	28							
23	eL	ZNE	10	46								
23	i	ZNE	13	39	27.5	u						
23	eP?	Z	16	24	09							
	eS	E		31	40							
	eLq	E		36							4	35
	eLr	ZNE		39			3.5	20				
23	i	Z	19	36	27	u						
	e	Z			38							
24	e	Z	13	22	05							
	e	Z			20							
24	e	Z	13	37	21							
24	eP?	Z	16	23	14							
	eL?	ZNE		28								
24	e	Z	19	08	36							
24	e	Z	19	49	39							
24	e	Z	21	19	02							
24	e	Z	21	49	00							
26	P	Z	00	53	38							
26	iP	Z	06	08	55	d						
	e(pP)	Z		09	24							
26	eP	ZE	07	18	21							
	ipP	Z			32	u						
	pPP	Z		21	27.5							
	iS	ZNE		28	14	ne	6.0	33	7.4	30	11	35
	(ScS)			32	04							
	eSS			33	16							
	eLq	N		38	52				5.4	32		
	eLr	ZNE		40	18		33	23	8.6	20	30	28
26	P?	Z	07	49	53							
26	i	Z	15	39	07	u						
26	e	Z	16	15	06							
26	e	Z	18	58	43							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
NOV 26	e	Z	18	58	48							
26	iP	ZNE	23	21	29	u						
	pP	Z			39							
	ePP	E		24	16							
	iS!	N		31	04	ne			12.5	38	18.2	30
	eSS	NE		35	48							
	eLq	N		41					4.4	30		
	eLr	NE		45					6.5	18	12.7	20
27	e	Z	10	51	50							
27	eP?	Z	19	03½								
	eL	Z		28								
27	e	Z	19	55	00							
27	e?	Z	21	23	18							
28	eP	Z	02	55	05							
	eS	ZNE	02	02	55							
	L	ZNE		10	18						6.2	20
28	iP	ZN	12	46	14	u						
	e?	Z		53	39							
	iS	ZNE		55	28	dsw						
	iScS	NE		56	12	sw						
	e	E		57	35							
	eSS	ZE	13	00	07							
	PKKP	Z		05	44							
	eL	ZNE		08							5.6	20
	P'P'	Z		14	12							
28	e(P)	Z	20	57	57							
28	e?	Z	21	28	26							
28	iP	Z	22	49	18	u						
	ipP	Z			36	u						
	PcP	Z			52							
	S	ZN		57	18							
	eScS?	ZN		58	37							
	eL	Z	23	07								
29	L	ZNE	06	04								
29	e	Z	13	51	23							
	e	Z			30							
	e	Z			37							
29	e	Z	17	19	22							
29	eP	ZNE	19	22	45	uw						
	PP	Z		23	13							
	PPP	Z			53							
	iS	ZNE		27	02	se			15.7	15		
	iPcP	N			28	s			28	20		
	L	ZNE		28	15		27	20			26	20
30	eL	ZNE	03	41								
30	eL	ZE	12	23								
30	e?	Z	16	48	33							
DEC 1	eP	Z	18	02	20							
	i	ZNE			22	se			11	26	8	24
	S	NE		04	17	sw			33	42	27	36

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
DEC	1	eL	ZNE	18	05	.2				90	10	110	11
	2	eP	Z	07	41	52							
		e	Z		42	00		0.7	7				
		S	ZNE		51	48		0.8	13	1½	2	0.8	10
		eL	ZNE	08	06	.3		2.0	24	0.9	22	1.9	23
	2	iP	ZNE	09	45	58	d	8	13	1.9	10	2.7	10
		S	ZNE		55	45		9	18	4	22	6½	18
		eLq	NE	10	07	.0				10	56	9	52
		Lr	Z					14	40				
	2	eL	ZE	20	31	.1		½				0.6	24
		eL	ZN		36	.0		0.7	20	½	18		
	2	eP	Z	02	04	09		½					
		eS	NE		12	00				0.6	20	½	
		eL	ZE		22								
		M	ZNE		28			1.5	18	1.0	16	1.1	15
	3	eP	Z	13	26	09		½					
		eS	ZNE		34	16		½		0.7	20	½	
		(SSS)	E		40	35						1.5	25
		eL	Z		43								
		eL	ZN		45			1.1	22	0.6	22		
	3	e	E	19	54	34						0.8	25
		eL	ZE	20	00	20		½				0.7	15
	7	L	NZ	07	36	54				3.0	15	2.3	15
	7	eP	Z	07	58	21							
		L	ZNE	08	01	48		1.5	16	3	15	2.3	13
	8	P	Z	04	42	03		½					
		eL	Z	05	08			½					
	8	eL	ZNE	08	17	.6				2.0	18	1.2	17
	8	eL	ZNE	14	47	.2		2.0	18			1.6	20
	9	e(S)	NE	08	48	.3							
		L	NE		49	.3				3	16	3	13
		eL	Z		49	.5		1.2	10				
	10	eP?	Z	02	59	37							
		P	ZNE			40	us	4	18	5¼	20	0.8	18
		i	Z			46	u						
		Lq	E	03	01	30						17½	15
		Lr	ZN			49		18½	20	10	16		
	10	eL	ZN	14	57								
	11	eP	ZNE	00	43	07							
		i	Z			17							
		eS	E		52	25						0.6	5
		eL	Z	01	05								
	11	P	ZNE	01	47	34	d?	0.8	8				
		ePP	Z		49	37		0.8	10				
		S	ZNE		54	52	w	1.0	17	2.3	25	3½	12
		e	E		59	00						1.7	30
		eLr	ZN	02	02	.3		3	23	3.3	25		
		M	ZNE		06			7	20	4	20	3.7	20
	11	eP	Z	09	48	44							
		eL	E		51	21						5½	17

