1948-
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NEW ZEALAND SEISMOLOGICAL REPORT

E-164

New Zealand Department of Scientific and Industrial Research
GEOPHYSICS DIVISION

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G.A. EIBY

SEISMOLOGICAL OBSERVATORY BULLETIN

E - 164

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Published in 1982

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INTRODUCTION

No one familiar with the history of the physical sciences – particularly those sciences that depend upon observation as well as upon experiment – is likely to question the value of a volume of earthquake data more than thirty years old. Nevertheless, such a publication is sufficiently rare to make some explanation desirable.

Sections of New Zealand earthquake data for the years 1948, 1949, and 1950 have already been published. Readings of shocks originating at distances of more than 10 degrees from Wellington, and of a selection of local earthquakes believed to have had magnitudes of 5 or more, are to be found in Dominion Observatory Bulletins E-111 to E-122. Instrumental constants were not given, and there are some inaccuracies in other station data. Lists of local epicentres and some felt information appeared in the cyclostyled Provisional Bulletins P-191 to P-226. These contain errors and misprints that were corrected in the annual summaries published by Hayes (1949, 1950, 1952); but these omit the magnitudes, and give the maximum felt intensities in an unsatisfactory form.

A more serious inadequacy in the local earthquake data already published arises from the lack of knowledge of crustal stucture and of the velocities of seismic waves at the time of the original analyses. Consideration of the nature of these deficiencies suggested that a significant improvement could be produced by a comparatively modest effort. The use of a computer has enabled the scattered and fragmentary information already in print to be united with unpublished information still in manuscript, and the calculations to be repeated in a consistent way, using a greatly improved crustal model.

It has been decided to present the results in a form as close as possible to that of the current New Zealand Seismological Reports, and to include some other historical matter relevant to the period, which is either unpublished, or has appeared in some place not normally accessible to seismologists. No teleseismic data have been included, as they are adequately treated in the earlier Bulletins, and for the most part appear in the International Seismological Summary.

The principal matters affected by the present revision are these:

1. The older epicentre lists contain a significant proportion of earthquakes that were not recorded instrumentally, the latitude and longitude of the place at which the shock was felt being considered an acceptable approximation to the epicentre. Not all of these events were earthquakes, and about 70 of them have been removed from the main list of origins. They will be found listed with other unconfirmed reports.

2. When the epicentre of an earthquake lies outside the boundary of the observing network, inaccuracies in the adopted wave-velocities produce a systematic error in position that increases with its distance from the boundary. Residual errors of this kind are still present, but they have been greatly reduced.

3. When the original analyses were made, the knowledge of New Zealand crustal structure was not adequate to permit a consistent interpretation of crustal pulses. It was nevertheless usual to measure the times of all prominent arrivals appearing on the records. All except a small proportion of these proved to be readily identifiable, increasing the data available for analysis by about 30 per cent.

4. The additional data make it possible to give solutions for over 100 earthquakes previously abandoned as insoluble. In many cases the positional accuracy of these solutions is low, but as nearly half of the shocks have magnitudes greater than 4, they have a place in statistical studies, making up about 5 per cent of the shocks of this magnitude.

5. Some of the station positions originally adopted were found to be significantly wrong.

6. In appropriate cases, readings from South Pacific and from Australian stations are now included in the solutions.

7. Intensity and magnitude data have been revised, and additional information is published for the first time. The nature of these revisions is discussed below under the appropriate headings.

The period covered by this Report begins in 1948, but the data for 1950 were the first to be examined. This year was chosen because it

seemed to be desirable to gain experience in working with comparatively straightforward material before attempting to deal with the deficient data of the very earliest years. Later material was thought to be less urgently in need of revision. It should be remarked that familiarity with the handwriting and with the non-standard notations of those who carried out the original analyses (which include some of my own earliest epicentre work) has proved of advantage in lightening the task.

EARTHQUAKE STUDY IN NEW ZEALAND

A brief outline of the development of systematic earthquake study in New Zealand will place the present Report in context. Organised reporting of felt earthquakes began in the late 1860s, and by the end of the century included intensity measurements on the Rossi-Forel scale, largely as a result of the issue of standard forms to postmasters by Mr George Hogben, later to become Director of Education and honorary Government Seismologist, in 1889.

In 1898, the New Zealand government had obtained two Milne seismographs, one of which was placed in the charge of Hogben in Timaru, and the other in the charge of Sir James Hector at the Colonial Museum, in Wellington. When Hogben moved to Wellington in 1900, his instrument was set up at at his home in Tinakori Road, and the Museum instrument was transferred to the Magnetic Observatory in Christchurch. The results, which were almost entirely recordings of teleseisms, were forwarded to Professor John Milne in the Isle of Wight, and somewhat spasmodically published under the auspices of the British Association for the Advancement of Science, and later, of the International Association of Seismology.

In 1915, upon Hogben's retirement, the instruments passed into the care of the Dominion Observatory, direct forerunner of the present Seismological Observatory, which issued the first Bulletin of this series in 1921. Both the form and content of the Bulletins have changed frequently, sometimes as a matter of scientific policy, but more often under the pressure of financial stringency. In consequence, important sections of the data had to be omitted or abridged. No complete list of local earthquake origins has ever been published, and the International Seismological Summary contains only the arrival times of the more important phases in teleseisms and a few of the larger New Zealand shocks.

The earliest determinations of epicentres based upon instrumental recordings appeared in the early 1930s, but by the end of the decade

the recording network had developed sufficiently to provide good coverage of shocks of magnitude 4 between about latitudes 38 and 42 degrees South, provided all stations were working. This is an important proviso. Records were changed and developed by power-station, lighthouse, and prison staff, often inadequately trained by a departing predecessor. As a result, stained and fogged records and incorrectly recorded time-signals too often frustrated the efforts of the Observatory seismologists to locate the earthquakes. Large shocks beyond the limits quoted were detected, but the spread of stations in azimuth was limited by the narrowness of the country, and gave insufficient control for placing the shocks in the far north and south.

During the period considered in this Report, the Observatory attempted to find the epicentre of every earthquake for which the necessary minimum of phases had been recorded. The tables most commonly used were those of Wadati and Masuda (1933), which covered deep-focus shocks at short distances. Early crustal structure work by Hayes and Bullen also had suggested that Japanese tables might provide a better approximation to New Zealand conditions than those being produced in Europe and America. At this time, New Zealand seismologists were becoming increasingly interested in crustal structure, and a surprising variety of "private" tables were in use, until discussion and experience established that it was wiser to adopt a standard and to make a systematic study of residuals. The Jeffreys-Bullen tables were found satisfactory for sub-crustal earthquakes, but it was not until a later period that consistent interpretations of crustal phases were being made.

By 1950, the recording network had grown, but there had been little increase in staff, and it became impracticable to go on measuring every arrival believed to be seismic on every record, and epicentre determination had fallen badly into arrears. It was decided that epicentres would be worked out only for shocks that had been felt, or were clearly recorded at three stations, the correlation being carried out before the records were read. This decision evolved into the present rule, which demands an origin for every earthquake to reach magnitude 4, and any smaller shock that has been reported felt. A sufficient number of smaller shocks is measured to ensure that the

magnitude criterion is met. About a thousand shocks are located each year.

Before 1964, when a computer was first introduced, graphical methods were in use. The computer greatly reduced the labour, and has enabled a systematic treatment of the errors to be included in the routine. Except in the case of shocks at the extremities of the country, however, the origins found in the decade before the computer was introduced are little inferior in accuracy. For an account of current methods, the reader should consult a recent Report, such as that for 1978 (Bulletin E-160). Attention is drawn to the existence of a master file of over 20,000 New Zealand earthquake origins stored on magnetic tape (Smith, 1976). Details appear in current Reports.

THE INSTRUMENTAL NETWORK

1948 – 50

In the period covered by this report, the New Zealand seismograph network consisted of 11 stations within the North and South Islands, (4 of them without absolute timing), and stations at Suva (Fiji) and Apia (Western Samoa). The data from these stations were on occasion supplemented by using readings from the Australian stations at Riverview and Brisbane, and from a private station at Dunedin operated by Mr. L.G. Penfold. In 1948 Jan. - Mar. the Galitzin instruments normally at Christchurch operated at Wairiri, but the records do not seem to have been read for local events.

The principal changes during the period were the installation of Wood-Anderson seismographs at Apia in 1948 November, at Cobb River in 1949 July, and at Arapuni in 1949 November. In 1949 March, the magnification of the Wood-Anderson instrument at

Wellington was doubled to 2,800. The Arapuni instrument was closed down in 1950 October in preparation for the move to a quieter site at Karapiro. The instrument at Cobb River was out of action from 1950 September 30 to December 5, during which time it was moved about 100 - 150 metres to the east to allow for the installation of additional generators in the power station.

Most of the instruments were of standard types, but a note on the Jaggar seismograph will perhaps be helpful. These improvised recorders played an important part in the development of New Zealand seismology, producing records of sufficiently good quality to be used in the earliest crustal structure studies. The mass consisted of a cylindrical tin or a length of pipe with slots into which two lengths of hack-saw blade were inserted radially before the tin was filled with molten lead. To this mass was also fixed a balsa-wood boom about a metre in length. The protruding blades were clamped between two lengths of angle-iron screwed to a base board, the period of vibration being adjusted to about half a second. A stylus on the end of the boom traced a record on a smoked card similar in appearance to a gramophone record. This was made permanent by immersing it in a weak solution of shellac in methylated spirit. A spring-driven clock turned the disk once an hour and gave it a slight sideways motion, so that a spiral record lasting some two or three days was obtained. Since the linear speed of the trace was variable, the records were measured with a circular protractor. The quality of the records depended greatly upon the skill with which the disk was smoked and the pressure of the stylus adjusted. At most stations it was very variable, but the records from Havelock North, in the care of Mr Henry de Denne, were of a consistently high quality.

It was not possible to provide Jaggar instruments with absolute timing, but at other stations the timing was good by the standards then prevailing elsewhere. Every photographic record (with the exception of that of the Milne instrument at Arapuni) and also the smoked paper records of the Imamura instruments carry minute or half-minute marks derived either from a pendulum clock of the "Synchronome" type, or from a marine chronometer fitted with electrical contacts. Clock corrections were derived from radio time-signals originating in the Observatory, which is also responsible for the national time-service. Station operators impressed these upon the

records by depressing a hand-key. In most cases several signals a day were taken. Towards the end of this period, the speeds of the drums at several stations were increased from 30mm/minute to 60mm/minute, and their mechanical quality was improved. The dates and character of the changes are not readily summarised. The times obtained by this system are reliable to a few tenths of a second except when there was gross error, or at periods of abnormally poor radio reception.

INDEX OF STATION CODES

The codes used to identify stations in the tabular sections of this Report are the international three-letter abbreviations allotted by the United States Earthquake Information Service, and used also by the International Seismological Centre, Newbury, Berkshire, England. Data from the following stations have been used in determining origins:

NEW ZEALAND NETWORK

Apia	API	Cobb River	COB	Suva	SUV
Arapuni	ARA	Havelock North	HNZ	Takaka	TAK
Auckland	AUC	Kaimata	KAI	Tuai	TUA
Bunnythorpe	BUN	Monowai	MNW	Wairiri	WAI
Christchurch	CHR	New Plymouth	NPZ	Wellington	WEL

OTHER STATIONS

Brisbane	BRS	Dunedin	DND	Riverview	RIV

□ □ □ □ □ □

GEOGRAPHICAL POSITIONS

STA	LATITUDE d m s	LONGITUDE d m s	ALT m	GEOCENTRIC DIRECTION COSINES A	B	C
API	13 48 26 S	171 46 30 W	2	-0.961 482	-0.138 981	-0.237 142
ARA	38 04 24 S	175 38 36 E	65	-0.786 955	0.059 955	-0.614 090
AUC	36 51 36 S	174 46 41 E	79	-0.798 711	0.072 997	-0.597 271
BRS	27 23 30 S	152 46 30 E	525	-0.790 642	0.406 771	-0.457 627
BUN	40 17 12 S	175 37 48 E	60	-0.762 741	0.058 288	-0.644 072
CHR	43 31 58 S	172 37 36 E	8	-0.721 282	0.093 337	-0.686 324
COB	41 05 16 S	172 44 02 E	213	-0.749 824	0.095 604	-0.654 693
DND	45 53 00 S	170 31 54 E	100	-0.689 022	0.114 912	-0.715 573
HNZ	39 40 18 S	176 53 06 E	18	-0.770 685	0.041 942	-0.635 834
KAI	42 31 33 S	171 24 31 E	82	-0.730 944	0.110 433	-0.673 443
MNW	45 46 49 S	167 37 07 E	155	-0.683 548	0.150 055	-0.714 315
NPZ	39 03 57 S	174 04 24 E	34	-0.774 336	0.080 384	-0.627 648
RIV	33 49 46 S	151 09 30 E	25	-0.729 171	0.401 557	-0.554 132
SUV	18 08 56 S	178 27 26 E	6	-0.950 524	0.025 601	-0.309 595
TAK	40 51 06 S	172 48 15 E	8	-0.752 609	0.095 021	-0.651 576
TUA	38 48 29 S	177 09 02 E	274	-0.780 343	0.038 841	-0.624 145
WAI	43 29 48 S	171 52 06 E	400	-0.720 411	0.102 936	-0.685 866
WEL	41 17 10 S	174 46 06 E	122	-0.750 486	0.068 718	-0.657 304

INSTRUMENTATION AND LITHOLOGY

Stations appear in alphabetical order. Values of instrumental constants are in most cases typical operating values only. The regularity with which constants could be determined at the various stations differed greatly, and reference to the original station registers is necessary when it is important to establish the constants at a particular date. Pendulum and galvanometer periods, T_o and T_g, are given in seconds. When no value of damping is given, it may be assumed to be critical, except in the case of Jaggar instruments in which the main sources of damping were stylus friction, and the air resistance of the boom.

	Instrument	Compt	T_o	T_g	Damping	Magnification
API	APIA					
	Foundation: Coral sand on Recent and Pleistocene basalt.					
	Wiechert (1,000kg)	NE	8		15:1	150
	Wiechert (180kg)	Z	2.5		15:1	65
	Wood-Anderson (from 1948 Nov.)					
		X	0.8		Crit.	1400
	The instrument was oriented so that the X component lay north-east.					
ARA	ARAPUNI					
	Foundation: Rhyolite tuffs.					
	Milne	E	10		Undamped	5
	Wood-Anderson (1949 Nov. - 1950 Oct.)					
		N	0.8		Crit.	1400

AUC AUCKLAND
Foundation: Volcanic tuffs on Tertiary sandstone and mudstone.

Milne-Shaw	N	10	20:1	150

BUN BUNNYTHORPE
Foundation: Gravels, silts, and sands.

Imamura	Z	2	5:1	1
	X	8	5:1	1
	Y	8	5:1	1

The instrument was orientated so that the X component lay north-east.

CHR CHRISTCHURCH
Foundation: Alluvial sands, tills, and gravels.

Galitzin (from 1948 Mar.)				
	Z	13	Crit.	465
	N	24	Crit.	275
	E	24	Crit.	275
Wood-Anderson	N	0.8	Crit.	1400

COB COBB RIVER
Foundation: Schist.

Wood-Anderson (from 1949 Jul.)			
E	0.8	Crit.	1400

This station was not in operation from 1950 Sep. 20 to Dec. 5, while the instruments were moved about 150 metres to the east to allow the installation of additional generators in the power-house.

DND DUNEDIN
Foundation: Basaltic flows.
Horizontal pendulums.

N	5	~50
E	5	~50

A private station constructed and operated by Mr L.G. Penfold. Damping is not known precisely, but is less than critical. The movements of twin horizontal pendulums with masses of approximately 100 kg. are amplified by pivoted levers and recorded on smoked paper. The drum speed is 10 mm/min, and time-marks are derived from a synchronous electric clock, which lifts the stylus each minute.

HNZ HAVELOCK NORTH
Foundation: Gravels and sandstones.

Jaggar	X			

The instrument was oriented so that the X component lay north-east.

KAI KAIMATA
Foundation: Moraine and river gravels over mudstone and sandstone.

Wood-Anderson	X	0.8	Crit.	1400

The instrument is oriented so that the X component lies north-east.

MNW MONOWAI
Foundation: Tertiary sandstone.

Jaggar	Z			

NPZ NEW PLYMOUTH
Foundation: Ash, conglomerate, and lava.

Wood-Anderson	X	0.8	Crit.	1400

The instrument was oriented so that the X component lay N80°E.

TAK TAKAKA
Foundation: Alluvial gravels.

Jaggar	?			

TUA TUAI
Foundation: Thick Tertiary sandstone and mudstone.

Wood-Anderson	N	0.8		Crit.	1400

WAI WAIRIRI
Foundation: Consolidated clay and sand.
Galitzin (until 1948 Mar.) For constants, see CHR.

WEL WELLINGTON
Foundation: Jurassic-Permian greywacke.

Milne-Shaw	N	12		30:1	250?
Galitzin-Wilip	Z	10.6	10	Crit.	606
Jones	Z	0.5		10:1	11000
Wood-Anderson	N	0.8		Crit.	1400 until 1949 Mar. 14
					2800 from 1949 Mar. 15
Imamura	Z	1		5:1	1
	N	4		5:1	1
	E	4		5:1	1

Wenner. A triggered three-component short-period strong-motion instrument. Constants not available.

ORGANISATION AND STAFFING

In 1949, the name of the organisation which had been known as the Dominion Observatory since the early 1920s, before that as the Hector Observatory, and still earlier as the Colonial Observatory, was changed to Seismological Observatory, and Mr R.C. Hayes, who had been styled Acting Director since 1936, was appointed Director. Administratively, the Observatory formed a Branch of the Department of Scientific and Industrial Research, formed in 1926. It directly controlled all New Zealand government seismograph stations except that at Christchurch, which was the responsibility of the Magnetic Survey, a separate Branch of the D.S.I.R. The Apia Observatory was also controlled by the Magnetic Survey, professional staff from New Zealand being seconded to Samoa, usually for a two-year term.

During the period covered by this Report, the following were members of the Dominion (Seismological) Observatory staff, though not all were then engaged in seismological duties:

Director:	R.C. Hayes (from 1948 Dec, previously Acting Director.)
Professional staff:	G.A. Eiby, B.Sc.(1948), M.Sc.(1950)
	R.A. Garrick, M.Sc. (until 1948 Sept.)
	W.M. Jones, M.Sc. (N.Z.), B.A. (Oxon.)
	J.D. Macfarlane, M.A., M.Sc. (from 1948 Sept.)
	N.S. Mountier, M.Sc. (until 1950 Mar.)
	M.G. Muir, M.Sc. (from 1950 May)
	A.A. Thomson, M.Sc. (from 1950 Jun.)
Technical Trainee:	R.R. Dibble
Instrument Maker:	H. MacMorran (from 1948 Oct. until 1950 Jan.)
	I.D.H. MacMillan (from 1950 Jan.)
Office Assistant:	N. Burt (until 1949 May.)
Clerk - Librarian:	R.E Dowden, B.A. (from 1949 Sept.)

INSTRUMENTAL DATA

The criteria used for selecting the earthquakes in this section of the Report differ slightly from those used in current routine. All instrumentally recorded shocks for which origins have already been published are listed, together with about 100 shocks for which no solution was found in the original analysis. These are arranged chronologically, and allocated definitive serial numbers. The usual reason why solutions have now become possible is that previously unidentifiable crustal phases can now be identified. For a description of the crustal model and the method of calculation, the reader is referred to current Reports. At the time of the original analysis it was usual to attempt to obtain an origin whenever an earthquake was recorded on three stations, or when felt information could be used to resolve the ambiguity for a shock recorded on two.

Previously published origins based solely upon felt information no longer appear in the instrumental list, but are listed with the other unconfirmed reports.

The following list of definitive serial numbers identifies earthquakes for which no origins have previously been published:

48/ 6	48/ 39	48/125	48/143	48/205
8	67	126	154	208
13	68	134	169	209
14	86	135	177	211
18	97	141	179	217
48/ 25	48/122	48/142	48/186	48/218
49/ 6	49/ 76	49/128	49/190	49/245
9	81	138	193	247
13	87	142	199	251
48	93	162	204	252
54	109	170	210	262
49/ 56	49/112	49/175	49/223	49/264
62	120	178	233	267
65	124	180	234	
69	125	182	243	

50/ 11	50/168	50/228	50/274	50/286
43	175	229	275	288
101	188	254	276	299
137	190	258	278	301
145	198	264	280	302
50/146	50/209	50/272	50/284	50/311
150	215	273	285	

Many of these earthquakes have magnitudes of 4 and above, and their inclusion should be helpful to a large range of statistical studies. The accuracy of the origins concerned differs widely. The best of them compare well with the generality of those listed, but others must be considered as little more than an indication of the part of the country in which the shock occurred. It should be possible to appraise the quality of a particular solution by examining the listed data.

The methods used to carry out the calculations are explained in current Reports, which also describe the velocity-model used. Because of the lesser number of data available, provision has been made to include readings from Australian and South Pacific stations within 25 degrees of the epicentre, and the magnitude programme has been extended to produce approximate values (identified with a ~ sign) in cases where the strict application of the present rules would exclude most of the available data.

The magnitudes assigned in this Report are intended to be values of M_L as originally defined by C.F. Richter (Bull. Seis. Soc. Am. *25:* 1-32, 1935), but have been obtained using the amended procedures devised by Haines and described in current Reports. These take account of the observed characteristics of energy propagation in the New Zealand region, for both deep and shallow earthquakes.

In the original interpretations, many amplitudes are given only as 1/2mm, <1/2mm, or ≪1/2mm. These have been conventionally assigned values of 0.5, 0.3, and 0.1mm respectively. Magnitudes derived from them are indicated by a suffixed letter S (small). They are not included in the values averaged to obtain the value of the magnitude finally adopted, except at the operator's discretion. If this has been exercised, both the station value and the average value are

prefaced by the sign ~. Other values not included in the average are those from stations that were clearly overloaded (identified by a + following both the amplitude and the station magnitude entries), stations recording waves that have followed paths along which propagation is known to be anomalous (identified by a following *), and anomalous readings believed to be in serious error by reason of their large discrepancy from the rest of the data (followed by A). A reading may be excluded on more than one of these grounds, but only the first reason for disqualification is shown in the text. As with small amplitudes, these values can be reinstated at the operator's discretion. This is exercised only in cases when the data are otherwise insufficient (as for example when all the amplitudes are small), or the result is clearly wrong (as, for example, when several overloaded stations all indicate a higher value, or the magnitude is much too small to be reconciled with the felt information). In all cases when the operator has intervened, the prefixed ~ appears. It is also used to identify adopted magnitudes that depend upon the reading of a single station.

It has been necessary to derive appropriate station factors for several stations that are no longer operating, or at which the instruments or their constants differ from those now in use. For all stations except ARA and COB, and for deep shocks recorded at TUA, residuals from the mean magnitude were found for all shocks in 1948 within 8 degrees of the station, provided that the mean was based on at least three stations, and the recorded amplitudes reached 1.0mm. Since the site correction to be assigned to WEL is by definition zero, the WEL residual was then subtracted from the other values to yield the appropriate corrections.

The correction for ARA is based on the period 1949 Nov. to 1950 Oct.; that for COB on the period 1949 July to 1950 Sept.; and that for deep shocks recorded at TUA on a sample of 50 shocks in 1948 and 1949. The WEL magnitudes were adopted as a standard. All amplitudes above 0.5mm were accepted. This relaxation was necessary to secure sufficient data. It was, however, decided to exclude a group of 39 shocks within 0.3 to 0.5 degrees of WEL, as there was only one shock within a similar distance of COB, and the remaining sample was more evenly distributed over the whole distance range. Also, a possible bias arising from the known

difference in the average depth of earthquakes near COB and near WEL is avoided. This decision increases the correction for COB by about 0.05 magnitude.

Site corrections based upon the residuals obtained are:

ARA	+0.15	TUA	+0.17	NPZ	–0.06	WEL	0.00
COB	+0.11	KAI	+0.28	CHR	+0.11		

Having regard to the uncertainties involved, these values have been rounded to the nearest 0.05 magnitude for regular use in the computer programmes.

SUMMARY OF ORIGINS AND MAGNITUDES

The following chronological list summarises the determinations, details of which are given in the following section.

The Reference Number appearing in the first column is used as a definitive identification of the earthquake, and is used throughout this Report and in current Observatory publications. Provisional numbers allocated in earlier P- and E-series Bulletins and annual summaries are superseded, but are included in the information that follows the separate origin determinations and in the list of unconfirmed felt reports, to enable cross reference.

The sign ~ preceding a magnitude may indicate either that the normal restrictions upon the inclusion of stations in the average have been relaxed, or that the value given depends upon a single station. An F following a magnitude indicates that the shock is known to have been felt.

NUM OBS is the number of separate phase readings used, and NUM STN the number of stations at which the shock was read, whether or not the readings were used in determining the origin.

REF NUM	ORIGIN TIME h m s	LATITUDE deg	LONGITUDE deg	DEPTH km	MAG	S.E	NUM OBS	NUM STN
001 JAN	01 06 41 44.2	38.82 S	175.82 E	12 R	4.6	0.8	7	3
002	01 16 58 19.9	42.05 S	173.04 E	33 R	~3.7	0.1	4	3
003	02 05 46 07.5	38.40 S	175.83 E	12 R	4.4	0.6	5	3
004	02 06 31 46.7	38.68 S	175.82 E	12 R	4.0	1.5	6	3
005	04 08 22 54.5	41.23 S	173.43 E	12 R	5.0 F	1.0	9	6
006	05 04 01 15.5	40.11 S	176.87 E	12 R	4.0	1.1	5	3
007	06 08 11 45.1	38.86 S	178.16 E	12 R	4.3 F	1.3	4	3
008	07 21 13 31.5	41.94 S	173.98 E	12 R	~3.4	0.6	5	3
009	07 21 27 33.4	38.66 S	178.69 E	194	5.8 F	1.5	8	5
010	09 04 11 50.4	40.20 S	175.00 E	12 R	~2.9 F	1.4	2	2
011	09 08 34 49.9	38.11 S	178.66 E	131	4.9 F	1.7	5	3
012	12 08 49 00.8	40.52 S	173.05 E	12 R	~3.7	1.1	4	3
013	13 10 01 12.6	34.31 S	179.81 E	33 R	5.3	3.1	4	4
014	13 11 12 27.2	36.32 S	177.37 W	12 R	~4.7	0.1	4	3
015	15 05 01 42.5	40.32 S	175.07 E	94	~6.3 F	1.8	13	9
016	19 17 54 42.7	40.19 S	172.97 E	12 R	~3.6	1.7	5	5
017	20 03 07 41.6	39.31 S	176.60 E	12 R	~3.7	0.5	5	3
018	20 05 52 53.0	35.16 S	176.82 W	12 R	5.4	1.7	4	3
019	20 09 44 10.0	34.38 S	177.62 W	33 R	6.3 F	3.4	8	8
020	24 08 00 30.2	39.15 S	175.23 E	218	4.8	1.8	6	5
021	25 11 42 36.4	40.20 S	175.00 E	12 R	~3.3 F	1.4	2	2
022	25 14 56 40.1	40.08 S	173.32 E	124	~4.0	0.5	5	4
023	26 11 54 01.4	38.94 S	175.77 E	121	4.8	0.5	6	4
024	27 22 52 49.6	41.50 S	173.89 E	12 R	~3.5 F	0.7	4	2
025	28 07 50 09.6	39.00 S	175.94 E	12 R	4.1	ND	3	3
026 FEB	01 11 05 02.2	41.11 S	175.68 E	12 R	4.2 F	0.2	4	2
027	01 16 06 50.1	39.80 S	177.56 E	12 R	~3.7	0.8	4	4
028	04 11 45 35.1	40.86 S	175.47 E	12 R	~4.0 F	0.5	4	2
029	04 18 59 06.0	40.87 S	173.90 E	12 R	5.1 F	1.7	9	6
030	05 01 09 44.3	38.63 S	176.08 E	191	4.7	0.4	6	3
031	05 05 30 34.7	38.09 S	176.89 E	33 R	~4.0	1.8	6	3
032	05 09 45 14.3	38.86 S	175.95 E	175	4.8	1.6	8	5
033	05 23 21 44.5	39.56 S	176.30 E	12 R	~3.7	ND	3	3
034	06 03 25 36.9	34.10 S	178.27 W	33 R	5.6	6.7	5	4
035	09 11 13 55.4	41.41 S	174.96 E	33 R	4.7 F	0.7	11	7
036	12 17 49 34.4	40.05 S	175.11 E	12 R	~3.2 F	ND	3	3
037	18 00 17 36.3	38.33 S	177.73 E	71	5.2 F	2.3	9	6
038	18 03 57 58.7	43.02 S	172.70 E	12 R	4.2 F	1.6	5	4
039	19 02 11 15.8	40.28 S	173.65 E	12 R	3.7	1.1	5	4
040	24 21 37 30.0	39.62 S	175.17 E	12 R	~3.4	1.5	5	3
041	27 00 38 00.0	45.90 S	168.10 E	12 R	~ F	ND	1	1
042	27 09 49 41.8	42.24 S	173.48 E	33 R	4.4 F	0.9	5	4
043	29 14 10 46.9	43.17 S	171.84 E	12 R	~3.3 F	2.8	4	2
044 MAR	01 22 56 26.6	38.90 S	176.00 E	12 R	~3.7 F	1.2	2	1
045	01 23 26 01.6	38.90 S	176.00 E	12 R	~3.5 F	1.9	2	1
046	02 01 13 03.1	38.90 S	176.00 E	12 R	~4.2 F	1.2	2	1
047	02 04 34 27.9	38.90 S	176.00 E	12 R	~3.5 F	0.8	2	1
048	02 10 12 17.2	38.90 S	176.00 E	12 R	~4.6 F	1.1	3	3
049	02 11 16 14.4	39.36 S	174.78 E	33 R	4.3 F	1.3	7	3
050	03 09 38 37.9	39.89 S	175.50 E	33 R	3.8 F	ND	3	2

REF NUM	ORIGIN TIME				LATITUDE deg	LONGITUDE deg	DEPTH km	MAG		S.E.	NUM OBS	NUM STN
		h	m	s								
051	MAR 05	02	33	57.9	41.26 S	175.23 E	12 R	~3.2		ND	3	2
052	05	04	35	31.8	43.17 S	171.26 E	12 R	~4.1		1.8	6	4
053	05	08	43	11.8	38.70 S	178.20 E	33 R	~3.8	F	1.4	4	4
054	10	09	20	56.2	38.24 S	175.69 E	12 R	4.7	F	1.1	6	3
055	14	16	21	08.4	40.41 S	173.18 E	125	~4.4		0.6	5	3
056	19	14	04	27.8	40.17 S	174.40 E	33 R	~4.1	F	1.4	4	2
057	23	02	44	52.5	40.40 S	176.40 E	12 R	~3.8	F	0.6	2	3
058	24	13	23	12.7	40.25 S	174.25 E	12 R	3.9	F	1.3	4	2
059	31	17	40	53.8	33.67 S	177.15 W	33 R	5.9		3.1	8	6
060	APR 08	05	56	54.1	40.21 S	174.68 E	33 R	3.9	F	0.9	5	3
061	18	09	05	40.4	41.03 S	175.93 E	12 R	4.3	F	0.9	5	3
062	18	19	33	60.0	40.07 S	176.04 E	12 R	4.1	F	0.5	4	4
063	18	23	39	28.4	41.53 S	172.34 E	12 R	4.5	F	1.2	8	5
064	20	04	29	24.8	31.14 S	175.89 E	33 R	6.2		5.0	8	8
065	24	08	20	08.8	42.14 S	176.98 E	12 R	4.5		0.3	5	4
066	25	19	04	33.8	41.76 S	172.26 E	12 R	4.2	F	1.6	9	5
067	MAY 19	09	36	46.8	35.35 S	178.32 E	33 R	5.5		3.6	4	2
068	20	06	09	12.8	39.73 S	174.58 E	173	4.4		0.1	5	4
069	20	14	59	26.7	39.26 S	177.91 E	12 R	4.3		1.5	4	3
070	22	18	57	35.5	42.47 S	172.88 E	12 R	5.9	F	1.2	12	10
071	22	19	21	26.7	42.50 S	173.00 E	12 R	6.4	F	0.7	11	12
072	22	19	29	24.6	42.50 S	172.90 E	12 R	~4.6		0.5	2	2
073	22	19	36	07.5	42.84 S	173.05 E	12 R	6.2	F	1.9	12	10
074	22	19	53	44.0	42.67 S	173.02 E	12 R	5.7	F	1.6	8	7
075	22	20	01	19.0	42.55 S	173.01 E	12 R	5.7	F	1.2	12	9
076	22	21	21	59.8	42.49 S	172.86 E	12 R	5.8	F	1.6	8	9
077	22	21	59	53.9	42.64 S	173.00 E	12 R	4.7		1.3	7	4
078	22	23	28	33.3	42.64 S	173.00 E	12 R	4.7		0.8	8	4
079	22	23	58	57.8	42.68 S	173.07 E	12 R	4.5		1.0	7	4
080	23	05	40	20.4	42.74 S	173.08 E	12 R	4.6		1.2	7	5
081	23	18	56	27.0	42.98 S	173.18 E	12 R	5.1		1.6	6	4
082	24	02	17	06.1	42.44 S	173.02 E	12 R	5.0		1.0	8	7
083	24	12	09	51.9	37.49 S	176.51 E	216	5.5	F	2.3	7	6
084	25	17	24	37.9	37.42 S	177.74 E	33 R	5.6	F	2.0	7	7
085	26	01	24	54.3	42.48 S	172.91 E	12 R	4.7	F	0.5	7	5
086	28	09	04	24.9	30.89 S	175.55 E	33 R	6.6		0.5	5	3
087	28	20	18	37.7	39.00 S	178.40 E	12 R	~4.8	F	0.2	2	1
088	28	22	16	00.3	39.18 S	178.30 E	12 R	4.5		ND	3	2
089	30	20	13	54.6	41.40 S	174.40 E	12 R	~4.3	F	1.6	5	2
090	JUN 01	08	04	53.0	41.00 S	175.54 E	12 R	4.4	F	1.5	8	5
091	02	18	31	17.0	42.61 S	172.72 E	12 R	3.8		1.9	5	4
092	02	22	53	18.4	42.48 S	173.00 E	12 R	3.9		0.7	7	3
093	03	03	57	21.2	38.56 S	175.92 E	195	4.8		0.7	5	3
094	07	07	17	40.0	37.74 S	177.99 E	270	5.0		0.2	5	4
095	07	18	05	57.2	37.34 S	176.94 E	198	5.0	F	2.1	5	4
096	09	06	41	16.3	42.43 S	172.96 E	12 R	3.7		0.8	6	4
097	09	15	03	01.0	31.81 S	176.60 E	33 R	6.4		0.1	4	3
098	10	02	48	55.9	37.37 S	176.97 E	217	5.1		0.8	7	6
099	13	08	08	32.1	42.42 S	172.95 E	12 R	~3.7		1.3	8	5
100	14	14	31	36.8	42.20 S	173.15 E	33 R	4.1		1.0	5	3

REF NUM	ORIGIN TIME				LATITUDE deg	LONGITUDE deg	DEPTH km	MAG		S.E.	NUM OBS	NUM STN
		h	m	s								
101	JUN 16	12	00	51.6	39.00 S	174.10 E	12 R	~	F	0.2	2	1
102	16	23	50	50.0	42.23 S	172.71 E	12 R	3.8		0.6	6	4
103	19	01	15	29.3	39.31 S	177.45 E	12 R	~3.8		0.1	5	3
104	19	06	18	35.9	43.37 S	169.02 E	12 R	5.7	F	1.8	9	7
105	19	06	56	58.4	43.40 S	169.10 E	12 R	5.2	F	0.7	6	5
106	19	07	05	38.3	43.67 S	169.59 E	12 R	5.7	F	0.8	9	7
107	19	08	14	47.3	42.96 S	169.41 E	12 R	4.6	F	0.8	6	4
108	20	20	55	35.0	39.32 S	175.82 E	33 R	4.4		0.7	5	3
109	21	20	05	24.4	41.45 S	174.68 E	12 R	~4.3	F	1.0	5	4
110	22	21	31	48.3	40.89 S	175.26 E	12 R	4.2	F	1.3	5	3
111	29	09	13	56.6	43.29 S	171.75 E	12 R	4.3	F	0.8	7	4
112	30	19	26	53.5	38.68 S	178.66 E	12 R	4.4	F	1.9	5	3
113	JUL 01	18	37	27.0	39.75 S	176.70 E	12 R	4.1		0.6	5	3
114	03	19	13	49.4	42.23 S	172.73 E	12 R	3.9		0.9	5	3
115	03	21	10	28.6	38.14 S	176.72 E	236	~5.4		0.2	7	4
116	04	14	13	08.0	40.33 S	175.57 E	12 R	4.5	F	1.1	5	3
117	11	08	03	50.2	42.37 S	172.69 E	12 R	4.0		1.3	9	4
118	11	19	24	30.2	38.60 S	178.90 E	12 R	~3.3	F	0.3	2	1
119	12	00	24	06.2	42.07 S	172.61 E	12 R	4.3	F	1.1	9	5
120	12	07	46	50.1	45.49 S	168.60 E	12 R	5.1	F	2.5	7	6
121	13	11	37	08.7	39.23 S	176.17 E	12 R	4.1		0.9	5	3
122	14	01	16	57.3	42.70 S	172.93 E	12 R	~4.0		1.5	4	3
123	14	03	19	41.0	45.34 S	167.37 E	12 R	~4.9	F	3.7	4	4
124	14	10	48	23.0	46.02 S	167.89 E	12 R	5.5	F	1.5	9	6
125	15	02	19	23.4	39.80 S	175.38 E	33 R	~4.0		1.9	5	3
126	16	16	34	40.8	38.97 S	175.12 E	12 R	~4.2	F	1.2	5	2
127	17	10	51	12.6	41.39 S	172.92 E	12 R	4.2		1.3	6	4
128	18	08	23	48.5	45.00 S	167.50 E	12 R	~4.3	F	0.8	3	3
129	23	09	19	23.6	45.48 S	167.25 E	12 R	5.1	F	2.1	6	5
130	24	19	13	45.2	41.60 S	173.80 E	12 R	~3.5	F	0.9	2	1
131	26	14	20	42.6	38.81 S	178.58 E	12 R	~3.9	F	1.0	4	2
132	29	05	09	57.5	39.75 S	174.01 E	206	5.3	F	1.4	8	5
133	29	18	59	55.7	42.68 S	173.17 E	12 R	3.8	F	1.6	9	5
134	AUG 03	01	58	18.4	40.08 S	173.72 E	33 R	~4.1		1.7	4	3
135	09	14	34	24.1	40.50 S	174.05 E	12 R	3.9		0.4	5	3
136	12	01	03	10.0	42.26 S	172.75 E	12 R	3.9		1.2	8	3
137	14	07	02	03.4	38.31 S	176.46 E	234	5.4		0.6	6	5
138	14	20	01	37.6	35.20 S	179.36 E	12 R	5.0		1.8	9	4
139	14	23	39	38.1	35.42 S	179.16 E	12 R	5.5		1.3	11	6
140	15	01	14	18.6	35.50 S	179.52 E	12 R	5.2		1.9	10	7
141	15	05	01	57.0	36.77 S	177.68 W	33 R	5.1		0.1	4	3
142	16	09	24	35.1	38.69 S	179.56 W	33 R	4.7		2.8	5	3
143	16	13	50	44.6	39.11 S	177.96 E	12 R	5.0	F	1.8	10	7
144	16	20	20	50.3	37.77 S	178.08 E	208	5.5		1.6	10	6
145	19	11	44	24.9	38.80 S	178.40 E	12 R	~4.6	F	1.1	2	1
146	19	12	25	53.6	38.80 S	178.40 E	12 R	~3.9	F	0.8	2	1
147	20	08	14	53.6	40.41 S	175.78 E	12 R	4.9	F	1.2	8	6
148	20	16	38	23.5	41.81 S	172.24 E	12 R	4.2		1.4	8	5
149	20	22	37	21.0	31.68 S	178.21 W	468	6.1		1.7	10	8
150	21	15	37	21.1	39.25 S	177.03 E	33 R	4.2	F	1.0	7	4