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
DEC	11	L	N			40				6¼	16		
		eL	Z			57		2.8	22				
	11	eP	Z	10	16	18							
		eL	Z		31			0.6	20				
	11	eL	E	15	18	.3						0.6	20
		eL	Z		19	½		0.6	25				
	12	eL	ZE	06	38							0.6	10
	12	eL	ZE	17	50			½	20			½	20
	13	eP	Z	05	51	07							
		eS	E	06	30	29						½	10
	13	P	Z	17	45	47		0.5	20				
		S	NE		53	39	w			1.0	16	2¾	13
		(ScS)	E		55	40						1.2	15
		Lr	Z	18	02	½		1.3	25				
		M	ZNE		10			3.2	16	1.7	17	1.3	17
	14	eP?	Z	06	53	32							
	14	e(P)	Z	11	20	10							
		eL	NE	11	29	03							
	14	eP	Z	13	00	50							
		e(SS)	E		13	50						1.2	15
		eL	NE		16								13
	14	iP	ZNE	18	10	42	d	1.4	12	½		½	
		i	Z		11	10	d?						
		pP	ZE			27		1.8	10				
		pP	Z			30							
		e	Z		20	25							
		iS	NE			48				3.5	15	3	15
		SP	ZNE		21	41		0.6	10	2.4	15	3.4	16
		e	N		23	26				0.6	10		
		SSS	E		29	42						2.3	15
		e	Z		31	15		1.2	17				
		eL	Z		38			1.1	45				
		SKPP'	Z		40	18							
		P'P'P'Z			57	28							
	14	iS	ZNE	22	01	14	u.	1		½	½	½	
		eS	E		11	13						1	
	14	ePKP?	Z	22	19	47							
		ePKP				54							
		ePP	Z		21	50		1.1	15				
		SKS	N		26	58				1.0	14		
		e(PS)	N		32	17				1.0	17		
		(SS)	ZNE		38	54		2.7	180	5¾	26	4	26
		eL	N		46					2½	135		
		eL	Z		57			1.7	30				
		M	ZNE	23	15			10½	17	6	16	3.7	17
	14	P	ZNE	23	30	36	unw	34	15	20½	17	9	15
		SP	ZNE		32	45	n	31	13	20½	15	14	15
		S	ZNE		37	28	s	50	33	62	18	50	22
		Lq	E		40	46						110	27
		eL	Z		41			48	20				
		M	ZNE		53			122	19	123	20	108	21
	15	eP	Z	01	48	40							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
DEC 15	P	Z	05 17 19							
15	eP	Z	11 38 11							
15	P	ZN	12 24 29							
	ePP	N	26 27				0.7	8		
	iS	NE	31 26	nw			4	24	1.6	17
	SS	NE	35 01				1.3	12	3.4	16
	i	E	43	w					4½	25
	eL	NE	41						4½	15
	M	E	52						4¼	15
15	eP	Z	19 51 22							
	eL	Z	20 07.2							
	eL	E	08.5						1.0	15
	eL	ZN			1.1	23	1.0	25		
16	eP	Z	16 54 06							
17	eP	Z	02 44 47							
17	eP	ZN	03 04 38	un						
	e	Z	05 34							
17	eP	Z	06 05 51		½					
	e	Z	06 02							
	eS	NE	15 38				0.8	15	0.6	10
	eLq	E	24.2						5	107
	eLr	ZNE	31.0		1.1	23				
17	P	ZE	16 58 32	u	0.8	10				
	S	ZNE	17 06 20		1.9	10	2.1	13	3.0	20
	eL	N	12.0				1.0	20		
	eL	ZE	13.0							
	M_1	ZE	15		4½	25			5	22
	M_2	E	20		4½	15			6	15
17	ePKP	Z	16 43 52		0.5	7				
	ePP	Z	45 42		0.6	20				
	eSS	ZNE	17 02 50		1.1	16	2.6	23	1.7	23
	eL	ZN	28		1.6	20	1.1	20		
	M	ZNE	38		5¼	18	2.6	18	1.9	17
18	eL	Z	20 34		0.6					
19	eP	Z	10 45 08							
	eL	Z	11 07		0.5	22				
19	eL	ZE	15 59½		0.5	20				
20	eP	Z	08 13 20							
	i	Z	28							
	ePP	Z	15 00		0.6	12				
	S	NE	19 37						1.2	18
	eLq	E	23.0						1.5	20
	eLr		25.0		3	20	1.1	17		
20	eL	ZE	17 47½		0.8	16			0.7	16
20	eL	Z	21 20							
	eL	Z	23		0.8	17				
21	iP	ZNE	01 34 22	d	3	17	3½	17	0.8	17
	L	ZNE	36 10		20	17	10½	20	8	16
21	eL	ZNE	06 22							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
DEC 21	eL	ZNE	07 29		1.2	20				
21	P	ZNE	10 28 59		3½	17				
	i	Z	30 16							
	iS	NE	35 54	sw			9	20	21	17
	L	NE	38 55						26	40
	Lr	Z	39 24		9½	20				
	M	ZNE	44		40	22	19	20	25	20
21	iP	Z	11 22 41	d						
	S	NE	29 48				9½	20	32	16
	eLq	E	38¾							
	e(Lr)	Z	39 25		10	18				
21	eL	E	12 10½						17	40
	eLr	ZN			18½	37	11	32		
21	eL	Z	21 20							
22	eL	Z	00 03							
	eL	NE	05							
	M	ZNE	15		2.3	17	0.8	17	11.9	18
23	S	NE	04 46 15				1.3	13	3.3	14
	e(L)	E	50						1.6	16
	e(Lr)	ZN	53½		2.3	20	1.3	22		
23	eL	Z	06 48							
23	eP	Z	14 07 21		0.8	10				
	e	Z	27							
	e	Z	45							
	S	NE	14 15				2.6	17	2.5	10
	eL	E	17.8						2.1	18
	M	NE	22		3.5	12	2.2	22	3½	12
24	eS	NE	01 21 20							
	eL	E	28		0.7	18				
24	e	Z	07 26 08							
	eS	NE	33 36				0.6	10	0.6	20
	eL	N	40½				1.4	30		
	M	ZNE	45		2.3	20	1.0	15	1.0	20
24	P	Z	09 22 46							
	S	ZNE	29 32		0.9	30	0.7	15	2.3	15
	eSS	E	32 49						1.2	17
	eL	E	34						1.5	18
	eL	Z	36		2.3	20				
24	e	Z	13 03 05							
	eL	ZE	30		0.6	22			0.5	23
24	P	Z	13 21 26							
24	eL	Z	19 02							
25	eP	Z	03 57 20	d						
	S	NE	04 04 07				3	18	6½	15
	eSS	E	07 13						2.3	13
	e	Z	39		3½	17				
	eL	Z	10		2.3	22				
	M	ZNE	13		6½	17	3½	18	4	20
25	P	Z	07 18 28							
	epP	Z	50							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
DEC 25	iP	ZE	10	30	21	d						
	eP	N			23							
	eS	NE		40	16				0.7	8	3.0	12
	eSS	NE		44	57				1.2	10	1.2	20
26	eP	Z	12	18	08							
	eS	NE		23	53						1.0	15
	eL	ZNE		29½			2.0	15	0.8	18	1.6	15
26	eP	Z	16	23	41		0.5	12				
	ePP	Z		26	05		0.5	12				
	eS	NE		30	24							
	SP	Z			43		0.5	12	1.7	14	1.5	10
	eL	E		34.5							1.1	17
	eL	Z		37½			1.4	17				
26	eL	NE	19	24								
	M	NE		40					0.8	17	0.9	17
26	eL	N	23	03								
27	eL	ZN	05	48			0.8	25	0.5	20		
	eL	E		55							0.7	20
27	P	Z	12	49	46	d	½					
	e	Z		51	36							
	pP	ZN			46							
	iS	NE		58	30	ne			2.0	10	2.7	15
	sS	NE	13	02	10				1.3	15	0.8	16
	P'P'	Z		17	07							
27	eL	N	12	55			0.6	22				
27	ePKP	Z	16	12	02		0.9	15				
	ePP	ZNE		14	15		3.5	15	1.3	20		
	eSKP	ZNE			57		5.5	20	1.5	16	0.8	17
	eSKP	Z		15	20							
	eSKS	N		19	12				2.0	22		
	eSP	ZNE		24	20		5.2	20	3.5	20		
	SS	ZNE		31	25		3.5	20			11.5	26
	eSS	ZN		32	24		10	25	15	30		
	SSS	NE		36	20		4	25			8	27
	Lq	E		46.0							12½	50
	eLr	ZN		53			18½	25	8½	25		
28	P	Z	03	11	07							
	eL	Z		12.0								
	eL	ZNE		12	47		0.7	15	0.6	12	1.0	15
28	ePKP	Z	07	39	32							
	ePP	ZNE		41	47		1.1	14				
	SKS	N		46	37				0.8	17		
	e	Z		50	54		1.1	15				
	ePS	ZNE		51	18		3.0	15	2.2	16	1.4	15
	eSS	E		58	23						6.0	20
	eSS	ZN		58	47				7.0	28		
	Lq	E	08	02	22						5	28
	Lr	ZN		19	43		12	22	6.5	23	5	
28	P	ZNE	10	15	01	d						
	pP	Z			28							
28	eL	Z	14	05			1.0	25				
29	iP		00	17	06	u						
	eL	ZNE		19.0			0.7	20	0.4	15	0.6	15