REF NUM	ORIGIN TIME			LATITUDE	LONGITUDE	DEPTH	MAG	S.E.	NUM OBS	NUM STN
		h	m s	deg	deg	km				
151	AUG 23	00	30 36.6	42.39 S	172.78 E	12 R	3.9	1.5	6	3
152	28	03	06 33.1	37.70 S	179.97 E	33 R	4.8	1.1	6	3
153	29	04	58 28.1	41.03 S	174.10 E	12 R	4.6 F	1.4	10	5
154	29	06	20 34.2	39.07 S	175.77 E	12 R	3.7	0.8	5	4
155	30	11	52 31.4	42.38 S	172.93 E	12 R	~3.8	0.8	5	3
156	30	19	34 45.9	38.77 S	177.93 E	33 R	4.0	1.3	5	4
157	31	03	53 25.4	41.11 S	174.20 E	12 R	3.7 F	1.4	7	4
158	31	23	07 28.4	31.25 S	177.02 E	33 R	6.7	2.1	7	5
159	SEP 02	09	54 16.8	41.90 S	172.47 E	12 R	3.9	0.6	6	4
160	04	08	20 21.6	39.82 S	177.33 E	12 R	4.2	0.9	6	4
161	04	18	12 36.4	42.48 S	173.04 E	12 R	3.7	1.5	5	3
162	05	07	04 04.7	40.09 S	173.11 E	12 R	4.4	1.7	7	4
163	05	23	14 51.4	41.20 S	173.19 E	12 R	4.1	1.7	8	4
164	06	00	34 31.6	43.40 S	171.42 E	12 R	4.2 F	1.2	6	3
165	06	00	38 58.5	38.02 S	177.58 E	116	5.7 F	1.8	9	6
166	07	21	47 13.0	41.03 S	174.83 E	12 R	~4.0 F	1.2	7	4
167	09	16	29 12.5	39.93 S	175.81 E	12 R	4.2 F	1.3	6	3
168	10	03	39 58.8	40.00 S	175.00 E	12 R	3.8 F	3.2	2	2
169	10	09	33 29.9	37.65 S	179.58 W	33 R	4.6	4.0	4	3
170	11	17	16 20.7	40.12 S	174.96 E	33 R	4.3 F	1.8	8	4
171	14	04	59 56.6	38.92 S	176.81 E	33 R	4.4	0.7	9	4
172	14	12	10 07.2	42.34 S	173.11 E	12 R	3.9	0.8	5	4
173	15	23	24 21.4	37.82 S	177.37 E	256	5.3	1.0	8	5
174	16	10	30 02.4	38.77 S	175.95 E	182	5.0	1.3	9	6
175	16	12	48 30.9	40.41 S	177.20 E	12 R	4.5	1.2	4	3
176	16	14	01 08.1	39.64 S	176.70 E	12 R	4.1	1.4	8	4
177	25	09	31 35.8	29.95 S	176.85 E	33 R	~5.9	0.5	4	3
178	29	18	02 57.4	41.00 S	174.00 E	12 R	~3.7 F	0.6	2	1
179	OCT 03	21	58 19.2	36.04 S	175.54 E	33 R	5.5	1.8	7	5
180	04	16	28 39.0	38.15 S	176.62 E	216	5.0	1.3	6	4
181	05	03	58 58.5	41.39 S	174.03 E	12 R	~4.4 F	0.9	5	3
182	08	20	23 34.4	39.81 S	175.05 E	12 R	3.8	0.9	5	3
183	08	21	20 59.1	43.01 S	173.00 E	12 R	~4.3	1.2	7	3
184	09	19	11 33.3	45.19 S	168.24 E	12 R	~4.8 F	ND	3	3
185	11	02	04 43.5	39.40 S	175.36 E	93	4.2	0.2	6	4
186	11	11	13 22.8	35.51 S	175.67 E	33 R	5.1	6.0	5	4
187	12	17	52 35.8	40.32 S	174.42 E	12 R	4.1 F	1.1	5	3
188	13	18	16 47.4	38.00 S	177.00 E	12 R	~3.7 F	0.7	2	1
189	13	19	34 08.4	38.00 S	177.00 E	12 R	~4.1 F	0.7	2	1
190	16	17	46 45.2	40.41 S	174.19 E	33 R	4.7 F	1.3	8	5
191	20	06	02 22.9	40.73 S	173.94 E	33 R	4.1	1.6	6	4
192	28	04	08 32.8	39.91 S	175.40 E	33 R	4.2	0.4	7	4
193	29	03	27 38.2	42.54 S	172.94 E	12 R	4.5 F	1.3	13	5
194	29	22	05 27.5	39.80 S	175.32 E	12 R	3.9 F	0.6	6	4
195	31	02	03 56.2	40.47 S	175.09 E	33 R	~3.5 F	0.9	5	3
196	31	10	22 48.5	42.20 S	173.15 E	12 R	~3.5 F	1.1	3	2
197	NOV 01	11	32 15.1	39.32 S	175.50 E	12 R	~3.8 F	0.6	5	3
198	03	05	44 26.1	37.77 S	176.04 E	12 R	4.7	0.1	4	3
199	03	16	21 42.3	40.00 S	175.63 E	12 R	~3.7	0.7	6	4
200	04	02	21 16.8	43.29 S	171.55 E	12 R	3.6 F	1.0	5	2

REF NUM	ORIGIN TIME			LATITUDE	LONGITUDE	DEPTH	MAG	S.E.	NUM OBS	NUM STN
		h	m s	deg	deg	km				
201	NOV 10	05	00 01.4	37.06 S	176.54 E	12 R	5.6	0.6	4	4
202	10	09	51 51.7	38.57 S	176.12 E	229	4.5	1.8	7	4
203	11	04	37 10.1	42.50 S	173.00 E	12 R	~3.3 F	ND	1	1
204	11	15	37 53.5	40.71 S	173.04 E	12 R	4.2 F	0.8	5	3
205	12	11	52 55.2	39.65 S	175.34 E	12 R	3.8	0.3	4	4
206	14	05	55 52.0	42.42 S	173.27 E	12 R	3.9	1.4	5	3
207	17	21	54 25.3	40.03 S	175.35 E	12 R	4.3 F	0.4	4	3
208	20	11	31 12.2	42.18 S	173.06 E	12 R	3.9	ND	3	3
209	23	08	46 44.3	42.50 S	172.00 E	12 R	4.2	0.6	4	3
210	25	19	42 47.5	40.08 S	175.31 E	33 R	3.8 F	0.3	4	2
211	27	12	44 52.0	40.50 S	173.24 E	12 R	4.3	1.6	4	4
212	28	12	03 22.3	38.38 S	176.71 E	182	5.2	0.5	7	5
213	30	14	07 42.8	42.68 S	172.64 E	12 R	3.8	1.1	6	3
214	DEC 07	08	19 40.4	39.50 S	179.52 E	12 R	5.7 F	1.1	8	5
215	07	12	36 43.7	41.63 S	172.81 E	12 R	4.2	0.8	6	4
216	08	03	07 13.0	33.74 S	178.48 E	33 R	6.4	4.0	4	3
217	10	20	16 54.2	36.57 S	175.91 E	33 R	5.5	0.5	4	3
218	11	03	01 16.2	31.63 S	178.34 W	33 R	5.6	3.9	5	3
219	13	09	31 23.5	40.82 S	172.85 E	5 R	4.0 F	0.9	8	3
220	13	10	59 38.4	40.80 S	172.53 E	12 R	4.6 F	0.6	4	3
221	17	10	36 03.9	41.30 S	172.50 E	12 R	4.0 F	0.5	2	2
222	17	13	51 14.4	39.49 S	179.55 W	12 R	4.9	1.0	5	4
223	19	02	54 17.3	42.34 S	172.70 E	12 R	4.2	0.8	6	3
224	20	21	05 21.7	40.93 S	173.02 E	12 R	~4.0	ND	3	3
225	21	03	01 40.2	38.84 S	177.17 E	68	~4.7 F	1.3	6	5
226	27	15	23 55.5	40.89 S	174.63 E	12 R	4.0	0.9	4	3
227	28	00	49 21.7	40.89 S	174.76 E	83	~5.3 F	1.5	11	7
228	29	11	25 50.3	42.24 S	172.61 E	33 R	~3.9	0.6	6	3

1949

001	JAN 10	15	44 03.4	40.02 S	173.46 E	164	~4.6	1.2	5	4
002	11	14	13 43.4	40.60 S	172.92 E	12 R	3.9	0.5	8	4
003	12	04	04 57.5	37.59 S	177.07 E	335	5.1	1.5	7	5
004	12	05	58 44.2	39.80 S	176.99 E	12 R	4.1 F	1.0	7	5
005	15	04	42 29.1	39.19 S	174.87 E	201	5.8 F	1.8	12	7
006	15	13	57 23.2	39.36 S	179.34 E	12 R	~4.4	0.9	5	3
007	20	00	02 59.7	38.76 S	175.94 E	137	5.4 F	1.3	8	6
008	22	09	24 57.4	38.91 S	175.85 E	143	4.4	0.7	6	4
009	22	18	54 20.0	39.75 S	175.00 E	12 R	3.9	0.7	4	4
010	23	13	08 02.1	41.50 S	174.18 E	12 R	~3.6	0.8	4	3
011	24	13	06 25.7	40.50 S	172.71 E	12 R	~3.6 F	ND	3	2
012	26	03	49 50.1	38.43 S	176.88 E	174	5.0	1.0	6	4
013	26	07	32 02.6	38.55 S	175.68 E	33 R	4.2	1.2	7	3
014	26	16	13 15.6	40.10 S	175.00 E	12 R	~4.0 F	1.2	2	2
015	29	09	20 11.6	38.92 S	176.27 E	242	4.4	ND	4	3
016	29	14	19 49.6	37.02 S	177.62 E	177	~5.4	0.2	6	5
017	29	21	12 19.8	40.81 S	172.23 E	12 R	4.6 F	0.8	10	3
018	30	23	22 11.1	41.16 S	172.40 E	12 R	4.1 F	0.9	8	3
019	31	15	37 01.9	40.37 S	174.39 E	12 R	4.3 F	0.9	6	4
020	FEB 02	18	01 56.3	42.21 S	172.79 E	12 R	~3.7 F	0.8	4	2

REF NUM		ORIGIN TIME h	m	s	LATITUDE deg	LONGITUDE deg	DEPTH km	MAG	S.E.	NUM OBS	NUM STN
021	FEB	03	19	21 20.1	42.85 S	173.01 E	12 R	4.5 F	0.9	7	4
022		04	15	23 46.9	39.24 S	173.69 E	33 R	5.0	0.9	6	4
023		06	18	19 25.6	36.70 S	178.19 E	12 R	~4.9 F	1.2	8	5
024		06	18	29 45.5	37.55 S	177.96 E	33 R	~4.5 F	1.3	6	5
025		06	18	42 28.6	37.48 S	177.89 E	12 R	4.5 F	1.7	6	5
026		06	18	44 36.4	37.30 S	178.22 E	33 R	4.7 F	2.7	5	5
027		06	23	04 53.3	37.46 S	177.38 E	33 R	4.5	1.1	7	5
028		08	05	08 17.0	39.30 S	176.50 E	99	4.3	1.9	6	4
029		09	11	32 23.1	40.00 S	175.00 E	12 R	~4.1 F	ND	1	1
030		09	17	30 50.5	39.68 S	174.35 E	199	~6.4 F	1.7	11	8
031		13	09	32 19.6	38.90 S	175.20 E	12 R	~3.6 F	ND	1	1
032		13	18	24 59.2	34.25 S	179.74 E	33 R	~6.7 F	5.8	9	7
033		14	16	28 54.0	37.30 S	175.70 E	12 R	~4.4 F	0.3	2	3
034		16	20	53 33.8	40.64 S	176.17 E	33 R	3.9 F	1.0	4	4
035		17	10	25 36.4	39.64 S	177.14 E	12 R	~3.8	1.7	4	3
036		19	10	23 56.0	38.52 S	176.50 E	140	4.4	0.8	6	4
037		21	17	56 14.0	40.07 S	175.71 E	12 R	4.4 F	0.4	6	4
038		21	18	06 10.8	40.09 S	175.69 E	12 R	~4.2 F	0.7	5	4
039		21	19	26 40.1	37.33 S	176.50 E	257	5.9	0.9	8	5
040		22	23	17 09.6	39.20 S	179.84 E	33 R	5.4	1.6	6	4
041		27	10	43 04.2	40.55 S	177.77 E	12 R	~4.3 F	2.7	5	4
042		28	22	10 19.8	42.33 S	172.96 E	12 R	4.1	0.8	5	3
043	MAR	05	00	25 54.5	38.89 S	175.25 E	12 R	~3.6 F	ND	3	2
044		05	03	40 08.1	38.91 S	175.86 E	12 R	4.7	1.5	7	4
045		06	11	22 35.0	38.70 S	176.10 E	12 R	~3.2 F	ND	1	1
046		06	16	45 31.5	38.70 S	176.10 E	12 R	~3.0 F	ND	1	1
047		07	20	17 22.3	40.48 S	176.58 E	12 R	4.2 F	1.8	12	4
048		13	15	04 09.5	36.43 S	178.03 W	33 R	4.9	2.3	7	4
049		15	20	03 33.5	40.61 S	175.85 E	12 R	3.8	0.6	6	3
050		16	03	13 21.5	38.92 S	177.68 E	12 R	~3.8 F	ND	3	2
051		16	17	07 38.4	40.62 S	172.98 E	12 R	4.2	0.4	5	4
052		17	08	45 51.3	36.25 S	179.92 W	33 R	4.7	0.3	4	3
053		21	23	05 13.4	43.27 S	173.50 E	33 R	4.3 F	0.2	5	2
054		22	00	48 08.4	40.46 S	173.23 E	12 R	4.3	1.7	4	3
055		25	12	26 42.1	41.75 S	173.61 E	12 R	~3.4	1.2	5	3
056		31	13	58 08.5	33.86 S	174.17 E	12 R	5.3	4.7	7	4
057	APR	02	12	10 47.1	38.09 S	176.35 E	291	5.0	0.5	7	5
058		03	00	14 00.0	40.14 S	174.14 E	12 R	4.3	0.3	6	3
059		05	15	50 44.2	42.08 S	175.09 E	12 R	4.7 F	0.9	10	4
060		06	23	46 12.5	34.91 S	178.94 E	12 R	4.8	1.9	9	6
061		09	21	37 00.7	38.19 S	179.48 E	33 R	4.7	2.7	6	3
062		11	10	07 17.4	42.46 S	172.96 E	12 R	3.6	1.9	5	3
063		14	18	58 06.9	41.30 S	174.04 E	12 R	4.7 F	0.7	11	5
064		14	23	58 18.5	43.59 S	175.15 E	33 R	4.7	1.5	6	4
065		26	08	10 52.3	40.54 S	172.92 E	12 R	~3.6	0.5	4	3
066		28	04	01 51.0	41.68 S	174.64 E	12 R	~3.0	0.2	4	3
067		30	20	51 50.0	39.16 S	177.93 E	12 R	~4.0	1.2	5	3
068	MAY	03	06	25 39.2	40.85 S	174.37 E	12 R	4.8 F	1.9	9	5
069		03	14	51 49.3	35.06 S	179.19 E	12 R	5.4	2.9	8	4
070		03	17	07 20.8	42.50 S	172.98 E	12 R	4.4 F	0.7	9	4

REF NUM		ORIGIN TIME h	m	s	LATITUDE deg	LONGITUDE deg	DEPTH km	MAG	S.E.	NUM OBS	NUM STN
071	MAY	03	19	59 59.8	44.68 S	169.09 E	12 R	4.7	0.6	7	4
072		05	15	29 52.4	41.22 S	172.60 E	181	~4.2	0.1	5	4
073		06	19	02 11.9	40.55 S	173.65 E	12 R	3.8	1.5	5	3
074		08	18	16 28.3	38.46 S	177.14 E	33 R	~4.1 F	1.2	5	2
075		12	18	25 26.6	39.45 S	174.35 E	227	4.4	0.5	5	5
076		13	04	04 23.5	39.85 S	174.89 E	12 R	3.9	2.1	6	4
077		14	12	22 09.7	38.79 S	174.70 E	12 R	4.2	2.7	5	4
078		16	09	15 14.5	39.31 S	174.78 E	12 R	3.7	0.2	5	3
079		17	02	11 06.1	39.02 S	175.82 E	125	4.6	1.4	7	5
080		17	09	57 26.0	42.38 S	172.86 E	12 R	3.6	0.9	5	3
081		19	04	29 47.0	41.05 S	173.18 E	12 R	~3.2	1.4	6	3
082		19	07	53 56.5	42.58 S	173.02 E	12 R	3.6	0.8	7	3
083		20	09	41 38.6	38.42 S	175.75 E	190	4.4	3.5	5	4
084		22	01	21 40.3	39.58 S	177.16 E	12 R	4.0	1.1	8	4
085		22	10	10 53.4	38.54 S	176.80 E	169	4.2	1.0	7	5
086		24	22	47 17.5	38.12 S	176.41 E	156	4.5	0.1	6	5
087		26	03	32 10.8	33.87 S	178.19 E	12 R	6.0	0.9	6	3
088		27	05	19 30.0	43.54 S	177.66 E	33 R	~3.9	1.2	5	4
089		27	08	54 10.0	45.57 S	167.14 E	33 R	5.9 F	1.5	11	8
090		29	00	23 09.3	39.16 S	176.12 E	33 R	4.9	1.2	7	4
091		29	18	12 22.0	39.64 S	174.36 E	200	~5.5 F	1.9	7	4
092		29	21	49 28.1	39.23 S	176.05 E	12 R	4.5	0.7	8	5
093		30	08	37 47.5	39.74 S	179.18 W	33 R	4.6	4.2	4	4
094	JUN	03	10	04 48.6	37.75 S	175.00 E	12 R	~2.7 F	ND	1	1
095		07	03	28 35.7	40.03 S	175.15 E	12 R	4.1	0.6	7	4
096		07	18	28 06.8	36.42 S	175.81 E	33 R	5.1	1.1	6	4
097		08	11	16 56.3	38.76 S	176.16 E	208	4.5	1.5	6	5
098		11	05	16 04.2	36.01 S	176.37 E	33 R	5.7	1.9	5	3
099		12	09	27 21.6	42.35 S	173.09 E	12 R	4.2 F	0.8	6	4
100		14	16	05 18.8	39.91 S	175.27 E	12 R	4.0	0.7	6	3
101		15	16	18 59.8	43.17 S	172.46 E	12 R	4.6 F	1.1	7	3
102		16	14	01 30.5	39.36 S	174.63 E	12 R	3.7	0.8	6	3
103		18	08	36 44.2	39.52 S	175.60 E	12 R	~3.7	0.8	6	3
104		19	01	55 22.9	39.03 S	175.15 E	235	4.6	1.6	7	5
105		20	04	35 34.3	34.76 S	176.98 E	33 R	6.6	1.3	6	4
106		22	00	40 36.3	40.00 S	174.69 E	33 R	5.2 F	0.6	9	6
107		23	08	12 11.3	39.31 S	175.02 E	214	~4.3	2.2	7	4
108		24	22	14 19.9	38.95 S	175.84 E	168	5.1	1.1	8	4
109		25	01	11 22.5	34.10 S	179.70 E	33 R	5.1	0.8	5	5
110		27	08	06 07.9	37.57 S	177.09 E	340	5.3	0.9	7	5
111		28	14	43 28.6	40.17 S	175.58 E	12 R	4.3 F	1.1	13	5
112	JUL	01	06	07 44.8	40.49 S	174.09 E	12 R	~3.7	2.0	6	3
113		01	16	21 25.9	39.08 S	176.16 E	33 R	5.1 F	1.0	11	5
114		02	11	55 51.9	39.33 S	179.53 E	33 R	4.6	0.4	6	5
115		03	05	38 53.1	40.63 S	174.65 E	12 R	3.7	1.1	6	3
116		03	08	02 19.0	38.19 S	176.31 E	152	4.4	0.4	5	4
117		04	06	09 30.9	40.85 S	174.38 E	12 R	4.5 F	1.2	9	5
118		05	09	28 26.7	42.24 S	174.10 E	33 R	~3.1	1.7	5	3
119		06	06	18 00.3	40.58 S	173.89 E	12 R	4.3	1.2	8	5
120		07	21	05 08.8	38.78 S	174.22 E	33 R	4.6	1.8	6	4

REF NUM		ORIGIN TIME h	m	s	LATITUDE deg	LONGITUDE deg	DEPTH km	MAG	S.E.	NUM OBS	NUM STN
121	JUL	11	20	22 29.4	39.92 S	172.50 E	12 R	4.1	0.7	6	4
122		12	04	21 40.3	39.63 S	176.56 E	12 R	3.9	1.1	5	4
123		12	05	02 19.5	37.68 S	175.92 E	274	4.5	0.7	7	4
124		14	19	40 17.8	32.34 S	179.70 W	33 R	5.5	2.3	6	5
125		17	22	38 53.0	35.05 S	178.81 E	33 R	5.2	3.9	5	4
126		18	23	07 17.8	40.54 S	172.88 E	12 R	~3.3 F	1.1	4	2
127		19	05	12 43.1	40.90 S	172.70 E	12 R	~3.3	0.5	5	3
128		19	10	56 31.2	40.54 S	173.25 E	12 R	~3.4	1.2	7	4
129		19	17	07 16.6	38.95 S	175.72 E	182	4.6	1.5	8	6
130		20	12	03 26.9	38.67 S	175.73 E	202	~4.1	2.1	6	5
131		20	22	33 52.6	40.17 S	173.96 E	124	~3.6	1.6	5	4
132		21	15	10 55.3	40.10 S	173.73 E	159	~5.2 F	1.7	11	6
133		22	15	27 16.8	40.12 S	174.88 E	12 R	3.8	0.6	5	3
134		24	10	30 58.7	40.15 S	173.73 E	214	~3.6	0.1	6	4
135		25	21	37 05.0	39.02 S	177.03 E	12 R	~4.0	1.2	7	4
136		27	01	28 54.2	38.55 S	175.89 E	166	4.5	1.3	5	5
137		29	12	23 38.4	38.77 S	175.66 E	12 R	4.3	1.0	4	4
138		30	13	18 19.6	39.46 S	178.90 E	12 R	4.2	1.9	5	3
139		30	15	04 02.4	39.45 S	176.74 E	12 R	4.3	1.6	8	5
140	AUG	01	12	55 42.4	41.73 S	174.16 E	33 R	~3.9	0.8	5	4
141		02	03	47 45.8	42.03 S	174.18 E	12 R	~4.2	0.7	8	4
142		05	06	54 33.6	37.04 S	177.09 E	33 R	4.8	2.8	5	4
143		06	13	19 18.1	44.94 S	168.15 E	12 R	4.9 F	0.2	6	4
144		06	22	31 37.8	45.25 S	168.46 E	12 R	~4.5 F	1.1	4	3
145		07	22	10 05.0	38.95 S	175.66 E	182	~5.1	0.6	8	5
146		08	00	16 53.6	39.37 S	174.81 E	194	~4.3	1.2	5	4
147		08	21	26 06.3	39.43 S	174.62 E	12 R	4.4 F	1.2	9	4
148		08	23	33 12.5	40.50 S	174.42 E	12 R	~3.3	1.1	4	3
149		09	07	11 01.0	41.49 S	172.13 E	12 R	3.3	0.1	5	3
150		10	19	29 08.7	41.47 S	173.87 E	12 R	~3.0	0.7	4	3
151		11	13	34 06.5	41.70 S	173.22 E	12 R	3.6	1.3	5	4
152		18	01	53 59.7	40.93 S	172.65 E	5 R	~3.5 F	0.6	6	3
153		24	16	45 24.8	41.75 S	173.33 E	12 R	~3.2	2.7	5	3
154		25	09	22 34.6	36.41 S	178.44 E	258	5.5 F	1.0	7	5
155		26	01	06 42.8	40.97 S	173.37 E	89	~3.2	ND	4	3
156		26	13	59 17.2	39.61 S	179.08 E	33 R	~3.8	3.0	4	4
157		28	19	30 02.3	41.26 S	174.34 E	107	~3.5	0.1	5	4
158		28	22	42 57.7	40.53 S	174.14 E	103	~3.6	0.7	6	4
159		29	22	44 08.6	41.54 S	173.03 E	58	~3.8	0.5	6	3
160		31	21	29 06.8	41.32 S	172.24 E	5 R	4.8 F	0.9	7	4
161	SEP	01	13	10 13.4	40.40 S	174.46 E	12 R	~2.9	0.2	4	4
162		02	16	54 40.9	39.00 S	179.08 E	12 R	4.6	0.6	5	4
163		03	04	07 58.6	39.49 S	174.55 E	12 R	3.6	0.5	6	3
164		05	11	43 40.5	39.70 S	174.65 E	119	~4.2	1.1	7	5
165		06	10	47 04.8	42.22 S	172.84 E	12 R	3.7	0.8	6	4
166		06	16	09 32.1	41.49 S	173.80 E	12 R	3.3	0.7	6	3
167		08	11	50 50.1	40.56 S	173.76 E	125	~4.2	0.9	8	4
168		10	20	50 12.9	38.34 S	176.71 E	165	~5.4 F	0.9	10	7
169		11	20	23 33.7	38.44 S	176.20 E	148	~5.5 F	1.0	9	5
170		12	11	47 35.3	40.75 S	175.33 E	12 R	~3.8	1.6	4	3

REF NUM		ORIGIN TIME h	m	s	LATITUDE deg	LONGITUDE deg	DEPTH km	MAG	S.E.	NUM OBS	NUM STN
171	SEP	13	01	56 19.5	39.28 S	174.84 E	12 R	4.2	0.7	4	3
172		14	09	40 30.6	41.10 S	172.70 E	12 R	~3.4 F	1.2	4	2
173		14	22	29 51.4	38.60 S	176.08 E	12 R	4.1 F	1.0	7	5
174		14	22	35 56.4	38.83 S	176.13 E	33 R	~4.2 F	0.7	8	5
175		14	22	39 15.1	38.88 S	175.95 E	12 R	~4.1	0.2	6	4
176		15	07	38 13.1	41.27 S	176.01 E	12 R	3.7	0.8	8	4
177		16	00	25 48.5	40.08 S	177.03 E	12 R	4.6 F	0.8	7	6
178		16	00	39 56.3	34.67 S	178.82 E	12 R	4.8	2.7	5	4
179		16	05	45 16.1	39.25 S	173.41 E	12 R	5.2 F	1.0	12	7
180		17	02	27 03.0	43.70 S	178.94 E	12 R	~4.1	0.7	4	4
181		17	09	35 59.6	42.63 S	174.57 E	33 R	~3.3	1.7	6	3
182		18	04	55 34.5	37.38 S	176.50 E	256	~4.3	0.2	5	4
183		20	07	20 39.7	41.62 S	172.63 E	12 R	3.8	0.9	5	3
184		26	02	14 48.9	38.61 S	173.55 E	33 R	~4.4 F	0.9	6	3
185		27	17	13 27.0	42.19 S	172.93 E	12 R	5.4 F	1.5	10	8
186		27	17	24 03.2	42.24 S	172.80 E	12 R	3.8	0.6	7	4
187		27	17	27 09.3	42.19 S	172.78 E	12 R	4.0	0.9	8	4
188		27	17	35 27.9	42.26 S	172.83 E	12 R	3.7	0.8	10	4
189		27	17	39 08.4	42.41 S	172.60 E	12 R	3.8	1.0	7	4
190		27	17	42 39.1	42.13 S	172.66 E	12 R	~2.9	ND	3	3
191		27	17	57 59.3	41.71 S	172.34 E	12 R	~3.1	0.8	5	4
192		27	18	24 32.6	42.22 S	172.81 E	5 R	3.6	1.6	8	4
193		27	18	52 56.5	42.59 S	173.01 E	33 R	~3.1	0.2	5	4
194		27	18	58 57.1	42.04 S	172.83 E	33 R	~3.0	1.5	5	3
195		27	20	49 14.4	42.23 S	172.82 E	12 R	3.8	1.1	10	4
196		28	22	55 22.5	42.48 S	173.09 E	12 R	~3.4	0.9	5	4
197		29	00	24 42.6	38.81 S	175.19 E	229	4.5	2.1	6	5
198		29	07	22 08.7	42.17 S	172.81 E	33 R	3.8	0.6	8	4
199		30	08	17 38.0	42.21 S	172.91 E	12 R	~3.2	0.9	5	3
200		30	08	28 53.2	40.71 S	174.05 E	103	~3.6	0.8	5	4
201	OCT	01	01	18 37.9	42.27 S	172.80 E	12 R	4.2	0.8	10	4
202		01	08	32 16.2	42.26 S	172.83 E	12 R	4.1	0.9	12	4
203		03	11	42 23.9	41.26 S	174.24 E	12 R	4.4 F	1.4	7	5
204		06	01	20 46.4	33.01 S	179.99 W	33 R	~4.9	3.5	4	3
205		08	06	49 12.7	40.00 S	175.10 E	12 R	~3.4 F	1.4	2	1
206		10	16	52 19.2	40.95 S	172.75 E	12 R	4.1 F	1.1	9	5
207		11	11	37 13.8	32.91 S	179.24 E	33 R	5.9	3.1	10	9
208		11	19	23 22.9	41.30 S	175.87 E	12 R	4.2 F	0.6	10	4
209		11	20	25 47.4	41.10 S	172.63 E	12 R	~3.5	0.8	8	3
210		14	09	49 54.1	42.39 S	173.01 E	12 R	3.6	0.8	7	3
211		16	00	32 34.0	41.58 S	172.35 E	12 R	4.0 F	0.6	7	4
212		17	23	49 06.6	41.20 S	172.59 E	12 R	4.1	1.1	8	4
213		19	18	42 57.4	44.92 S	167.80 E	12 R	4.6 F	1.4	5	4
214		24	17	15 04.4	40.53 S	172.22 E	33 R	3.7	1.8	7	4
215		24	17	16 32.6	41.15 S	172.30 E	12 R	~3.1	1.0	6	3
216		26	07	39 41.6	37.60 S	176.20 E	12 R	~4.1 F	0.5	3	1
217		26	09	01 09.9	37.60 S	176.20 E	12 R	~4.3 F	0.3	3	1
218		28	00	21 10.9	40.29 S	174.11 E	12 R	3.5	0.9	5	4
219		29	06	59 47.1	43.32 S	173.04 E	33 R	4.1 F	0.6	8	4
220		29	08	38 39.9	39.98 S	174.87 E	12 R	~3.8	0.5	6	3

REF NUM	ORIGIN TIME				LATITUDE	LONGITUDE	DEPTH	MAG	S.E.	NUM OBS	NUM STN
			h	m	s	deg	deg	km				
221	OCT	30	23	54	01.8	33.67 S	178.93 W	33 R	5.5	2.4	9	6
222		31	10	26	11.8	40.15 S	174.20 E	12 R	3.2	0.7	5	3
223		31	15	52	01.2	40.45 S	175.44 E	12 R	~3.4	0.4	4	4
224	NOV	07	01	28	36.8	41.32 S	174.37 E	12 R	3.9	0.6	7	4
225		08	15	12	43.9	40.61 S	176.22 E	12 R	4.3 F	1.0	12	5
226		09	16	08	31.1	41.47 S	172.97 E	108	~3.6	0.7	7	5
227		09	16	39	31.0	42.50 S	172.90 E	12 R	~3.2	0.6	7	4
228		09	22	23	34.6	44.97 S	168.14 E	12 R	~4.4 F	1.1	7	5
229		12	12	11	41.8	42.28 S	172.83 E	12 R	3.7	0.7	10	5
230		15	04	22	12.1	40.87 S	174.36 E	12 R	3.8 F	0.3	5	3
231		16	13	22	22.8	40.06 S	174.51 E	12 R	3.6	0.4	5	4
232		16	15	55	49.0	40.39 S	174.07 E	12 R	3.6	0.7	7	4
233		18	04	54	47.7	40.21 S	174.93 E	12 R	3.5	0.8	5	3
234		19	03	45	18.4	42.20 S	172.92 E	12 R	~3.2	0.7	7	4
235		19	15	01	42.8	41.59 S	173.45 E	12 R	~3.1	0.7	5	3
236		20	11	01	25.3	42.17 S	172.90 E	33 R	3.6	0.7	6	4
237		22	00	51	47.4	29.30 S	178.20 W	190 R	~7.0 F	7.5	9	5
238		23	11	58	49.4	40.20 S	176.15 E	12 R	3.7 F	0.9	9	4
239		23	12	23	52.4	40.23 S	173.48 E	12 R	4.5	1.6	8	6
240		23	14	54	34.7	40.15 S	175.39 E	12 R	3.6	0.3	7	4
241		24	05	06	29.4	40.31 S	174.66 E	12 R	4.0	0.9	9	6
242		24	06	02	23.3	41.33 S	173.77 E	12 R	4.2	0.9	9	5
243		26	17	12	18.0	43.26 S	176.84 E	12 R	4.5	1.6	5	4
244	DEC	01	17	07	25.1	40.98 S	174.36 E	12 R	3.6 F	0.6	4	2
245		03	10	03	15.5	40.27 S	175.45 E	12 R	~4.0	1.6	5	3
246		03	16	36	30.1	41.22 S	173.58 E	61	~3.1	0.8	5	5
247		04	16	29	03.0	40.52 S	173.70 E	12 R	4.3	1.7	6	3
248		05	16	49	16.2	40.27 S	173.62 E	146	~3.7	1.1	7	5
249		07	18	37	12.3	38.55 S	176.07 E	169	4.7 F	0.6	8	7
250		09	09	29	55.4	43.19 S	171.31 E	12 R	4.5	0.8	6	4
251		09	18	49	28.2	30.35 S	179.18 E	33 R	7.2	4.6	6	5
252		14	00	12	37.9	31.73 S	178.36 W	33 R	~5.4	2.3	5	4
253		14	03	56	24.1	41.17 S	174.05 E	12 R	~3.0	0.4	5	3
254		18	05	39	10.4	35.12 S	179.97 E	300	~6.7 F	1.2	12	8
255		18	09	35	27.2	39.46 S	176.01 E	12 R	5.7 F	0.8	13	9
256		19	07	06	57.1	42.30 S	172.86 E	12 R	3.9	1.0	10	5
257		19	08	52	56.0	39.89 S	176.60 E	12 R	4.0	1.4	6	5
258		19	13	55	26.0	40.91 S	172.92 E	214	~4.4	0.9	8	5
259		21	04	09	18.3	42.53 S	173.35 E	12 R	~3.5	1.4	6	4
260		22	13	12	50.0	41.36 S	172.32 E	12 R	5.4 F	1.4	15	7
261		22	13	16	54.8	41.32 S	172.32 E	33 R	4.0	1.5	7	5
262		23	13	09	35.5	41.77 S	173.39 E	12 R	~3.0	0.8	4	3
263		24	09	24	13.7	38.91 S	175.67 E	160	~4.1	3.1	5	4
264		26	10	12	35.8	39.83 S	173.57 E	12 R	~3.5	1.0	6	3
265		27	22	27	37.3	41.22 S	172.21 E	12 R	3.6	0.7	4	3
266		29	09	50	53.8	41.21 S	172.14 E	12 R	3.6	0.5	6	3
267		30	19	44	42.9	39.59 S	177.26 E	12 R	3.8	1.4	12	6

REF NUM	ORIGIN TIME				LATITUDE	LONGITUDE	DEPTH	MAG	S.E.	NUM OBS	NUM STN
		h	m	s	deg	deg	km				
001	JAN	03	18	34	30.6	33.97 S	176.49 E	33 R	5.8	1.6	4	3
002		06	16	25	10.6	40.17 S	174.90 E	33 R	3.7	1.1	5	4
003		07	14	21	03.4	41.14 S	174.56 E	33 R	5.6 F	1.9	14	7
004		07	14	28	54.8	41.14 S	174.51 E	33 R	~3.6	1.6	5	4
005		07	15	12	24.2	40.95 S	174.40 E	33 R	~3.1	0.3	4	3
006		07	16	17	17.4	40.00 S	173.82 E	141	~3.8	1.0	6	5
007		07	18	29	00.7	40.52 S	174.98 E	33 R	~3.5	2.7	4	3
008		07	21	36	43.5	40.72 S	174.86 E	33 R	~3.6 F	2.6	4	3
009		08	02	33	15.9	41.11 S	174.33 E	12 R	3.4 F	0.8	7	5
010		08	22	25	55.5	41.19 S	174.31 E	33 R	3.7	0.6	6	4
011		09	08	40	07.5	38.29 S	177.64 E	110	5.4 F	1.1	8	7
012		09	13	09	50.6	37.36 S	176.83 E	309	5.1	0.4	5	6
013		09	15	29	59.9	40.85 S	174.67 E	33 R	3.5	0.5	6	4
014		10	01	21	42.9	41.26 S	174.34 E	33 R	~4.1	0.4	5	4
015		12	20	48	19.5	41.06 S	174.36 E	6	~5.7 F	0.5	8	6
016		12	20	49	50.5	41.15 S	174.61 E	33 R	~5.6 F	0.7	4	3
017		12	20	59	14.5	41.13 S	174.52 E	33 R	4.6 F	0.9	7	5
018		12	21	29	16.7	39.21 S	177.63 E	33 R	~4.0 F	ND	3	3
019		13	01	19	08.5	41.14 S	174.56 E	33 R	~3.5	0.9	4	3
020		13	05	30	37.3	40.91 S	174.46 E	12 R	4.3 F	1.0	11	4
021		13	06	56	40.0	40.44 S	174.98 E	33 R	3.8	1.0	4	4
022		13	07	52	33.1	41.04 S	174.53 E	33 R	3.9 F	1.8	7	5
023		13	10	13	26.3	39.15 S	174.96 E	226	~5.6 F	1.2	9	7
024		14	12	49	16.6	41.10 S	174.33 E	12 R	3.9	0.5	6	5
025		15	02	04	04.0	40.82 S	174.43 E	12 R	4.1 F	0.9	5	5
026		15	02	09	20.4	41.03 S	174.34 E	12 R	3.3 F	0.6	5	4
027		16	02	00	04.4	40.97 S	178.76 W	33 R	4.8	ND	3	4
028		16	11	38	10.2	37.68 S	177.33 E	33 R	4.2 F	1.2	4	3
029		16	18	43	02.8	40.87 S	174.60 E	12 R	~3.6 F	0.1	4	3
030		17	04	15	46.4	38.87 S	175.82 E	142	5.0 F	0.5	8	6
031		19	19	10	57.5	40.95 S	174.12 E	12 R	4.2 F	0.4	8	5
032		19	20	27	51.1	37.94 S	177.11 E	33 R	4.1 F	1.8	6	6
033		21	02	13	02.3	41.03 S	174.30 E	12 R	5.1 F	1.5	10	6
034		21	22	54	55.2	39.05 S	176.07 E	0	5.1	1.9	7	6
035		22	05	58	00.1	42.43 S	172.81 E	33 R	3.5	2.0	7	4
036		23	10	20	24.8	41.00 S	174.75 E	12 R	~3.6 F	0.8	4	3
037		23	16	24	42.3	40.96 S	172.72 E	0	4.1 F	1.0	14	5
038		24	00	33	10.1	41.09 S	175.84 E	33 R	4.4 F	1.9	12	5
039		25	07	45	07.0	39.03 S	177.28 E	81	~4.3 F	0.8	7	5
040		28	05	21	09.6	41.06 S	174.29 E	25	3.3	1.0	8	4
041		30	09	04	39.5	40.18 S	176.40 E	96	~3.9	1.6	5	3
042		30	14	58	54.5	41.45 S	174.32 E	33 R	~2.9	0.6	4	3
043		31	19	21	36.0	39.55 S	177.10 E	33 R	4.6 F	1.5	8	6
044	FEB	01	03	35	03.4	37.23 S	177.09 E	223	~5.0	2.1	6	6
045		01	10	03	17.6	41.52 S	174.90 E	12 R	~3.6 F	1.1	5	3
046		01	10	17	35.3	41.17 S	175.23 E	12 R	3.6 F	0.0	3	3
047		01	12	54	33.6	41.49 S	175.15 E	12 R	3.7 F	1.7	6	4
048		01	19	13	43.9	40.31 S	174.11 E	12 R	3.6	0.1	4	3
049		02	02	22	09.7	38.97 S	177.67 E	33 R	~4.2	2.0	5	4
050		02	03	38	55.3	41.20 S	174.14 E	12 R	~2.6	0.9	4	3

REF NUM		ORIGIN TIME h m s	LATITUDE deg	LONGITUDE deg	DEPTH km	MAG	S.E.	NUM OBS	NUM STN
051	FEB 03	16 06 16.1	40.81 S	174.43 E	7	5.5 F	0.9	12	8
052	04	04 24 54.8	40.75 S	174.47 E	12 R	~2.9	1.1	5	3
053	04	12 07 41.5	39.35 S	176.50 E	20	~3.5	1.6	7	3
054	04	12 52 49.2	41.37 S	174.39 E	12 R	~3.6	0.9	6	3
055	04	18 52 40.2	41.15 S	174.29 E	11	3.6 F	0.3	6	4
056	05	01 23 42.1	49.08 S	164.18 E	33 R	6.6 F	2.2	12	8
057	06	09 22 06.7	41.39 S	174.30 E	12 R	3.8 F	1.3	8	4
058	06	10 40 41.8	42.74 S	172.90 E	5 R	4.9 F	2.0	9	6
059	06	22 53 27.0	46.25 S	161.00 E	33 R	5.8	4.3	8	6
060	06	23 53 14.8	46.23 S	166.00 E	33 R	5.2	2.0	6	6
061	07	13 40 01.8	41.05 S	174.44 E	12 R	3.6	1.1	6	5
062	10	17 20 22.9	40.92 S	174.42 E	12 R	3.4	0.2	5	3
063	11	02 45 42.8	41.23 S	174.27 E	12 R	4.1	1.6	11	6
064	12	14 23 38.4	42.31 S	174.97 E	5	~3.3	1.0	7	4
065	12	20 06 07.9	41.58 S	172.04 E	12 R	4.1	0.9	10	5
066	13	08 14 59.8	38.92 S	175.79 E	138	4.6	0.7	7	7
067	14	01 57 57.6	39.84 S	172.96 E	12 R	~3.5	ND	3	3
068	14	15 17 26.5	40.92 S	174.48 E	12 R	3.6 F	ND	3	2
069	14	15 52 06.6	39.96 S	173.26 E	12 R	3.5	ND	3	3
070	15	09 16 00.4	41.15 S	172.62 E	12	4.0	1.3	9	5
071	16	19 22 50.0	38.66 S	176.01 E	33 R	~4.1	2.9	7	4
072	17	01 15 05.1	37.98 S	176.61 E	12 R	4.6	1.7	8	5
073	17	17 10 22.3	37.54 S	178.30 E	289	4.6	0.2	5	3
074	17	19 21 04.1	40.20 S	174.26 E	1	4.5	1.1	13	6
075	17	20 23 08.6	40.91 S	175.74 E	7	4.2 F	1.8	10	5
076	18	21 54 16.8	41.98 S	172.34 E	0	4.1	1.5	12	4
077	19	03 35 12.0	41.04 S	174.36 E	10	3.6	1.1	6	4
078	19	23 18 39.4	40.10 S	176.35 E	33 R	3.7	2.0	5	4
079	20	10 44 48.0	37.67 S	177.38 E	289	5.5 F	2.3	9	7
080	20	12 29 38.7	43.22 S	169.89 E	18	4.3	1.6	9	4
081	20	22 17 33.7	41.20 S	172.84 E	8	~3.4	0.2	6	4
082	21	01 57 06.6	32.43 S	178.77 W	33 R	~5.3	1.8	4	4
083	22	04 27 35.4	39.63 S	174.94 E	125	4.6	0.4	10	6
084	25	09 32 57.0	39.01 S	178.48 E	11	4.8 F	1.3	10	7
085	25	23 46 22.4	41.56 S	172.80 E	115	~3.4	ND	4	3
086	28	18 58 43.6	38.88 S	176.70 E	30	5.7 F	0.7	10	8
087	28	19 09 36.9	39.06 S	176.90 E	12 R	~3.6	1.5	5	3
088	MAR 01	21 16 23.6	38.61 S	174.05 E	0 R	4.0	1.3	8	4
089	03	18 25 01.3	41.72 S	173.14 E	12 R	3.6	2.2	5	4
090	03	23 02 59.2	39.88 S	177.24 E	5	4.8 F	1.5	16	7
091	05	10 32 09.8	35.28 S	175.40 W	12 R	5.0	5.8	6	5
092	05	14 14 16.6	40.79 S	174.61 E	12 R	3.5	1.5	4	3
093	05	15 14 04.8	38.77 S	176.95 E	67	~4.0	2.5	7	7
094	05	15 33 27.3	42.67 S	174.28 E	12	4.1	0.5	7	4
095	10	15 40 20.2	40.87 S	173.03 E	12 R	2.9	0.6	4	4
096	12	16 44 29.2	39.05 S	176.64 E	33 R	4.9 F	1.4	9	7
097	13	09 38 28.2	40.55 S	174.04 E	33 R	5.7 F	1.5	15	8
098	13	16 10 30.6	38.75 S	176.75 E	12 R	~2.8 F	0.3	2	1
099	13	18 10 48.6	38.29 S	178.00 E	33 R	5.3 F	0.7	7	7
100	13	19 11 59.8	38.05 S	177.03 E	12 R	4.1 F	1.6	7	4

REF NUM		ORIGIN TIME h m s	LATITUDE deg	LONGITUDE deg	DEPTH km	MAG	S.E.	NUM OBS	NUM STN
101	MAR 13	22 21 14.2	38.22 S	175.43 E	12 R	4.7	1.6	7	4
102	14	00 43 25.2	37.75 S	177.25 E	12 R	~3.9 F	0.8	2	1
103	14	11 26 16.7	37.75 S	176.52 E	12 R	4.3 F	1.3	4	3
104	15	19 43 29.1	40.99 S	174.40 E	12 R	3.9 F	0.4	7	4
105	16	01 40 56.5	40.29 S	174.10 E	12 R	3.5	1.0	6	4
106	16	02 20 53.4	38.27 S	176.39 E	189	4.6	0.3	5	5
107	17	10 08 31.0	38.38 S	176.84 E	12 R	4.0	0.8	5	3
108	18	02 52 25.1	41.08 S	178.02 E	33 R	4.3	1.3	5	4
109	18	05 38 17.9	41.52 S	173.90 E	12 R	5.4 F	0.6	10	8
110	19	06 48 48.0	41.50 S	173.75 E	12 R	~2.8	ND	0	1
111	19	10 01 19.9	40.83 S	173.00 E	12 R	4.2 F	2.1	8	5
112	20	15 28 46.9	38.00 S	179.00 E	12 R	~4.4 F	0.7	2	2
113	21	14 49 47.7	38.75 S	178.50 E	12 R	~3.8 F	1.0	3	2
114	23	18 15 00.0	37.75 S	177.00 E	12 R	~3.5 F	ND	1	1
115	24	04 43 00.7	42.08 S	173.52 E	33 R	3.5	1.2	6	4
116	26	00 51 41.9	39.67 S	174.61 E	193	~5.2	1.2	6	6
117	26	16 13 15.0	37.75 S	177.25 E	12 R	~3.2 F	ND	0	1
118	26	17 58 27.7	41.05 S	172.49 E	5 R	~3.5	1.0	4	3
119	26	20 29 46.6	37.75 S	177.00 E	12 R	~3.8 F	0.2	2	1
120	27	01 24 45.2	37.75 S	177.25 E	12 R	~4.1 F	0.8	2	1
121	27	04 08 01.8	40.39 S	173.50 E	153	~4.1	0.2	5	4
122	28	00 37 36.4	39.36 S	177.51 E	12 R	5.2 F	1.5	14	6
123	28	02 00 47.7	39.15 S	177.86 E	33 R	~3.6	2.1	5	4
124	28	02 37 53.5	38.94 S	177.83 E	5 R	4.3 F	2.1	12	7
125	28	03 51 14.1	38.40 S	177.31 E	12 R	~3.9	1.7	6	4
126	28	08 41 05.4	39.25 S	177.81 E	33 R	5.2 F	1.7	11	7
127	28	11 04 19.9	39.13 S	176.96 E	12 R	3.7 F	1.7	9	6
128	29	19 20 46.9	40.02 S	174.42 E	120	~4.3	1.8	11	7
129	30	15 34 04.4	47.62 S	166.77 E	12 R	~4.7	2.0	7	4
130	APR 01	08 24 22.8	46.75 S	164.24 E	33 R	5.2	1.6	5	5
131	01	14 40 14.4	41.13 S	174.42 E	12 R	~2.3	1.4	4	3
132	01	17 52 21.7	41.37 S	173.43 E	12 R	~3.0	0.6	5	3
133	01	19 52 30.7	40.53 S	175.91 E	102	~3.7 F	1.1	6	4
134	02	01 38 45.1	38.34 S	176.48 E	95	~4.0	0.7	7	4
135	02	12 34 22.7	42.12 S	174.10 E	33 R	~3.8	0.7	7	4
136	04	18 04 02.0	40.44 S	174.20 E	92	~3.9	0.7	7	5
137	05	10 13 02.1	31.83 S	177.22 W	333	6.0	3.2	8	7
138	06	03 32 42.4	40.86 S	175.68 E	12 R	~3.3	1.2	5	4
139	06	10 01 31.6	41.86 S	172.38 E	5 R	4.2	1.1	9	5
140	07	04 59 05.0	40.28 S	173.61 E	175	4.3	1.3	6	4
141	07	13 59 10.3	39.83 S	176.94 E	97	~4.8 F	1.1	8	6
142	11	03 18 13.6	42.99 S	173.35 E	12 R	3.4	ND	3	3
143	12	14 47 03.6	38.51 S	176.29 E	181	5.0	1.3	10	7
144	14	07 43 28.9	42.10 S	172.81 E	12 R	4.4	0.7	10	5
145	15	13 19 15.9	40.67 S	174.54 E	33 R	4.4	2.3	4	5
146	17	05 17 55.5	39.75 S	176.28 E	33 R	4.1	3.1	6	5
147	17	06 46 56.3	38.54 S	175.56 E	164	4.1	0.1	5	4
148	20	15 09 59.9	41.42 S	171.89 E	112	~3.7	0.5	7	4
149	22	12 33 05.1	41.13 S	173.74 E	12 R	3.2	0.7	5	4
150	23	14 27 43.1	39.24 S	175.92 E	12 R	4.0	2.3	5	4

REF NUM		ORIGIN TIME h	m	s	LATITUDE deg	LONGITUDE deg	DEPTH km		MAG	S.E.	NUM OBS	NUM STN
151	APR	23	19	32 57.2	40.91 S	175.27 E	5	R	3.9	3.8	5	5
152		24	16	37 58.6	42.45 S	172.88 E	12	R	~3.4	0.4	5	3
153		27	09	53 42.5	37.18 S	178.87 E	106		4.7	1.6	10	7
154		30	11	58 21.5	41.10 S	172.63 E	5	R	4.4 F	2.3	6	4
155	MAY	04	11	38 12.6	37.91 S	176.44 E	183		5.1	1.6	8	6
156		06	20	22 50.3	40.23 S	174.29 E	5	R	4.5	0.8	9	6
157		08	20	20 25.4	38.95 S	176.91 E	33	R	~3.8 F	1.3	5	4
158		09	03	55 57.5	38.70 S	175.87 E	12	R	4.7 F	1.4	9	6
159		09	04	20 43.6	38.51 S	175.91 E	12	R	4.2	3.2	10	6
160		09	04	23 12.9	38.81 S	175.87 E	12	R	~4.4	1.0	4	3
161		09	15	39 58.9	38.71 S	178.49 E	12	R	4.0 F	0.6	4	3
162		11	16	32 33.9	41.24 S	173.51 E	33	R	~2.9	0.5	5	4
163		18	01	31 35.7	41.11 S	175.79 E	33	R	3.9 F	0.4	4	3
164		19	19	57 21.9	39.04 S	174.99 E	33	R	~3.8	0.2	4	3
165		22	00	46 53.4	39.96 S	175.34 E	33	R	3.6	0.5	6	4
166		24	07	21 26.0	40.03 S	177.54 E	33	R	4.2	1.2	6	4
167		25	22	52 52.8	41.16 S	172.44 E	12	R	4.5 F	1.3	10	4
168		26	00	14 39.4	41.86 S	173.60 E	12	R	~4.2	2.0	5	3
169		30	20	10 19.6	37.79 S	178.02 E	12	R	5.5 F	1.3	12	5
170		31	11	02 16.7	42.06 S	173.92 E	12	R	3.8	1.2	6	4
171	JUN	03	05	30 35.2	38.82 S	175.93 E	12	R	4.1	1.6	8	5
172		04	06	37 11.9	33.59 S	177.57 E	33	R	6.6	1.0	6	5
173		11	07	55 28.9	41.00 S	172.50 E	12	R	~3.5 F	1.7	4	2
174		14	00	51 49.2	41.16 S	174.46 E	77		~4.8 F	0.9	10	7
175		14	05	16 01.6	40.75 S	174.50 E	12	R	~2.4	0.6	2	1
176		15	06	39 26.3	43.60 S	172.70 E	12	R	~ F	0.1	2	1
177		16	07	14 20.6	39.86 S	173.02 E	12	R	4.0	0.6	6	3
178		16	20	53 00.5	41.27 S	173.19 E	90		~4.9 F	0.9	10	6
179		17	15	56 33.4	38.92 S	175.25 E	185		~5.9 F	1.7	15	10
180		17	23	43 51.1	40.15 S	174.57 E	33	R	4.0	0.6	6	4
181		23	11	25 57.6	40.88 S	172.19 E	12	R	4.3 F	0.9	12	5
182		23	19	31 59.9	41.16 S	172.27 E	12	R	4.0 F	0.7	9	5
183		24	21	02 12.1	41.35 S	173.11 E	12	R	4.1	0.5	4	3
184		25	04	22 16.1	38.73 S	176.15 E	168		4.3	2.4	5	5
185		27	07	57 38.7	41.17 S	172.55 E	12	R	3.9	0.7	8	5
186		29	05	53 51.6	37.75 S	177.00 E	12	R	~4.1 F	0.2	2	1
187		29	12	15 41.2	41.61 S	174.18 E	12	R	3.5	1.0	4	3
188		30	11	23 46.5	40.89 S	174.98 E	12	R	~3.2	ND	3	3
189	JUL	02	10	12 59.1	42.10 S	173.69 E	12	R	~3.1	1.4	5	3
190		02	18	51 33.5	41.64 S	178.50 E	12	R	~3.9	1.8	4	4
191		03	12	19 50.2	41.19 S	173.70 E	12	R	4.0	2.5	5	4
192		03	12	36 18.1	40.63 S	173.88 E	12	R	~4.1 F	2.1	4	4
193		04	22	01 07.2	39.93 S	173.92 E	128		~3.7	1.0	6	4
194		05	19	37 50.3	39.13 S	179.70 E	12	R	4.6	1.1	6	4
195		06	05	17 41.7	40.85 S	172.61 E	12	R	~3.3	0.9	5	3
196		06	19	26 19.0	38.20 S	177.05 E	12	R	~4.0 F	3.2	5	3
197		08	03	31 51.0	33.47 S	179.02 E	33	R	5.9	2.3	7	5
198		09	01	01 03.3	39.48 S	175.75 E	12	R	3.9	2.7	8	5
199		13	12	54 13.1	41.18 S	172.00 E	12	R	3.8	1.3	8	4
200		15	06	50 36.0	41.02 S	174.48 E	12	R	3.7 F	2.0	7	4

REF NUM		ORIGIN TIME h	m	s	LATITUDE deg	LONGITUDE deg	DEPTH km	MAG	S.E.	NUM OBS	NUM STN
201	JUL	16	01	42 02.0	41.24 S	173.87 E	57	~3.3	0.5	5	3
202		17	03	02 50.0	39.81 S	176.97 E	12 R	4.5 F	0.8	13	8
203		18	02	45 50.8	40.85 S	172.33 E	0 R	3.9	1.4	10	6
204		18	12	31 20.7	40.66 S	175.32 E	5 R	4.1 F	0.6	7	6
205		21	04	46 55.3	39.73 S	174.19 E	207	5.6 F	1.4	14	8
206		22	07	48 19.6	41.71 S	174.29 E	12 R	3.9	1.3	5	6
207		22	08	24 46.4	38.89 S	175.62 E	12 R	4.3	1.0	4	4
208		22	12	19 18.3	39.05 S	176.58 E	12 R	3.7 F	0.5	6	5
209		23	06	06 50.2	41.28 S	175.65 E	12 R	3.7	1.0	5	4
210		24	21	04 39.4	39.49 S	174.63 E	161	~4.4 F	2.0	5	5
211		25	07	17 15.1	42.15 S	173.50 E	29	4.1	0.8	7	5
212		28	05	17 18.6	39.59 S	175.70 E	12 R	5.3 F	1.7	11	8
213		28	12	41 07.6	39.87 S	175.01 E	12 R	4.4 F	1.3	8	6
214		28	13	26 51.7	39.87 S	175.47 E	12 R	4.1	0.7	8	5
215		28	18	59 00.2	40.92 S	175.84 E	12 R	3.9	1.3	4	3
216	AUG	02	10	05 09.3	37.59 S	175.65 E	12 R	~3.7 F	1.1	6	4
217		04	18	28 18.3	38.92 S	176.06 E	12 R	4.3	1.6	9	7
218		05	09	17 00.9	49.05 S	164.06 E	33 R	6.5 F	0.4	9	10
219		06	00	53 56.4	39.04 S	177.60 E	12 R	4.0 F	0.8	5	3
220		09	22	44 12.2	39.37 S	177.18 E	12 R	~3.8 F	2.2	5	4
221		10	18	12 59.5	38.00 S	177.75 E	12 R	3.9 F	1.2	4	2
222		11	01	44 04.8	41.29 S	172.26 E	12 R	3.7	1.1	6	4
223		11	03	10 48.1	42.15 S	173.61 E	12 R	3.9	1.3	7	4
224		11	07	16 54.3	39.12 S	177.81 E	5 R	4.2 F	2.0	11	7
225		12	00	43 37.7	36.98 S	177.25 E	253	4.7	1.1	5	3
226		12	10	44 27.6	34.92 S	178.42 W	33 R	5.4	1.6	9	8
227		15	08	46 37.8	39.74 S	174.59 E	33 R	4.4 F	0.4	7	5
228		20	14	57 47.0	38.75 S	174.75 E	12 R	4.3	5.3	4	4
229		22	06	16 31.7	38.00 S	178.50 E	12 R	4.0	2.7	5	4
230		28	00	38 03.9	43.12 S	165.68 E	12 R	4.9	2.5	6	4
231		28	10	09 01.8	38.54 S	176.03 E	12 R	~3.4 F	0.0	4	3
232		28	10	19 03.7	38.54 S	176.35 E	163	~3.9 F	1.4	5	5
233		30	07	40 21.1	44.26 S	166.45 E	33 R	4.9 F	1.2	7	4
234		31	22	49 08.2	38.30 S	178.28 E	84	4.8 F	0.1	5	4
235	SEP	01	00	18 11.0	39.05 S	175.42 E	168	5.8 F	1.6	16	8
236		01	19	13 52.9	41.20 S	175.68 E	27	4.4 F	0.2	7	5
237		03	09	19 41.5	38.32 S	175.74 E	33 R	4.4	0.6	5	4
238		05	02	04 01.9	39.66 S	179.52 E	33 R	5.8	1.0	10	7
239		05	05	38 41.6	39.55 S	179.26 E	33 R	4.9	1.3	10	6
240		05	15	34 17.1	40.22 S	174.86 E	33 R	3.9 F	0.6	5	4
241		06	14	02 38.9	39.43 S	175.28 E	122	3.9	1.0	5	4
242		07	11	16 30.4	38.89 S	175.52 E	202	~4.2	3.0	6	5
243		07	14	59 00.1	34.34 S	176.98 W	318	6.2	3.4	13	9
244		12	01	57 18.6	38.85 S	177.09 E	33 R	5.1 F	2.8	7	4
245		12	07	15 14.0	35.64 S	178.10 E	33 R	4.8	4.2	5	4
246		14	04	51 17.2	41.61 S	173.70 E	12 R	3.5	1.0	6	4
247		15	01	54 11.5	38.25 S	177.50 E	12 R	~3.9 F	0.3	2	1
248		17	16	48 09.8	40.86 S	177.70 E	12 R	4.5 F	1.4	7	6
249		17	17	40 39.9	40.13 S	177.19 E	12 R	4.4 F	2.2	6	5
250		18	19	15 42.2	41.44 S	172.74 E	147	~3.9	2.2	6	4

REF NUM		ORIGIN TIME h	m	s	LATITUDE deg	LONGITUDE deg	DEPTH km		MAG	S.E.	NUM OBS	NUM STN
251	SEP	19	16	05 01.2	40.99 S	172.53 E	4		~3.4	0.8	7	5
252		21	08	41 16.0	40.85 S	172.89 E	0		4.2 F	0.9	8	5
253		22	20	28 37.1	38.22 S	177.77 E	107		4.1 F	1.1	5	4
254		23	18	24 58.3	41.60 S	176.05 E	33	R	~3.7	0.5	4	3
255		26	13	24 08.0	39.61 S	174.23 E	239		4.7	2.0	9	6
256		27	19	55 39.3	32.50 S	179.00 E	33	R	5.8 F	0.3	2	2
257		30	00	02 38.8	41.55 S	174.01 E	33	R	4.6 F	0.5	6	5
258	OCT	03	11	59 58.0	33.67 S	179.55 E	33	R	~4.8	6.0	5	5
259		08	07	02 41.6	40.72 S	173.52 E	33	R	3.9	0.4	5	4
260		09	16	37 06.9	38.00 S	176.00 E	33	R	~3.9 F	ND	1	1
261		09	20	25 00.4	38.00 S	176.00 E	33	R	~3.8 F	0.7	2	1
262		10	10	22 52.5	38.24 S	177.13 E	12	R	~3.6 F	2.2	4	3
263		10	18	42 23.8	45.02 S	166.98 E	33	R	5.8 F	1.3	12	9
264		13	12	43 12.9	40.66 S	175.18 E	12	R	4.4	1.2	5	3
265		13	19	07 28.3	39.83 S	173.88 E	186		~4.1	0.1	5	4
266		15	13	46 24.6	40.25 S	174.00 E	12	R	~3.7 F	0.1	2	1
267		18	03	47 29.5	39.45 S	174.71 E	12	R	3.9	0.2	5	3
268		18	09	01 24.2	40.34 S	173.93 E	33	R	4.2	1.4	6	4
269		18	17	01 49.8	41.41 S	171.83 E	33	R	4.1	1.3	6	3
270		18	17	24 04.5	39.89 S	177.35 E	12	R	4.2	1.1	5	4
271		19	09	51 24.5	36.10 S	175.92 W	200	R	6.4	4.1	12	7
272		20	07	35 04.8	42.92 S	173.53 E	33	R	3.6	1.2	6	4
273		22	19	46 56.9	40.51 S	173.04 E	12	R	3.6	0.3	4	3
274		24	01	45 43.2	35.21 S	177.38 W	33	R	5.5	3.3	9	8
275		26	03	49 53.7	31.54 S	179.48 W	33	R	5.9	2.5	7	7
276		26	15	38 47.3	33.00 S	176.39 W	33	R	~	1.6	7	7
277		28	05	08 20.4	38.25 S	178.25 E	12	R	~4.3 F	1.2	2	1
278		28	09	05 20.6	28.82 S	174.16 E	33	R	6.0	2.5	6	6
279		28	16	16 14.5	38.71 S	177.28 E	102		~4.3	0.2	7	5
280		29	07	57 57.7	40.92 S	173.97 E	33	R	~2.8	1.8	5	3
281	NOV	01	09	13 41.7	40.43 S	173.94 E	12	R	~3.3	0.1	4	3
282		01	13	56 18.7	41.44 S	173.14 E	12	R	~3.2	1.0	5	3
283		04	08	42 14.4	40.42 S	177.06 E	33	R	4.5 F	1.6	7	6
284		05	09	51 22.7	38.48 S	176.45 E	33	R	3.9	1.9	4	4
285		06	21	03 08.3	37.29 S	174.95 E	12	R	4.8	1.2	5	4
286		08	02	39 31.4	40.11 S	172.42 E	12	R	~4.0	1.6	5	4
287		08	18	42 03.1	40.83 S	173.60 E	12	R	~3.4	0.9	5	3
288		09	06	20 16.9	35.13 S	177.67 E	33	R	~5.4	2.5	6	4
289		10	00	17 26.7	31.45 S	176.16 E	33	R	6.1	0.1	4	4
290		10	08	30 33.6	38.27 S	177.75 E	125		4.7	1.3	8	6
291		10	09	29 00.1	41.06 S	173.50 E	33	R	4.1	0.5	5	4
292		11	08	36 39.1	40.35 S	173.29 E	149		~4.4	0.8	6	4
293		11	14	49 50.7	44.22 S	169.60 E	12	R	4.5	1.7	6	3
294		12	13	43 54.9	38.00 S	177.00 E	33	R	~3.8 F	0.6	2	1
295		13	10	21 13.0	41.20 S	174.72 E	33	R	4.9 F	1.7	8	5
296		16	13	12 13.1	33.03 S	178.14 E	33	R	6.9	2.4	6	5
297		19	19	52 05.6	40.42 S	177.74 E	33	R	4.5 F	1.1	6	5
298		25	19	32 22.5	40.58 S	173.04 E	158		~4.6	1.0	7	5
299		26	13	27 07.0	39.65 S	175.84 E	12	R	3.9	1.8	4	4
300		26	13	49 59.1	38.75 S	176.24 E	206		4.7	0.7	8	5

REF NUM		ORIGIN TIME h	m	s	LATITUDE deg	LONGITUDE deg	DEPTH km		MAG	S.E.	NUM OBS	NUM STN
301	NOV	27	16	59 07.7	42.86 S	172.84 E	12	R	3.7	1.4	5	3
302		30	07	20 27.6	39.34 S	175.92 E	12	R	4.3	1.7	6	5
303		30	18	57 18.0	40.91 S	172.60 E	12	R	~3.9	2.0	4	3
304	DEC	01	19	16 23.8	41.31 S	172.64 E	158		~4.1	0.7	5	4
305		04	16	54 20.2	44.92 S	167.96 E	175		~5.8 F	0.2	5	3
306		10	05	39 18.8	40.18 S	172.72 E	12	R	~3.6	2.2	4	3
307		10	13	23 06.2	28.42 S	179.97 E	300	R	~7.4 F	2.3	12	8
308		10	15	50 10.1	38.53 S	175.84 E	167		4.8	1.6	8	6
309		11	23	05 07.8	40.34 S	173.40 E	181		~4.3	1.5	6	5
310		13	17	50 34.5	40.57 S	174.97 E	33	R	~3.8 F	ND	3	2
311		14	19	32 32.0	40.12 S	175.39 E	33	R	~3.5	0.4	4	3
312		16	09	54 30.3	40.60 S	175.10 E	72		~4.5 F	0.3	6	4
313		17	11	40 05.1	38.86 S	176.50 E	136		~4.6 F	1.8	7	4
314		18	06	07 47.6	40.61 S	173.26 E	12	R	3.9	1.2	5	4
315		21	10	55 16.4	40.95 S	172.38 E	12	R	4.7 F	1.3	9	4
316		21	11	07 03.4	40.36 S	176.04 E	12	R	4.4 F	2.5	6	4
317		23	09	39 00.6	41.88 S	172.75 E	12	R	4.9	0.7	7	4
318		27	03	45 47.9	41.15 S	176.15 E	12	R	4.3	0.5	4	3
319		29	06	08 20.1	39.96 S	173.63 E	12	R	4.5	1.6	6	4

STATION READINGS

The following section sets out for each shock the arrival times of the various phases at the individual stations, the maximum amplitudes recorded, and the results of the associated calculations of origins and magnitudes. When appropriate, provisional reference numbers, a summary of the felt information, and references to other published data are also given.

The data are presented as follows: After the reference number of each shock the parameters of its origin, the standard error of the residuals, and the adopted magnitude are given. Details of the magnitude calculation have been described above in the section preceding the summarised results, and in current Reports, which also contain details of the epicentre calculations and the crustal model on

which they depend. The standard error is derived from the equation

$$\text{S.E.} = \sqrt{\frac{\sum_{i=1}^{n} (w_i \, r_i / 100)^2}{n - m}}$$

where r_i is the i th residual, w_i is its weight, n the number of readings, and m the number of parameters determined. Below each parameter of the origin, its standard error is printed, or if the parameter was restricted to a particular value, the letter R. When the number of readings and the number of parameters to be determined is the same, the standard error is not defined. This is indicated by printing ND.

Residuals are listed for all readings used in calculating the origin and in certain other cases. A weight, in the range 0 to 100, is assigned to each residual by Jeffreys' method (Jeffreys, H., 1939: *Probability Theory*, Cambridge University Press), which severely diminishes the weight given to residuals greater than three standard errors. The absence of a weight indicates that that reading was suppressed by the seismologist who processed the earthquake, and was not used in determining the origin.

The information listed for each station includes the arrival times of the various phases, the directions of ground motion, the residuals, the epicentral distance in degrees (1° = 111km), the azimuth of the station from the epicentre, in degrees east of north, and magnitudes computed as already described.

48/ 001

JAN 01 $06^h41^m44^s.2$ 38°.82S 175°.82E 12 km M = 4.6
± 0.4 0.03 0.02 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	06	42	03		−0.1	100	1.04	90	4.5
	eS*			17		−0.0	100			
NPZ	ePn	06	42	08		−0.6	100	1.39	259	4.6
	iSn			27		0.2	100			
WEL	ePn	06	42	25		−0.1	100	2.59	198	4.2s
	iP*			31		1.4	97			
	eS*		43	03		−0.5	100			

AMPLITUDES: TUA 5.0 NPZ 5.0 WEL 0.5

PRO: 48/1

48/ 002

JAN 01 $16^h58^m19^s.9$ 42°.05S 173°.04E 33 km M ~ 3.7
± 0.1 0.01 0.01 R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eSn	16	58	57		−0.1	100	1.30	248	3.4s
WEL	iPn	16	58	44		0.0	100	1.50	60	3.7
	eSn		59	02		0.0	100			
NPZ	eSn	16	59	40		0.1	100	3.09	15	3.8s

AMPLITUDES: KAI 0.3 WEL 1.0 NPZ 0.3

PRO: 48/2

48/ 003

JAN 02 $05^h46^m07^s.5$ 38°.40S 175°.83E 12 km M = 4.4
± 0.6 0.04 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	05	46	28		0.4	100	1.12	112	4.3
	iS*			42		−0.5	100			
NPZ	Pn	05	46	34		0.2	100	1.53	244	4.5
	iSn			53		−0.5	99			
WEL	ePn	05	46	55		1.1		3.00	195	4.5s
	eSn		47	29		0.1	100			

AMPLITUDES: TUA 2.5 NPZ 3.5 WEL 0.5

PRO: 48/3

48/ 004

JAN 02 $06^h31^m46^s.7$ 38°.68S 175°.82E 12 km M = 4.0
± 0.9 0.07 0.04 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	06	32	07		1.2	100	1.04	97	3.8
	S*			19		−0.8	100			
NPZ	eP*	06	32	13		0.9	100	1.41	254	4.1
	iS*			30		−0.8	100			
WEL	eP*	06	32	33		−1.4	100	2.73	197	4.1s
	iS*		33	11		0.9	100			

AMPLITUDES: TUA 1.0 NPZ 1.5 WEL 0.3

PRO: 48/4

JAN 04 $08^h22^m54^s.5$ $41°.23S$ $173°.43E$ 12 km 48/ 005 M = 5.0
± 0.4 0.03 0.03 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TAK	Sg-Pg			15		6.7		0.60	308	
WEL	iPg	08	23	16		1.0	100	1.01	94	
	iSg			28.5		−0.2	100			4.8
KAI	ePn	08	23	28		0.9	100	1.99	229	
	iSn			51		−0.6	100			4.6
NPZ	iP*	08	23	33		−0.5	100	2.21	13	
	iSn			58		0.9	100			5.0
CHR	iPg	08	23	49		6.4		2.38	194	
	iSn		24	01		0.0	100			5.5
TUA	eP*	08	24	00		0.5	100	3.74	51	
	iSn			32		−1.8	98			4.9

AMPLITUDES: WEL 26 KAI 2.0 NPZ 10
CHR 19 TUA 1.5

PRO: 48/5

FELT: Western Nelson (72), MM IV; and Wellington (68), MM III.

JAN 05 $04^h01^m15^s.5$ $40°.11S$ $176°.87E$ 12 km 48/ 006 M = 4.0
± 1.1 0.05 0.08 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	04	01	39		0.0	100	1.31	10	
	iSn			56		−0.5	100			3.8
WEL	ePg	04	01	58		2.4		1.98	233	
	iSn		02	12		−0.5	100			4.2
NPZ	ePn	04	01	55		1.2	99	2.40	295	
	iSn		02	22		−0.5	100			4.1

AMPLITUDES: TUA 1.0 WEL 1.5 NPZ 1.0

No provisional solution.

JAN 06 $08^h11^m45^s.1$ $38°.86S$ $178°.16E$ 12 km 48/ 007 M = 4.3
± 3.5 0.10 0.19 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	i?	08	11	58				0.79	274	
	iP*		12	00		0.3	100			4.1
	iS*			11		0.6	100			
NPZ	eSn	08	13	10		−1.1	99	3.19	265	3.8s
WEL	iSn	08	13	20		0.2	100	3.55	226	4.5

AMPLITUDES: TUA 6.5 NPZ 0.3 WEL 1.0

PRO: 48/6

FELT: Maraenui (28), MM III.

JAN 07 $21^h13^m31^s.5$ $41°.94S$ $173°.98E$ 12 km 48/ 008 M ~ 3.4
± 0.3 0.03 0.05 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	21	13	47		−0.7	99	0.88	42	
	iS*		14	00		0.5	100			3.4
CHR	eP*	21	14	05		0.2	100	1.88	212	
	iSn			26		−0.1	100			3.7s
KAI	iSn	21	14	29		0.0	100	2.00	252	3.8s

AMPLITUDES: WEL 1.3 CHR 0.5 KAI 0.3

No provisional solution.

JAN 07 $21^h27^m33^s.4$ $38°.66S$ $178°.69E$ 194 km 48/ 009 M = 5.8
± 1.7 0.07 0.13 11 S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	21	28	06		1.8	99	1.21	263	5.7
	iS			28		−0.2	100			
AUC	P	21	28	30		−0.4	100	3.58	299	
	S		29	14		−0.4	100			
NPZ	S-P			45		0.6	100	3.63	262	4.4*
	iP		28	39		8.1				
	iS		29	24		8.7				
WEL	iP	21	28	35		−0.5	100	4.00	228	5.9
	iS		29	22		−1.6	99			
KAI	iS	21	30	29		1.7	99	6.75	233	4.7*
	i			31						

AMPLITUDES: TUA 26 AUC 0.5 NPZ 3.5
WEL 18 KAI 1.5

PRO: 48/7

FELT: Wairoa (53), MM III. Error in time correction at NPZ assumed.

JAN 09 $04^h11^m50^s.4$ $40°.20s$ $175°.00E$ 12 km 48/ 010 M ~ 2.9
± R R R R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iS*	04	12	26		1.0	100	1.10	189	~2.9s
NPZ	eSn	04	12	31		−1.0	100	1.34	327	2.6s

AMPLITUDES: WEL 0.3 NPZ 0.1

PRO: 48/8

FELT: Wanganui (57), MM III.

JAN 09 $08^h34^m49^s.9$ $38°.11s$ $178°.66E$ 131 km 48/ 011 M = 4.9
± 3.1 0.16 0.22 19 S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	08	35	18		1.1	99	1.38	239	4.9
	iS			37		−0.7	100			
NPZ	eP	08	35	46		−1.0	100	3.73	254	3.6s
	eS		36	31		0.5	100			
WEL	e	08	36	03				4.37	222	4.9
	iS			46		0.0	100			

AMPLITUDES: TUA 5.5 NPZ 0.5 WEL 1.5

PRO: 48/9

FELT: Maraenui (28), MM IV.