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
DEC 29	eL	Z	07	42							
29	eP	ZNE	17	24	01						
	S	NE		31	24					2.7	15
	eLq	E		39½						2.0	15
	eLr	Z		41		3.7	17				
29	e(PS)	ZNE	21	00	00						
	eL	Z		24							
30	eL	ZNE	03	02							
30	eL	Z	08	02							
30	eL	Z	11	33							
31	P	Z	10	40	50	1.0	15				
	eS	E		50	06					0.6	15
	eL	NE	11	03				0.4	30	2.5	30
	eLr	Z		05½		3	33				
	M	ZNE		10		9	20	4	22	2	15
31	L	ZE	16	08		0.6	17				
31	eL	ZE	17	17		0.7	26			1.0	20
31	e	NE	20	54.0				0.7	20	0.8	20
	eL	Z		55		1.2	25				
	eL	NE		57				0.8	15	1.6	17
31	PKP		21	12	42						
31	eL	ZNE	23	44		0.6	25	0.7	15	0.6	15

INSTRUMENTALLY DETERMINED EPICENTRES

The following list gives the epicentres of earthquakes reported felt, and of all instrumentally recorded earthquakes of magnitude 4 and above for which there is sufficient data. Reported earthquakes that cannot be confirmed experimentally are listed separately following the list of places reporting felt earthquakes. An explanation of the notation will be found at the beginning of the section 'Station Readings'. These epicentres have been plotted on Maps 1 and 2, to be found in the pocket inside the back cover of this Report. 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. The dates given for shocks occurring in the N.Z. forenoon are therefore one day behind the N.Z. civil date.

No.	Date	h m s	Epicentre	Depth	Mag.	Class
59/ 1	JAN 6	22 57 50	39.3 S 175.0 E	210 km	4.5	C
2	7	16 15±	Felt Reparoa			-
3	7	16 30±	Felt Reparoa and Rotorua			-
4	9	17 08 28	41.7 S 173.9 E	S	4.6	B
5	10	09 17 34	34 S 178½ W	N?	5.2	D
6	10	15 43 06	37.4 S 177.4 E	190 km	4.8	C
7	10	17 01 09	34½ S 178½ W	>N	5.2	C
8	12	00 35 30	42.05S 172.4 E	S	4.1	B
9	12	10 21 52	42.85S 173.2 E	S	3.4	B
10	20	15 41 00	38.0 S 177.6 E	110 km	4.6	C
11	24	10 49 11	37.5 S 177.1 E	170 km	5.7	B
12	28	10 18 11	40.2 S 175.1 E	S	4.0	C
13	FEB 3	23 23 18	39.8 S 174.3 E	N	5.5	B
14	4	21 47 52	40.2 S 173.2 E	N	4.5	B
15	5	00 55.8	43½ S 172½ E	N	2½±	D
16	5	19 43 18	40.7 S 173.5 E	N	4.3	D
17	6	06 18 35	38.6 S 176.9 E	180 km	4.4	C
18	8	22 57.0	41½ S 174 E	S	3.8	D
19	10	16 22 22	39.0 S 175.6 E	120 km	4.4	C
20	12	03 50 08	38.5 S 177.0 E	S	4.6	D
21	13	09 01.9	38 S 177 E	N	3.1	D
22	15	15 30 20	39.4 S 174.4 E	200 km	3.8	D
23	17	16 37 55	39.0 S 176.3 E	100 km	4.6	C
24	18	12 06.0	38½ S 176 E			D
25	19	21 15 45	41.4 S 175.7 E	N	4.0	C
26	20	14 17 03	38.1 S 176.8 E	150 km	4.4	D
27	23	07 20 07	40.1 S 175.0 E	N	3.5	C
28	27	05 58 26	39.0 S 176.0 E	120 km	4.6	C
29	27	16 32.5	38 S 177 E			D
30	28	23 17 13	38 S 176.4 E	300 km	4.9	C
31	MAR 2	08 58 02	40.7 S 175.7 E	S	3.4	C
32	10	05 27 56	38.3 S 177.7 E	S	4.7	D
33	11	00 30 03	38.0 S 176.7 E	180 km	4.8	B
34	12	06 39 50	40.5 S 176.4 E	S	4.4	B
35	12	07 42 05	40.5 S 176.4 E	S	3.8	C