JAN 12 $08^h49^m00^s.8$ $40°.52s$ $173°.05E$ 12 km 48/ 012 M ~ 3.7
± 0.7 0.04 0.06 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	08	49	26		−0.9	99	1.51	121	3.7
	iSn			47		0.5	100			
NPZ	iSn	08	49	50		0.2	100	1.65	29	3.5s
KAI	iSn	08	50	07		0.2	100	2.36	211	3.9s

AMPLITUDES: WEL 1.0 NPZ 0.5 KAI 0.3

PRO: 48/10

Changes to sand-banks off Farewell Spit (72) reported. See "Evening Post" 1948 Feb. 10.

JAN 13 $10^h01^m12^s.6$ ± 7.8 — 34°.31S ± 0.47 — 179°.81E ± 0.56 — 33 km R — 48/ 013 M = 5.3 S.E. of RES. 3.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	Pn	10	02	24		−0.0	100	4.97	205	5.2
	iSn		03	20		1.9	100			
NPZ	ePn	10	02	56		9.6		6.61	222	4.7s
	eSn		03	58		0.5	100			
WEL	eP*	10	03	37		6.5		8.02	208	5.4
	iSn		04	29		−2.4	99			
KAI	eS*	10	06	39		10.0		10.51	216	5.2s
	e			52						

AMPLITUDES: TUA 2.0 NPZ 0.5 WEL 1.5 KAI 0.3

No provisional solution.

JAN 13 $11^h12^m27^s.2$ ± 0.3 — 36°.32S ± 0.02 — 177°.37W ± 0.02 — 12 km R — 48/ 014 M ~ 4.7 S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	11	13	41		−0.0	100	5.01	239	~4.6s
	iSn		14	37		0.1	100			
NPZ	eS*	11	16	08		−0.0	100	7.32	245	~4.5s
WEL	iSn	11	15	46		−0.0	100	7.88	229	~4.9s
	eS*		16	31		5.8				

AMPLITUDES: TUA 0.5 NPZ 0.3 WEL 0.5

No provisional solution.

JAN 15 $05^h01^m42^s.5$ ± 0.8 — 40°.32S ± 0.04 — 175°.07E ± 0.08 — 94 km 13 — 48/ 015 M ~ 6.3 S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
BUN	S-P			09		−2.3	99	0.42	86	
WEL	iP	05	02	04.5		1.7	100	1.00	193	5.3+
	iS			18		0.1	100			
NPZ	iP	05	02	10		1.5	100	1.47	328	5.3+
	iS			29		0.8	100			
TAK	S-P			19		−3.6		1.81	252	
TUA	iP	05	02	18		0.0	100	2.20	47	6.3
	iS			45		0.6	100			
ARA	S-P			30		2.7		2.29	11	
AUC	iP	05	02	35		−0.5	100	3.46	356	
	iS		03	13		−2.6	99			
KAI	P	05	02	38		1.5	100	3.53	230	5.3*

	S		03	17		−0.4	100			
CHR	iP	05	02	39		0.2	100	3.70	209	5.3+
	iS		03	18.5		−2.9	99			

AMPLITUDES: WEL 68+ NPZ 63+ TUA 71 AUC 37 KAI 11 CHR 20+

PRO: 48/13

FELT: All the North Island south of Auckland (16), Nelson province (72, 73, 76), and Blenheim (77). Intensity reached MM VI in central parts of the North Island (49, 57, 62). ScS recorded at AUC, TUA, and WEL confirms depth. See Garrick, R.A., 1949 for discussion and isoseismal map.

JAN 19 $17^h54^m42^s.7$ ± 1.3 — 40°.19S ± 0.06 — 172°.97E ± 0.11 — 12 km R — 48/ 016 M ~ 3.6 S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eSn	17	55	25		−0.8	100	1.40	38	3.1s
WEL	Sn	17	55	33		−1.1	100	1.75	129	~3.6s
KAI	eS*	17	56	02		−0.8	100	2.62	206	4.0s
CHR	iSn	17	56	14		1.4	100	3.36	184	
TUA	ePg	17	55	55		1.3	100	3.51	68	4.4s

AMPLITUDES: NPZ 0.3 WEL 0.5 KAI 0.3 TUA 0.3

PRO: 48/14

JAN 20 $03^h07^m41^s.6$ ± 0.3 — 39°.31S ± 0.02 — 176°.60E ± 0.02 — 12 km R — 48/ 017 M ~ 3.7 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P*	03	07	54		−0.0	100	0.66	41	3.7
	iS*		08	03		−0.0	100			
NPZ	eP*	03	08	17		0.6	99	1.97	276	3.6s
	iSn			38		−0.4	100			
WEL	eSn	03	08	49		−0.1	100	2.42	215	3.6s

AMPLITUDES: TUA 3.5 NPZ 0.5 WEL 0.3

PRO: 48/15

JAN 20 $05^h52^m53^s.0$ ± 4.3 — 35°.16S ± 0.34 — 176°.82W ± 0.36 — 12 km R — 48/ 018 M = 5.4 S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	05	54	21		0.0	100	6.05	231	5.3
	Sn		55	29		1.4	99			
NPZ	eSn	05	56	20		−0.6	100	8.25	239	4.6s
WEL	ePg	05	55	48		−7.0		9.01	225	5.5
	Sn		56	38		−0.8	100			

AMPLITUDES: TUA 1.5 NPZ 0.3 WEL 1.5

No provisional solution.

Stations poorly distributed in azimuth.

JAN 20 $09^h44^m10^s.0$ ± 5.5 — 34°.38S ± 0.26 — 177°.62W ± 0.39 — 33 km R — 48/ 019 M = 6.3 S.E. of RES. 3.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	Pn	09	45	38		1.2	100	6.10	222	6.3
	iSn		46	46		3.4	100			
ARA	Sn-Pn		1	24		13.3		6.58	234	
AUC	iPn	09	45	41		−3.5	100	6.67	246	
	iSn		46	58		1.8	100			
NPZ	ePn	09	46	10		5.3		8.14	233	5.5A
	Sn		47	37		5.3				
WEL	ePn	09	46	25		6.6		9.15	219	6.4
	iSn		47	55		−0.9	100			
KAI	ePn	09	47	10		15.0		11.83	223	6.0
	iSn		48	58		−2.2	100			
CHR	iP*	09	47	37		3.5	100	11.87	217	6.3
	eSn		48	58		−3.3	100			
API	eP	09	50	19		84.6		21.15	16	
	S		52	50		7.1				

AMPLITUDES: TUA 15 NPZ 2.0 WEL 13
KAI 1.5 CHR 5.0

PRO: 48/16

FELT: Wellington (68), MM II. ISS gives 33.9S 177.8W, records a suggested depth of 60 km., and lists data from 83 additional stations. No N.Z data appear. Indefinite tremors are recorded at HNZ and BUN. Timing error possibly present at NPZ.

48/ 020

JAN 24 $08^h00^m30^s.2$ 39°.15S 175°.23E 218 km M = 4.8
± 3.2 0.11 0.12 20 S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP	08	01	02		0.7	100	0.90	275	3.1s
	S			25		−0.5	100			
TUA	eP	08	01	13		7.0		1.54	78	4.8
	iS			33		−0.7	100			
WEL	P	08	01	13		1.0	100	2.16	189	4.7
	iS			45.5		1.2	100			
KAI	eS	08	02	38		6.1		4.45	219	3.3s
CHR	iS	08	02	38		−1.7	99	4.80	203	4.5*

AMPLITUDES: NPZ 0.3 TUA 2.5 WEL 3.0
KAI 0.1 CHR 2.0

PRO: 48/17

48/ 021

JAN 25 $11^h42^m36^s.4$ 40°.20S 175°.00E 12 km M ~ 3.3
± R R R R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eS*	11	43	12		1.0	100	1.10	189	~3.2s
NPZ	Sn	11	43	17		−0.9	100	1.34	327	~3.3s

AMPLITUDES: WEL 0.5 NPZ 0.5

PRO: 48/18

FELT: Wanganui (57), MM II.

48/ 022

JAN 25 $14^h56^m40^s.1$ 40°.08S 173°.32E 124 km M ~ 4.0
± 0.9 0.02 0.08 12 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	P	14	57	04		−0.3	100	1.16	30	3.8*
	iS			23		0.2	100			

WEL	P	14	57	10	0.3	99	1.64	138	4.0
	iS			32	−0.2	100			
TUA	e	14	57	54			3.22	68	3.7s
CHR	eP?	14	57	21	−13.0		3.49	188	4.4*
	S		58	15	0.0	100			

AMPLITUDES: NPZ 2.5 WEL 1.3 TUA 0.1
CHR 2.5

PRO: 48/19

48/ 023

JAN 26 $11^h54^m01^s.4$ 38°.94S 175°.77E 121 km M = 4.8
± 0.8 0.03 0.02 7 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	11	54	25		0.4	100	1.08	83	4.7
	iS			42		−0.3	100			
NPZ	eP	11	54	27.5		0.1	100	1.33	264	3.5*
	iS			47		−0.0	100			
WEL	iP	11	54	41		−0.5	99	2.47	198	4.8
	iS		55	12		0.3	100			
CHR	eS	11	56	12		−4.6		5.17	206	3.6s

AMPLITUDES: TUA 6.0 NPZ 1.0 WEL 3.5
CHR 0.3

PRO: 48/21

48/ 024

JAN 27 $22^h52^m49^s.6$ 41°.50S 173°.89E 12 km M ~ 3.5
± 1.6 0.05 0.07 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	22	53	03		0.3	100	0.69	72	3.5
	S*			12		−0.1	100			
NPZ	iSn	22	53	57		−0.5	99	2.44	3	3.6s
	iSg		54	12		0.3	100			

AMPLITUDES: WEL 3.0 NPZ 0.3

PRO: 48/22

FELT: Havelock (78), MM IV.

48/ 025

JAN 28 $07^h50^m09^s.6$ 39°.00S 175°.94E 12 km M = 4.1
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eS*	07	50	40		−0.1	100	0.96	79	3.8
NPZ	Sn	07	50	54		0.0	100	1.46	267	3.4s
WEL	eSn	07	51	18		0.0	100	2.46	201	4.4

AMPLITUDES: TUA 1.5 NPZ 0.3 WEL 1.0

No provisional solution.

48/ 026

FEB 01 $11^h05^m02^s.2$ 41°.11S 175°.68E 12 km M = 4.2
± 0.4 0.01 0.02 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	11	05	15.5		0.0	100	0.71	255	4.0
	iS*			25		−0.1	100			

NPZ	P*	11 05 44		−0.1	100	2.38	328	4.4
	Sn	06 09		0.1	100			

AMPLITUDES: WEL 8.5 NPZ 2.0

PRO: 48/23

FELT: Northern parts of Wellington province (62, 65, 66).

FEB 01 $16^h06^m50^s.1$ 39°.80S 177°.56E 12 km 48/ 027 M ~ 3.7

± 1.5 0.03 0.08 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
HNZ	S*-P*			05		−2.4		0.53	283	
TUA	S*	16	07	23		0.1	100	1.03	342	
WEL	ePg	16	07	49		6.4		2.59	234	~3.7s
	iSn		08	02		0.2	100			
NPZ	eSn	16	08	06		−0.7	99	2.80	284	~3.7s
	eS*			16		0.4	100			
	eSg			35		10.6				

AMPLITUDES: WEL 0.3 NPZ 0.3

PRO: 48/24

FEB 04 $11^h45^m35^s.1$ 40°.86S 175°.47E 12 km 48/ 028 M ~ 4.0

± 1.3 0.02 0.11 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	11	45	48		0.1	100	0.67	231	4.0
	iS*			57		−0.1	100			
NPZ	ePg	11	46	17		−0.4	99	2.09	329	3.7s
	iSn			35		0.3	100			
	iS*			58		18.6				

AMPLITUDES: WEL 9.0 NPZ 0.5

PRO: 48/25

FELT: Western parts of Wellington province (65, 68).

FEB 04 $18^h59^m06^s.0$ 40°.87S 173°.90E 12 km 48/ 029 M = 5.1

± 0.6 0.04 0.06 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	18	59	22.5		0.7	100	0.77	123	4.9
	iSg			33		0.6	100			
NPZ	iP*	18	59	39		1.0	100	1.81	4	5.1+
KAI	ePn	18	59	45		−0.6	100	2.49	228	5.0
	i			47						
	iSn	19	00	14		−1.4	100			
CHR	iP*	18	59	57		1.6	100	2.83	199	5.4
	iSn	19	00	18		−5.3				
TUA	ePn	18	59	54		−1.7	100	3.24	52	5.0
	iSn	19	00	31		−2.2	99			
AUC	eP*	19	00	23		6.5		4.06	10	
	iSn			55		2.0	99			

AMPLITUDES: WEL 55 NPZ 19+ KAI 3.0
CHR 10 TUA 3.0

PRO: 48/26

FELT: About Cook Strait from Wanganui (57) to Farewell Spit (72) and Blenheim (57).

FEB 05 $01^h09^m44^s.3$ 38°.63S 176°.08E 191 km 48/ 030 M = 4.7

± 0.6 0.03 0.02 4 S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	01	10	12		−0.3	99	0.85	102	4.6
	iS			34		0.1	100			
NPZ	iP	01	10	19		0.4	99	1.63	254	3.5*
	iS			45		−0.2	100			
WEL	eP	01	10	32		−0.1	100	2.84	200	4.8
	eS		11	09		0.1	100			

AMPLITUDES: TUA 3.1 NPZ 0.8 WEL 2.5

PRO: 48/27

FEB 05 $05^h30^m34^s.7$ 38°.09S 176°.89E 33 km 48/ 031 M ~ 4.0

± 2.7 0.15 0.12 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	05	30	49		−0.0	100	0.74	164	4.0
	iSn			57		−1.5	100			
NPZ	ePn	05	31	11		−0.1	100	2.41	245	3.6s
	iSn			37		−1.5	100			
WEL	ePn	05	31	29		1.9	99	3.58	206	4.2s
	eSn		32	08		1.3	100			
	e			13						

AMPLITUDES: TUA 5.5 NPZ 0.3 WEL 0.5

PRO: 48/28

FEB 05 $09^h45^m14^s.3$ 38°.86S 175°.95E 175 km 48/ 032 M = 4.8

± 2.3 0.10 0.09 16 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P	09	45	41		−0.1	100	0.94	87	4.9
	iS		46	02		0.2	100			
NPZ	P	09	45	47		1.1	100	1.48	261	3.4*
	S		46	09		−1.2	100			
WEL	P	09	45	57		−1.2	100	2.58	200	4.6
	S		46	33		1.0	100			
KAI	eS	09	47	29		1.6	99	5.03	222	3.4s
CHR	eS	09	47	32		−1.7	99	5.30	207	3.7s

AMPLITUDES: TUA 6.0 NPZ 0.7 WEL 2.0
KAI 0.1 CHR 0.3

PRO: 48/30

FEB 05 $23^h21^m44^s.5$ 39°.56S 176°.30E 12 km 48/ 033 M ~ 3.7

± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	S*	23	22	16		0.0	100	1.00	42	3.7
NPZ	eSn	23	22	37		0.0	100	1.80	285	3.3s
WEL	Sn	23	22	44		0.0	100	2.09	214	3.5s

AMPLITUDES: TUA 1.5 NPZ 0.3 WEL 0.3

PRO: 48/31

FEB 06 $03^h25^m36^s.9$ $34°.10S$ $178°.27W$ 33 km 48/ 034 M = 5.6
±16.4 1.21 1.41 R S.E. of RES. 6.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	03	27	02		0.0	100	5.98	217	5.5
	eSn		28	14		7.6	99			
NPZ	eSn	03	28	53		0.2	100	7.90	229	4.6s
WEL	Sn	03	29	15		−5.3	100	9.05	216	5.7
KAI	e	03	30	11				11.67	221	5.5s
	eSn			21		−2.4	100			

AMPLITUDES: TUA 2.5 NPZ 0.3 WEL 2.5
KAI 0.5

PRO: 48/32

Phase identifications too uncertain for a reliable solution.

FEB 09 $11^h13^m55^s.4$ $41°.41S$ $174°.96E$ 33 km 48/ 035 M = 4.7
± 0.4 0.02 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	11	14	01		−0.7	100	0.19	310	
	iS*			06		−0.3	100			
BUN	ePn	11	14	15		−0.7	100	1.23	25	
NPZ	ePn	11	14	32		−0.1	100	2.43	344	
	Sn			59.5		−0.3	100			4.8
CHR	eP*	11	14	51		7.7		2.74	218	
	i			57						4.8
	iSn		15	04		−3.1				
	iS*			19		−0.1	100			
KAI	iP*	11	14	52		6.4		2.87	246	
	eSn		15	06		−4.4				
	iS*			24		0.8	100			
	i			32						
TUA	ePn	11	14	42		0.8	99	3.10	34	
	iSn		15	16		0.3	100			4.5
AUC	iP*	11	15	20		6.0		4.54	358	
	eSn			50		−0.5	100			
	iS*		16	14		0.9	99			

AMPLITUDES: WEL 57+ BUN 0.3 NPZ 5.0
CHR 2.8 TUA 1.0 AUC 2.0

PRO: 48/33

FELT: Throughout Wellington province. Maximum intensity MM IV.

FEB 12 $17^h49^m34^s.4$ $40°.05S$ $175°.11E$ 12 km 48/ 036 M ~ 3.2
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eS*	17	50	14		0.0	100	1.27	192	~3.1s
NPZ	eS*	17	50	14		0.0	100	1.27	320	~3.2s
TUA	eSn	17	50	32		0.0	100	2.01	53	3.1s

AMPLITUDES: WEL 0.3 NPZ 0.5 TUA 0.1

PRO: 48/34

FELT: Wanganui (57), MM III.

FEB 18 $00^h17^m36^s.3$ $38°.33S$ $177°.73E$ 71 km 48/ 037 M = 5.2
± 2.5 0.08 0.18 19 S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	00	17	51.5		0.2	100	0.66	223	5.2
	iS		18	02.5		0.0	100			
HNZ	S-P			18		−1.3	100	1.49	206	
AUC	eP	00	18	18		−1.3	100	2.76	301	
	iS			50		−1.7	100			
	i		19	11						
NPZ	P	00	18	24		1.9	100	2.95	254	4.1*
	iS			59		2.6	99			
WEL	eP	00	18	34		1.0	100	3.73	217	5.2
	e			49						
	i		19	08						
	iS			13		−2.9	99			
CHR	eS	00	20	18		−6.2		6.48	215	

AMPLITUDES: TUA 59 AUC 2.0 NPZ 2.0
WEL 4.5

PRO: 48/35

FELT: East coast of the North Island from Opotiki (35) to Wairoa (53).

FEB 18 $03^h57^m58^s.7$ $43°.02S$ $172°.70E$ 12 km 48/ 038 M = 4.2
± 3.1 0.16 0.11 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iPg	03	58	21		0.6	100	1.07	297	4.1
	iSn			33		−0.8	100			
WEL	e	03	58	17				2.32	42	4.3
	iPg			53		7.4				
NPZ	eP*	03	59	07		−2.6		4.09	15	4.0s
	iSn			48		1.7	99			
	iS*	04	00	02		−0.8	100			
	iSg			27		10.7				
TUA	eSn	04	00	17		−0.7	100	5.39	40	4.0s

AMPLITUDES: KAI 2.5 WEL 1.5 NPZ 0.3
TUA 0.1

PRO: 48/36

FELT: Christchurch (110) and Akaroa (111), MM III.

FEB 19 $02^h11^m15^s.8$ $40°.28S$ $173°.65E$ 12 km 48/ 039 M = 3.7
± 0.8 0.02 0.07 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iSg	02	11	59		0.8	100	1.26	15	3.5
WEL	Pn	02	11	39		−0.2	100	1.31	140	3.8
	iSg		12	01		0.8	100			
TUA	eSn	02	12	38		−1.1	99	3.08	63	4.7A
CHR	ePg	02	12	23		−0.3	100	3.34	193	3.5s

AMPLITUDES: NPZ 1.0 WEL 1.5 TUA 1.0
CHR 0.1

No provisional solution.

FEB 24 $21^h37^m30^s.0$ $39°.62S$ $175°.17E$ 12 km 48/ 040 M ~ 3.4
± 0.7 0.04 0.05 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iS*	21	38	02		−0.2	100	1.02	303	3.4
WEL	eP*	21	38	01		1.0	100	1.69	190	3.5s
	iSn			19		−0.9	100			
	i			43						
TUA	iP*	21	38	02		1.2	100	1.74	63	3.9s
	iSn			20		−1.1	100			

AMPLITUDES: NPZ 1.0 WEL 0.5 TUA 0.5

PRO: 48/37

FEB 27 $00^h38^m00^s.0$ $45°.90S$ $168°.10E$ 12 km 48/ 041
± R R R R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
MNW	S*-P*			05		−0.1	100	0.36	289	

PRO: 48/38

FELT: Nightcaps (140), MM IV; and Monowai (139).

FEB 27 $09^h49^m41^s.8$ $42°.24S$ $173°.48E$ 33 km 48/ 042 M = 4.4
± 0.5 0.04 0.09 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	09	50	04		0.2	100	1.35	46	4.2
	iSn			20		−0.2	100			
CHR	iP*	09	50	16		8.3		1.44	206	4.5
	iSn			22		−0.2	100			
KAI	Sn-Pn			42		23.4		1.57	259	4.4
NPZ	ePn	09	50	30		1.0	99	3.20	8	4.5
	eSn		51	04		−0.7	100			

AMPLITUDES: WEL 3.5 CHR 5.0 KAI 2.0
NPZ 1.5

PRO: 48/39

FELT: Molesworth (89), MM IV.

FEB 29 $14^h10^m46^s.9$ $43°.17S$ $171°.84E$ 12 km 48/ 043 M ~ 3.3
± 5.3 0.54 0.83 R S.E. of RES. 2.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eP*	14	10	58		−1.7	100	0.68	123	3.3
	iS*		11	10		1.0	100			
KAI	iP*	14	11	02		1.7	100	0.71	334	3.1s
	iS*			09		−1.0	100			

AMPLITUDES: CHR 1.5 KAI 0.5

PRO: 48/40

FELT: Lake Coleridge (100), MM IV.

MAR 01 $22^h56^m26^s.6$ $38°.90S$ $176°.00E$ 12 km 48/ 044 M ~ 3.7
± R R R R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	22	56	44		0.8	100	0.90	85	3.7
	iS*			54.5		−0.8	100			

AMPLITUDES: TUA 1.3

PRO: 48/41

FELT: Reporoa (33), MM II.

MAR 01 $23^h26^m01^s.6$ $38°.90S$ $176°.00E$ 12 km 48/ 045 M ~ 3.5
± R R R R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	23	26	19.5		1.3	100	0.90	85	3.5
	iS*			29		−1.3	100			

AMPLITUDES: TUA 0.8

PRO: 48/42

FELT: Reporoa (33), MM II.

MAR 02 $01^h13^m03^s.1$ $38°.90S$ $176°.00E$ 12 km 48/ 046 M ~ 4.2
± R R R R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	01	13	20.5		0.8	100	0.90	85	4.2
	iS*			31		−0.8	100			

AMPLITUDES: TUA 4.0

PRO: 48/43

FELT: Reporoa (33), MM III.

MAR 02 $04^h34^m27^s.9$ $38°.90S$ $176°.00E$ 12 km 48/ 047 M ~ 3.5
± R R R R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P*	04	34	45		0.6	100	0.90	85	3.5
	S*			56		−0.6	100			

AMPLITUDES: TUA 0.8

PRO: 48/44

FELT: Reporoa (33), MM II.

MAR 02 $10^h12^m17^s.2$ $38°.90S$ $176°.00E$ 12 km 48/ 048 M ~ 4.6
± R R R R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	10	12	35		1.2	99	0.90	85	4.6
	iS*			45.5		−0.4	100			
NPZ	e	10	12	57				1.51	263	3.4s
	iSn		13	02		−0.8	100			
	i			27						
WEL	eP*	10	13	20		17.9		2.56	201	3.4s
	eS*		14	04		28.3				

AMPLITUDES: TUA 10 NPZ 0.3 WEL 0.1

PRO: 48/45

FELT: Reporoa (33), MM IV.

MAR 02 $11^h16^m14^s.4$ 39°.36S 174°.78E 33 km 48/ 049 M = 4.3
± 0.5 0.04 0.04 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iPn	11	16	25		−1.4	99	0.62	298	4.2
	iS*			37		1.2	100			
WEL	P*	11	16	47		−1.4	99	1.92	180	4.4
	iS*			17 15		1.1	100			
TUA	ePn	11	16	44		−0.2	100	1.93	74	4.0s
	iP*			49		0.4	100			
	eSn			17 07		0.3	100			

AMPLITUDES: NPZ 21 WEL 2.8 TUA 0.3

PRO: 48/46

FELT: Southern Taranaki (47, 57, 58) and central parts of the North Island (39, 40, 49).

MAR 03 $09^h38^m37^s.9$ 39°.89S 175°.50E 33 km 48/ 050 M = 3.8
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iSn	09	39	17		0.0	100	1.38	306	3.8
WEL	ePn	09	39	02		0.0	100	1.50	202	3.7
	Sn			20		0.0	100			

AMPLITUDES: NPZ 1.5 WEL 1.0

PRO: 48/48

FELT: Wanganui (57), MM III.

MAR 05 $02^h33^m57^s.9$ 41°.26S 175°.23E 12 km 48/ 051 M ~ 3.2
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	02	34	05		0.0	100	0.35	265	3.2
	iS*			10		0.0	100			
NPZ	eSn	02	35	04		0.0	100	2.37	338	3.1s
	eSg			22		4.5				

AMPLITUDES: WEL 5.8 NPZ 0.1

PRO: 48/49

MAR 05 $04^h35^m31^s.8$ 43°.17S 171°.26E 12 km 48/ 052 M ~ 4.1
± 2.9 0.12 0.18 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	04	35	42		−2.0	99	0.65	10	4.1
	iS*			54		1.1	100			
CHR	S*-P*			14		−0.2	100	1.06	111	
	iP*		35	56		4.9				
	iS*		36	10		4.7				
WEL	eP*	04	36	28		0.2	100	3.21	55	3.9s
	iSn		37	05		6.7				
	iSg			25		5.0				
NPZ	iPn	04	36	42		1.7	99	4.62	28	4.1s
	iSn		37	31		−1.0	100			

	i		35							
	eSg	38	33		25.8					

AMPLITUDES: KAI 6.5 WEL 0.3 NPZ 0.3

PRO: 48/50

Absolute timing at CHR uncertain.

MAR 05 $08^h43^m11^s.8$ 38°.70S 178°.20E 33 km 48/ 053 M ~ 3.8
± R R R R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	08	43	27		−0.5	100	0.83	262	3.8
	iSn			36		−1.6	99			
NPZ	eS*	08	44	54		3.4		3.24	262	3.8s
	e		46	08						
AUC	iSn	08	44	38		1.6	100	3.28	303	
WEL	eSn	08	44	47		0.6	100	3.69	224	4.0s
	e		45	50						

AMPLITUDES: TUA 2.5 NPZ 0.3 AUC 0.5
WEL 0.3

PRO: 48/51

FELT: Tolaga Bay (37), MM III.

MAR 10 $09^h20^m56^s.2$ 38°.24S 175°.69E 12 km 48/ 054 M = 4.7
± 1.1 0.08 0.04 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	09	21	20		0.9	100	1.27	117	4.7
	iS*			35		−1.0	100			
NPZ	Pn	09	21	22		−0.3	100	1.51	237	4.7
	iSn			41		−0.8	100			
WEL	iPn	09	21	45		0.7	100	3.12	193	4.4s
	iSn		22	21		0.5	100			
	iS*			26		−5.4				

AMPLITUDES: TUA 3.5 NPZ 7.5 WEL 0.3

PRO: 48/52

FELT: Tokaanu (40), MM IV; and Taumarunui (39), MM III.

MAR 14 $16^h21^m08^s.4$ 40°.41S 173°.18E 125 km 48/ 055 M ~ 4.4
± 1.1 0.02 0.09 16 S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP	16	21	36		−0.4	99	1.48	126	4.4
	iS			58		0.2	100			
NPZ	eP	16	21	37		0.4	99	1.51	27	3.7*
	iS			58		−0.2	100			
CHR	S	16	22	35		0.0	100	3.15	187	4.1*

AMPLITUDES: WEL 3.5 NPZ 1.5 CHR 1.5

PRO: 48/54

MAR 19 $14^h04^m27^s.8$ 40°.17S 174°.40E 33 km 48/ 056 M ~ 4.1
± 2.7 0.10 0.28 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	14	04	48		0.9	100	1.15	166	~4.1+

	Sn	05 01	−0.5	100			
TUA	ePn	14 05 05	−0.9	100	2.53	58	3.9s
	eSn	35	0.5	100			

AMPLITUDES: WEL 4.0+ TUA 0.3

PRO: 48/56

FELT: Wanganui (57), MM IV.

48/ 057

MAR 23 $02^h44^m52^s.5$ 40°.40S 176°.40E 12 km M ~ 3.8
± R R R R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iSn	02	45	38		−0.4	100	1.52	234	3.8
TUA	eSn	02	45	43		0.4	100	1.69	20	3.5s
NPZ	e?	02	46	14				2.23	306	3.5s

AMPLITUDES: WEL 1.0 TUA 0.3 NPZ 0.3

PRO: 48/57

FELT: Porangahau (64), MM III.

48/ 058

MAR 24 $13^h23^m12^s.7$ 40°.25S 174°.25E 12 km M = 3.9
± 2.5 0.20 1.07 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	13	23	32		−0.7	100	1.11	159	3.9
	iS*			47		−0.6	100			
NPZ	eP*	13	23	34		−0.1	100	1.19	353	3.9
	iS*			49		−0.9	99			

AMPLITUDES: WEL 2.5 NPZ 2.5

PRO: 48/58

FELT: Wanganui (57), MM IV.

48/ 059

MAR 31 $17^h40^m53^s.8$ 33°.67S 177°.15W 33 km M = 5.9
± 5.1 0.29 0.36 R S.E. of RES. 3.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	17	42	31		−0.4	100	6.88	220	5.8
	iSn		43	50		4.7	99			
AUC	iSn	17	43	54		−1.9	100	7.33	242	
NPZ	eP*	17	43	29		2.5	100	8.89	230	4.7s
WEL	ePn	17	43	12		−1.1	100	9.94	218	6.0
	iSn		44	57		−1.7	100			
KAI	eSn	17	46	04		1.2	100	12.61	222	5.4s
CHR	eSn	17	46	01		−3.3	100	12.67	216	5.2s

AMPLITUDES: TUA 3.5 AUC 1.0 NPZ 0.3
WEL 4.0 KAI 0.3 CHR 0.3

PRO: 48/60

Stations poorly distributed in azimuth.

48/ 060

APR 08 $05^h56^m54^s.1$ 40°.21S 174°.68E 33 km M = 3.9
± 0.4 0.02 0.06 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	05	57	15		1.0	99	1.08	176	3.6
	iS*			28		−0.6	100			
NPZ	ePn	05	57	14		−0.6	100	1.23	338	4.1
				30		0.2	100			

TUA	eSn	05 57 57	−0.0	100	2.37	55	4.0s

AMPLITUDES: WEL 1.5 NPZ 3.5 TUA 0.5

PRO: 48/61

FELT: Wanganui (57), MM III.

48/ 061

APR 18 $09^h05^m40^s.4$ 41°.03S 175°.93E 12 km M = 4.3
± 0.8 0.05 0.06 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	09	05	58		0.8	99	0.92	253	4.3
	iS*		06	09		−0.5	100			
TUA	ePn	09	06	18		−0.7	100	2.40	23	4.3
	iSn			48		0.4	100			
	i		07	13						
NPZ	eP*	09	06	25		2.1		2.42	323	4.4
	eSn			48		0.0	100			

AMPLITUDES: WEL 9.5 TUA 1.0 NPZ 2.0

PRO: 48/62

FELT: Masterton (66), MM III; Bunnythorpe (62), MM II.

48/ 062

APR 18 $19^h33^m60^s.0$ 40°.07S 176°.04E 12 km M = 4.1
± 0.3 0.02 0.03 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
BUN	iSg	19	34	21		7.7		0.38	235	
TUA	ePg	19	34	37		6.1		1.52	35	4.1
	iSn			46		0.0	100			
WEL	ePg	19	34	31		−0.4	99	1.56	218	4.2
	iSn			47		0.4	100			
NPZ	iSn	19	34	53		0.0	100	1.82	303	3.9

AMPLITUDES: BUN 0.5 TUA 1.5 WEL 2.5
NPZ 1.0

PRO: 48/63

FELT: Bunnythorpe (62), MM II.

48/ 063

APR 18 $23^h39^m28^s.4$ 41°.53S 172°.34E 12 km M = 4.5
± 0.5 0.03 0.06 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	23	39	50		−0.2	100	1.21	214	4.4
	iS*		40	06		−0.3	100			
WEL	ePn	23	39	58		−1.1	100	1.84	83	4.6
	iSn		40	22		−0.1	100			
CHR	iPg	23	40	08		−1.1	100	2.02	174	4.4
	iSn			28		1.9	98			
NPZ	ePn	23	40	13		0.9	100	2.80	29	4.6
	i			15						
	iSn			45		0.0	100			
TUA	ePn	23	40	39		2.6		4.58	55	4.6s

AMPLITUDES: KAI 3.5 WEL 5.0 CHR 2.0
NPZ 2.5 TUA 0.5

PRO: 48/64

FELT: Western Nelson (72, 74, 75), MM III.

APR 20 $04^h29^m24^s.8$ 31°.14S 175°.89E 33 km 48/ 064 M = 6.2
± 5.8 0.27 0.40 R S.E. of RES. 5.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	04	31	13		−0.7	100	7.72	173	7.9
	Sn		32	40		3.7	100			
NPZ	ePn	04	31	33		14.8		8.05	190	5.1
	Sn		33	12		27.9				
HNZ	iSn	04	33	00		3.8		8.55	175	
WEL	iPn	04	31	48		0.9	100	10.16	185	6.2
	iSn		33	28		−7.0	99			
KAI	eSn	04	34	24		6.9	99	11.92	196	5.3s
CHR	eSn	04	34	31		−3.5	100	12.64	191	5.7
API	P	04	33	25		−39.1		20.65	36	
	eS		36	41		−67.1				
RIV	iP	04	34	08		−0.0	100	21.02	256	
	iS		37	55		−0.3	100			

AMPLITUDES: TUA 27 NPZ 1.0 WEL 4.5
KAI 0.3 CHR 1.0

PRO: 48/65

ISS gives 31.8S 179.5E, and lists data from 19 additional stations.

APR 24 $08^h20^m08^s.8$ 42°.14S 176°.98E 12 km 48/ 065 M = 4.5
± 0.4 0.01 0.02 R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	08	20	42		0.3	99	1.86	296	4.3
	iS*		21	06		−0.2	100			
TUA	Sn	08	21	38		−0.1	100	3.33	2	4.6
CHR	Sn	08	21	42		−0.1	100	3.49	245	4.6
NPZ	iS*	08	22	04		0.2	100	3.78	323	4.6

AMPLITUDES: WEL 2.6 TUA 1.0 CHR 1.0
NPZ 1.2

PRO: 48/67

APR 25 $19^h04^m33^s.8$ 41°.76S 172°.26E 12 km 48/ 066 M = 4.2
± 0.7 0.04 0.07 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	19	04	50		−1.9	99	0.99	219	4.0
	S*		05	06		0.8	100			
CHR	eSn	19	05	27		0.8	100	1.79	171	3.0s
	eSg			35		0.8	100			
WEL	ePn	19	05	04		−1.8	100	1.94	77	4.1
	Sn			29		−0.8	100			
NPZ	eP*	19	05	30		3.4		3.02	28	4.5
	e			46						
	iSn			58		2.1	99			
TUA	ePg	19	06	09		−1.0	100	4.76	53	4.4s
	e			28						
	eS*			59		0.8	100			
	e		07	03						

AMPLITUDES: KAI 2.2 CHR 0.1 WEL 1.3
NPZ 1.5 TUA 0.3

PRO: 48/68

FELT: Western Nelson (74, 75) MM III; and Westport (79), MM II.

MAY 19 $09^h36^m46^s.8$ 35°.35S 178°.32E 33 km 48/ 067 M = 5.5
± 6.7 0.49 1.30 R S.E. of RES. 3.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	09	37	37		−2.2	100	3.58	195	5.6
	iSn		38	20		1.2	100			
WEL	ePn	09	38	22		2.2	100	6.55	204	5.3
	eSn		39	29		−1.2	100			

AMPLITUDES: TUA 5.8 WEL 1.1

No provisional solution.

MAY 20 $06^h09^m12^s.8$ 39°.73S 174°.58E 173 km 48/ 068 M = 4.4
± 0.3 0.01 0.01 1 S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iS	06	09	58		0.0	100	0.77	329	3.5*
WEL	iP	06	09	45		0.0	100	1.57	175	4.3
	iS		10	10		0.0	100			
TUA	P	06	09	52		0.1	100	2.20	66	4.4
	iS		10	22		−0.1	100			
CHR	iS	06	10	56		−7.6		4.08	200	4.5*

AMPLITUDES: NPZ 1.2 WEL 2.0 TUA 0.9
CHR 2.8

No provisional solution.

MAY 20 $14^h59^m26^s.7$ 39°.26S 177°.91E 12 km 48/ 069 M = 4.3
± 3.5 0.06 0.22 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	14	59	41		0.3	100	0.75	307	4.3
	iS*			50		−0.8	100			
NPZ	eSn	15	00	49		1.0	99	2.99	273	3.3s
WEL	eSn	15	00	51		−0.6	100	3.14	229	4.3

AMPLITUDES: TUA 11 NPZ 0.1 WEL 0.8

PRO: 48/69

MAY 22 $18^h57^m35^s.5$ 42°.47S 172°.88E 12 km 48/ 070 M = 5.9
± 0.5 0.05 0.04 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	18	57	55		−0.0	100	1.08	190	4.7+
KAI	iP*	18	57	55		−0.3	100	1.09	267	5.0+
	S*		58	10		0.1	100			
TAK	Sn-Pn			20		−0.7	100	1.62	358	
WEL	Pn	18	58	06		−0.1	100	1.84	50	
	Sn			29		−0.1	100			
NPZ	ePn	18	58	30		0.9	100	3.52	15	6.0
ARA	iP*	18	59	06		6.1		4.88	27	
	iS*	19	00	06		2.7				

TUA	ePn	18	58	47	−0.8	100	4.90	43		5.7
	iSn		59	43	0.6	100				
AUC	ePn	18	59	00	−0.1	100	5.80	15		
	iS*	19	00	21	−9.8					
RIV	iP	19	02	03	2.5	97	19.11	290		
	iS		05	42	11.8					
BRS	iP	19	02	31	−2.5	97	22.25	306		
	iS		06	42	8.8					

AMPLITUDES: CHR 13+ KAI 19+ NPZ 38
TUA 6.1

PRO: 48/70

FELT: Most northern parts of the South Island. Intensity reached MM VI at Hanmer Springs (88). Listed in ISS, with data from 4 additional stations.

48/ 071

MAY 22 $19^h21^m26^s.7$ 42°.50S 173°.00E 12 km M = 6.4
± 0.3 0.03 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eP*	19	21	46		−0.1	100	1.07	194	4.6+
KAI	iP*	19	21	47		−0.9	99	1.17	268	5.1+
	S*		22	04		0.5	100			
TAK	Sn-Pn			20		−1.0	99	1.65	355	
WEL	Pn	19	21	56		−0.6	100	1.79	48	5.5+
	Sn		22	19		−0.1	100			
NPZ	ePn	19	22	21		0.7	100	3.52	14	6.3
DND	Sn-Pn			37		−6.5		3.82	207	
HNZ	Sn-P*			37		0.4	100	4.08	47	
TUA	ePn	19	22	39		0.6	100	4.85	42	6.5
	Sn		23	37.5		4.8				
ARA	iPg	19	23	00		−4.9		4.86	25	
	iS*			54		0.0				
AUC	iPn	19	22	51		−0.2	100	5.80	14	
	iSn		23	51		−4.3				
RIV	iP	19	25	53		0.2	100	19.19	290	
	iS		29	32		8.8				
BRS	iP	19	26	21		−4.5		22.32	306	
	iS		30	29		3.1				

AMPLITUDES: CHR 12+ KAI 19+ WEL 40+
NPZ 71 TUA 35

PRO: 48/71

FELT: Throughout the northern half of the South Island, and near Wellington. Intensity reached MM VIII at Hanmer Springs (88) and Waiau (96), where chimneys fell and other structural damage occurred. See Eiby, G.A., 1953 for locality map showing isoseismals and individual observations of intensity. ISS lists readings from 67 additional stations.

48/ 072

MAY 22 $19^h29^m24^s.6$ 42°.50S 172°.90E 12 km M ~ 4.6
± R R R R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	19	29	45		0.4	100	1.11	268	4.6
	iS*			59		−0.4	100			
WEL	Pn	19	29	45		−10.4		1.84	50	

AMPLITUDES: KAI 7.4

PRO: 48/72

Felt reports from Westport and Reefton timed 19h 30m clearly refer to the larger shock 8 minutes earlier (48/71), which they did not report.

48/ 073

MAY 22 $19^h36^m07^s.5$ 42°.84S 173°.05E 12 km M = 6.2
± 1.5 0.11 0.07 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iPg	19	36	35		2.1	100	1.25	284	5.2+
	Sg			49		−0.9	100			
TAK	Sg-Pg			20		−6.9		2.00	355	
WEL	Pn	19	36	42		1.5	100	2.02	40	5.6+
	Sn		37	07		1.7	100			
NPZ	ePn	19	37	07		1.4	100	3.85	12	6.4
	Sn			50		0.5	100			
HNZ	Sn-Pn			27		−21.4		4.28	44	
TUA	ePn	19	37	21		−1.5	100	5.09	39	5.9
	iSn		38	18		−1.2	100			
ARA	i	19	39	12				5.16	23	
AUC	iPn	19	37	34		−2.6	99	6.12	13	
	iSn		38	44		0.0	100			
RIV	iP	19	40	37		1.5	100	19.35	290	
	iS		43	57		−10.7				
BRS	iP	19	41	06		−2.7	99	22.56	307	

AMPLITUDES: KAI 19+ WEL 40+ NPZ 71
TUA 9.8

PRO: 48/73

FELT: Throughout the northern half of the South Island, and near Wellington. ISS lists additional readings from 12 stations.

48/ 074

MAY 22 $19^h53^m44^s.0$ 42°.67S 173°.02E 12 km M = 5.7
± 1.7 0.13 0.08 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	19	54	05		−0.6	100	1.20	276	4.8+
	S*			22		0.4	100			
TAK	Sn-Pn			19		−3.8		1.83	355	
WEL	Pn	19	54	14		−1.4	100	1.90	44	
	Sn			39		−0.0	100			
NPZ	ePn	19	54	40		0.2	100	3.69	13	5.9
	iSn		55	20		−2.0	99			
TUA	ePn	19	54	49		−8.3		4.98	40	5.4
	iSn		55	54		1.2	100			
ARA	eSg	19	56	36		3.3		5.01	24	
AUC	eP*	19	55	29		2.2	99	5.96	14	
	iSn		56	51		34.5				

AMPLITUDES: KAI 10+ NPZ 24 TUA 2.7

PRO: 48/74

FELT: Northern parts of the South Island, and near Wellington. ISS gives a possible PKP reading from STU.

48/ 075

MAY 22 $20^h01^m19^s.0$ 42°.55S 173°.01E 12 km M = 5.7
± 0.8 0.05 0.05 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	20	01	40		−0.3	100	1.18	271	4.9+
	iS*			56		−0.1	100			
TAK	Sn-Pn			20		−1.6	99	1.71	355	
WEL	Pn	20	01	48		−1.4	100	1.83	47	
	Sn		02	13		0.8	100			
NPZ	ePn	20	02	15		1.7	99	3.57	13	5.9
	Sn			58		3.7				
TUA	Sn-Pn			55		0.4	100	4.89	41	5.4
	ePn		02	37		5.8				
	iSn		03	32		6.2				
ARA	iS*	20	04	06		18.3		4.90	25	
AUC	iPn	20	02	43		−1.2	100	5.85	14	
	eS*		04	16		0.1	100			
RIV	iP	20	05	46		0.6	100	19.21	290	
	iS		09	17		0.8	100			
BRS	iP	20	06	17		−1.1	100	22.36	306	
	iS		10	23		4.1				

AMPLITUDES: KAI 13+ NPZ 29 TUA 3.3

PRO: 48/75

FELT: Northern parts of the South Island, and near Wellington. ISS lists readings from 12 additional stations. Suspected error in clock correction at TUA.

48/ 076

MAY 22 $21^h21^m59^s.8$ 42°.49S 172°.86E 12 km M = 5.8

± 1.2 0.10 0.10 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	21	22	19		−0.3	100	1.08	267	
TAK	Sn-Pn			20		−0.8	100	1.64	358	
WEL	iPn	21	22	29		−1.7	100	1.86	50	5.5+
	Sn			52		−1.8	99			
NPZ	ePn	21	22	54		0.4	100	3.54	15	6.2
	Sn		23	34		−0.2	100			
ARA	iS*	21	24	48		19.9		4.90	27	
TUA	ePn	21	23	14		1.7	100	4.91	43	5.4
	iSn		24	09		1.8	99			
AUC	iSn	21	24	39		10.3		5.81	15	
	i		26	01						
RIV	iP	21	26	29		4.3		19.09	290	
	iS		29	26		−28.1				
BRS	iP	21	26	53		−4.7		22.24	306	

AMPLITUDES: WEL 41+ NPZ 56 TUA 2.7

PRO: 48/76

FELT: Northern parts of the South Island, and near Wellington. ISS lists readings from 6 additional stations.

48/ 077

MAY 22 $21^h59^m53^s.9$ 42°.64S 173°.00E 12 km M = 4.7

± 1.3 0.10 0.06 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	22	00	16		0.8	100	1.18	275	4.6+
	iS*			30		−0.9	100			
WEL	ePn	22	00	25		−0.2	100	1.89	45	4.6
	iSn			47		−1.6	99			
NPZ	ePn	22	00	52		2.6		3.66	13	4.7
	eSn		01	32		0.7	100			
		22	01	21		1.3	99	4.96	41	

	eS*	02	24		−0.2	100			
	eSg		38		−2.9				

AMPLITUDES: KAI 6.0+ WEL 4.2 NPZ 1.8

PRO: 48/77

48/ 078

MAY 22 $23^h28^m33^s.3$ 42°.64S 173°.00E 12 km M = 4.7

± 0.8 0.06 0.04 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	23	28	55		0.4	100	1.18	275	4.6
	iS*		29	10		−0.3	100			
WEL	ePn	23	29	05		0.4	100	1.89	45	4.6
	eSn			28		−0.1	100			
NPZ	Pn	23	29	31		2.2		3.66	13	4.8
	Sn		30	11		0.3	100			
TUA	eP*	23	29	58		−1.1	99	4.96	41	4.6s
	iSn		30	43		1.1	99			
	iS*		31	03		−0.6	100			

AMPLITUDES: KAI 6.4 WEL 5.0 NPZ 2.3
TUA 0.5

PRO: 48/79

48/ 079

MAY 22 $23^h58^m57^s.8$ 42°.68S 173°.07E 12 km M = 4.5

± 1.1 0.08 0.05 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	23	59	20		−0.0	100	1.23	277	4.5
	iS*			36		−0.4	100			
WEL	ePn	23	59	29		0.0	100	1.88	43	4.4
	iSn			51		−1.4	99			
NPZ	ePn	23	59	55		1.3	99	3.69	12	4.6
	eSn	24	00	36		0.1	100			
TUA	eP*	24	00	24		0.4	100	4.96	40	3.9s
	eS*		01	33		4.9				

AMPLITUDES: KAI 4.6 WEL 2.8 NPZ 1.5
TUA 0.1

PRO: 48/80

48/ 080

MAY 23 $05^h40^m20^s.4$ 42°.74S 173°.08E 12 km M = 4.6

± 1.3 0.10 0.06 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	P*	05	40	43		0.1	100	1.25	279	4.5
	S*			59		−0.6	100			
TAK	iSn	05	41	00		−15.4		1.90	354	
WEL	ePn	05	40	52.5		0.3	100	1.93	41	4.6
	iSn		41	15		−1.0	100			
NPZ	ePn	05	41	19		1.9	98	3.75	12	4.8
	iSn		42	00		0.1	100			
TUA	eP*	05	41	46		−0.9	100	5.00	40	3.9s
	e			50						

AMPLITUDES: KAI 4.3 WEL 4.1 NPZ 2.0
TUA 0.1

PRO: 48/81

48/ 081

MAY 23 $18^h56^m27^s.0$ 42°.98S 173°.18E 12 km M = 5.1
± 1.9 0.14 0.07 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	18	56	53		1.2	100	1.38	289	5.1
	iS*		57	09		−1.0	100			
WEL	ePn	18	56	59		−1.7	99	2.07	35	5.1
	Sn		57	21.5		−4.6				
NPZ	ePn	18	57	28		1.3	100	3.97	10	5.2
	iSn		58	12		0.2	100			
TUA	eP*	18	57	56		0.1	100	5.14	37	4.7s
	iSn		58	48		8.0				
	iS*		59	23		20.1				
	i			51						

AMPLITUDES: KAI 12 WEL 11 NPZ 5.0
TUA 0.5

PRO: 48/82

48/ 082

MAY 24 $02^h17^m06^s.1$ 42°.44S 173°.02E 12 km M = 5.0
± 0.4 0.03 0.04 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	02	17	27.5		0.9	100	1.13	194	4.6+
	iS*			41		−0.6	100			
KAI	iP*	02	17	27		−0.6	100	1.19	265	5.0
	iS*			44		0.5	100			
TAK	Sn-Pn			20		−0.4	100	1.59	354	
WEL	iPn	02	17	35		−0.3	100	1.75	49	5.0
	iSn			58.5		1.2	99			
NPZ	ePn	02	18	03		4.2		3.46	14	5.1
	iSn			45		6.4				
TUA	eP*	02	18	28		−1.1	99	4.80	42	4.9
	eSn		19	19		8.2				
AUC	Pg	02	19	31		29.1		5.73	14	
	iS*		20	11		11.4				

AMPLITUDES: CHR 10+ KAI 12 WEL 12
NPZ 4.7 TUA 0.9 AUC 2.0

PRO: 48/83

48/ 083

MAY 24 $12^h09^m51^s.9$ 37°.49S 176°.51E 216 km M = 5.5
± 3.9 0.14 0.19 23 S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	12	10	27		0.5	100	1.41	159	5.5
	iS			54		0.8	100			
AUC	iS	12	10	54		−0.9	100	1.52	294	
NPZ	iP	12	10	39		2.1	99	2.48	230	3.8*
	eS		11	17		5.3				
WEL	iP	12	10	53		−2.1	99	4.02	199	5.4
	iS		11	42.5		−1.7	100			
KAI	eS	12	12	39		1.6	100	6.37	216	4.2s
CHR	iS	12	12	40		−5.5		6.72	205	4.3*

AMPLITUDES: TUA 12 AUC 1.0 NPZ 1.0
WEL 5.0 KAI 0.5 CHR 1.0

PRO: 48/84

FELT: Western Bay of Plenty (28, 35) and Gisborne district (37, 43, 53).

48/ 084

MAY 25 $17^h24^m37^s.9$ 37°.42S 177°.74E 33 km M = 5.6
± 2.6 0.09 0.16 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	Sn-Pn			18		0.4	100	1.46	199	5.7
	iPn		25	11		9.6				
	iSn			29		10.1				
ARA	eS*	17	25	48		14.6		1.79	248	
AUC	iSn	17	25	41		−1.4	100	2.44	282	
	i		26	30						
NPZ	ePn	17	25	30		3.2	98	3.32	239	4.8A
	iSn		26	09		5.3				
	iS*			20		0.8	100			
WEL	ePn	17	25	42		−0.8	100	4.49	210	5.7
	Sn		26	30		−1.8	100			
KAI	iSn	17	27	27		−6.1		7.05	222	5.3
CHR	e	17	27	27				7.24	211	5.6
	iSn			38		0.1	100			

AMPLITUDES: TUA 70 NPZ 2.9 WEL 10
KAI 0.8 CHR 2.6

PRO: 48/85

FELT: Eastern Bay of Plenty (28, 35), MM V; and Gisborne district (37, 43, 53). Clock correction at TUA uncertain.

48/ 085

MAY 26 $01^h24^m54^s.3$ 42°.48S 172°.91E 12 km M = 4.7
± 0.2 0.02 0.02 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	01	25	14		0.2	100	1.07	191	4.6+
	iS*			28		−0.1	100			
KAI	eP*	01	25	15		0.5	100	1.12	267	4.3A
	S*			29		−0.3	100			
WEL	ePn	01	25	24		−0.8	99	1.83	50	4.7
	iSn			48		0.3	100			
NPZ	ePn	01	25	53		5.1		3.53	15	4.8
	iS*		26	37		−4.6				
TUA	eP*	01	26	19		0.1	100	4.89	43	4.7
	eSn		27	09		7.9				

AMPLITUDES: CHR 10+ KAI 3.5 WEL 6.2
NPZ 2.5 TUA 0.6

PRO: 48/86

FELT: Hanmer Springs (88), MM IV.

48/ 086

MAY 28 $09^h04^m24^s.9$ 30°.89S 175°.55E 33 km M = 6.6
± 0.8 0.04 0.09 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	09	06	18		0.3	100	8.01	171	7.2
	Sn		07	43		−0.2	100			
WEL	ePn	09	06	50		−0.3	100	10.39	183	6.0

	eSn	08 41		0.4	100				
CHR	eSn	09 09 39		−0.2	100	12.83	190		5.4s

AMPLITUDES: TUA 7.0 WEL 3.3 CHR 0.5

No provisional solution.

Stations poorly distributed in azimuth.

48/ 087

MAY 28 $20^h18^m37^s.7$ 39°.00S 178°.40E 12 km M ~ 4.8
± R R R R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	20	18	56		0.2	100	0.99	281	~4.8+
	iS*		19	09		−0.1	100			
	Pg			47		49.1				
	S			55		45.8				

AMPLITUDES: TUA 17+

PRO: 48/87

FELT: Wairoa (53), MM IV. Pg and S phases apparently belong to a separate event.

48/ 088

MAY 28 $22^h16^m00^s.3$ 39°.18S 178°.30E 12 km M = 4.5
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	22	16	18		0.0	100	0.97	292	4.7
	iS*			31		0.0	100			
WEL	Sn	22	17	32		0.0	100	3.43	231	4.3

AMPLITUDES: TUA 16 WEL 0.7

PRO: 48/88

48/ 089

MAY 30 $20^h13^m54^s.6$ 41°.40S 174°.40E 12 km M ~ 4.3
± R R R R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	20	14	00		−1.0	100	0.30	68	
	iSg			08		2.6	99			
NPZ	iSn	20	14	59		−1.3	100	2.35	354	4.3
	iS*		15	07		0.4	100			
	iSg			13		−0.6	100			

AMPLITUDES: WEL 37 NPZ 1.6

PRO: 48/89

FELT: Wellington (68), MM IV; and Paraparaumu (65), MM II.

48/ 090

JUN 01 $08^h04^m53^s.0$ 41°.00S 175°.54E 12 km M = 4.4
± 1.1 0.05 0.09 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	08	05	08		1.8	99	0.65	244	4.5
	iSg			14		−1.0	100			
NPZ	ePn	08	05	28		−1.0	100	2.23	329	4.5
	ePg			37		−1.2	100			
	e			43						
	iSn			57		0.9	100			
TUA	e	08	05	54				2.52	30	4.1
	iSg		06	18		0.2	100			

CHR	eSn	08 06 21		−1.2	100	3.32	220		3.5s
KAI	iPg	08 06 04		1.5	100	3.44	242		4.5
	iSn	20		−5.0					

AMPLITUDES: WEL 28 NPZ 3.0 TUA 0.6
CHR 0.1 KAI 0.6

PRO: 48/90

FELT: Wellington district (65, 68), MM III.

48/ 091

JUN 02 $18^h31^m17^s.0$ 42°.61S 172°.72E 12 km M = 3.8
± 2.1 0.11 0.09 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iS*-P*			13		0.6	100	0.93	184	3.9
KAI	S*	18	31	48		0.1	100	0.97	275	3.6
WEL	ePn	18	31	46		−4.1		2.02	50	3.8
	eSn		32	15		0.1	100			
NPZ	eSn	18	32	53		−2.0	99	3.69	17	3.9s
	eS*		33	11		1.8	99			

AMPLITUDES: CHR 2.9 KAI 0.9 WEL 0.7
NPZ 0.3

PRO: 48/91

Clock correction at CHR uncertain.

48/ 092

JUN 02 $22^h53^m18^s.4$ 42°.48S 173°.00E 12 km M = 3.9
± 0.3 0.02 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eP*	22	53	39		0.9	99	1.09	194	3.9
	iS*			52		−0.6	100			
KAI	eP*	22	53	40		0.3	100	1.18	267	4.0
	iS*			55		−0.3	100			
WEL	ePn	22	53	48		−0.2	100	1.78	49	3.8
	ePg			55		0.5	100			
	Sn		54	10		−0.6	100			

AMPLITUDES: CHR 2.1 KAI 1.5 WEL 0.9

PRO: 48/92

48/ 093

JUN 03 $03^h57^m21^s.2$ 38°.56S 175°.92E 195 km M = 4.8
± 1.3 0.06 0.05 7 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P	03	57	51		0.5	99	1.00	105	4.8
	iS		58	13		−0.2	100			
NPZ	e	03	57	59				1.53	250	3.1s
	iS		58	21		0.0	100			
WEL	eP	03	58	09		−0.4	100	2.86	198	4.7
	iS			47		0.3	100			

AMPLITUDES: TUA 4.1 NPZ 0.3 WEL 2.0

PRO: 48/93

48/ 094

JUN 07 $07^h17^m40^s.0$ 37°.74S 177°.99E 270 km M = 5.0
± 0.4 0.03 0.03 2 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	07	18	19		0.2	100	1.25	212	4.9
	iS			49		−0.1	100			
NPZ	eP	07	18	35		−2.8		3.35	246	2.9s
	eS		19	23		0.1	100			
WEL	eP	07	18	49		−0.0	100	4.33	214	5.1
	S		19	43		0.1	100			
CHR	eS	07	20	48		5.1		7.07	214	3.8s

AMPLITUDES: TUA 2.6 NPZ 0.1 WEL 2.3
CHR 0.3

PRO: 48/94

JUN 07 $18^h05^m57^s.2$ 37°.34S 176°.94E 198 km M = 5.0 — 48/ 095
± 3.8 0.15 0.21 21 S.E. of RES. 2.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	18	06	32		1.3	99	1.48	174	4.9
	iS			56		−0.7	100			
AUC	iS	18	07	02		−0.0	100	1.79	285	
NPZ	eP	18	06	51		5.7		2.84	232	2.8s
	eS		07	37		14.4				
WEL	eP	18	07	02		−1.2	99	4.28	202	5.0
	iS			55		0.8	100			

AMPLITUDES: TUA 3.9 NPZ 0.1 WEL 1.9

PRO: 48/95

FELT: Maraenui (28), MM III.

JUN 09 $06^h41^m16^s.3$ 42°.43S 172°.96E 12 km M = 3.7 — 48/ 096
± 0.3 0.02 0.03 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iS*	06	41	52		0.4	100	1.13	192	3.6
KAI	eP*	06	41	37		−0.0	100	1.15	265	3.7
	iS*			52		−0.3	100			
WEL	eP*	06	41	47		−0.7	100	1.77	50	3.6s
	iSn		42	08		−0.3	100			
	iS*			16		4.9				
NPZ	eSn	06	42	50		1.0	99	3.47	15	3.9s
	iS*		43	10		8.0				

AMPLITUDES: CHR 1.1 KAI 0.7 WEL 0.5
NPZ 0.3

PRO: 48/96

JUN 09 $15^h03^m01^s.0$ 31°.81S 176°.60E 33 km M = 6.4 — 48/ 097
± 0.3 0.02 0.03 R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	15	04	40		0.0	100	6.99	176	6.8
	Sn		05	55		−0.0	100			
WEL	Sn	15	06	57		0.1	100	9.57	188	5.9
CHR	eSn	15	07	58		−0.1	100	12.11	194	5.1s

AMPLITUDES: TUA 1.5 WEL 1.0 CHR 0.3

No provisional solution.

JUN 10 $02^h48^m55^s.9$ 37°.37S 176°.97E 217 km M = 5.1 — 48/ 098
± 1.5 0.05 0.07 8 S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	02	49	30		−0.8	99	1.45	174	5.1
	iS			58		0.0	100			
AUC	iS	02	50	04		0.0	100	1.83	285	
NPZ	iP	02	49	49		3.9		2.84	233	3.4s
	eS		50	31		7.8				
WEL	iP	02	50	03		0.8	99	4.27	203	5.1
	eS			54		0.4	100			
KAI	eS	02	51	48		−0.8	99	6.70	218	4.3*
	e			54						
CHR	eS	02	51	56		0.3	100	6.99	207	

AMPLITUDES: TUA 5.6 NPZ 0.4 WEL 2.7
KAI 0.6

PRO: 48/97

Error in clock correction at NPZ suspected.

JUN 13 $08^h08^m32^s.1$ 42°.42S 172°.95E 12 km M ~ 3.7 — 48/ 099
± 0.5 0.03 0.04 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	08	08	53		0.4	100	1.13	192	3.7
	iS*		09	08		0.2	100			
KAI	eP*	08	08	54		1.3	100	1.14	264	3.5s
	iS*		09	07		−0.9	100			
WEL	ePn	08	09	00		−1.7	99	1.77	51	
	eSn			23		−1.0	100			
	iS*			28		1.2	100			
NPZ	eS*	08	10	18		0.6	100	3.46	15	3.9s
TUA	e	08	10	50				4.82	43	4.4s
	e		11	13						

AMPLITUDES: CHR 1.2 KAI 0.5 NPZ 0.3
TUA 0.3

PRO: 48/98

JUN 14 $14^h31^m36^s.8$ 42°.20S 173°.15E 33 km M = 4.1 — 48/ 100
± 0.5 0.04 0.04 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	14	32	02		1.1	99	1.33	255	4.1
	iS*			18		−0.7	100			
CHR	ePn	14	31	59		−0.2	100	1.39	196	4.1
	iSn		32	16		0.0	100			
WEL	eP*	14	32	09		5.0		1.52	53	
	eSn			19		−0.2	100			
	eS*			30		5.7				

AMPLITUDES: KAI 1.4 CHR 2.0

PRO: 48/100

48/ 101

JUN 16 $12^h00^m51^s.6$ 39°.00S 174°.10E 12 km

± R R R R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iPg	12	00	54		−0.1	100	0.07	198	
	iSg			56		0.1	100			

AMPLITUDES: NPZ 38

PRO: 48/101

FELT: New Plymouth (47), MM III.

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JUN 16 $23^h50^m50^s.0$ 42°.23S 172°.71E 12 km M = 3.8

± 0.2 0.02 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iS*	23	51	22		0.0	100	1.01	253	3.7
CHR	ePn	23	51	14		0.7	99	1.30	183	3.8
	eSn			30		−0.6	99			
WEL	ePn	23	51	20		−0.2	100	1.81	59	3.9
	iSn			43		0.2	100			
NPZ	eSn	23	52	25		5.6		3.33	19	3.9s
	iSg			42		−0.2	100			

AMPLITUDES: KAI 1.1 CHR 1.1 WEL 0.9
NPZ 0.3

PRO: 48/102

48/ 103

JUN 19 $01^h15^m29^s.3$ 39°.31S 177°.45E 12 km M ~ 3.8

± 0.1 0.00 0.01 R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	01	15	40		0.1	100	0.56	335	3.8
	iS*			47.5		−0.1	100			
NPZ	eSn	01	16	42		0.0	100	2.64	274	3.2s
	eS*			50		0.0	100			
WEL	eSn	01	16	47		−0.0	100	2.84	225	3.3s
	eSg		17	18		12.8				

AMPLITUDES: TUA 5.7 NPZ 0.1 WEL 0.1

PRO: 48/103

48/ 104

JUN 19 $06^h18^m35^s.9$ 43°.37S 169°.02E 12 km M = 5.7

± 2.8 0.09 0.20 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iPn	06	19	08		0.1	100	1.94	65	5.3+
	Sn			31		−0.9	100			
CHR	iPn	06	19	17		−0.3	100	2.63	95	6.1
	Sn			49		0.6	100			
DND	iSn-P*			28		0.7	100	2.74	157	
WEL	ePn	06	19	46		−0.0	100	4.74	66	5.6
	iSn		20	38		−1.1	100			
	i			44						
NPZ	ePn	06	20	04		4.3		5.74	43	5.5
	iSn		21	07		3.8	95			
TUA	ePn	06	20	33		7.3		7.64	56	5.5

	iSn		22	02		13.1				
	iS*			37		10.4				
AUC	ePn	06	20	42		13.5		7.85	36	
	iSn		21	52		−1.9	100			

AMPLITUDES: KAI 10+ CHR 56 WEL 6.9
NPZ 4.2 TUA 1.5

PRO: 48/104

FELT: Central and southern Westland and western Otago. Maximum intensity reported at Bruce Bay (104), MM VI. ISS adopts N.Z. solution and lists data from 5 additional stations.

48/ 105

JUN 19 $06^h56^m58^s.4$ 43°.40S 169°.10E 12 km M = 5.2

± 1.1 0.04 0.08 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	Pg	06	57	36		−0.9	99	1.91	64	5.2
	S*			57		−0.2	100			
CHR	ePn	06	57	39		0.0	100	2.57	94	5.4
	iSn		58	10		0.4	100			
WEL	ePn	06	58	08		−0.0	100	4.71	65	5.0
	i			50						
NPZ	ePn	06	58	30		8.0		5.72	43	5.2
	eSn		59	26		0.7	100			
TUA	ePn	06	58	57		9.2		7.61	56	4.8s

AMPLITUDES: KAI 10 CHR 11 WEL 1.9
NPZ 2.0 TUA 0.3

PRO: 48/105

FELT: Greymouth (85), MM III; and Gore (150), MM II. ISS adopts N.Z. solution.

48/ 106

JUN 19 $07^h05^m38^s.3$ 43°.67S 169°.59E 12 km M = 5.7

± 1.0 0.04 0.06 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	P*	07	06	10		0.6	100	1.75	50	5.4+
	Sn			30		0.2	100			
CHR	iPn	07	06	14		0.0	100	2.21	88	6.1
	S*			46		−0.2	100			
DND	iSn-Pn			29		1.1	99	2.31	163	
WEL	ePn	07	06	44		−1.3	98	4.51	60	5.5
	iSn		07	36		−0.0	100			
NPZ	ePn	07	07	02		0.4	100	5.71	38	5.6
	iSn		08	05		0.3	100			
TUA	ePn	07	07	31		5.1		7.49	52	5.5
	iP*		08	15		27.8				
	iSn		09	05		17.5				
AUC	iP*	07	08	10		16.3		7.87	32	
	iSn		09	25		28.2				

AMPLITUDES: KAI 17+ CHR 86 WEL 7.0
NPZ 5.2 TUA 1.5

PRO: 48/106

FELT: Central and southern Westland and parts of Otago. Maximum intensity reported MM VI at Bruce Bay (104). ISS adopts N.Z. solution, and lists data from 7 additional stations. See Hayes, R.C., 1949 for isoseismal map.

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JUN 19 $08^h14^m47^s.3$ 42°.96S 169°.41E 12 km M = 4.6
± 1.4 0.04 0.10 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iPn	08	15	14		0.3	100	1.53	74	4.7
	iSn			34		0.5	100			
CHR	ePn	08	15	26		0.2	100	2.42	105	4.4
	iSn			54		−0.8	100			
WEL	eP*	08	16	08		5.8		4.32	69	3.7s
	eSn			41		0.6	100			
NPZ	eSn	08	17	02		−0.7	100	5.25	44	3.8s
	eS*			20		−6.2				

AMPLITUDES: KAI 4.3 CHR 1.3 WEL 0.1
NPZ 0.1

PRO: 48/107

FELT: Hokitika (91), MM III.

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JUN 20 $20^h55^m35^s.0$ 39°.32S 175°.82E 33 km M = 4.4
± 0.3 0.02 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS*	20	56	12		0.3	100	1.15	64	4.4
NPZ	Pn	20	55	57		−0.5	100	1.39	280	3.5s
	iS*		56	19		0.4	100			
WEL	iPn	20	56	07		−0.6	100	2.12	202	4.3
	iS*			41		0.4	100			

AMPLITUDES: TUA 3.5 NPZ 0.5 WEL 1.8

PRO: 48/108

48/ 109

JUN 21 $20^h05^m24^s.4$ 41°.45S 174°.68E 12 km M ~ 4.3
± 2.5 0.10 0.08 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	20	05	28		−0.6	100	0.18	23	
	iSg			31.5		0.1	100			
NPZ	iSn	20	06	33		1.0	99	2.42	349	4.3
	iS*			38		−0.7	100			
KAI	Sg	20	07	06		11.9		2.66	245	4.0s
TUA	eSn	20	06	52		0.2	100	3.25	37	4.0s
	eS*		07	11		7.5				

AMPLITUDES: WEL 47 NPZ 1.6 KAI 0.3
TUA 0.3

PRO: 48/109

FELT: Paraparaumu (65) to Wellington (68).

48/ 110

JUN 22 $21^h31^m48^s.3$ 40°.89S 175°.26E 12 km M = 4.2
± 0.9 0.05 0.10 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	21	31	59		0.2	100	0.55	223	4.0
	iS*		32	06.5		0.1	100			
NPZ	ePn	21	32	20		−1.6	99	2.03	333	4.3
	iSn			47.5		0.9	100			
TUA	ePg	21	32	40		0.4	100	2.54	36	3.8s

	eSg	33	22			8.2				

AMPLITUDES: WEL 12 NPZ 2.0 TUA 0.3

PRO: 48/110

FELT: Otaki, Paraparaumu (65), MM IV.

48/ 111

JUN 29 $09^h13^m56^s.6$ 43°.29S 171°.75E 12 km M = 4.3
± 0.7 0.03 0.04 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	09	14	10		0.6	100	0.68	111	4.3
	iS*			18		−0.7	100			
KAI	eP*	09	14	12		0.5	100	0.80	342	3.9+
	S*			22		−0.4	100			
WEL	eP*	09	14	49		0.0	100	3.00	49	4.3
	iS*		15	29		0.7	100			
	i			32						
NPZ	eSn	09	15	55		−0.7	100	4.57	23	3.7s

AMPLITUDES: CHR 13 KAI 2.5+ WEL 1.0
NPZ 0.1

PRO: 48/111

FELT: Lake Coleridge (100), MM III.

48/ 112

JUN 30 $19^h26^m53^s.5$ 38°.68S 178°.66E 12 km M = 4.4
± 3.4 0.16 0.19 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	19	27	13		−1.9	99	1.19	263	4.3
	iS*			30		−0.7	100			
NPZ	ePn	19	27	49		0.9	100	3.60	262	3.5s
	eSn		28	31		1.7	99			
WEL	iSn	19	28	38		−0.1	100	3.96	228	4.5

AMPLITUDES: TUA 4.0 NPZ 0.1 WEL 0.9

PRO: 48/112

FELT: Tolaga Bay (37), MM IV.

48/ 113

JUL 01 $18^h37^m27^s.0$ 39°.75S 176°.70E 12 km M = 4.1
± 0.4 0.02 0.04 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	18	37	45		−0.3	100	1.01	20	4.4
	iS*			59		0.2	100			
WEL	eP*	18	38	05		0.6	99	2.12	223	4.0
	iSn			27		−0.4	100			
NPZ	ePg	18	38	14		3.5		2.15	288	4.0
	iSn			28		0.0	100			

AMPLITUDES: TUA 7.0 WEL 1.0 NPZ 1.0

PRO: 48/113

48/ 114

JUL 03 $19^h13^m49^s.4$ 42°.23S 172°.73E 12 km M = 3.9
± 0.7 0.03 0.10 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	19	14	12		−0.9	99	1.30	183	3.9
	S*			31		0.8	100			
WEL	Pn	19	14	19		−0.4	100	1.79	59	3.9

	Sn			42	0.1	100			
NPZ	eSn	19	15	19	0.4	100	3.32	18	3.9s

AMPLITUDES: CHR 1.6 WEL 1.1 NPZ 0.3

PRO: 48/114

JUL 03 $21^h10^m28^s.6$ $38°.14$S $176°.72$E 236 km 48/ 115 M ~ 5.4

± 0.3 0.02 0.02 1 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	21	11	01		0.1	100	0.75	153	
	S			26		−0.1	100			
NPZ	iP	21	11	13		0.1	100	2.27	245	4.0*
	iS			47		−0.0	100			
WEL	iP	21	11	26		−0.1	100	3.48	205	5.4
	iS		12	11		0.2	100			
CHR	S	21	13	11		−0.1	100	6.22	209	4.5*

AMPLITUDES: NPZ 1.7 WEL 6.9 CHR 1.6

PRO: 48/115

JUL 04 $14^h13^m08^s.0$ $40°.33$S $175°.57$E 12 km 48/ 116 M = 4.5

± 0.6 0.03 0.06 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePg	14	13	32		1.1	99	1.13	212	4.5
	iSg			45.5		−0.7	100			
NPZ	ePg	14	13	42		−0.6	100	1.71	317	4.9
	iSn			59		0.5	100			
TUA	iSn	14	14	04		−0.2	100	1.95	39	4.1
	iSg			28		14.3				

AMPLITUDES: WEL 10 NPZ 13 TUA 1.0

PRO: 48/116

FELT: Wanganui (57), and Wellington (69), MM III.

JUL 11 $08^h03^m50^s.2$ $42°.37$S $172°.69$E 12 km 48/ 117 M = 4.0

± 0.4 0.02 0.04 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	08	04	09		1.2	100	0.96	261	
	S*			20		−0.7	100			
CHR	iP*	08	04	12		0.9	100	1.16	182	4.0
	iS*			25		−1.6	99			
	iS*			27		0.4	100			
WEL	Pn	08	04	22		0.5	100	1.89	56	4.0
	Sn			45		−0.0	100			
NPZ	eSn	08	05	24		1.1	100	3.46	18	3.9s
	iS*			34		−1.8	99			

AMPLITUDES: CHR 2.5 WEL 1.1 NPZ 0.3

PRO: 48/117

JUL 11 $19^h24^m30^s.2$ $38°.60$S $178°.90$E 12 km 48/ 118 M ~ 3.3

± R R R R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePg?	19	24	58		−0.2	100	1.39	261	~3.3s
	eSn		25	13		0.2	100			

AMPLITUDES: TUA 0.3

PRO: 48/118

FELT: Tolaga Bay (37), MM III.

JUL 12 $00^h24^m06^s.2$ $42°.07$S $172°.61$E 12 km 48/ 119 M = 4.3

± 0.4 0.03 0.04 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	P*	00	24	25		0.6	100	1.00	243	
	eS*			38		0.2	100			
CHR	Pn	00	24	31		−0.6	100	1.46	179	4.4
	iSn			50		−0.6	100			
WEL	ePn	00	24	36		−0.2	100	1.80	65	4.3
	iSn			25 00		1.3	99			
NPZ	eP*	00	25	02		0.0	100	3.20	21	4.3
	iPg			12		1.1	100			
	iS*			42		−1.8	99			
TUA	eP*	00	25	32		3.5		4.75	48	4.4s
	eS*			26 35		4.6				

AMPLITUDES: CHR 3.5 WEL 2.5 NPZ 1.0
TUA 0.3

PRO: 48/119

FELT: Hanmer Springs (88), MM IV; and Molesworth (89), MM III.

JUL 12 $07^h46^m50^s.1$ $45°.49$S $168°.60$E 12 km 48/ 120 M = 5.1

± 3.3 0.20 0.27 R S.E. of RES. 2.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
MNW	iS*-P*			05		−5.2		0.75	247	
CHR	ePn	07	47	44		0.9	100	3.48	57	5.2
	iS*		48	35		−1.1	100			
WEL	ePn	07	48	18		−1.5	100	6.15	49	4.9
	Sn		49	29		1.7	100			
NPZ	ePn	07	48	50		10.8		7.59	34	4.8s
	iSn		50	05		3.1	99			
TUA	ePn	07	49	14		12.7		9.21	47	4.9s
	eSn		50	53		12.2				
	eSg		52	00		−0.2	100			
AUC	ePg	07	50	18		10.0		9.79	30	
	eSn			52		−2.8	99			

AMPLITUDES: CHR 4.0 WEL 0.9 NPZ 0.5
TUA 0.3

PRO: 48/120

FELT: Scattered places in Otago and Southland. Maximum reported intensity at Monowai (139), MM V. Stations poorly distributed in azimuth.

JUL 13 $11^h37^m08^s.7$ $39°.23$S $176°.17$E 12 km 48/ 121 M = 4.1

± 0.4 0.04 0.03 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	11	37	24		−0.7	100	0.86	62	3.9

	iS*		37	0.6	100				
NPZ	ePn	11	37 36	−0.6	100	1.64	275		3.5s
	iSn		58	0.5	100				
WEL	iSn	11	38 14	0.2	100	2.32	207		4.2

AMPLITUDES: TUA 3.0 NPZ 0.5 WEL 1.3

PRO: 48/121

JUL 14 $01^h16^m57^s.3$ 42°.70S 172°.93E 12 km 48/ 122 M ~ 4.0

± 0.8 0.05 0.06 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eS*	01	17	25		0.1	100	0.86	195	3.1s
KAI	S*	01	17	33		0.0	100	1.13	278	3.5s
WEL	ePg	01	17	36		−1.1	99	1.97	45	4.0
	iSn			55		1.0	100			

AMPLITUDES: CHR 0.5 KAI 0.5 WEL 1.1

No provisional solution.