No.	Date	h m s	Epicentre	Depth	Mag.	Class
59/ 36	MAR 13	00 42 40	33 S 178½ W	N	5.7	D
37	13	10 22 39	44.5 S 166.8 E	S	5.0	C
38	17	04 51 30	45.3 S 167.3 E	S	4.7	C
39	19	12 52 29	41.1 S 171.9 E	S	4.5	B
40	21	20 04 58	39.3 S 175.7 E	S	4.0	B
41	23	23 06 29	40.8 S 174.6 E	S	4.1	B
42	31	09 06 17	41.2 S 175.6 E	S	3.5	D
43	APR 3	03 33 58	38.4 S 176.4 E	N	3.3	D
44	4	18 05 36	39.7 S 174.5 E	N	4.6	B
45	5	13 02 18	40.2 S 175.2 E	N	4.2	C
46	7	00 21 33	38 S 176.7 E	N	4.0	D
47	7	01 44.4	Felt Kawerau		3.0	D
48	8	01 23 26	33½ S 179½ E	400 km	6.7	D
49	9	17 49 51	40.1 S 175.8 E	S	4.9	C
50	10	10 57 48	Felt Kawerau		3.5	D
51	11	22 03 15	37.5 S 177.5 E	N	4.9	D
52	12	03 46 47	37.9 S 177.0 E	N	3.9	C
53	13	23 43 16	39.7 S 176.6 E	N	4.6	D
54	14	02 59 37	35.1 S 179.9 W	N	4.7	C
55	16	01 14 50	37.9 S 176.5 E	180 km	5.5	C
56	16	03 02 09	41 S 175 E	S	4.2	D
57	18	03 36 44	38.5 S 175.9 E	160 km	5.2	C
58	19	13 53 37	32 S 178 W	600 km	5.5	D
59	24	10 55 46	38 S 176.7 E	N	3.0	D
60	25	13 31 24	Felt Kawerau			D
61	27	09 49 15	41.3 S 174.4 E	S	3.9	D
62	MAY 2	08 44 52	37.9 S 176.8 E	320 km	4.6	C
63	2	15 34 07	38.6 S 175.9 E	150 km	4.3	D
64	3	07 55 50	44.3 S 168.2 E	S	4.3	D
65	3	17 36 58	38.6 S 175.8 E	100 km	4.3	C
66	7	07 15 10	37.9 S 176.0 E	200 km	4.9	D
67	11	12 45 35	39.5 S 177.0 E	N	3.9	C
68	14	20 07 16	42.3 S 172.8 E	S	4.8	B
69	18	19 00 55	38.0 S 176.5 E	170 km	5.4	B
70	18	21 21 44	39.3 S 175.5 E	S	4.1	C
71	21	17 34 31	41.4 S 172.4 E	S	4.3	B
72	22	06 57 12	41.0 S 174.2 E	S	6.0	B
73	22	16 41 52	39.15S 176.1 E	S	4.8	B
74	28	09 22 25	40.2 S 176.0 E	S	4.0	C
75	30	17 09 02	37 S 179½ W	S	4.9	D
76	31	00 18 51	38.4 S 176.0 E	170 km	4.8	C
77	JUN 1	04 27 12	39.3 S 175.0 E	200 km	3.9	B
78	1	11 26.7	45 S 170 E	N	3.5	D
79	1	19 26 35	39.4 S 176.5 E	S	4.8	C
80	2	10 02 13	40.8 S 175.1 E	N	4.0	D
81	2	17 18 16	39.0 S 174.9 E	200 km	5.6	B
82	2	21 20 28	37.9 S 175.5 E	N	4.1	D
83	2	22 03 47	37.9 S 175.5 E	N	3.5	D
84	3	04 15 26	38.3 S 176.1 E	170 km	4.4	D
85	3	08 52 57	37.9 S 175.5 E	N	3.2	D
86	6	01 47 26	42.6 S 173.9 E	S	4.4	C
87	7	03 22 46	41.7 S 171.4 E	N	3.8	D
88	13	16 12 38	41.1 S 175.8 E	N	3.6	D
89	13	20 52 02	43.1 S 173.5 E	N	4.1	D
90	14	18 00 12	40.8 S 172.7 E	S	4.2	C
91	19	05 31 52	41.9 S 173.5 E	N	4.3	B
92	19	15 27 59	39 S 178.1 E	N	4.0	D
93	20	08 26 26	38.5 S 176.7 E	N	4.5	C
94	22	15 20 50	40.8 S 176.7 E	N	3.9	B
95	25	13 11 00	40.9 S 174.5 E	N	4.1	B
96	27	19 04 35	33½ S 180	100 km	7.0	D
97	28	10 31 04	41.5 S 174.7 E	N	2.9	C
98	29	05 49 33	42.6 S 173.9 E	S	4.3	B
99	29	05 57 43	42.6 S 173.9 E	S	4.2	B
100	30	13 20 42	42.6 S 174.0 E	S	4.7	A
101	30	13 22 34	42.6 S 174.0 E	S	4.1	B
102	30	13 24 04	42.6 S 174.0 E	S	3.9	B