JUL 14 $03^h19^m41^s.0$ 45°.34S 167°.37E 12 km 48/ 123 M ~ 4.9

± 9.7 0.29 0.55 R S.E. of RES. 3.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
MNW	iS*-P*			05		−1.6	100	0.48	158	
KAI	e	03	20	35				4.05	47	4.6s
	iSn		21	25		−2.7	99			
CHR	eP*	03	20	55		1.6	100	4.18	66	4.9
	iPg		21	16		10.6				
	iS*			49		1.1	100			
WEL	eSn	03	22	25		−7.5		6.75	56	4.6s

AMPLITUDES: KAI 0.5 CHR 1.5 WEL 0.4

PRO: 48/122

FELT: Throughout Southland and central Otago. Maximum reported intensity MM IV.

JUL 14 $10^h48^m23^s.0$ 46°.02S 167°.89E 12 km 48/ 124 M = 5.5

± 2.3 0.10 0.18 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
MNW	iS*-P*			05		0.6	100	0.31	322	
CHR	ePn	10	49	25		−0.7	100	4.19	55	5.8
	iP*			35		−0.7	100			
	iSn		50	14		0.9	100			
	iS*			38		7.6				
KAI	ePn	10	49	32		4.6		4.31	37	5.6
	iP*			36		−1.8	99			
	iSn		50	17		1.0	100			
	iS*			42		8.0				
WEL	ePn	10	50	05		2.6	98	6.88	49	5.3
	iP*			37		15.5				
	iSn		51	09		−8.6				
NPZ	ePn	10	50	22		0.0	100	8.32	35	5.4
	iSn		51	51		−1.1	100			
TUA	ePn	10	50	55		10.8		9.94	47	5.2s
	eSn		53	07		35.8				
	eS*			57		34.4				

AMPLITUDES: CHR 12 KAI 4.0 WEL 1.8
NPZ 1.5 TUA 0.5

PRO: 48/123

FELT: Throughout Southland and central Otago. Maximum reported intensity MM V at Monowai (139). ISS adopts N.Z. provisional solution, and lists a possible PKP reading from STU.

JUL 15 $02^h19^m23^s.4$ 39°.80S 175°.38E 33 km 48/ 125 M ~ 4.0

± 0.9 0.05 0.07 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	ePn?	02	19	43		−1.0		1.25	306	3.0s
	iS*		20	03		0.0	100			
WEL	iP*	02	19	53		1.7	99	1.56	197	3.5s
	iS*		20	11		−1.0	100			
TUA	eP*	02	19	52		−1.6	100	1.69	55	4.0
	iS*		20	17		0.9	100			

AMPLITUDES: NPZ 0.3 WEL 0.5 TUA 1.0

No provisional solution.

JUL 16 $16^h34^m40^s.8$ 38°.97S 175°.12E 12 km 48/ 126 M ~ 4.2

± 1.8 0.08 0.09 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP*	16	34	56		0.1	100	0.82	263	4.2
	iS*		35	07		−0.0	100			
WEL	Pn	16	35	17		−1.1	99	2.33	187	4.0s
	iP*			23		1.3	99			
	iS*			52		−0.2	100			

AMPLITUDES: NPZ 9.5 WEL 0.5

PRO: 48/125

FELT: Taumarunui (39), MM III.

JUL 17 $10^h51^m12^s.6$ 41°.39S 172°.92E 12 km 48/ 127 M = 4.2

± 0.6 0.04 0.06 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	10	51	38		0.8	100	1.39	86	4.2
	iSn			56		0.5	100			
KAI	iS*	10	52	03		1.0	100	1.59	224	3.8s
CHR	eSn	10	52	12		−1.5	99	2.15	186	4.2
NPZ	ePn	10	51	52		−0.0	100	2.49	21	4.1
	Sn		52	21		−0.7	100			

AMPLITUDES: WEL 3.1 KAI 0.5 CHR 1.0
NPZ 1.0

PRO: 48/126

JUL 18 $08^h23^m48^s.5$ 45°.00S 167°.50E 12 km 48/ 128 M ~ 4.3

± R R R R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eSn	08	25	28		−0.2	100	3.76	50	~4.5s
CHR	eSn	08	25	34		0.9	100	3.96	70	~4.4s

WEL	eSn	08 26 33		−0.7	100	6.48	58	~4.0s

AMPLITUDES: KAI 0.5 CHR 0.5 WEL 0.1

PRO: 48/127

FELT: Queenstown (132), MM IV; and Awarua (154), MM III.

JUL 23 $09^h19^m23^s.6$ 45°.48S 167°.25E 12 km 48/ 129 M = 5.1
± 4.0 0.15 0.22 R S.E. of RES. 2.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
MNW	iS*-P*			06		0.4	100	0.40	139	
KAI	eP*	09	20	37		0.4	100	4.21	47	
	S*		21	34		2.5	99			5.0
CHR	eP*	09	20	39		0.7	100	4.31	65	
	iS*		21	33		−1.5	100			5.1
WEL	ePn	09	21	10		6.8		6.89	55	
	e		22	10						4.5s
NPZ	iSn	09	22	47		−2.1	99	8.16	41	4.9s

AMPLITUDES: KAI 1.2 CHR 2.0 WEL 0.3 NPZ 0.5

PRO: 48/128

FELT: Scattered places in Southland and central Otago. Listed in ISS additional readings.

JUL 24 $19^h13^m45^s.2$ 41°.60S 173°.80E 12 km 48/ 130 M ~ 3.5
± R R R R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	19	14	00.5		0.6	100	0.79	67	
	iS*			10		−0.6	100			3.5

AMPLITUDES: WEL 2.0

PRO: 48/129

FELT: Blenheim (77), MM IV.

JUL 26 $14^h20^m42^s.6$ 38°.81S 178°.58E 12 km 48/ 131 M ~ 3.9
± 2.2 0.08 0.10 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P*	14	21	03		0.1	100	1.12	270	
	eS*			17		−0.7	99			3.9
	eSg			21		0.6	100			
WEL	eSn	14	22	24		0.0	100	3.83	229	3.6s

AMPLITUDES: TUA 2.0 WEL 0.1

PRO: 48/130

FELT: Tolaga Bay (37), MM IV.

JUL 29 $05^h09^m57^s.5$ 39°.75S 174°.01E 206 km 48/ 132 M = 5.3
± 1.4 0.06 0.12 11 S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP	05	10	27		0.8	100	0.68	4	
	iS			48		−0.4	100			4.4*
WEL	iP	05	10	35		1.8	99	1.64	160	
	iS		11	01		0.2	100			5.1
TUA	eP	05	10	42		−1.4	99	2.61	70	
			11	07						5.5

	iS		12	−6.9				
KAI	e	05 11 08				3.40	214	4.5*
	iS		35	−0.4	100			
CHR	eP	05 11 00		0.9	100	3.91	195	
	e		42.5					
	iS		45.5	−1.2	100			

AMPLITUDES: NPZ 7.0 WEL 9.0 TUA 7.5 KAI 2.0

PRO: 48/131

FELT: Wanganui (57), MM III.

JUL 29 $18^h59^m55^s.7$ 42°.68S 173°.17E 12 km 48/ 133 M = 3.8
± 0.6 0.03 0.05 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eP*	19	00	12		−0.9	100	0.94	205	3.7
	iS*			25		−0.5	100			
	i			38						
KAI	ePg	19	00	24		1.7	99	1.31	276	3.9
	iSg			40		0.0	100			
WEL	ePg	19	00	37		4.2		1.84	41	3.9
	iSg			58		0.5	100			
	i		01	04						
	i			50						
NPZ	eSn	19	01	31		−2.4	99	3.68	11	4.2s
	i			56						
	iSg			59		−0.6	100			
TUA	ePg	19	01	37		2.1	99	4.91	39	4.4s
	iSn		02	03		−0.0	100			
	iSg			49		8.0				

AMPLITUDES: CHR 2.0 KAI 1.0 WEL 1.0 NPZ 0.5 TUA 0.3

PRO: 49/133

FELT: Hanmer Springs (88), MM III.

AUG 03 $01^h58^m18^s.4$ 40°.08S 173°.72E 33 km 48/ 134 M ~ 4.1
± 2.0 0.05 0.18 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	01	58	38		0.2	100	1.04	15	3.1s
WEL	eSn	01	58	58		−1.2	99	1.45	147	4.1
	iS*		59	05		1.1	100			
TUA	Sn	01	59	35		−0.1	100	2.94	66	4.2s

AMPLITUDES: NPZ 0.5 WEL 2.2 TUA 0.3

No provisional solution.

AUG 09 $14^h34^m24^s.1$ 40°.50S 174°.05E 12 km 48/ 135 M = 3.9
± 0.4 0.01 0.04 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	14	34	42		0.4	99	0.95	145	4.0
	iS*			54		−0.3	100			
NPZ	ePg	14	34	53		−0.2	100	1.43	1	3.8
	eSn		35	08		0.0	100			
TUA	eSn	14	35	44		0.1	100	2.93	56	4.1s

AMPLITUDES: WEL 4.1 NPZ 1.5 TUA 0.4

No provisional solution.

48/ 136

AUG 12 $01^h03^m10^s.0$ 42°.26S 172°.75E 12 km M = 3.9

± 0.4 0.04 0.04 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	P*	01	03	27		−1.8	99	1.03	255	3.7
	eSg			46		1.1	100			
CHR	iPn	01	03	33		0.1	100	1.28	184	4.2
	iS*			50		0.1	100			
WEL	ePn	01	03	40		−0.0	100	1.79	58	3.9
	iPg			46		−0.3	100			
	Sn		04	04		1.5	99			
	iSg			10		−0.6	100			

AMPLITUDES: KAI 1.0 CHR 3.0 WEL 1.0

PRO: 48/134

48/ 137

AUG 14 $07^h02^m03^s.4$ 38°.31S 176°.46E 234 km M = 5.4

± 0.8 0.04 0.05 5 S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	07	02	36		0.5	100	0.74	133	5.6
	iS		03	00		−0.4	100			
NPZ	iP	07	02	45		0.1	100	2.02	247	4.0*
	i		03	11						
	iS			17		−0.1	100			
WEL	iS-P			43		0.6	99	3.25	203	5.1
KAI	eS	07	04	30		−4.2		5.71	221	4.1s
CHR	e	07	03	38				5.97	208	4.4*
	eS		04	40		−0.2	100			

AMPLITUDES: TUA 23 NPZ 2.0 WEL 3.5
KAI 0.5 CHR 1.5

PRO: 48/135

Clock correction at WEL uncertain.

48/ 138

AUG 14 $20^h01^m37^s.6$ 35°.20S 179°.36E 12 km M = 5.0

± 2.4 0.10 0.09 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	20	02	37		−0.9	100	4.01	205	5.0
	iSn		03	25		1.6	100			
	iSg			53		0.2	100			
AUC	iSn	20	03	26		1.4	100	4.07	245	
	iS*			40		−1.1	100			
	iSg			54		−0.5	100			
	e		04	04						
NPZ	eP*	20	03	19		2.6	99	5.71	226	4.9
	e			54						
	eSn			59		−5.4				
WEL	eP*	20	03	37		−2.4	99	7.06	209	5.1
	iSn		04	36		−0.8	100			
	i		05	26						

AMPLITUDES: TUA 2.0 NPZ 1.0 WEL 1.1

PRO: 48/136

48/ 139

AUG 14 $23^h39^m38^s.1$ 35°.42S 179°.16E 12 km M = 5.5

± 1.3 0.05 0.08 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	23	40	44		0.8	100	3.74	205	5.7
	iSn		41	17		−0.5	100			
	iS*			32		−0.1	100			
AUC	ePn	23	40	38		2.2	98	3.83	247	
	iPg			55		−0.5	100			
	iSn		41	18		−1.4	99			
	eS*			35		0.5	100			
NPZ	ePn	23	41	03		5.0		5.45	227	5.1
	iP*			17		4.7				
	Sn		42	00		1.5	99			
	iS*			33		9.8				
WEL	iPn	23	41	25		8.6		6.80	209	5.9
	iP*			35		−0.3	100			
	Sn		42	30		−0.9	100			
	S*		43	14		10.4				
CHR	e	23	42	52				9.55	210	5.4
	eSn		43	13		−23.9				
	e		44	07						
RIV	iP	23	44	43		−1.2	100	23.08	266	

AMPLITUDES: TUA 11 NPZ 2.0 WEL 7.0
CHR 0.8

PRO: 48/137

ISS lists data from 14 additional stations, but suggests no epicentre. Long-period movements recorded at ARA.

48/ 140

AUG 15 $01^h14^m18^s.6$ 35°.50S 179°.52E 12 km M = 5.2

± 1.8 0.09 0.11 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	01	15	15		−1.0	100	3.80	209	5.4
	iSn		16	00		0.7	100			
AUC	ePn	01	15	21		1.4	100	4.07	249	
	iPg			44		3.2	98			
	iSg		16	34		−1.5	100			
NPZ	ePn	01	15	47		6.3		5.61	229	4.9
	iP*			59		3.5				
	Sn		16	42		−0.8	100			
WEL	P*	01	16	16		−1.0	100	6.87	211	5.4
	iSn		17	15		1.9	100			
KAI	eSn	01	19	18		63.4		9.43	220	4.6s
	eS*		20	05		62.1				
CHR	eSn	01	18	18		−1.1	100	9.62	211	5.2s
	iS*			59		−9.6				
RIV	iP	01	19	26		−1.5	100	23.35	266	

AMPLITUDES: TUA 4.5 NPZ 1.2 WEL 2.2
KAI 0.1 CHR 0.5

PRO: 48/138

ISS lists data from 11 additional stations, but suggests no epicentre.

48/ 141

AUG 15 $05^h01^m57^s.0$ 36°.77S 177°.68W 33 km M = 5.1
± 0.3 0.02 0.02 R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	05	03	03		0.0	100	4.57	242	4.9
	iSn			53		0.1	100			
NPZ	eSn	05	04	49		−0.1	100	6.91	248	4.0s
WEL	eP*	05	04	15		10.5		7.41	230	5.3
	Sn		05	01		−0.0	100			

AMPLITUDES: TUA 1.0 NPZ 0.1 WEL 1.6

No provisional solution.

48/ 142

AUG 16 $09^h24^m35^s.1$ 38°.69S 179°.56W 33 km M = 4.7
± 4.4 0.22 0.23 R S.E. of RES. 2.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	09	25	12		−1.8	100	2.57	266	4.5
	iS*			53		−1.0	100			
	i			59						
NPZ	e	09	26	15				4.98	264	3.7s
	eS*		27	08		2.0	100			
	i			47						
WEL	eP*	09	26	05		2.3	100	5.07	237	4.8
	eS*		27	07		−1.5	100			

AMPLITUDES: TUA 1.4 NPZ 0.1 WEL 1.0

No provisional solution.

48/ 143

AUG 16 $13^h50^m44^s.6$ 39°.11S 177°.96E 12 km M = 5.0
± 2.1 0.05 0.14 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	13	50	58.5		0.8	100	0.70	295	5.2
	S*		51	07		−0.3	100			
HNZ	iS*-P*			13		−0.4	100	1.01	236	
NPZ	P*	13	51	35		−2.4	99	3.02	270	4.7
	i			57						
	iSn		52	10		3.3	98			
	i			39						
WEL	iPn	13	51	36		1.3	100	3.27	227	5.0
	Sn		52	13		0.5	100			
AUC	ePn	13	51	32		−4.1		3.37	311	
	eSn		52	14		−1.0	100			
CHR	eSn	13	53	17		−0.3	100	5.97	221	
KAI	ePg	13	53	00		13.6		6.03	233	4.9s
	eSn			17		−1.8	100			
	e			22						

AMPLITUDES: TUA 93 NPZ 2.5 WEL 4.0
KAI 0.5

PRO: 48/139

FELT: Eastern Bay of Plenty to northern Hawke's Bay.

48/ 144

AUG 16 $20^h20^m50^s.3$ 37°.77S 178°.08E 208 km M = 5.5
± 2.0 0.08 0.13 10 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	20	21	22		−0.9	100	1.27	215	5.3
	i			43						
	iS			48		−0.1	100			
AUC	S	20	22	17		1.6	100	2.78	288	
NPZ	eP	20	21	44		−1.5	100	3.40	246	3.8*
	i			55						
	iS		22	27		−1.3	100			
WEL	eP	20	21	58		0.8	100	4.34	215	5.6
	i		22	16						
	iS			51		2.0	99			
KAI	eS	20	23	48		−1.6	100	6.97	225	4.2s
CHR	eP	20	22	33		0.6	100	7.09	214	4.5*
	iS		23	53		0.7	100			

AMPLITUDES: TUA 11 NPZ 0.8 WEL 8.5
KAI 0.5 CHR 1.5

PRO: 48/141

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AUG 19 $11^h44^m24^s.9$ 38°.80S 178°.40E 12 km M ~ 4.6
± R R R R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	11	44	43.5		0.8	100	0.97	269	4.6
	iS*			55		−0.8	100			

AMPLITUDES: TUA 13

PRO: 48/141

FELT: Gisborne (45), MM III.

48/ 146

AUG 19 $12^h25^m53^s.6$ 38°.80S 178°.40E 12 km M ~ 3.9
± R R R R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	12	26	12		0.5	100	0.97	269	3.9
	iS*			24		−0.5	100			

AMPLITUDES: TUA 2.5

PRO: 48/142

FELT: Gisborne (45), MM III.

48/ 147

AUG 20 $08^h14^m53^s.6$ 40°.41S 175°.78E 12 km M = 4.9
± 0.7 0.02 0.06 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
BUN	ePg	08	14	56		−1.6	99	0.17	318	
	iSg		15	01		0.7	100			
WEL	iP*	08	15	15		0.4	100	1.16	221	5.0
	iS*			30		−0.1	100			
NPZ	iP*	08	15	28		1.2	100	1.88	315	5.0
	iPg			39		7.4				
	eSg			56		−1.0	100			
TUA	eP*	08	15	27		−0.5	100	1.92	34	4.6
	e		16	07						
AUC	ePg	08	16	11		4.0		3.64	347	
	eS*			45		0.9	100			
KAI	ePg	08	16	09		−3.5		3.91	236	
	i			47						

	iSg	17	10	4.9						

AMPLITUDES: WEL 31 NPZ 14 TUA 3.5

PRO: 48/143

FELT: South-western parts of the North Island. Record at WEL shows a second event 9 seconds later.

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AUG 20 $16^h38^m23^s.5$ 41°.81S 172°.24E 12 km M = 4.2

± 0.6 0.03 0.06 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	16	38	39		−1.7	99	0.94	221	4.1
	S*			54		0.6	100			
CHR	iPg	16	39	04		5.3		1.74	171	3.7
	iSn			15		0.3	100			
	iSg			23		0.8	100			
WEL	ePn	16	38	54		−1.9	99	1.97	75	4.5
	iSn		39	20		−0.2	100			
	i			22						
NPZ	ePn	16	39	12		0.9	100	3.08	28	4.6
	e			36						
	eSn			48		1.1	100			
TUA	ePn	16	39	43		8.4		4.81	53	4.2s

AMPLITUDES: KAI 3.0 CHR 0.6 WEL 3.0
NPZ 2.0 TUA 0.2

PRO: 48/144

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AUG 20 $22^h37^m21^s.0$ 31°.68S 178°.21W 468 km M = 6.1

± 1.3 0.15 0.34 19 S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
AUC	iP	22	39	15		−0.5	100	7.77	226	
	iS		40	46		−0.3	100			
TUA	iP	22	39	20		1.2	100	8.06	207	6.2
	iS		40	52		0.1	100			
NPZ	iP	22	39	38		1.5	100	9.69	218	4.0s
	e		41	04						
	eS			33		8.9				
	e			52						
WEL	iP	22	39	50		−1.8	99	11.12	209	6.0
	iS		41	50		−2.4	99			
KAI	eP	22	40	20		1.6	100	13.62	214	3.8s
SUV	P	22	40	00		−20.2		13.81	347	
CHR	eP	22	40	25		4.0		13.87	209	4.6*
	iS		42	47		1.1	100			
API	iP	22	41	09		−0.7	100	18.74	20	

AMPLITUDES: TUA 4.0 NPZ 0.5 WEL 2.7
KAI 0.1 CHR 0.9

PRO: 48/145

ISS gives 31.0S 178.5W, depth .040r (285 km.), and lists data from 7 additional stations. Clock correction at SUV uncertain.

48/ 150

AUG 21 $15^h37^m21^s.1$ 39°.25S 177°.03E 33 km M = 4.2

± 0.7 0.04 0.07 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
HNZ	Sn-Pn			07		0.1	100	0.44	195	
TUA	e?	15	37	28				0.45	12	4.2
	iPn			30		−0.7	100			
	Sn			38		0.2	100			
NPZ	ePn	15	37	57		0.9	100	2.30	274	4.1
	iSn		38	22		−0.4	100			
WEL	P*	15	38	09		1.2	99	2.67	220	4.2
	iSn			30		−1.2	99			
	iS*			51		8.2				

AMPLITUDES: TUA 25 NPZ 1.0 WEI 1.0

PRO: 48/146

FELT: Hastings (60), MM III.

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AUG 23 $00^h30^m36^s.6$ 42°.39S 172°.78E 12 km M = 3.9

± 0.7 0.05 0.06 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	00	30	54		−1.2	100	1.02	262	3.9
	iS*		31	10		1.1	100			
CHR	iP*	00	30	57		−0.3	100	1.14	185	3.8
	iS*		31	13		0.4	100			
WEL	ePn	00	31	06		−1.4	100	1.85	54	3.9
	iSn			32		1.4	100			

AMPLITUDES: KAI 1.5 CHR 1.6 WEL 1.0

PRO: 48/147

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AUG 28 $03^h06^m33^s.1$ 37°.70S 179°.97E 33 km M = 4.8

± 1.6 0.12 0.12 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	Pn	03	07	09		−1.4	99	2.47	243	4.8
	iSn			39		0.4	100			
NPZ	iPn	03	07	43		0.5	100	4.82	252	4.7
	iSn		08	35		−0.0	100			
	i			41						
WEL	ePn	03	07	51		0.9	100	5.38	227	4.8
	iSn		08	48		−0.4	100			

AMPLITUDES: TUA 3.0 NPZ 1.0 WEL 1.0

PRO: 48/148

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AUG 29 $04^h58^m28^s.1$ 41°.03S 174°.10E 12 km M = 4.6

± 0.5 0.03 0.04 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	04	58	38		−1.7	99	0.57	117	4.6
	iSg			47.5		−0.0	100			
NPZ	e	04	59	20				1.97	359	4.3
	iSn			24		−0.7	100			
	iSg			47		12.6				
	i			55						
KAI	ePn	04	59	08		0.3	100	2.50	233	5.2
	iS*			44		−0.7	100			
	i	05	00	36						

CHR	ePn	04 59 10	−0.7	100	2.73	203		4.5
	iSn	42	−0.9	100				
	iS*	54	2.6	98				
TUA	ePg	04 59 35	1.5	100	3.23	48		4.4
	i	44						
	iSg	05 00 17.5	0.4	100				

AMPLITUDES: WEL 52 NPZ 2.5 KAI 5.0
CHR 1.5 TUA 0.7

PRO: 48/150

FELT: Wellington (68), MM IV.

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AUG 29 $06^h20^m34^s.2$ 39°.07S 175°.77E 12 km M = 3.7
± 0.5 0.04 0.04 R S.E. of RES. 0.8

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS*	06 21 09		−0.1	100	1.11	77	3.6
NPZ	iPn	06 20 58		0.3	100	1.32	270	3.8
WEL	iP*	06 21 16		0 6	100	2.34	199	
	iSn	40		0.1	100			
KAI	ePg	06 22 10		−0.9	99	4.78	222	
	e	19						

AMPLITUDES: TUA 0.6 NPZ 1.0

No provisional solution.

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AUG 30 $11^h52^m31^s.4$ 42°.38S 172°.93E 12 km M ~ 3.8
± 0.4 0.03 0.03 R S.E. of RES. 0.8

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	11 52 51		−0.8	99	1.13	262	3.8
	iS*	53 07.5		0.5	100			
CHR	eP*	11 52 53		0.4	100	1.18	191	3.1s
	eS*	53 08		−0.2	100			
WEL	iSn	11 53 23		0.1	100	1.75	52	3.4s

AMPLITUDES: KAI 1.1 CHR 0.3 WEL 0.3

PRO: 48/151

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AUG 30 $19^h34^m45^s.9$ 38°.77S 177°.93E 33 km M = 4.0
± 2.8 0.09 0.16 R S.E. of RES. 1.3

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	19 34 58		0.3	100	0.61	266	3.8
	iS*	35 08		1.1	100			
NPZ	iSn	19 36 03		−1.4	99	3.02	263	4.1
WEL	iSn	19 36 16		0.3	100	3.49	223	4.2s
KAI	e	19 37 19				6.22	231	4.8s
	iSn	21		−0.2	100			

AMPLITUDES: TUA 4.9 NPZ 0.7 WEL 0.5
KAI 0.3

PRO: 48/152

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AUG 31 $03^h53^m25^s.4$ 41°.11S 174°.20E 12 km M = 3.7
± 0.5 0.03 0.04 R S.E. of RES. 1.4

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	03 53 33		−1.4	99	0.46	113	3.4
	iS*	42		1.1	100			
NPZ	ePg	03 54 07		0.3	100	2.04	357	4.0
	iSn	24		0.1	100			
KAI	iPg	03 54 18		1.6	99	2.52	235	4.0s
	eSn	34		−1.3	100			
	e	55 10						
TUA	eSn	03 54 52		−0.3	100	3.23	46	3.6s

AMPLITUDES: WEL 5.0 NPZ 1.0 KAI 0.3
TUA 0.1

PRO: 48/153

FELT: Wellington (68), MM II.

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AUG 31 $23^h07^m28^s.4$ 31°.25S 177°.02E 33 km M = 6.7
± 3.2 0.17 0.33 R S.E. of RES. 2.1

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	23 09 17		2.1	100	7.54	179	7.0
	iSn	10 36		0.3	100			
NPZ	e	23 09 36				8.16	196	4.6s
	iP*	54		5.3				
	e	11 17						
WEL	Pn	23 09 49		−1.9	100	10.18	190	6.3
	iSn	11 38		−1.0	100			
KAI	ePn	23 10 17		−0.3	100	12.11	200	5.6s
	eSn	12 28		2.5	99			
	i	40						
CHR	eSn	23 12 39		−1.7	100	12.74	195	5.4s

AMPLITUDES: TUA 1.4 NPZ 0.3 WEL 1.5
KAI 0.5 CHR 0.5

PRO: 48/154

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SEP 02 $09^h54^m16^s.8$ 41°.90S 172°.47E 12 km M = 3.9
± 0.3 0.02 0.03 R S.E. of RES. 0.6

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	09 54 35		−0.1	100	1.00	231	3.8
	iS*	49		0.4	100			
CHR	ePg	09 54 54		4.1		1.64	176	4.0
	iSn	55 05		−0.4	100			
WEL	Pn	09 54 47		−0.3	100	1.84	71	3.8
	iSn	55 11		0.8	99			
NPZ	e?	09 55 01				3.09	24	3.8s
	iSn	40		−0.3	100			

AMPLITUDES: KAI 1.4 CHR 1.1 WEL 0.8
NPZ 0.3

PRO: 48/155

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SEP 04 $08^h20^m21^s.6$ 39°.82S 177°.33E 12 km M = 4.2
± 0.9 0.03 0.06 R S.E. of RES. 0.9

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	08 20 41		0.8	100	1.03	352	4.4

	iS*			53		−0.8	100			
WEL	iSn	08	21	29		−0.6	100	2.44	232	4.0
NPZ	eSn	08	21	35		0.8	100	2.64	286	3.9s
	eS*			42		−0.2	100			
KAI	e	08	22	35				5.22	237	4.1s
	eSn			36.5		0.1	100			

AMPLITUDES: TUA 7.8 WEL 0.7 NPZ 0.5
KAI 0.1

PRO: 48/156

SEP 04 $18^h12^m36^s.4$ 42°.48S 173°.04E 12 km M = 3.7 — 48/ 161
± 0.8 0.05 0.06 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	ePg	18	13	00		1.4	99	1.10	196	3.5
	iS*			10		−0.9	100			
KAI	eP*	18	12	57		−1.2	100	1.21	267	3.8
	eS*		13	15		0.7	100			
WEL	eSn	18	13	28		0.0	100	1.75	48	3.4s

AMPLITUDES: CHR 0.8 KAI 0.9 WEL 0.3

PRO: 48/157

SEP 05 $07^h04^m04^s.7$ 40°.09S 173°.11E 12 km M = 4.4 — 48/ 162
± 1.8 0.10 0.11 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	S*-P*			14		−2.8	98	1.26	36	4.6
	P*		04	23		−4.4				
	iP*			26		−1.4				
	iS*			37		−7.2				
WEL	Pn	07	04	33		−0.9	100	1.74	134	4.3
	Sn			56		0.2	100			
KAI	ePg	07	05	01		0.6	100	2.75	207	4.4
	iSn			21		0.8	100			
	iSg			36		−1.5	100			
TUA	eSn	07	05	36		0.8	100	3.37	69	3.9s

AMPLITUDES: NPZ 11 WEL 2.5 KAI 0.7
TUA 0.1

PRO: 48/158

Clock correction at NPZ uncertain.

SEP 05 $23^h14^m51^s.4$ 41°.20S 173°.19E 12 km M = 4.1 — 48/ 163
± 0.8 0.04 0.06 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	23	15	12.5		−0.5	100	1.20	95	3.9
	iPg			15.5		−0.1	100			
	iS*			29		0.1	100			
	iSg			32		0.2	100			
KAI	ePn	23	15	22		−0.5	100	1.87	224	4.3
	eSn			40		−5.8				
NPZ	iP*	23	15	34		3.3	97	2.24	18	4.0
	iS*			58		−2.1	99			
CHR	e	23	15	47				2.37	190	
	eSg		16	11		−0.2	100			

	e		17	12						
	e			38						

AMPLITUDES: WEL 2.4 KAI 1.1 NPZ 1.0

PRO: 48/159

Originally interpreted as two superimposed shocks.

SEP 06 $00^h34^m31^s.6$ 43°.40S 171°.42E 12 km M = 4.2 — 48/ 164
± 1.5 0.06 0.09 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	00	34	47		−0.6	100	0.87	360	4.2
	S*			59		−0.4	100			
CHR	iPg	00	34	50		0.3	100	0.89	99	4.1
	iS*			59		−0.9	100			
WEL	eP*	00	35	30		1.6	99	3.26	51	3.9s
	eS*		36	11		0.0	100			

AMPLITUDES: KAI 4.7 CHR 5.0 WEL 0.3

PRO: 48/160

FELT: Lake Coleridge (100), MM IV.

SEP 06 $00^h38^m58^s.5$ 38°.02S 177°.58E 116 km M = 5.7 — 48/ 165
± 2.1 0.09 0.15 12 S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	00	39	19.5		0.4	100	0.85	203	5.7
	iS			34.5		−0.1	100			
AUC	eP	00	39	44		4.8		2.51	297	
	iS		40	08		−1.6	100			
NPZ	iP	00	39	48		3.1	97	2.94	248	4.5*
	S		40	21		1.1	100			
WEL	eP	00	39	57		−1.0	100	3.91	213	5.7
	i		40	06.5						
	iS			42		−1.3	100			
KAI	eP	00	40	33		−0.2	100	6.52	224	4.8*
	eS		41	42.5		−4.2				
CHR	iP	00	40	35		−0.2	100	6.66	213	4.6*
	iS		41	47		−3.2				

AMPLITUDES: TUA 75 NPZ 5.0 WEL 11
KAI 2.3 CHR 2.0

PRO: 48/161

FELT: Scattered eastern places in the North Island from Whakatane (27) to Wellington (68). Listed in ISS additional readings.

SEP 07 $21^h47^m13^s.0$ 41°.03S 174°.83E 12 km M ~ 4.0 — 48/ 166
± 0.5 0.03 0.06 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	21	47	17		−1.6	99	0.26	190	
	iS*			23.5		1.0	100			
NPZ	ePn	21	47	46		−0.4	100	2.04	343	4.0
	eSn		48	07		−4.5				
TUA	e?	21	47	51				2.84	40	3.9s
	eSn		48	30		−0.7	100			
	eSg			50		1.1	100			
KAI	eP*	21	48	05		0.2	100	2.96	239	3.6s
	eS*			44		0.5	100			

AMPLITUDES: WEL 13 NPZ 1.0 TUA 0.3
KAI 0.1

PRO: 48/162

FELT: Wellington (68), MM II.

48/ 167

SEP 09 $16^h29^m12^s.5$ 39°.93S 175°.81E 12 km M = 4.2
± 1.9 0.04 0.14 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	16	29	41		0.5	100	1.57	210	4.1
	iSn			58.5		−1.1	100			
NPZ	iPn?	16	29	38		−1.8		1.60	302	4.3
	iP*			41		0.0	100			
	iSn		30	00		−0.3	100			
KAI	eSn	16	31	05		1.8	99	4.21	231	3.9s
	eS*			20		−0.5	100			

AMPLITUDES: WEL 1.9 NPZ 3.5 KAI 0.1

PRO: 48/163

FELT: Wanganui (57), MM IV.

48/ 168

SEP 10 $03^h39^m58^s.8$ 40°.00S 175°.00E 12 km M = 3.8
± R R R R S.E. of RES. 3.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iS*	03	40	38		2.3	100	1.18	322	3.9
WEL	e?	03	39	36				1.30	188	3.7
	iSn		40	37		−2.3	100			

AMPLITUDES: NPZ 2.5 WEL 1.2

PRO: 48/164

FELT: Wanganui (57), MM III.

48/ 169

SEP 10 $09^h33^m29^s.9$ 37°.65S 179°.58W 33 km M = 4.6
±10.6 0.60 0.89 R S.E. of RES. 4.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	09	34	12		0.1	100	2.83	245	4.4
	iSn			43		−0.6	100			
WEL	e	09	35	48				5.68	229	4.7
	eSn			50		−2.3	100			
KAI	eSn	09	37	02		3.2	99	8.45	232	4.5s

AMPLITUDES: TUA 1.0 WEL 0.6 KAI 0.1

No provisional solution.

48/ 170

SEP 11 $17^h16^m20^s.7$ 40°.12S 174°.96E 33 km M = 4.3
± 0.7 0.04 0.07 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	17	16	40		−0.3	100	1.18	187	4.3
	iSn			55		0.1	100			
NPZ	iPn	17	16	41		−0.4	100	1.25	327	4.6
	iSn			57		0.2	100			
TUA	ePn	17	16	51		−2.5	99	2.14	53	4.0
	eS*		17	29		2.2	99			
KAI	eP*	17	17	22		−1.2	100	3.60	227	4.3s
			18	04		10.9				

	eS*			12		1.8	100			

AMPLITUDES: WEL 6.6 NPZ 13 TUA 0.7
KAI 0.3

PRO: 48/165

FELT: Wanganui (57), MM V

48/ 171

SEP 14 $04^h59^m56^s.6$ 38°.92S 176°.81E 33 km M = 4.4
± 0.3 0.03 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	05	00	04		−0.1	100	0.29	67	
	iS*			10		0.4	100			
NPZ	e?	05	00	20				2.14	265	4.3
	iP*			34		−0.4	100			
	iS*		01	03		0.4	100			
WEL	eP*	05	00	45.5		−0.7	100	2.83	213	4.5
	iSn		01	10		−0.7	100			
	iS*			24.5		1.1	99			
KAI	eP*	05	01	31		0.1	100	5.46	227	4.9s
	iSn		02	14		0.2	100			

AMPLITUDES: TUA 25 NPZ 2.0 WEL 1.8
KAI 0.5

PRO: 48/166

48/ 172

SEP 14 $12^h10^m07^s.2$ 42°.34S 173°.11E 12 km M = 3.9
± 0.4 0.03 0.04 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	12	10	29		−0.6	100	1.24	197	3.9
KAI	ePn	12	10	31		0.9	99	1.28	261	4.2
	eS*			47		−0.1	100			
WEL	eS*	12	10	58		0.4	100	1.63	50	3.7
NPZ	eS*	12	11	49		−0.4	100	3.36	13	3.9s

AMPLITUDES: CHR 1.5 KAI 1.8 WEL 0.7
NPZ 0.3

PRO: 48/167

48/ 173

SEP 15 $23^h24^m21^s.4$ 37°.82S 177°.37E 256 km M = 5.3
± 1.5 0.08 0.10 8 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	23	24	57.5		0.2	100	1.00	190	5.2
	iS		25	24.5		−0.7	100			
	i			52						
NPZ	eP	23	25	13		−0.2	100	2.87	243	3.8*
	iS			54		0.4	100			
	i		26	05						
WEL	iP	23	25	26.5		0.4	100	4.00	209	5.4
	iS		26	17.5		1.2	99			
KAI	e	23	26	23				6.54	222	4.7*
	iS		27	11		−1.0	99			
CHR	eS	23	27	16		−0.5	100	6.74	211	4.3*

AMPLITUDES: TUA 7.0 NPZ 1.0 WEL 4.6
KAI 1.5 CHR 1.0

PRO: 48/168

48/ 174

SEP 16 $10^h30^m02^s.4$ 38°.77S 175°.95E 182 km M = 5.0
± 1.5 0.05 0.07 11 S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	10	30	30.5		0.5	100	0.94	93	5.0
	iS			50		−1.3	100			
NPZ	iP	10	30	35		0.2	100	1.49	258	4.0*
	iS			31 00		0.3	100			
AUC	iS	10	31	11		−0.3	100	2.12	334	
WEL	iP	10	30	49		1.3	99	2.67	199	5.0
	iS			31 24		1.3	99			
KAI	iS	10	32	16		−1.5	99	5.10	221	4.4*
CHR	eS	10	32	23		−0.9	100	5.38	207	4.1*

AMPLITUDES: TUA 8.5 NPZ 2.5 WEL 4.6
KAI 1.0 CHR 0.8

PRO: 48/169

Listed in ISS additional readings.

48/ 175

SEP 16 $12^h48^m30^s.9$ 40°.41S 177°.20E 12 km M = 4.5
± 1.6 0.07 0.11 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	12	48	59		0.7	100	1.60	359	4.5
	iSn			49 18		−0.7	100			
WEL	iSn	12	49	29		−0.3	100	2.04	244	4.5
NPZ	Sn	12	49	47		0.4	100	2.76	298	

AMPLITUDES: TUA 3.5 WEL 2.9

PRO: 48/170

48/ 176

SEP 16 $14^h01^m08^s.1$ 39°.64S 176°.70E 12 km M = 4.1
± 0.8 0.05 0.09 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePg	14	01	28		1.6	99	0.90	23	3.4A
	S*			36		−0.7	100			
NPZ	ePn	14	01	41		−1.4	100	2.12	285	4.0
	eSn		02	09		0.7	100			
WEL	ePn	14	01	42.5		−1.2	100	2.20	221	4.1
	Pg		02	02		9.2				
	iSn			12		1.5	100			
KAI	eSn	14	03	15		−0.9	100	4.93	232	4.6S
	e			29						
	eS*			38		0.5	100			

AMPLITUDES: TUA 1.0 NPZ 1.0 WEL 1.0
KAI 0.3

PRO: 48/171

48/ 177

SEP 25 $09^h31^m35^s.8$ 29°.95S 176°.85E 33 km M ~ 5.9
± 1.2 0.06 0.09 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	09	33	40		0.0	100	8.85	178	~6.5s
	eSn			35 14		−0.2	100			
WEL	eSn	09	36	17		0.4	99	11.44	188	~5.7s
KAI	eSn	09	37	01		−0.2	100	13.29	198	~5.4s

AMPLITUDES: TUA 0.4 WEL 0.5 KAI 0.3

No provisional solution.

48/ 178

SEP 29 $18^h02^m57^s.4$ 41°.00S 174°.00E 12 km M ~ 3.7
± R R R R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	18	03	10		0.4	100	0.65	116	3.7
	iS*			18		−0.4	100			

AMPLITUDES: WEL 5.0

PRO: 48/173

FELT: Tawa Flat (68), MM II.

48/ 179

OCT 03 $21^h58^m19^s.2$ 36°.04S 175°.54E 33 km M = 5.5
± 3.1 0.15 0.14 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	21	59	06		1.6	100	3.05	156	5.6
	Sn			38		−0.4	100			
NPZ	eS*	22	00	00		1.9	99	3.24	201	3.4s
WEL	ePn	21	59	34		−0.8	100	5.27	186	5.4
	i	22	00	30						
	iSn			32		0.0	100			
KAI	eSn	22	01	19		0.1	100	7.23	205	4.9s
CHR	iSn	22	01	30.5		−2.5	99	7.81	196	4.9s

AMPLITUDES: TUA 2.5 NPZ 0.1 WEL 2.0
KAI 0.3 CHR 0.4

No provisional solution.

48/ 180

OCT 04 $16^h28^m39^s.0$ 38°.15S 176°.62E 216 km M = 5.0
± 2.4 0.10 0.23 17 S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	16	29	10		0.7	100	0.78	148	5.0
	iS			32		−0.7	100			
NPZ	iP	16	29	21		−0.1	100	2.20	245	3.4s
WEL	iP	16	29	35		−0.2	100	3.45	204	5.0
	S		30	20		1.3	99			
CHR	eS	16	31	19		−0.9	100	6.17	208	4.2*

AMPLITUDES: TUA 5.5 NPZ 0.5 WEL 3.0
CHR 0.8

PRO: 48/174

Listed in ISS additional readings.

48/ 181

OCT 05 $03^h58^m58^s.5$ 41°.39S 174°.03E 12 km M ~ 4.4
± 0.5 0.03 0.03 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	03	59	10		0.7	100	0.57	80	4.4

	iS*		16.5	−0.6	100				
KAI	eSn	04	00 02	−0.2	100	2.26	239		3.9s
NPZ	eP*	03	59 40	0.7	100	2.32	1		3.8s
	eSn	04	00 03	−0.6	100				

AMPLITUDES: WEL 35 KAI 0.3 NPZ 0.5

PRO: 48/175

FELT: Wellington(18), MM III.

48/ 182

OCT 08 $20^h23^m34^s.4$ 39°.81S 175°.05E 12 km M = 3.8

± 0.4 0.02 0.03 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	e?	20	23	45				1.06	314	4.1
	iS*		24	08		0.2	100			
WEL	Pn	20	24	00		−0.2	100	1.49	188	3.5
	iSn			20		0.4	100			
TUA	ePn	20	24	05		−1.0	99	1.91	59	3.7s
	eS*			34		0.6	100			

AMPLITUDES: NPZ 5.0 WEL 0.6 TUA 0.3

PRO: 48/177

48/ 183

OCT 08 $21^h20^m59^s.1$ 43°.01S 173°.00E 12 km M ~ 4.3

± 0.6 0.03 0.06 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eP*	21	21	10		−0.3	100	0.59	207	3.8+
	ePg			13		1.8	99			
	eS*			17.5		−0.9	100			
	iSg			19		−0.3	100			
KAI	iP*	21	21	23		1.1	100	1.27	292	4.3
	eS*			38		−0.7	100			
WEL	Sn	21	22	00		−0.5	100	2.17	38	3.8s

AMPLITUDES: CHR 6.0+ KAI 2.5 WEL 0.5

PRO: 48/178

48/ 184

OCT 09 $19^h11^m33^s.3$ 45°.19S 168°.24E 12 km M ~ 4.8

± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
MNW	iS*-P*			10		0.0	100	0.74	216	
KAI	ePg	19	12	49		4.8		3.51	42	4.8
	eSn		13	07		0.0	100			
CHR	eSn	19	13	08		0.0	100	3.55	64	4.3s

AMPLITUDES: KAI 1.0 CHR 0.5

PRO: 48/179

FELT: Monowai (139), and Dunedin (145), MM III.

48/ 185

OCT 11 $02^h04^m43^s.5$ 39°.40S 175°.36E 93 km M = 4.2

± 0.3 0.01 0.01 4 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP	02	05	04		−0.2	100	1.05	288	3.4*
	iS			20		0.0	100			

TUA	iS	02	05 30	−0.1	100	1.51	68		4.3
WEL	iP	02	05 15.5	0.0	100	1.94	193		4.1
	S		39	−0.1	100				
KAI	eS	02	06 38	0.1	100	4.33	222		3.8s

AMPLITUDES: NPZ 1.0 TUA 1.5 WEL 1.3
KAI 0.3

PRO: 48/180

48/ 186

OCT 11 $11^h13^m22^s.8$ 35°.51S 175°.67E 33 km M = 5.1

±11.0 0.45 0.40 R S.E. of RES. 6.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	11	14	16		1.9	100	3.50	161	5.6
	S*		15	09		−0.3	100			
NPZ	eP*	11	14	35		6.7		3.77	199	4.5
WEL	iS*	11	16	17		−1.4	100	5.80	187	5.2
	e		17	04						
KAI	eSn	11	16	29		−5.9	99	7.75	204	4.9s
	eS*		17	22		5.7	99			

AMPLITUDES: TUA 1.5 NPZ 1.0 WEL 1.0
KAI 0.3

No provisional solution.

Minute at NPZ not certain. Solution unsatisfactory.

48/ 187

OCT 12 $17^h52^m35^s.8$ 40°.32S 174°.42E 12 km M = 4.1

± 0.5 0.02 0.07 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	17	52	54		0.1	100	1.00	165	3.8
	iS*		53	07		−0.3	100			
NPZ	eP*	17	53	00		1.2	99	1.29	348	4.3
	iS*			15		−0.9	100			
KAI	ePg	17	53	44		4.4		3.16	225	4.2s
	eSn		54	01		−0.0	100			

AMPLITUDES: WEL 2.5 NPZ 5.0 KAI 0.3

PRO: 48/181

FELT: Wanganui (57), MM III.

48/ 188

OCT 13 $18^h16^m47^s.4$ 38°.00S 177°.00E 12 km M ~ 3.7

± R R R R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	18	17	02		−0.5	100	0.82	172	3.7
	iS*			14		0.5	100			

AMPLITUDES: TUA 2.0

PRO: 48/182

FELT: Whakatane (27).

48/ 189

OCT 13 $19^h34^m08^s.4$ 38°.00S 177°.00E 12 km M ~ 4.1

± R R R R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	19	34	23		−0.5	100	0.82	172	4.1
	iS*			35		0.5	100			

AMPLITUDES: TUA 5.0

PRO: 48/183

FELT: Edgecumbe, Whakatane (27)

48/ 190

OCT 16 $17^h46^m45^s.2$ 40°.41S 174°.19E 33 km M = 4.7

± 0.5 0.03 0.06 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	17	47	01		−1.1	100	0.97	154	4.6
	iSn			14		−0.6	100			
NPZ	ePn	17	47	06		−1.1	100	1.35	356	4.7
	iSn			23		−0.5	100			
TUA	ePn	17	47	30		3.2		2.79	56	4.7
	eSn			48 00		1.8	99			
KAI	eP*	17	47	37.5		0.3	100	2.97	224	4.8
	e			55						
	eSn			48 04		1.4	100			
CHR	eP*	17	47	48		4.8		3.33	200	4.2s
	iSn			48 11		−0.2	100			

AMPLITUDES: WEL 18 NPZ 12 TUA 2.0
KAI 1.5 CHR 0.5

PRO: 48/184

FELT: North-western parts of Wellington province (57, 61, 65).

48/ 191

OCT 20 $06^h02^m22^s.9$ 40°.73S 173°.94E 33 km M = 4.1

± 0.7 0.04 0.08 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	06	02	38		0.1	100	0.84	132	3.8
	iSn			49.5		0.5	100			
NPZ	iPn	06	02	50		0.8	100	1.66	4	4.3
	iSn			03 08		−0.9	100			
KAI	eP*	06	03	16		7.4		2.61	226	4.2s
	eSn			33		1.5	100			
CHR	iSn	06	03	38		−2.0	99	2.96	199	4.3

AMPLITUDES: WEL 4.0 NPZ 3.0 KAI 0.5
CHR 0.8

PRO: 48/185

48/ 192

OCT 28 $04^h08^m32^s.8$ 39°.91S 175°.40E 33 km M = 4.2

± 0.2 0.01 0.02 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	ePn	04	08	54		−0.5	99	1.33	309	4.2
	iSn			09 11		0.3	100			
WEL	iPn	04	08	56		−0.3	100	1.46	199	4.4
	iSn			09 14		0.1	100			
TUA	ePn	04	09	00		−0.2	100	1.75	52	4.1
	iSn			21		0.3	100			
KAI	eP*	04	09	53		10.9		3.99	228	4.6s
	Sn			10 15		0.3	100			

AMPLITUDES: NPZ 4.0 WEL 4.5 TUA 1.2
KAI 0.5

PRO: 48/186

48/ 193

OCT 29 $03^h27^m38^s.2$ 42°.54S 172°.94E 12 km M = 4.5

± 0.4 0.03 0.04 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	03	27	56		−0.7	100	1.02	193	4.3
	iP*			57.5		0.8	100			
	iS*		28	11.5		1.2	100			
KAI	iP*	03	27	58		−0.7	100	1.13	270	4.8
	iS*		28	14		0.1	100			
WEL	ePn	03	28	08		−1.0	100	1.85	48	4.4
	eSn			33		0.9	100			
NPZ	ePn	03	28	30		−2.5	98	3.58	14	4.6
	eSn		29	15		1.4	100			
	eS*			29		1.8	99			
	i			32						
TUA	eP*	03	29	02		−1.2	100	4.91	42	4.4s
	iPg			17.5		−0.0	100			
	S*		30	07		−0.2	100			

AMPLITUDES: CHR 7.0 KAI 11 WEL 3.0
NPZ 1.5 TUA 0.3

PRO: 48/188

FELT: Hanmer Springs (88), MM IV.

48/ 194

OCT 29 $22^h05^m27^s.5$ 39°.80S 175°.32E 12 km M = 3.9

± 0.3 0.02 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	P*	22	05	50		0.7	99	1.21	307	3.9
	iS*		06	05		−0.4	100			
WEL	ePn	22	05	54		−0.1	100	1.55	195	3.9
	iSn		06	14		0.0	100			
TUA	ePg	22	06	02		−0.6	100	1.74	56	3.8
	iSn			19		0.5	100			
KAI	e	22	07	03				4.01	226	3.9s

AMPLITUDES: NPZ 2.7 WEL 1.4 TUA 0.6
KAI 0.1

PRO: 48/189

FELT: Wanganui (57), MM III.

48/ 195

OCT 31 $02^h03^m56^s.2$ 40°.47S 175°.09E 33 km M ~ 3.5

± 0.9 0.02 0.11 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	02	04	11		−0.3	100	0.85	197	3.5
	iSn			22.5		−0.0	100			
NPZ	iP*	02	04	26		1.0	99	1.61	331	3.5s
	eSn			40		−0.8	100			
KAI	eSn	02	05	25		0.1	100	3.44	232	3.8s

AMPLITUDES: WEL 2.0 NPZ 0.5 KAI 0.1

PRO: 48/190

FELT: Paraparaumu Beach (65), MM III.

48/ 196

OCT 31 $10^h22^m48^s.5$ 42°.20S 173°.15E 12 km M ~ 3.5
± R R R R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	Pn	10	23	13.5		1.3	99	1.33	255	~3.5s
	iSn			29		−0.9	100			
	e			38						
CHR	ePn	10	23	12.5		−0.4	100	1.39	196	

AMPLITUDES: KAI 0.4

PRO: 48/191

FELT: Hanmer Springs (88), MM IV.

48/ 197

NOV 01 $11^h32^m15^s.1$ 39°.32S 175°.50E 12 km M ~ 3.8
± 0.3 0.02 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eS*	11	32	51		0.1	100	1.14	282	3.8
TUA	ePn	11	32	39		−0.4	100	1.38	69	3.6s
	eSn			58		0.4	100			
WEL	ePn	11	32	48		−0.5	100	2.04	196	3.0s
	eSn			33 14		0.4	100			

AMPLITUDES: NPZ 1.5 TUA 0.3 WEL 0.1

PRO: 48/192

FELT: Wanganui (57), MM III.

48/ 198

NOV 03 $05^h44^m26^s.1$ 37°.77S 176°.04E 12 km M = 4.7
± 0.3 0.02 0.01 R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	05	44	50		−0.0	100	1.35	140	4.4
	iSn		45	08		0.0	100			
WEL	eSn	05	46	03		−0.1	100	3.64	195	5.0
	i			06						
KAI	eSn	05	46	58		0.1	100	5.93	215	5.2s

AMPLITUDES: TUA 1.8 WEL 0.6 KAI 0.3

PRO: 48/193

48/ 199

NOV 03 $16^h21^m42^s.3$ 40°.00S 175°.63E 12 km M ~ 3.7
± 0.3 0.02 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePg	16	22	11.5		0.0	100	1.44	207	3.7
	iSn			25.5		−0.7	99			
NPZ	eSn	16	22	28		−0.3	100	1.52	307	3.2s
TUA	ePg	16	22	28		11.7		1.68	45	3.7s
	eSn			32		−0.0	100			
	eS*			34.5		0.2	100			
KAI	eSn	16	23	30		0.8	99	4.06	230	
	eSg		24	05		6.1				

AMPLITUDES: WEL 1.0 NPZ 0.3 TUA 0.5

PRO: 48/194

48/ 200

NOV 04 $02^h21^m16^s.8$ 43°.29S 171°.55E 12 km M = 3.6
± 1.8 0.08 0.15 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	02	21	31		−0.1	100	0.77	352	3.9
	iPg			35.5		3.0				
	iS*			40.5		−1.0	99			
	iS*			42.5		1.0	99			
CHR	eP*	02	21	32		0.1	100	0.82	108	3.3
	iS*			43		−0.0	100			

AMPLITUDES: KAI 2.5 CHR 1.0

PRO: 48/195

FELT: Lake Coleridge (100), MM III.

48/ 201

NOV 10 $05^h00^m01^s.4$ 37°.06S 176°.54E 12 km M = 5.6
± 1.5 0.08 0.05 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	05	00	31.5		−0.1	100	1.81	165	5.3
	iSn			54.5		0.2	100			
WEL	ePn?	05	01	02		−5.5		4.45	198	5.9
	iSn			57		−0.4	99			
KAI	eSn	05	02	53		0.3	100	6.74	214	5.0s
CHR	Pg	05	02	40		14.7		7.13	204	5.4s

AMPLITUDES: TUA 6.0 WEL 3.5 KAI 0.1
CHR 0.3

PRO: 48/196

48/ 202

NOV 10 $09^h51^m51^s.7$ 38°.57S 176°.12E 229 km M = 4.5
± 2.6 0.12 0.12 16 S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	09	52	23		−0.7	100	0.84	107	4.4
	iS			48		−0.6	100			
NPZ	eP	09	52	31		1.2	100	1.67	252	3.4s
	eS			59		−0.2	100			
WEL	iP	09	52	43		0.7	100	2.91	201	4.6
	iS		53	23		1.5	100			
KAI	eS	09	54	12		−2.1	99	5.34	221	3.4s

AMPLITUDES: TUA 1.5 NPZ 0.5 WEL 1.5
KAI 0.1

PRO: 48/197

48/ 203

NOV 11 $04^h37^m10^s.1$ 42°.50S 173°.00E 12 km M ~ 3.3
± R R R R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eS*	04	37	47		0.0	100	1.18	268	~3.3s

AMPLITUDES: KAI 0.3

PRO: 48/198

FELT: Hanmer Springs (88), MM III.

48/ 204

NOV 11 $15^h37^m53^s.5$ 40°.71S 173°.04E 12 km M = 4.2
± 0.4 0.02 0.03 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	15	38	18		−0.5	100	1.43	114	4.0
	iSg			42		0.2	100			
NPZ	ePn?	15	38	10		−13.9		1.83	26	4.3
	eSn			47		0.2	100			
KAI	ePg	15	38	37		−0.6	100	2.19	213	4.4
	iSn			56		0.7	99			

AMPLITUDES: WEL 2.0 NPZ 3.0 KAI 1.0

PRO: 48/199

FELT: Collingwood (72), MM IV.

48/ 205

NOV 12 $11^h52^m55^s.2$ 39°.65S 175°.34E 12 km M = 3.8
± 0.2 0.01 0.01 R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eS*	11	53	31		−0.0	100	1.14	300	3.5
TUA	eS*	11	53	46		−0.1	100	1.64	60	4.1
WEL	iPn	11	53	24		0.3	100	1.69	195	3.8
	iSg			52		−0.1	100			
KAI	eSn	11	54	38		−5.8		4.13	225	4.4s

AMPLITUDES: NPZ 1.0 TUA 1.0 WEL 1.0
KAI 0.3

No provisional solution.

48/ 206

NOV 14 $05^h55^m52^s.0$ 42°.42S 173°.27E 12 km M = 3.9
± 0.8 0.05 0.06 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	P*	05	56	15		1.2	100	1.21	203	4.0
	S*			29		−0.9	100			
KAI	iPg	05	56	21		1.0	100	1.39	265	4.0
	eSg			38		−0.7	100			
WEL	eSn	05	56	39		−0.5	100	1.58	45	3.7

AMPLITUDES: CHR 2.0 KAI 1.0 WEL 0.8

PRO: 48/200

48/ 207

NOV 17 $21^h54^m25^s.3$ 40°.03S 175°.35E 12 km M = 4.3
± 0.6 0.01 0.04 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePg	21	54	52		−0.2	100	1.32	199	4.5
	iS*		55	07		0.3	100			
NPZ	e?	21	54	15				1.38	314	4.1
	eP*			44		−6.0				
	iSg		55	12		0.1	100			
KAI	eS*	21	56	23		−0.1	100	3.88	229	3.9s

AMPLITUDES: WEL 7.0 NPZ 3.0 KAI 0.1

PRO: 48/201

FELT: Wanganui (57), MM III.

48/ 208

NOV 20 $11^h31^m12^s.2$ 42°.18S 173°.06E 12 km M = 3.9
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iS*	11	31	52		0.0	100	1.27	254	4.0
CHR	Sn	11	31	55		0.0	100	1.39	193	3.5s
WEL	iSn	11	31	59		0.0	100	1.56	56	3.8

AMPLITUDES: KAI 1.4 CHR 0.5 WEL 1.0

No provisional solution.

48/ 209

NOV 23 $08^h46^m44^s.3$ 42°.50S 172°.00E 12 km M = 4.2
± R R R R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	P*	08	47	04		−0.7	99	1.13	156	3.3s
	S*			20		0.2	100			
WEL	ePg	08	47	41		8.2		2.39	61	4.1
	Sg		48	05		−0.1	100			
NPZ	ePg	08	48	17		16.4		3.77	25	4.3
	eSn			25		0.6	100			

AMPLITUDES: CHR 0.5 WEL 1.0 NPZ 0.7

No provisional solution.

No consistent interpretation of phases seems obtainable.

48/ 210

NOV 25 $19^h42^m47^s.5$ 40°.08S 175°.31E 33 km M = 3.8
± 0.7 0.01 0.09 R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eSn	19	43	24		0.0	100	1.27	199	3.5
NPZ	ePn	19	43	10		−0.2	100	1.39	316	4.1
	iP*			13		0.2	100			
	iSn			27		−0.1	100			

AMPLITUDES: WEL 0.9 NPZ 3.0

PRO: 48/202

FELT: Wanganui (58), MM III.

48/ 211

NOV 27 $12^h44^m52^s.0$ 40°.50S 173°.24E 12 km M = 4.3
± 0.9 0.05 0.09 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iSn	12	45	35		−0.0	100	1.40	125	4.3
NPZ	ePg	12	45	25		1.2	99	1.57	24	3.9
	iSn			38		−1.1	100			
KAI	eSn	12	46	00		−0.1	100	2.45	214	4.6
TUA	e	12	46	16				3.46	62	3.8s

AMPLITUDES: WEL 4.5 NPZ 1.5 KAI 1.5
TUA 0.1

No provisional solution.

48/ 212

NOV 28 $12^h03^m22^s.3$ 38°.38S 176°.71E 182 km M = 5.2
± 0.8 0.04 0.04 4 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	12	03	48		0.3	100	0.55	141	5.1
	iS		04	07		−0.3	100			
NPZ	iP	12	04	02		0.3	100	2.17	251	3.5*
	eS			32		−0.1	100			
WEL	P	12	04	14.5		−0.3	100	3.26	207	5.2
	iS			56		0.6	99			
KAI	e	12	05	40				5.79	223	4.1s
	eS			52		−1.3				
CHR	S	12	05	58		−0.4	100	6.00	210	4.2*

AMPLITUDES: TUA 12 NPZ 0.7 WEL 5.0
KAI 0.5 CHR 1.0

PRO: 48/203

Listed in ISS additional readings. Clock correction at KAI uncertain.

48/ 213

NOV 30 $14^h07^m42^s.8$ 42°.68S 172°.64E 12 km M = 3.8
± 0.5 0.03 0.04 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	P*	14	07	58		−0.5	100	0.85	181	3.6
	Sg		08	12		0.3	100			
KAI	eP*	14	07	59		−0.7	100	0.92	279	3.7
	eSg		08	14.5		0.4	100			
WEL	ePg	14	08	27		1.4	99	2.12	49	4.0
	eSn			42		−1.0	100			

AMPLITUDES: CHR 2.0 KAI 1.2 WEL 0.9

PRO: 48/204

48/ 214

DEC 07 $08^h19^m40^s.4$ 39°.50S 179°.52E 12 km M = 5.7
± 1.6 0.05 0.11 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	08	20	13.5		0.7	100	1.97	290	5.5
	iSn			36		−1.0	100			
WEL	iPn	08	20	40		−1.0	100	4.04	242	6.1
	iSn		21	27		0.1	100			
NPZ	ePn	08	20	46		2.1		4.25	274	5.5
	i			47						
	iSn		21	33		1.1	100			
CHR	e	08	22	05				6.55	230	5.4
	iSn			28		0.8	100			
KAI	ePn	08	21	19.5		0.3	100	6.84	241	5.9
	iSn		22	33		−1.0	100			

AMPLITUDES: TUA 24 WEL 32 NPZ 9.0
CHR 2.0 KAI 3.5

PRO: 48/205

FELT: Motu (36), Tolaga Bay (37), Te Whaiti (42), and Wellington (68). Listed in ISS additional readings.

48/ 215

DEC 07 $12^h36^m43^s.7$ 41°.63S 172°.81E 12 km M = 4.2
± 0.3 0.03 0.04 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	12	37	09		0.8	99	1.37	229	4.6
	iSn			25		−0.9	99			
WEL	iPn	12	37	10		0.2	100	1.51	77	3.9
	iSn			29		−0.4	100			
CHR	eSn	12	37	39		0.3	100	1.90	184	3.5s
NPZ	e	12	37	48				2.74	21	4.2
	eSn			59		0.1	100			

AMPLITUDES: KAI 4.0 WEL 1.5 CHR 0.3
NPZ 1.0

PRO: 48/206

48/ 216

DEC 08 $03^h07^m13^s.0$ 33°.74S 178°.48E 33 km M = 6.4
±10.4 0.58 0.77 R S.E. of RES. 4.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	03	08	27		−0.1	100	5.17	192	6.2
	iSn		09	25		1.8	100			
WEL	e	03	10	16				8.09	200	6.5
	Sn			30		−3.3	99			
KAI	iSn	03	11	30		1.5	100	10.39	210	6.4

AMPLITUDES: TUA 3.0 WEL 3.5 KAI 0.9

PRO: 48/207

Listed in ISS additional readings.

48/ 217

DEC 10 $20^h16^m54^s.2$ 36°.57S 175°.91E 33 km M = 5.5
± 1.2 0.06 0.04 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	20	17	31		−0.1	100	2.44	157	5.4
	iSn			59		0.2	100			
WEL	i	20	18	53				4.79	190	5.5
	iSn			55		−0.3	99			
KAI	eSn	20	19	46		0.2	100	6.89	209	5.1s

AMPLITUDES: TUA 2.5 WEL 1.0 KAI 0.5

No provisional solution.

48/ 218

DEC 11 $03^h01^m16^s.2$ 31°.63S 178°.34W 33 km M = 5.6
± 7.1 0.73 1.45 R S.E. of RES. 3.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	03	03	07		−2.7	100	8.05	206	5.5
	i			13						
	iSn		04	39		3.2	100			
WEL	iSn	03	05	47		−2.3	100	11.11	208	5.5
KAI	ePn	03	04	28		2.7	100	13.60	214	5.9
	iSn		06	48		−0.9	100			

AMPLITUDES: TUA 1.5 WEL 1.0 KAI 0.8

No provisional solution.

Stations poorly distributed in azimuth.

48/ 219

DEC 13 $09^h31^m23^s.5$ 40°.82S 172°.85E 5 km M = 4.0
± 0.4 0.03 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	09	31	50		−0.7	100	1.53	108	3.8
	P*			52		0.6	100			
	iSn		32	11		0.0	100			
NPZ	ePn	09	31	58		0.9	100	2.00	29	4.1
	iSn		32	22		−0.2	100			
KAI	ePn	09	31	56		−1.4	99	2.02	212	4.2
	eSn		32	23		0.3	100			
	iS*			27		0.6	100			

AMPLITUDES: WEL 1.0 NPZ 1.5 KAI 0.8

PRO: 48/208

FELT: Western Nelson (72), MM III.

48/ 220

DEC 13 $10^h59^m38^s.4$ 40°.80S 172°.53E 12 km M = 4.6
± 1.1 0.06 0.04 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iS*	11	00	33		0.2	100	1.76	107	4.6
KAI	iPn	11	00	10		−0.1	100	1.92	206	4.6
	iS*			38		0.4	100			
CHR	eSn	11	00	53		−0.4	99	2.74	179	3.8s

AMPLITUDES: WEL 5.5 KAI 2.0 CHR 0.3

PRO: 48/209

FELT: Karori (68), MM II.

48/ 221

DEC 17 $10^h36^m03^s.9$ 41°.30S 172°.50E 12 km M = 4.0
± R R R R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eSn	10	36	49		0.4	100	1.47	213	4.0
WEL	iSn	10	36	54		−0.4	100	1.71	90	3.9

AMPLITUDES: KAI 1.0 WEL 1.0

PRO: 48/210

FELT: Motueka (75).

48/ 222

DEC 17 $13^h51^m14^s.4$ 39°.49S 179°.55W 12 km M = 4.9
± 2.0 0.06 0.14 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	13	51	57		0.9	99	2.65	284	4.9
	iSn		52	27		−0.5	100			
WEL	iPn	13	52	23		−0.9	99	4.70	246	4.9
	iSn		53	17		0.4	100			
CHR	eSn	13	54	15		0.1	100	7.13	233	4.9s
KAI	iSn	13	54	16		−7.4		7.48	243	5.1s

AMPLITUDES: TUA 3.5 WEL 1.5 CHR 0.5
KAI 0.5

PRO: 48/211

48/ 223

DEC 19 $02^h54^m17^s.3$ 42°.34S 172°.70E 12 km M = 4.2
± 0.4 0.02 0.03 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	P*	02	54	35		−0.0	100	0.97	259	4.0
	iS*			48		−0.1	100			
CHR	P*	02	54	40		1.2	98	1.20	183	4.4
	eS*			54		−0.7	100			
WEL	ePn	02	54	48		−0.3	100	1.87	56	3.6s
	eS*		55	15		0.0	100			

AMPLITUDES: KAI 2.0 CHR 6.0 WEL 0.5

PRO: 48/212

48/ 224

DEC 20 $21^h05^m21^s.7$ 40°.93S 173°.02E 12 km M ~ 4.0
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eSn	21	06	04		0.0	100	1.37	105	3.1s
KAI	eSn	21	06	19		0.0	100	2.00	217	3.8s
NPZ	iSn	21	06	20		0.0	100	2.03	24	4.0

AMPLITUDES: WEL 0.3 KAI 0.3 NPZ 1.0

PRO: 48/213

48/ 225

DEC 21 $03^h01^m40^s.2$ 38°.84S 177°.17E 68 km M ~ 4.7
± 2.4 0.08 0.14 14 S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	03	01	50		−0.2	100	0.04	338	
	iS			57.5		−0.0	100			
NPZ	iP	03	02	19		0.6	100	2.42	264	4.0*
	iS			47		0.2	100			
WEL	iS	03	03	04		1.0	100	3.06	216	~4.7+
KAI	iS	03	04	08		−1.4	99	5.71	228	4.4*
CHR	eS	03	04	20		8.5		5.80	215	3.7s

AMPLITUDES: TUA 58 NPZ 2.0 WEL 2.0+
KAI 1.0 CHR 0.3

PRO: 48/214

FELT: Motu (36), and Te Whaiti (42), MM III.

48/ 226

DEC 27 $15^h23^m55^s.5$ 40°.89S 174°.63E 12 km M = 4.0
± 0.5 0.02 0.06 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	15	24	03		−0.7	99	0.40	166	3.5
	iS*			10		0.6	100			
NPZ	iSn	15	24	50		0.2	100	1.87	347	3.9
KAI	Sn	15	25	15		0.1	100	2.92	235	4.6

AMPLITUDES: WEL 8.0 NPZ 1.0 KAI 1.0

PRO: 48/215

48/ 227

DEC 28 $00^h49^m21^s.7$ 40°.89S 174°.76E 83 km M ~ 5.3
± 1.0 0.04 0.09 11 S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP	00	49	36		0.6	100	0.40	179	4.7+
	iS			45		−0.7	100			
BUN	P	00	49	43		3.0		0.89	48	
	S			55		1.2	100			
TAK	S-P			19		−0.6	100	1.48	271	
NPZ	iP	00	49	52		−0.8	100	1.89	344	5.3*
	iS		50	15		−0.8	100			
TUA	S-P			32		−0.4	100	2.77	42	5.3
	iP		50	00		−5.1				
	iS			32		−5.5				
KAI	iP	00	50	09		0.8	100	3.00	236	4.9*
	iS			45.5		2.5	98			
CHR	eP	00	50	09		−0.4	100	3.09	210	4.8*
	iS			43		−2.3	99			

AMPLITUDES: WEL 55+ NPZ 52 TUA 5.0
KAI 6.5 CHR 8.0

PRO: 48/216

FELT: Throughout Taranaki, Wellington, and Nelson provinces. Error in clock correction at TUA suspected.

48/ 228

DEC 29 $11^h25^m50^s.3$ 42°.24S 172°.61E 33 km M ~ 3.9
± 0.3 0.02 0.03 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	Pn	11	26	06		−0.6	99	0.94	252	3.9
	iSn			19		0.3	100			
CHR	iPn	11	26	12		0.5	100	1.29	179	3.4s
	eSn			27		−0.3	100			
WEL	ePn	11	26	20		0.5	100	1.87	60	3.4s
	eSn			41		−0.4	100			

AMPLITUDES: KAI 2.0 CHR 0.5 WEL 0.3

PRO: 48/217

1949

49/ 001

JAN 10 $15^h44^m03^s.4$ 40°.02S 173°.46E 164 km M ~ 4.6
± 2.9 0.07 0.11 22 S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iS	15	44	51		0.3	100	1.06	27	3.5*
WEL	P	15	44	35		−0.5	100	1.61	142	4.6
	iS		45	00		−0.2	100			
KAI	iS	15	45	27.5		−0.5	100	2.94	211	3.8s
CHR	iS	15	45	43		0.9	99	3.57	190	4.3*

AMPLITUDES: NPZ 1.0 WEL 4.5 KAI 0.5
CHR 2.0

PRO: 49/1

49/ 002

JAN 11 $14^h13^m43^s.4$ 40°.60S 172°.92E 12 km M = 3.9
± 0.2 0.01 0.02 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn?	14	14	07		−3.2		1.56	117	3.7
	eSn			30		−0.2	100			
	eS*			32		0.2	100			
NPZ	iPn	14	14	14		0.8	98	1.77	30	4.0
	iSn			35		−0.4	100			
	iS*			38		−0.2	100			
	e		15	11						
KAI	eP*	14	14	23		0.3	100	2.23	210	4.1s
	eSn			46		−0.4	100			
CHR	eS*	14	15	13		−0.1	100	2.93	184	3.9s
	e			47						

AMPLITUDES: WEL 0.8 NPZ 1.5 KAI 0.5
CHR 0.3

PRO: 49/2

49/ 003

JAN 12 $04^h04^m57^s.5$ 37°.59S 177°.07E 335 km M = 5.1
± 2.7 0.16 0.16 13 S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	04	05	43		0.1	100	1.22	177	4.8
	iS		06	18		−0.3	100			
NPZ	eS?	04	06	39		0.6	100	2.78	237	3.6s
WEL	P	04	06	07		−0.1	100	4.10	205	5.3
	e			58						
	iS		07	01.5		−0.2	100			
KAI	iS	04	07	50		−1.8	99	6.57	220	4.3*
CHR	e	04	07	35				6.83	208	4.5*
	iS			59		1.6	99			

AMPLITUDES: TUA 1.5 NPZ 0.5 WEL 3.5
KAI 0.7 CHR 1.5

PRO: 49/3

49/ 004

JAN 12 $05^h58^m44^s.2$ 39°.80S 176°.99E 12 km M = 4.1
± 0.8 0.03 0.06 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
HNZ	Sg-Pg			04		1.5		0.15	328	
TUA	iP*	05	59	03		0.5	100	1.00	7	3.9
	iS*			14.5		−1.4	99			
	iS*			16.5		0.6	100			
WEL	Sn	05	59	47		−0.6	100	2.25	228	4.1
	iSg	06	00	03		3.0				
NPZ	ePn	05	59	23		0.9	100	2.38	287	4.4
	iS*			57		−0.1	100			
KAI	eSn	06	00	54		−0.0	100	5.01	235	4.6s

AMPLITUDES: TUA 2.5 WEL 1.0 NPZ 2.0
KAI 0.3

PRO: 49/4

FELT: Havelock North (60).

49/ 005

JAN 15 $04^h42^m29^s.1$ ± 1.3 39°.19S ± 0.05 174°.87E ± 0.09 201 km 11 M = 5.8 S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP	04	42	58.5		1.5	100	0.63	281	4.7*
	iS		43	20		1.4	100			
HNZ	S-P			25		−2.2	99	1.63	108	
TUA	iP	04	43	07		0.9	100	1.82	79	5.6
	iS			34		−0.7	100			
WEL	iP	04	43	10.5		1.4	100	2.10	182	5.9
	iS			40.5		0.7	100			
AUC	i?	04	42	40				2.32	358	
	iS		43	42		−2.2	99			
KAI	iP	04	43	35		0.4	100	4.25	217	5.3*
	iS		44	23		−2.4	99			
CHR	iP	04	43	40.5		0.6	100	4.66	201	5.2*
	iS		44	33		−1.6	100			

AMPLITUDES: NPZ 15 TUA 14 WEL 45 KAI 9.0 CHR 12

PRO: 49/5

FELT: Central and southern parts of the North Island. Listed in ISS additional readings.

49/ 006

JAN 15 $13^h57^m23^s.2$ ± 2.2 39°.36S ± 0.06 179°.34E ± 0.14 12 km R M ~ 4.4 S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePg	13	57	59		−0.4	100	1.79	287	3.7s
	eSn		58	15		−0.5	100			
WEL	iSn	13	59	08		−0.4	100	3.99	240	4.4
NPZ	ePn	13	58	25		0.3	100	4.09	272	4.2s
	iSn		59	12		0.9	99			

AMPLITUDES: TUA 0.5 WEL 0.7 NPZ 0.4

No provisional solution.

49/ 007

JAN 20 $00^h02^m59^s.7$ ± 1.3 38°.76S ± 0.04 175°.94E ± 0.06 137 km 11 M = 5.4 S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	00	03	24.5		1.6	99	0.94	94	5.6
	iS			40		−0.6	100			
HNZ	S-P			19		−0.5	100	1.17	142	
NPZ	eP	00	03	31		2.5		1.49	257	4.5*
	iS			52		1.4	99			
AUC	iS	00	04	02		−1.0	100	2.11	334	
WEL	iP	00	03	43.5		0.3	100	2.68	199	5.1
	iS		04	15.5		−0.7	100			
KAI	eP	00	04	21		5.7		5.10	221	4.7*
	iS		05	13		−0.7	100			

AMPLITUDES: TUA 48 NPZ 9.5 WEL 7.0 KAI 2.0

PRO: 49/6

FELT: Te Whaiti (42), MM II; and Havelock North (60). Listed in ISS additional readings.

49/ 008

JAN 22 $09^h24^m57^s.4$ ± 1.0 38°.91S ± 0.04 175°.85E ± 0.03 143 km 8 M = 4.4 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	09	25	22		0.2	100	1.02	85	4.4
	iS			40		−0.5	100			
NPZ	e?	09	25	24				1.39	263	3.9*
	iP			26		0.4	100			
	iS			47		−0.2	100			
WEL	eS	09	26	11		0.4	100	2.52	199	4.4
KAI	eS	09	27	07		−0.6	99	4.94	222	3.8s

AMPLITUDES: TUA 2.5 NPZ 2.3 WEL 1.3 KAI 0.3

PRO: 49/7

49/ 009

JAN 22 $18^h54^m20^s.0$ ± 0.4 39°.75S ± 0.02 175°.00E ± 0.03 12 km R M = 3.9 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP*	18	54	37.5		−0.6	99	0.99	313	3.4
	iSg			54		0.4	100			
WEL	eS*	18	55	08		0.0	100	1.55	186	3.9
TUA	eSn	18	55	15.5		0.1	100	1.92	61	4.4
KAI	iPg	18	55	43		4.6		3.88	223	4.6s

AMPLITUDES: NPZ 1.1 WEL 1.3 TUA 1.5 KAI 0.5

No provisional solution.