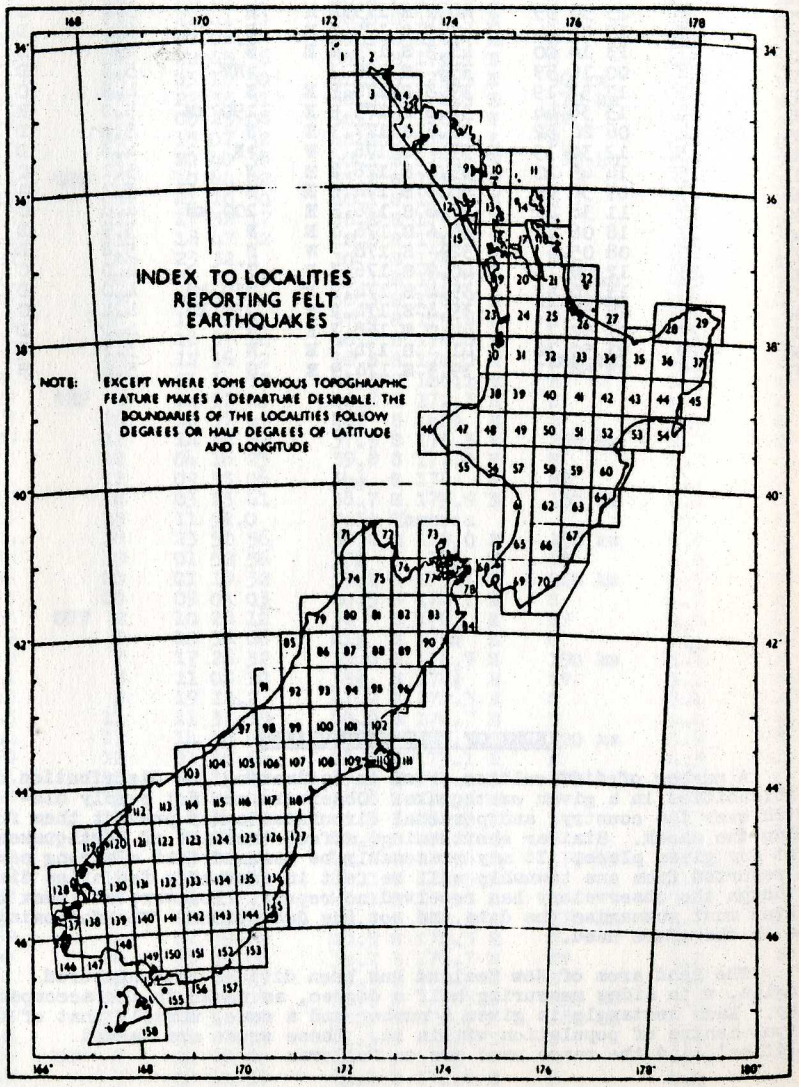
No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
59/103	JUL 1	03	10	14	35 S 179 W	N	5.2	D
104	1	13	10	42	37.3 S 176.8 E	240 km	4.9	B
105	1	19	57	03	35 S 179 W	N	5.0	D
106	14	06	00	43	33 S 178 W	N	5.7	D
107	18	08	07	32	40.4 S 174.8 E	S	4.7	B
108	23	22	41	50	38.0 S 176.8 E	S	3¾	C
109	24	00	08	.8	38 S 176¾ E	S	3¼	D
110	26	22	45	56	39.3 S 175.1 E	S	4.1	B
111	28	03	10	50	41.1 S 173.5 E	90 km	4.7	B
112	29	22	35	51	38.3 S 176.1 E	170 km	4.8	B
113	30	00	29	08	34 S 178½ W	N?	5.2	D
114	30	15	07	52	40.0 S 175.3 E	S	4.8	C
115	31	20	40	38	40.1 S 173.5 E	160 km	5.6	B
116	AUG 5	10	44	02	33.2 S 179.3 W	S	5.4	D
117	5	21	10	50	40.1 S 175.0 E	N	3.6	D
118	11	17	32	17	38.8 S 177.8 E	N	4.1	D
119	11	18	47	52	42.8 S 174.7 E	N	4.4	C
120	14	23	32	.4	30 S 177 E	N?	5.3	D
121	20	01	27	09	40.1 S 173.7 E	160 km	4.0	B
122	22	04	23	22	38.3 S 176.7 E	220 km	4.4	C
123	28	17	22	31	37.4 S 179.8 E	N	5.3	C
124	28	18	57	16	40.7 S 176.6 E	N	4.1	D
125	29	12	36	22	38.5 S 176.0 E	200 km	4.2	D
126	29	21	14	52	44.5 S 168.1 E	N	4.4	C
127	SEP 4	14	51	43	41.8 S 172.3 E	S	4.5	C
128	10	10	37	49	46¾ S 166½ E	S	5.4	D
129	11	14	52	32	37.9 S 176.5 E	220 km	4.7	C
130	12	04	16	23	39.8 S 177.0 E	S	4.5	C
131	12	09	53	06	34½ S 178 W	N?	5.1	D
132	14	03	23	41	38.7 S 175.9 E	150 km	4.8	B
133	15	11	51	.0	Felt Kawerau		2½	D
134	18	23	50	56	38.2 S 178.0 E	130 km	4.8	C
135	19	01	52	56	35¼ S 179¾ W	N?	4.8	D
136	20	01	19	52	39.1 S 175.1 E	120 km	4.3	C
137	28	09	01	03	40.3 S 174.1 E	S	4.7	B
138	OCT 2	10	28	12	38 S 178 E	N?	4.6	D
139	2	10	36	06	41¼ S 174¾ E	S	2¼	D
140	7	17	26	32	39.0 S 174.9 E	190 km	4.4	C
141	8	11	03	10	35½ S 178½ E	N?	5.1	D
142	9	19	12	.2	41.7 S 172.3 E	S	3.4	D
143	11	11	31	15	40.0 S 176.7 E	N	4.4	B
144	11	14	58	46	38.9 S 175.1 E	220 km	3.9	C
150	12	01	58	56	41.9 S 173.1 E	N	4.3	C
151	13	04	33	41	37.3 S 177.0 E	280 km	5.0	B
152	13	17	46	46	38.8 S 179.9 W	N	4.8	D
153	14	12	34	33	41.7 S 174.3 E	N	3.7	D
154	17	15	08	57	40.9 S 174.2 E	N	4.0	C
155	18	15	20	59	40.2 S 173.6 E	170 km	4.6	C
156	19	05	49	33	41.1 S 172.5 E	N	4.0	C
157	19	06	03	23	41.0 S 172.5 E	N	3.8	B
158	24	00	29	17	38.5 S 175.7 E	170 km	4.8	C
159	24	02	59	50	40.9 S 172.3 E	S	4.7	B
160	24	08	59	00	39.1 S 176.7 E	N?	4.2	D
161	25	13	31	55	40.8 S 172.5 E	S	3.6	B
162	27	12	26	09	37.9 S 177.5 E	130 km	4.2	D
163	27	19	51	19	38.3 S 176.0 E	180 km	4.3	C
164	28	21	27	35	41.5 S 173.4 E	S	4.8	D
165	NOV 2	04	28	00	34 S 179½ W	N	4.8	D
166	7	03	10	39	41.1 S 172.8 E	S	4.5	C
167	10	04	47	03	38.2 S 176.5 E	150 km	4.7	B
168	11	23	42	42	38.0 S 176.8 E	S	3.3	D
169	12	05	32	56	40.4 S 173.5 E	170 km	5.5	B
170	12	08	37	14	41.5 S 174.4 E	S	3.6	B
171	13	21	20	16	39.3 S 177.2 E	S	4.3	B
172	14	15	36	24	39.3 S 175.3 E	S	4.3	B
173	15	04	09	00	40.3 S 173.7 E	110 km	4.6	C
174	16	08	27	17	36.8 S 179.2 E	N	4.4	D

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
59/175	NOV 22	19	44	56	37.5 S 176.5 E	240 km	5.0	B
176	23	11	40	06	41.7 S 171.6 E	N	2.8	D
177	23	18	06	42	42.1 S 171.1 E	S	4.0	B
178	26	01	36	16	38.0 S 176.9 E	S	2.8	D
179	26	23	58	59	40.1 S 173.2 E	S	5.1	C
180	27	19	05	34	41.2 S 174.9 E	S	2¼	D
181	27	23	10	00	41.3 S 173.8 E	S	2½	D
182	28	00	16	59	35½ S 180	>N?	5.3	D
183	29	17	57	19	39.5 S 176.5 E	S	4.9	C
184	30	13	38	44	38.6 S 175.9 E	190 km	5.0	B
185	DEC 14	06	24	52	38.6 S 177.7 E	N	5.1	D
186	15	12	30	19	39 S 176 W	>N	4.5	D
187	15	14	49	20	39.6 S 176.2 E	N	5.1	C
188	17	07	38	04	40.8 S 174.0 E	S	3.7	C
189	17	11	38	44	37.8 S 176.3 E	200 km	4.6	C
190	17	18	06	12	39.6 S 176.4 E	N	3.9	D
191	20	08	05	.6	32½ S 178 W	N	5.8	D
192	23	12	46	15	40.9 S 176.7 E	S	4.0	C
193	26	13	10	52	39.4 S 174.2 E	230 km	4.0	D
194	26	14	58	27	39.4 S 174.2 E	230 km	4.4	C
195	27	07	52	.7	44.0 S 168.7 E	N	4.2	D
196	29	21	50	38	41 S 174 E	N	3.7	D
197	29	23	58	17	39.3 S 174.9 E	S	5.6	B

INDEX OF FELT EARTHQUAKES

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

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



1	Three Kings	54	Mahia	107	Mt. Somers
2	Te Reinga	55	Hawera	108	Ashburton
3	Ninety Mile Beach	56	Waverley	109	Rakaia
4	Doubtless Bay	57	Wanganui	110	Christchurch
5	Kaitaia	58	Taihape	111	Akaroa
6	Kaikohe	59	Ruahine	112	Big Bay
7	Bay of Islands	60	Hastings	113	Jacksons Bay
8	Dargaville	61	Bulls	114	Makarora
9	Whangarei	62	Palmerston North	115	Lake Ohau
10	Bream Head	63	Dannevirke	116	Pukaki
11	Moko Hinau	64	Porangahau	117	Fairlie
12	Kaipara	65	Otaki	118	Timaru
13	Warkworth	66	Masterton	119	George Sound
14	Barrier Islands	67	Castlepoint	120	Milford
15	Helensville	68	Wellington	121	Glenorchy
16	Auckland	69	Featherston	122	Arrowtown
17	Waiheke	70	Martinborough	123	Wanaka
18	Coromandel	71	Mt. Stevens	124	St. Bathans
19	Pukekohe	72	Takaka	125	Kurow
20	Mercer	73	D'Urville Is.	126	Duntroon
21	Thames	74	Karamea	127	Waimate
22	Mayor Is.	75	Motueka	128	Secretary Is.
23	Raglan	76	Nelson	129	Doubtful Sound
24	Hamilton	77	Blenheim	130	Te Anau
25	Matamata	78	Picton	131	Livingstone Mts.
26	Tauranga	79	Westport	132	Kingston
27	Whakatane	80	Murchison	133	Alexandra
28	Te Kaha	81	Glenhope	134	Poolburn
29	East Cape	82	Wairau	135	Ranfurly
30	Kawhia	83	Awatere	136	Oamaru
31	Te Kuiti	84	Cape Campbell	137	Resolution Is.
32	Tokoroa	85	Greymouth	138	Pillans Pass
33	Rotorua	86	Reefton	139	Monowai
34	Murapara	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		

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 the 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 during 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.

PLACES REPORTING FELT EARTHQUAKES

59/ 2	Jan 7d	16h 15m±	
		MM3-4?	Reporoa (33)
59/ 3	Jan 7d	16h 30m±	
		MM3	Reporoa (33), Rotorua
59/ 4	Jan 9d	17h 08m	
		MM4	Blenheim, Karori (68)
		MM2	Kelburn (68)
		?	Nelson
59/ 9	Jan 12d	10h 21m	
		MM4	Cheviot
59/11	Jan 24d	10h 49m	
		MM2	Motu, Waikaremoana (44)
59/13	Feb 3d	23h 23m	
		MM4	Collingwood (72)
		MM3	Stratford (47)
		MM2	Dannevirke, Hawera, New Plymouth, Taihape.
59/15	Feb 5d	00h 55m	
		MM3	Christchurch
59/21	Feb 13d	09h 01m	
		?	Kawerau (34)
59/24	Feb 18d	12h 06m	
		MM4	Taupo
59/29	Feb 27d	16h 32m	
		MM2	Kawerau (34)
59/31	Mar 2d	08h 58m	
		MM3	Eketahuna (66)
59/32	Mar 10d	05h 27m	
		MM4	Motu
		MM2	Opotiki
59/34	Mar 12d	06h 39m	
		MM4	Porongahau
		MM3	Dannevirke

59/35	Mar 12d	07h 42m	
		MM2	Porongahau
59/39	Mar 19d	12h 52m	
		MM4	Collingwood (72)
59/41	Mar 23d	23h 06m	
		MM2	Wellington
59/42	Mar 31d	09h 06m	
		MM4	Masterton
		MM2	Eketahuna (66)
59/43	Apr 3d	03h 33m	
		MM2	Wairakei (41)
		MM3	Wairakei (41)
59/44	Apr 4d	18h 05m	
		MM1	Eketahuna (66)
59/45	Apr 5d	13h 02m	
		MM2	Wanganui
59/46	Apr 7d	00h 21m	
		MM5	Kawerau (34)
59/47	Apr 7d	01h 44m	
		MM2	Kawerau (34)
59/49	Apr 9d	17h 50m	
		MM5	Wanganui
		MM4	Eketahuna (66), Dannevirke, Hunterville (58), Taihape, Waiouru (50) Wanganui.
		MM3	Porongahau, Raetihi (49)
		MM2	Bunnythorpe (62), Palmerston North
59/50	Apr 10d	10h 57m	
		MM3	Kawerau (34)
59/52	Apr 12d	03h 46m	
		MM4	Kawerau (34)
59/53	Apr 13d	23h 43m	
		MM4	Napier
		MM3	Napier
		MM1	Waipawa (52)
59/56	Apr 16d	03h 02m	
		MM3	Paraparaumu (65) Wellington
		MM1	Eketahuna (66)
59/59	Apr 24d	10h 55m	
		MM4	Kawerau (34)
59/60	Apr 25d	13h 31m	
		MM3	Kawerau (34)
59/61	Apr 27d	09h 49m	
		MM1	Plimmerton (68)
59/64	May 3d	07h 50m	
		MM3	Queenstown (132)
59/67	May 11d	12h 45m	
		MM2	Napier
59/71	May 21d	17h 34m	
		MM3	Karamea

59/71	May 21d	17h 34m		
			MM2	Collingwood (72)
			MM1	St. Arnaud (81)
59/72	May 22d	06h 57m		(See isoseismal map)
			MM6	Blenheim, Picton
			MM5	Cape Campbell (77), Collingwood (72), Farewell Spit (72), Wellington
			MM4	Akaroa Lighthouse (111), Foxton (62), Hawera, Kelburn (68), Ohakune, Paraparaumu (65), Tadmor (75)
			MM3	Bunnythorpe (62), Cape Campbell, Eketahuna (66), Nelson, Otaki, Ohakea (62), St. Arnaud (81)
			MM2	Castlepoint (66), Cheviot, Hunterville (58), Karamea, Palmerston North.
			MM1	Greymouth, Taumarunui.
59/78	Jun 1d	11h 26m		
			?	Oamaru, Otiake (125)
59/79	Jun 1d	19h 26m		
			MM4	Taihape
			MM3	Napier
			MM2	Dannevirke
59/80	Jun 2d	10h 02m		
			MM4	Otaki
			MM3	Paekakariki (68), Wainuiomata (68)
			MM2	Kelburn (68), Naenae (68), Trentham (68)
59/81	Jun 2d	17h 18m		
			MM4	Otaki
			MM3	Blenheim, Dannevirke, Karori (68), Napier
			MM2	Eketahuna (66), Foxton (61), Kelburn (68), Nelson, Palmerston North.
			MM1	Bunnythorpe (62), Waipawa (52).
59/87	Jun 7d	03h 22m		
			MM3	Westport
59/88	Jun 13d	16h 12m		
			MM2	Eketahuna (66)
59/89	Jun 13d	20h 52m		
			MM2	Cheviot
59/90	Jun 14d	18h 00m		
			MM4	Collingwood (72)
59/94	Jun 22d	15h 20m		
			MM3	Dannevirke
59/95	Jun 25d	13h 10m		
			MM3	Karori (68)
59/96	Jun 27d	19h 04m		
			MM3	Motu
			MM2	Eketahuna (66), Dannevirke, Opotiki, Tolaga Bay
			MM1	Wellington
59/97	Jun 28d	10h 31m		
			MM2	Wellington
59/98	Jun 29d	05h 49m		
			MM1	Kaikoura

59/100	Jun 30d	13h 20m		
			MM3	Kaikoura
59/101	Jun 30d	13h 22m		
			MM5	Kaikoura
59/102	Jun 30d	13h 24m		
			MM3	Kaikoura
59/107	Jul 8d	08h 07m		
			MM4	Foxton (61), Ohakune
			MM3	Eketahuna (66), Ohakea (62), Palmerston North
			MM2	Stratford (47)
59/108	Jul 23d	22h 41m		
			MM6	Kawerau (34)
			MM3	Te Teko (34)
59/109	Jul 24d	00h 08m		
			MM3	Kawerau (34)
59/110	Jul 26d	22h 45m		
			MM3	Ohakune
			MM2	Taumarunui
59/111	Jul 28d	03h 10m		
			MM4	Nelson
59/114	Jul 30d	15h 07m		
			MM4	Bunnythorpe (62), Foxton (61), Hunterville (58), Stratford (47).
			MM3	Lower Hutt (68), Wellington
			MM2	Dannevirke, Eketahuna (66), Hawera, Palmerston North.
59/115	Jul 31d	20h 40m		
			MM3	Foxton (61)
			MM2	Karori (68), Wanganui
59/118	Aug 11d	17h 32m		
			MM1	Gisborne
59/126	Aug 29d	21h 14m		
			MM4	Milford Sound
59/127	Sep 4d	14h 51m		
			MM4	Tadmor (75), Westport
59/133	Sep 15d	11h 51m		
			MM3	Kawerau (34)
59/137	Sep 28d	09h 07m		
			MM2	Karori (68)
59/139	Oct 2d	10h 36m		
			MM1	Lower Hutt (68)
59/143	Oct 11d	11h 31m		
			MM2	Waipawa (60), Dannevirke
59/153	Oct 14d	12h 34m		
			MM2	Wellington
59/164	Oct 28d	21h 27m		
			MM4	Wellington, Blenheim
			MM3	Nelson
			MM2	Kelburn (68)

59/166	Nov 7d	03h 10m	MM2	Nelson
59/168	Nov 11d	23h 42m	MM2	Te Teko (34)
59/169	Nov 12d	05h 32m	MM3	Karori (68), Lower Hutt (68)
59/176	Nov 23d	11h 40m	MM2	Westport
59/177	Nov 23d	18h 06m	MM4	Westport
59/178	Nov 26d	01h 36m	MM2	Te Teko (34)
59/179	Nov 26d	23h 58m	MM1	Wellington
59/180	Nov 27d	19h 05m	MM2	Lower Hutt (68)
59/181	Nov 27d	23h 10m	MM3	Lower Hutt (68)
59/183	Nov 29d	17h 57m	MM3	Dannevirke
			MM1	Eketahuna (66), Waipawa (60)
59/185	Dec 14d	06h 24m	MM2	Opotiki
59/187	Dec 15d	14h 49m	MM5	Taihape
			MM4	Dannevirke, Waiouru (50),
			MM3	Eketahuna (66), Raetihi (49)
59/188	Dec 17d	07h 38m	MM3	Karori (68)
59/190	Dec 17d	18h 06m	MM4	Taihape
59/192	Dec 23d	12h 46m	MM2	Dannevirke
59/195	Dec 27d	07h 52m	MM4	Haast
59/197	Dec 29d	23h 58m	MM4	New Plymouth, Ohakune
			MM3	Bunnythorpe (62), Raetihi (49), Taumarunui, Wanganui
			MM2	Dannevirke, Eketahuna (66).

The following earthquakes reported to the Observatory cannot be confirmed either by instrumental recordings or independent reports:

Feb 3d	07h 59m	Farewell Spit	MM4-5
Apr 9d	22h 05m	Ohakune	MM3
11d	02h 57m	Kawerau	MM1
21d	17h 05m	Eketahuna	?
Jun 7d	04h 06m	Westport	MM3
7d	09h 44m	Cromwell	MM4
18d	15h 20m	Gisborne	MM1
21d	02h 00m	St Arnaud	MM2

Jul 13d	01h 50m	Kaikoura	MM1
20d	07h 30m	Kaikoura	MM1
24d	15h 55m	Kawerau	MM2
27d	17h 58m	Kawerau	MM2
Aug 2d	16h 11m	Kawerau	MM2
Sep 15d	12h 08m	Kawerau	MM4
18d	20h 45m	Kawerau	MM4
Oct 12d	14h 30m	Kaikoura	MM1
Nov 27d	09h 10m	Kawerau	MM3
Dec 15d	03h 57m	Opotiki	MM2

EARTHQUAKES FELT NEAR STATED LOCALITIES

The first figure following the locality name is the number of the epicentre, followed by the maximum intensity (in brackets) reported from the district covered by the locality name. The instrumental magnitude may be found from the epicentre list, and the places actually reporting the shock from the table of 'Places reporting felt earthquakes'.

111 Akaroa 72(4)

77 Blenheim 4(4) 72(6) 81(3) 164(4)

61 Bulls 81(2) 107(4) 114(4) 115(3)

84 Cape Campbell 72(3)

50 Chateau 49(4) 187(4)

96 Cheviot 9(4) 72(2) 89(2)

110 Christchurch 15(3)

63 Dannevirke 13(2) 34(3) 49(4) 79(2) 81(3) 94(3) 96(2) 114(2) 143(2) 183(3) 187(4) 192(2) 197(2)

45 Gisborne 118(1)

81 Glenhope 71(1) 72(3)

85 Greymouth 72(1)

103 Haast 195(4)

60 Hastings 143(2) 183(1)

55 Hawera 72(4) 114(2)

90 Kaikoura 98(1) 100(3) 101(5) 102(3)

74 Karamea 71(3) 72(2)

132 Kingston 64(3)

66 Masterton 31(3) 42(4) 44(1) 49(4) 56(1) 72(3) 81(2) 88(2) 96(2) 107(3) 114(2) 183(1) 187(3) 197(2)

120 Milford 126(4)

36 Motu 11(2) 32(4) 96(3)

75 Motueka 72(4) 127(4)

34	Murupara	29(2) 46(5) 47(2) 50(3) 52(4) 59(4) 60(3) 108(6) 109(3) 133(3) 168(2) 178(2)
52	Napier	53(4) 67(2) 79(3) 81(3)
76	Nelson	72(3) 81(2) 111(4) 164(3) 166(2)
47	New Plymouth	13(3) 107(2) 114(4) 197(4)
49	Ohakune	49(3) 72(4) 107(4) 110(3) 187(3) 197(4)
35	Opotiki	32(2) 96(2) 185(2)
65	Otaki	56(3) 72(4) 80(4) 81(4)
62	Palmerston North	49(2) 72(4) 81(2) 107(3) 114(4) 197(3)
78	Picton	72(6)
64	Porongahau	34(4) 35(2) 49(3)
33	Rotorua	2(3-4) 3(3)
58	Taihape	13(2) 49(4) 79(4) 114(4) 187(5) 190(4)
72	Takaka	13(4) 39(4) 71(2) 72(5) 90(4)
39	Taumarunui	72(1) 110(2) 197(3)
41	Taupo	24(4) 43(3)
37	Tolaga Bay	96(2)
57	Wanganui	45(2) 49(5) 115(2) 197(3)
68	Wellington	4(4) 41(2) 56(3) 61(1) 72(5) 80(3) 81(3) 95(3) 96(1) 97(2) 114(3) 115(2) 137(2) 139(1) 153(2) 164(4) 169(3) 179(1) 180(2) 181(3) 188(3)
79	Westport	87(3) 127(4) 176(2) 177(4)
44	Whakapunaki	11(2)

PUBLICATIONS

During 1959, the following papers by members of the Seismological Observatory staff were published:

E-135 Seismological Observatory Bulletin 1954 Jan-Dec.

S-105 G.A. EIBY: A Survey of the Tektite Problem N.Z.J. Geol. and Geophys. 2, No.1, pp. 183-94.

Present knowledge of the occurrence, properties, and composition of tektites is reviewed, and the principal theories that have been advanced to explain their origin are critically discussed.

S-106 R.C. HAYES: Earthquakes in New Zealand during the year 1954.

LIST OF MAPS

The following maps will be found in the pocket inside the back cover of this Report:

1. Epicentres of Normal Focus Earthquakes in 1959
2. Epicentres of Deep Focus Earthquakes in 1959
3. Isoseismals for the Earthquake of 1959 May 22