49/ 010

JAN 23 $13^h08^m02^s.1$ ± 0.5 41°.50S ± 0.04 174°.18E ± 0.04 12 km R M ~ 3.6 S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	13	08	11		−0.7	99	0.49	64	3.6
	iS*			19		0.5	100			
KAI	eSn	13	09	07		0.1	100	2.30	243	3.4s
NPZ	iSn	13	09	10		0.0	100	2.44	358	3.8s

AMPLITUDES: WEL 6.0 KAI 0.1 NPZ 0.5

PRO: 49/8

49/ 011

JAN 24 $13^h06^m25^s.7$ ± ND 40°.50S ND 172°.71E ND 12 km R M ~ 3.6 S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	13	06	55		0.0	100	1.75	117	~3.6s
	eSn		07	17		0.0	100			
KAI	eSn	13	07	29		0.0	100	2.25	205	3.9s

AMPLITUDES: WEL 0.5 KAI 0.3

PRO: 49/9

FELT: Takaka (72), MM III.

49/ 012

JAN 26 $03^h49^m50^s.1$ 38°.43S 176°.88E 174 km M = 5.0
± 1.7 0.11 0.08 9 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	03	50	13		−1.0	99	0.44	151	4.9
	iS			33		0.5	100			
NPZ	iP	03	50	31		0.7	100	2.29	253	3.6*
	eS			51 01		−0.3	100			
WEL	iP	03	50	43		0.4	100	3.28	209	5.0
	eS			51 28		5.0				
KAI	eS	03	52	22		−0.3	100	5.84	224	3.9s

AMPLITUDES: TUA 10 NPZ 0.8 WEL 3.2
KAI 0.3

PRO: 49/10

Listed in ISS additional readings.

49/ 013

JAN 26 $07^h32^m02^s.6$ 38°.55S 175°.68E 33 km M = 4.2
± 1.2 0.12 0.04 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	07	32	22		−0.2	100	1.18	103	4.0
	eSn			36		−0.8	100			
	eS*			41		1.0	100			
NPZ	eP*	07	32	28		0.8	100	1.36	247	4.0
	eSn			41		−0.2	100			
WEL	iPn	07	32	43		−1.7	99	2.83	194	4.7
	eP*			53		1.0	100			

AMPLITUDES: TUA 1.0 NPZ 1.5 WEL 1.0

No provisional solution.

49/ 014

JAN 26 $16^h13^m15^s.6$ 40°.10S 175°.00E 12 km M ~ 4.0
± R R R R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eS*	16	13	54		0.9	100	1.20	188	3.2s
NPZ	iS*	16	13	54		−0.9	100	1.26	325	4.0

AMPLITUDES: WEL 0.5 NPZ 3.0

PRO: 49/11

FELT: Wanganui (57), MM IV.

49/ 015

JAN 29 $09^h20^m11^s.6$ 38°.92S 176°.27E 242 km M = 4.4
± ND ND ND ND S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS	09	21	10		0.0	100	0.70	81	4.1
WEL	iP	09	21	00		0.0	100	2.63	205	4.6
	iS			37.5		0.0	100			
KAI	eS	09	22	30.5		0.0	100	5.16	224	3.4s
	e			48						

AMPLITUDES: TUA 2.0 WEL 1.7 KAI 0.1

PRO: 49/12

49/ 016

JAN 29 $14^h19^m49^s.6$ 37°.02S 177°.62E 177 km M ~ 5.4
± 0.4 0.02 0.02 2 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P	14	20	25		0.2	100	1.83	191	
	S			52		−0.1	100			
AUC	iS	14	21	01		0.0	100	2.28	273	
NPZ	eP	14	20	51		6.5		3.46	233	3.8*
	i		21	08						
	iS			38		11.2				
	i			48						
WEL	iP	14	21	01.5		−0.2	100	4.81	207	5.4
	iS			57.5		0.1	100			
KAI	iS	14	22	56		0.0	100	7.29	219	4.1s

AMPLITUDES: NPZ 0.8 WEL 4.0 KAI 0.4

PRO: 49/13

Listed in ISS additional readings.

49/ 017

JAN 29 $21^h12^m19^s.8$ 40°.81S 172°.23E 12 km M = 4.6
± 0.4 0.02 0.04 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iPn	21	12	50		−0.2	100	1.83	199	4.7
	iSn		13	13		0.0	100			
	i			14						
WEL	P*	21	12	54		−0.7	100	1.98	105	4.4
	iSn		13	17		0.3	100			
	iS*			21		0.2	100			
NPZ	eP*?	21	13	00		0.7	100	2.24	40	4.8
	iPg			05		−0.2	100			
	iSn			23		−0.1	100			
	iS*			30		1.3	99			
	iSg			34		−1.4	98			

AMPLITUDES: KAI 3.0 WEL 2.5 NPZ 6.0

PRO: 49/15

FELT: Kahurangi Point (71), MM V; and Karamea (74).

49/ 018

JAN 30 $23^h22^m11^s.1$ 41°.16S 172°.40E 12 km M = 4.1
± 0.4 0.03 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	23	22	37.5		−0.3	100	1.56	208	4.2
	eP*			39.5		0.7	100			
	S*		23	00		0.6	100			
	iSg			03		−0.6	100			
WEL	ePn	23	22	40		−1.1	99	1.79	95	4.1
	eS*		23	07		0.5	100			
NPZ	iP*	23	22	55		0.8	100	2.46	32	4.1
	eSn		23	19		−0.4	100			

AMPLITUDES: KAI 1.4 WEL 1.5 NPZ 1.0

PRO: 49/16

FELT: Kahurangi Point (71), MM V; and Karamea (74).

49/ 019

JAN 31 $15^h37^m01^s.9$ 40°.37S 174°.39E 12 km M = 4.3
± 0.4 0.02 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	15	37	20		0.5	100	0.96	163	4.3
	iS*			32		−0.4	100			
NPZ	eP*	15	37	26		0.3	100	1.32	349	4.1
	iSn			42.5		−0.5	100			
TUA	Sn	15	38	18		3.2		2.64	55	4.3
KAI	e	15	38	13				3.11	225	4.5
	eSn			27		1.0	99			
	eS*			36		−0.8	100			

AMPLITUDES: WEL 9.0 NPZ 3.5 TUA 0.8
KAI 0.7

PRO: 49/17

FELT: Paraparaumu Beach (65), MM III.

FEB 02 $18^h01^m56^s.3$ 42°.21S 172°.79E 12 km 49/ 020 M ~ 3.7
± 2.0 0.66 0.40 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	18	02	16		0.2	100	1.07	252	3.7
	S*			30		−0.1	100			
WEL	ePg	18	02	31		−0.6	99	1.75	59	3.6s
	eSn			48		0.5	100			

AMPLITUDES: KAI 0.8 WEL 0.5

PRO: 49/18

FELT: Hanmer (88), MM III.

FEB 03 $19^h21^m20^s.1$ 42°.85S 173°.01E 12 km 49/ 021 M = 4.5
± 0.9 0.05 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	19	21	42.5		0.3	100	1.22	285	4.5
	S*			58		−0.5	100			
WEL	ePn	19	21	54		0.6	100	2.04	40	4.2
	eSn		22	17		−1.4	98			
	iS*			23		0.2	100			
NPZ	ePn	19	22	22		3.7		3.87	12	4.7
	eP*			27.5		0.3	100			
	e		23	12						
	eS*			18		0.4	100			
TUA	eP*	19	22	53		4.5		5.11	39	4.3s

AMPLITUDES: KAI 4.0 WEL 1.5 NPZ 1.5
TUA 0.2

PRO: 49/19

FELT: Hanmer (88), MM III.

FEB 04 $15^h23^m46^s.9$ 39°.24S 173°.69E 33 km 49/ 022 M = 5.0
± 0.8 0.05 0.06 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	i	15	24	32				0.34	60	2.9A
WEL	iPn	15	24	21		0.5	100	2.20	158	4.9
	iSn			46		0.2	100			
TUA	iPn	15	24	27.5		−0.1	100	2.73	82	5.0
	iSn			58		−0.3	100			
KAI	ePn	15	24	42		0.9	99	3.72	207	5.0
	Sn		25	21		−1.1	99			

AMPLITUDES: NPZ 2.8 WEL 7.0 TUA 1.2
KAI 1.5

PRO: 49/20

FEB 06 $18^h19^m25^s.6$ 36°.70S 178°.19E 12 km 49/ 023 M ~ 4.9
± 1.7 0.06 0.11 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	18	20	00.5		−1.5	99	2.26	201	4.9
	iPg			12.5		1.1	100			
	i			18						
AUC	eP*	18	20	15		1.4	99	2.74	266	
	iSn			40		−0.9	100			
NPZ	eP*	18	20	35		−0.4	100	4.02	233	4.2s
	e			52						
	i		21	00						
	iSn			16		4.3				
WEL	eP*	18	20	57		−0.2	100	5.30	209	4.4s
	eS*		22	06		−0.1	100			
KAI	eP*	18	21	41		0.7	100	7.82	220	5.0s
	eS*		23	18		−3.8				

AMPLITUDES: TUA 5.0 NPZ 0.5 WEL 0.4
KAI 0.3

PRO: 49/21

FELT: Waihi (21), Whakatane (27), Opotiki (35).

FEB 06 $18^h29^m45^s.5$ 37°.55S 177°.96E 33 km 49/ 024 M ~ 4.5
± 2.1 0.05 0.15 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P*	18	30	09.5		−1.5	99	1.41	207	4.5
	i			20						
	iSn			25		−0.4	100			
AUC	ePn	18	30	26		1.0	100	2.64	284	
	Sn			54		−0.7	100			
NPZ	e	18	30	59				3.41	242	3.9s
	e			32	07					
WEL	eP*	18	31	04		1.0	100	4.48	213	4.2s
	e			55						
	eS*			32	02	0.6	100			
KAI	eSn	18	33	11		29.6		7.07	223	4.9s

AMPLITUDES: TUA 5.0 NPZ 0.3 WEL 0.3
KAI 0.3

PRO: 49/22

FELT: Opotiki (35), MM II, Waihi (21), and Whakatane (27).

FEB 06 $18^h42^m28^s.6$ 37°.48S 177°.89E 12 km 49/ 025 M = 4.5
± 2.6 0.07 0.27 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	Pn	18	42	55		1.1	100	1.45	204	4.7
	eSn		43	11		−1.7	99			
AUC	Pn	18	43	08		−1.1	100	2.56	283	
	e			30						
NPZ	ePn	18	43	22		1.5	100	3.39	241	4.2
WEL	eP*	18	43	46		−0.6	100	4.50	212	4.5

	eS*		44 46		0.7	100		
KAI	ePn	18	44 24		13.3	7.07	223	4.9s
	eSn		45 42		13.9			

AMPLITUDES: TUA 7.5 NPZ 0.6 WEL 0.6
KAI 0.3

PRO: 49/23

FELT: Opotiki (35), MM II, Waihi (21), and Whakatane (27).

49/ 026

FEB 06 $18^h44^m36^s.4$ ± 3.6 37°.30S 0.14 178°.22E 0.20 33 km R M = 4.7 S.E. of RES. 2.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	18	45	01		−2.5	99	1.73	209	5.0
	iP*			18		10.8				
AUC	iSn	18	45	50		0.5	100	2.79	278	
NPZ	iS*	18	46	28		−1.4	100	3.72	240	4.5
WEL	eP*	18	46	05		5.6		4.80	213	4.5
	eS*		47	03		1.2	100			
KAI	ePn	18	46	23		2.1	100	7.39	223	4.9s
	eSn		47	47		7.0				

AMPLITUDES: TUA 10 NPZ 1.0 WEL 0.6
KAI 0.3

PRO: 49/24

FELT: Opotiki (35), MM III, Waihi (21), and Whakatane (27).

49/ 027

FEB 06 $23^h04^m53^s.3$ ± 1.3 37°.46S 0.04 177°.38E 0.08 33 km R M = 4.5 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	23	05	16		0.7	100	1.36	188	4.7
	iSn			31		−0.8	100			
AUC	eP*	23	05	32		0.5	100	2.16	285	
	iSn			50		−1.2	99			
NPZ	eP*	23	05	51		4.4		3.05	237	4.2
	iSn		06	14		1.3	99			
WEL	eP*	23	06	08		−0.1	100	4.32	207	4.3s
	e			13						
	S*		07	04		−0.4	100			
	e			08						
KAI	eP*	23	06	47		−3.7		6.82	220	4.8s
	eSn		07	50		6.8				

AMPLITUDES: TUA 7.5 NPZ 0.8 WEL 0.4
KAI 0.3

PRO: 49/25

49/ 028

FEB 08 $05^h08^m17^s.0$ ± 2.7 39°.30S 0.09 176°.50E 0.13 99 km 27 M = 4.3 S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	05	08	35		0.5	100	0.70	46	4.3
	iS			47		−0.9	100			
NPZ	iP	05	08	50		1.3	100	1.90	276	4.0*
	iS		09	12		−0.3	100			
WEL	i	05	09	05				2.38	213	4.3
	iS			25		1.1	100			
KAI	S	05	10	27		−1.8	99	5.03	229	3.8s

AMPLITUDES: TUA 5.0 NPZ 2.5 WEL 1.3
KAI 0.3

PRO: 49/26

49/ 029

FEB 09 $11^h32^m23^s.1$ ± R 40°.00S R 175°.00E R 12 km R M ~ 4.1 S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iS*	11	33	00		0.0	100	1.18	322	4.1

AMPLITUDES: NPZ 4.5

PRO: 49/27

FELT: Wanganui (57), MM IV.

49/ 030

FEB 09 $17^h30^m50^s.5$ ± 0.7 39°.68S 0.05 174°.35E 0.10 199 km 7 M ~ 6.4 S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP	17	31	20		1.8	99	0.65	341	5.4+
	iS			40.5		0.9	100			
WEL	iP	17	31	26		0.4	100	1.64	169	5.7+
	iS			51		−1.5	100			
HNZ	S-P			29		−0.5	100	1.95	91	
TUA	iP	17	31	34.5		1.6	100	2.34	69	6.4
	iS		32	06		0.4	100			
AUC	iP	17	31	37		−1.5	100	2.83	7	
	S		32	14		−1.8	100			
KAI	S-P			39.5		−4.9		3.61	217	6.2*
	iP		31	51		3.1				
	iS		32	30.5		−1.8				
RIV	iP	17	35	02		−1.8	100	19.46	280	
	iS		38	33		5.0				
BRS	iP	17	35	23		−3.0		21.70	298	
	iS		39	10		1.3	100			

AMPLITUDES: NPZ 75+ WEL 45+ TUA 64
KAI 83

PRO: 49/28

FELT: Eastern and central parts of the North Island, and throughout the South Island north of Banks Peninsula, with intensity reaching MM V in several scattered places. See Hayes, R.C., 1950 for isoseismal map. ISS adopts N.Z. provisional solution and lists data from 9 additional stations. Timing at KAI uncertain.

49/ 031

FEB 13 $09^h32^m19^s.6$ ± R 38°.90S R 175°.20E R 12 km R M ~ 3.6 S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eS*?	09	32	48		0.0	100	0.89	259	3.6

AMPLITUDES: NPZ 2.0

PRO: 49/29

FELT: Taumarunui (39), MM II.

49/ 032

FEB 13 $18^h24^m59^s.2$ ± 3.5 34°.25S 0.35 179°.74E 0.50 33 km R M ~ 6.7 S.E. of RES. 5.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
AUC	iPn	18	26	06		−2.5	100	4.81	236	
	iS*		27	26		0.9	100			
TUA	ePn	18	26	03		−8.1	99	5.00	204	6.3+
	iSn		27	18		12.5				
NPZ	ePn?	18	26	34.5		1.3	100	6.62	222	5.6A
	i			37						
	iSn		27	40		−4.3	100			
BUN	Sn-Pn			1 06		−7.6		6.86	207	
WEL	ePn	18	26	42		−10.7		8.05	208	6.7
	iSn		28	25		6.3	100			
KAI	ePn	18	27	22.5		−4.0	100	10.53	216	
	Sn		29	24.5		6.2	100			
	e			29.5						
API	P	18	29	54		4.3	100	21.75	23	
	eS		32	22		−81.4				

AMPLITUDES: TUA 22+ NPZ 4.5 WEL 30

PRO: 49/30

FELT: North eastern parts of the North Island (35, 37, 42, 53). Maximum reported intensity MM IV. ISS gives 32.8S 178.1W, and lists data from 143 additional stations. USCGS and BCIS suggest a depth of 60km. WEL ScS 18 40 09.

49/ 033

FEB 14 $16^h28^m54^s.0$ 37°.30S 175°.70E 12 km M ~ 4.4

± R R R R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iSn	16	29	49		0.2	100	1.89	143	~4.4s
WEL	eP*	16	30	04		−0.2	100	4.05	190	4.8s
KAI	ePn?	16	30	11		−12.7		6.17	211	5.0s

AMPLITUDES: TUA 0.5 WEL 0.3 KAI 0.5

PRO: 49/33

FELT: Paeroa (21), MM III.

49/ 034

FEB 16 $20^h53^m33^s.8$ 40°.64S 176°.17E 33 km M = 3.9

± 0.9 0.04 0.07 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	20	53	55		0.7	99	1.24	238	3.8
	iSn		54	09		−0.6	100			
TUA	eSn	20	54	27		−0.2	100	1.98	23	3.6s
	e			45						
NPZ	eP*?	20	54	19		5.5		2.25	314	4.0
	eSn			34		0.1	100			
KAI	e	20	55	55				4.04	241	4.4s

AMPLITUDES: WEL 1.6 TUA 0.3 NPZ 1.0
KAI 0.3

PRO: 49/36

FELT: Dannevirke (63), MM III.

49/ 035

FEB 17 $10^h25^m36^s.4$ 39°.64S 177°.14E 12 km M ~ 3.8

± 2.0 0.08 0.16 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	10	25	53		1.2	99	0.83	1	3.8
	[illegible]		26	02		−1.0	100			

WEL	eSn	10	26	44		−0.5	100	2.45	227	3.9s
	e		27	27						
NPZ	eP*	10	26	23		3.6		2.45	283	3.6s
	eSn			45		0.4	100			

AMPLITUDES: TUA 2.5 WEL 0.5 NPZ 0.3

PRO: 49/37

49/ 036

FEB 19 $10^h23^m56^s.0$ 38°.52S 176°.50E 140 km M = 4.4

± 1.3 0.06 0.05 8 S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	10	24	17		0.1	100	0.58	120	4.3
	iS			33		0.2	100			
NPZ	eP	10	24	30		−0.5	100	1.97	253	3.5*
	iS			57		0.1	100			
WEL	eS	10	25	21		−0.6	99	3.07	205	4.4
KAI	eS	10	26	22		0.7	99	5.57	223	3.9s

AMPLITUDES: TUA 3.5 NPZ 0.7 WEL 1.0
KAI 0.3

PRO: 49/38

49/ 037

FEB 21 $17^h56^m14^s.0$ 40°.07S 175°.71E 12 km M = 4.4

± 0.2 0.01 0.02 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	17	56	39		0.3	100	1.41	210	4.4
	iSn			57		−0.2	100			
NPZ	ePn	17	56	42		0.4	100	1.62	308	4.6
	iSn		57	02		−0.2	100			
TUA	ePn	17	56	42		−0.4	99	1.68	42	4.3
	eSn		57	04		0.2	100			
KAI	ePg	17	57	42		5.9		4.07	232	4.6s
	eSg		58	28		−2.9				

AMPLITUDES: WEL 5.0 NPZ 7.5 TUA 2.0
KAI 0.5

PRO: 49/39

FELT: Central North Island (57, 58, 63), MM III.

49/ 038

FEB 21 $18^h06^m10^s.8$ 40°.09S 175°.69E 12 km M ~ 4.2

± 0.4 0.02 0.04 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	18	06	36		0.8	99	1.39	210	4.2
	iSn			53		−0.5	100			
NPZ	ePn	18	06	38		−0.3	100	1.61	309	
	iSn			59		0.1	100			
TUA	ePg	18	06	50		4.7		1.70	42	3.7s
	iSn		07	01		−0.1	100			
	iSg			17		8.7				
KAI	eS*	18	08	20		6.4		4.04	232	

AMPLITUDES: WEL 3.0 TUA 0.5

PRO: 49/40

FELT: Dannevirke (57), MM III.

49/ 039

FEB 21 $19^h26^m40^s.1$ 37°.33S 176°.50E 257 km M = 5.9
± 1.0 0.04 0.07 6 S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
AUC	eP	19	27	18		−0.8	99	1.46	288	
	iS			50		0.9	99			
TUA	iP	19	27	20		0.3	100	1.56	161	5.8
	iS			50		−0.4	100			
NPZ	iP	19	27	33		4.1		2.57	227	4.2*
	iS		28	06		−0.8	99			
WEL	iP	19	27	47		0.3	100	4.17	198	5.9
	iS		28	39		0.4	100			
KAI	iP	19	28	15		−0.1	100	6.50	215	5.0*
	i		29	22						
	iS			24		−5.5				

AMPLITUDES: TUA 20 NPZ 2.5 WEL 15
KAI 3.0

PRO: 49/41

Listed in ISS additional readings.

49/ 040

FEB 22 $23^h17^m09^s.6$ 39°.20S 179°.84E 33 km M = 5.4
± 3.2 0.10 0.20 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	23	17	43		0.7	100	2.12	280	5.1
	Sn		18	05		−1.7	99			
WEL	P*	23	18	25		−0.8	100	4.40	240	5.5
	iSn		19	01		−0.3	100			
NPZ	ePn?	23	18	20		5.6		4.48	270	5.4
	iP*			32		4.8				
	eSn		19	05		1.7	99			
KAI	eP*	23	19	10		−3.4		7.20	240	5.4
	iSn		20	09		0.5	100			

AMPLITUDES: TUA 8.0 WEL 6.0 NPZ 5.5
KAI 1.0

PRO: 49/42

Listed in ISS additional readings.

49/ 041

FEB 27 $10^h43^m04^s.2$ 40°.55S 177°.77E 12 km M ~ 4.3
± 5.2 0.20 0.45 R S.E. of RES. 2.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	10	43	35		0.6	100	1.81	344	
	iSn			58		1.0	100			3.8s
WEL	ePn	10	43	43		0.7	100	2.38	251	
	eSn		44	12		1.0	100			4.3
NPZ	iPn	10	43	50		−3.5	98	3.21	296	3.8s
KAI	eSn	10	44	59		−18.6		5.17	245	4.1s

AMPLITUDES: TUA 0.5 WEL 1.3 NPZ 0.3
KAI 0.1

PRO: 49/43

FELT: Carterton (70).

49/ 042

FEB 28 $22^h10^m19^s.8$ 42°.33S 172°.96E 12 km M = 4.1
± 0.6 0.06 0.05 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	22	10	40		−0.8	99	1.17	260	4.2
	iS*			57		0.6	100			
WEL	ePn	22	10	49		0.5	100	1.71	53	3.9
	iSn		11	10		−0.1	100			
NPZ	ePn	22	11	09		−2.2		3.37	15	3.9s
	eSn			50		−0.1	100			

AMPLITUDES: KAI 2.5 WEL 1.0 NPZ 0.3

PRO: 49/44

49/ 043

MAR 05 $00^h25^m54^s.5$ 38°.89S 175°.25E 12 km M ~ 3.6
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eiS*	00	26	24		0.0	100	0.93	259	3.6
WEL	iPn	00	26	33		0.0	100	2.42	189	4.0s
	eSn		27	02		0.0	100			
	e			05						

AMPLITUDES: NPZ 2.0 WEL 0.4

PRO: 49/45

FELT: Taumarunui (39), MM III.

49/ 044

MAR 05 $03^h40^m08^s.1$ 38°.91S 175°.86E 12 km M = 4.7
± 1.0 0.07 0.05 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	03	40	23		−3.6		1.02	84	4.4
	eS*			40		−0.2	100			
	iSg			43		0.4	100			
NPZ	eP*	03	40	34		0.8	100	1.39	263	3.6s
WEL	iPn	03	40	47		−0.9	100	2.51	199	4.6
	iP*			52		−0.2	100			
	eS*		41	27		1.9	99			
CHR	eSn	03	42	21		−1.9	99	5.22	207	5.2

AMPLITUDES: TUA 4.5 NPZ 0.5 WEL 1.5
CHR 1.0

PRO: 49/46

49/ 045

MAR 06 $11^h22^m35^s.0$ 38°.70S 176°.10E 12 km M ~ 3.2
± R R R R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS*	11	23	01.5		0.0	100	0.83	98	~3.2s

AMPLITUDES: TUA 0.5

PRO: 49/47

FELT: Taupo (41).

49/ 046

MAR 06 $16^h45^m31^s.5$ 38°.70S 176°.10E 12 km M ~ 3.0
± R R R R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eS*	16	45	58		0.0	100	0.83	98	~3.0s

AMPLITUDES: TUA 0.3

PRO: 49/48

FELT: Taupo (41).

49/ 047

MAR 07 $20^h17^m22^s.3$ 40°.48S 176°.58E 12 km M = 4.2
± 1.0 0.04 0.07 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	20	17	50		0.5	100	1.59	239	4.2
	eP*			52		1.3	100			
	iSn		18	07		−3.0	99			
TUA	eP*	20	17	54		1.2	100	1.72	15	3.6s
	eSn		18	11		−2.0	100			
NPZ	eP*	20	18	06		1.8	100	2.39	305	4.2
	ePg			09		−1.6	100			
	iSn			30		0.9	100			
	iS*			35.5		−0.1	100			
	iSg			43		0.1	100			
KAI	ePg	20	18	53		2.0	100	4.39	241	4.5s
	eSn		19	16		−1.1	100			
	eSg			54.5		4.3				

AMPLITUDES: WEL 2.5 TUA 0.4 NPZ 1.2
KAI 0.3

PRO: 49/49

FELT: Dannevirke (63), Porangahau (64), MM III.

49/ 048

MAR 13 $15^h04^m09^s.5$ 36°.43S 178°.03W 33 km M = 4.9
± 4.1 0.26 0.39 R S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	15	05	16		1.5	100	4.50	237	4.7
	eSn		06	06		2.4	99			
NPZ	ePn	15	05	43		−2.6	99	6.79	245	4.5s
	eSn		06	58		−0.5	100			
	e		07	10.5						
	eS*			40.5		6.2				
WEL	eSn	15	07	14		0.3	100	7.42	227	5.0
	e			43						
	eS*			51		−2.2	100			
KAI	eSn	15	08	21		1.0	100	10.18	230	5.2s
	e			44						

AMPLITUDES: TUA 0.8 NPZ 0.3 WEL 0.8
KAI 0.3

No provisional solution.

Stations poorly distributed in azimuth.

49/ 049

MAR 15 $20^h03^m33^s.5$ 40°.61S 175°.85E 12 km M = 3.8
± 0.4 0.02 0.03 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	20	03	53		0.2	100	1.06	230	3.5
	iS*		04	07		0.0	100			
	i			17						
TUA	eP*	20	04	09		−0.8	99	2.06	30	3.6s
	eSn			33		0.6	99			
NPZ	ePg	20	04	15		−0.2	100	2.06	318	4.0
	n			32.5		0.1	100			

i 52.5

AMPLITUDES: WEL 2.5 TUA 0.3 NPZ 1.0

PRO: 49/50

49/ 050

MAR 16 $03^h13^m21^s.5$ 38°.92S 177°.68E 12 km M ~ 3.8
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	03	13	30		0.0	100	0.43	285	3.8
	iS*			36		0.0	100			
WEL	iSn	03	14	49		0.0	100	3.25	222	3.6s

AMPLITUDES: TUA 11 WEL 0.3

PRO: 49/51

FELT: Wairoa (53), MM III.

49/ 051

MAR 16 $17^h07^m38^s.4$ 40°.62S 172°.98E 12 km M = 4.2
± 0.3 0.01 0.02 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	17	08	05		0.5	99	1.51	117	3.8
	iS*			25		−0.3	100			
NPZ	iSn	17	08	30		−0.2	100	1.76	29	3.3s
KAI	iS*	17	08	47		−0.2	100	2.24	211	3.9s
CHR	iSn	17	08	58		0.0	100	2.92	185	4.6

AMPLITUDES: WEL 2.5 NPZ 0.3 KAI 0.3
CHR 1.5

PRO: 49/52

49/ 052

MAR 17 $08^h45^m51^s.3$ 36°.25S 179°.92W 33 km M = 4.7
± 0.9 0.12 0.17 R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	08	46	42		0.0	100	3.46	222	4.6
	iSn		47	20		−0.3	99			
	i			25						
WEL	iSn	08	48	34		0.1	100	6.52	218	4.7
KAI	eSn	08	49	38		0.2	100	9.18	224	4.6s

AMPLITUDES: TUA 1.0 WEL 1.0 KAI 0.1

PRO: 49/53

49/ 053

MAR 21 $23^h05^m13^s.4$ 43°.27S 173°.50E 33 km M = 4.3
± 0.5 0.04 0.03 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	23	05	40		−0.2	100	1.71	295	4.6
	eP*			44		0.2	100			
WEL	ePn	23	05	47		0.1	100	2.20	26	3.9
	eP*			52		−0.1	100			
	iSn		06	12		−0.0	100			

AMPLITUDES: KAI 2.5 WEL 1.3

PRO: 49/55

FELT: Christchurch (110), MM II.

49/ 054

MAR 22 $00^h48^m08^s.4$ 40°.46S 173°.23E 12 km M = 4.3

± 1.1 0.06 0.10 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	00	48	32		−1.4	99	1.43	126	4.1
	eSn			53		0.8	100			
NPZ	iSn	00	48	55		0.3	100	1.54	25	4.2
KAI	iSn	00	49	17.5		0.3	100	2.47	213	4.5

AMPLITUDES: WEL 5.0 NPZ 3.0 KAI 1.0

PRO: 49/56

49/ 055

MAR 25 $12^h26^m42^s.1$ 41°.75S 173°.61E 12 km M ~ 3.4

± 0.7 0.08 0.08 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	12	26	59		−1.1	99	0.99	63	3.4
	eS*		27	14		0.7	100			
KAI	Sn	12	27	35		0.1	100	1.81	244	3.9s
CHR	eP*	12	27	17		0.9	100	1.93	202	3.8s
	eSn			37		−0.6	100			

AMPLITUDES: WEL 2.0 KAI 0.5 CHR 0.5

PRO: 49/58

49/ 056

MAR 31 $13^h58^m08^s.5$ 33°.86S 174°.17E 12 km M = 5.3

± 6.1 0.26 0.44 R S.E. of RES. 4.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP*	13	59	42		3.6	100	5.20	181	4.2s
	iSn	14	00	25		2.2	100			
TUA	iPn	13	59	24		−4.9	99	5.49	155	5.7
	eSn	14	00	41		11.2				
	eS*			55		0.2	100			
WEL	ePn	13	59	57		1.6	100	7.43	177	4.8
	eSn	14	01	43		26.6				
	eS*			56		3.1	100			
CHR	iS*	14	02	56		−6.0	99	9.74	187	5.2s

AMPLITUDES: NPZ 0.3 TUA 1.0 WEL 1.0 CHR 0.5

No provisional solution.

Stations poorly distributed in azimuth.

49/ 057

APR 02 $12^h10^m47^s.1$ 38°.09S 176°.35E 291 km M = 5.0

± 0.8 0.04 0.04 4 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	12	11	26		−0.5	99	0.95	139	5.0
	iS			57.5		0.2	100			
NPZ	S	12	12	10		0.0	100	2.03	241	3.3s
WEL	P	12	11	47.5		0.5	99	3.42	200	4.9
	S		12	33.5		−0.2	100			
	i			35						

KAI	eS	12	13	23		−0.3	100	5.82	219	3.9s
CHR	S	12	13	30		0.1	100	6.13	206	4.6*

AMPLITUDES: TUA 3.0 NPZ 0.3 WEL 4.0 KAI 0.3 CHR 2.0

PRO: 49/59

49/ 058

APR 03 $00^h14^m00^s.0$ 40°.14S 174°.14E 12 km M = 4.3

± 0.2 0.01 0.02 R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	00	14	19.5		−0.0	100	1.08	357	5.1
	iPg			22		0.1	100			
	i			27						
	iS*			30		−3.9				
WEL	eP*	00	14	22.5		0.2	100	1.24	157	3.5
	eS*			38.5		−0.3	99			
	iS*			39		0.2	100			
TUA	eSn	00	15	14		0.1	100	2.68	61	

AMPLITUDES: NPZ 47 WEL 1.8

PRO: 49/60

49/ 059

APR 05 $15^h50^m44^s.2$ 42°.08S 175°.09E 12 km M = 4.7

± 0.7 0.03 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	15	51	02		0.9	100	0.83	343	4.6+
	iSg			11		−1.3	99			
KAI	ePn	15	51	28		0.5	100	2.76	259	4.9
	iPg			45		4.8				
	iS*		52	08		−0.8	100			
NPZ	eP*	15	51	39		0.6	100	3.10	345	4.6
	ePg			47		−0.0	100			
	i		52	00						
	iSn			08		−0.2	100			
	iSg			30		1.1	99			
TUA	eSn	15	52	20		−0.7	100	3.63	26	4.6
	eSg			46		−0.3	100			
	e			58						

AMPLITUDES: WEL 50+ KAI 2.0 NPZ 2.0 TUA 0.8

PRO: 49/61

FELT: Blenheim (77), MM III.

49/ 060

APR 06 $23^h46^m12^s.5$ 34°.91S 178°.94E 12 km M = 4.8

± 2.2 0.10 0.16 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
AUC	iPn	23	47	05		−6.2		3.90	239	
	eSn			55		−0.5	100			
TUA	Pn	23	47	12		−2.6	99	4.14	200	4.9
	ePg			38		1.7	100			
	iSn		48	01		−0.4	100			
	e			12						
NPZ	ePn	23	47	36.5		0.9	100	5.69	222	4.3s
	ePg		48	06		−1.4	100			

WEL	ePn	23	47	58		2.2	99	7.16	206	4.7
	e		48	01						
KAI	ePn	23	48	25		−4.1		9.60	215	5.4s
RIV	iP	23	51	16		−1.3	100	22.93	265	
	eS		55	24		1.3	100			

AMPLITUDES: TUA 1.5 NPZ 0.3 WEL 0.8
KAI 0.5

PRO: 49/62

Listed in ISS with data from 13 additional stations. Classified as an undetermined shock.

49/ 061

APR 09 $21^h37^m00^s.7$ 38°.19S 179°.48E 33 km M = 4.7
± 4.2 0.14 0.26 R S.E. of RES. 2.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	e?	21	37	01				1.93	251	4.5
	ePn			27		−3.6	99			
	iSn			52		−1.0	100			
AUC	eP*	21	38	10		0.5	100	3.97	288	
	iS*		39	02		0.8	100			
WEL	ePn	21	38	12		2.6	99	4.77	228	4.9
	iSn		39	02		0.7	100			

AMPLITUDES: TUA 2.5 WEL 3.0

PRO: 49/63

Listed in ISS with data from 6 additional stations. No solution given.

49/ 062

APR 11 $10^h07^m17^s.4$ 42°.46S 172°.96E 12 km M = 3.6
± 0.9 0.09 0.08 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	10	07	37.5		0.2	100	1.10	193	3.7
KAI	eP*	10	07	39		0.9	100	1.14	266	3.7
	eS*			53		−0.4	100			
WEL	eP*	10	07	47		−2.0	99	1.79	50	3.5
	eS*		08	14		1.3	100			

AMPLITUDES: CHR 1.5 KAI 0.8 WEL 0.8

No provisional solution.

49/ 063

APR 14 $18^h58^m06^s.9$ 41°.30S 174°.04E 12 km M = 4.7
± 0.2 0.01 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	18	58	17.5		0.1	100	0.55	88	4.3
	iS*			25		0.1	100			
NPZ	iPn	18	58	43		0.1	100	2.23	1	4.9
	i		59	06						
	i			08						
	iSn			10		0.0	100			
	iS*			15		−0.6	100			
KAI	eP*	18	58	47		−0.5	100	2.31	237	4.9
	i		59	08						
	iSn			13		1.2	99			
	iS*			18		0.1	100			
CHR	ePg	18	58	57		0.3	100	2.46	205	4.7
	eSn		59	14		−1.4	98			

TUA	ePn	18	59	00	0.5	100	3.45	45	4.3s
	ePg			21	4.4				

AMPLITUDES: WEL 49 NPZ 8.0 KAI 3.0
CHR 2.5 TUA 0.5

PRO: 49/64

FELT: Scattered places near Cook Strait (68, 72, 77), MM III.

49/ 064

APR 14 $23^h58^m18^s.5$ 43°.59S 175°.15E 33 km M = 4.7
± 2.2 0.11 0.14 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iPn	23	58	47		−0.1	100	1.84	271	4.7
	Sn		59	07		−1.6	99			
WEL	iPn	23	58	53		−0.7	100	2.32	353	4.4
	Sn		59	20		−0.2	100			
KAI	iPn	23	59	04		1.8	99	2.94	290	4.9
	Sn			36		0.8	100			
NPZ	eSn	24	00	23		8.2		4.59	349	4.4s

AMPLITUDES: CHR 5.0 WEL 4.0 KAI 2.0
NPZ 0.5

PRO: 49/65

49/ 065

APR 26 $08^h10^m52^s.3$ 40°.54S 172°.92E 12 km M ~ 3.6
± 0.5 0.02 0.05 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	08	11	19		−0.5	99	1.58	119	3.6
	iSn			40		0.2	100			
NPZ	eSn	08	11	43		0.1	100	1.71	31	3.5s
CHR	eSn	08	12	14		0.1	100	3.01	184	4.1s

AMPLITUDES: WEL 1.3 NPZ 0.5 CHR 0.5

No provisional solution.

49/ 066

APR 28 $04^h01^m51^s.0$ 41°.68S 174°.64E 12 km M ~ 3.0
± 0.3 0.01 0.02 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	04	01	59		−0.1	100	0.40	14	3.0
	iS*		02	05		0.1	100			
KAI	eS*	04	03	09		0.0	100	2.55	250	4.0s
NPZ	iS*	04	03	12		−0.1	100	2.65	350	3.7s

AMPLITUDES: WEL 5.5 KAI 0.3 NPZ 0.3

PRO: 49/66

49/ 067

APR 30 $20^h51^m50^s.0$ 39°.16S 177°.93E 12 km M ~ 4.0
± 3.0 0.06 0.19 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	20	52	03		−0.2	100	0.70	300	4.0
	iS*			12		−0.8	100			
NPZ	ePg	20	52	52		1.3	99	3.01	271	3.8s
	eSn		53	12		0.4	100			

WEL	eSn	20	53	16		−0.8	100	3.22 228	3.8s

AMPLITUDES: TUA 6.0 NPZ 0.3 WEL 0.5

PRO: 49/67

49/ 068

MAY 03 $06^h25^m39^s.2$ 40°.85S 174°.37E 12 km M = 4.8

± 0.8 0.04 0.08 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	06	25	49		−0.4	100	0.53	145	4.3
	iS*			57.5		0.8	100			
NPZ	Pn	06	26	08.5		−0.7	100	1.80	353	4.8
	iSn			31.5		−0.2	100			
KAI	ePn	06	26	23		0.4	100	2.78	232	5.0
	Sn			57		1.7	100			
TUA	e	06	26	44				2.96	47	4.6
	e			48						
CHR	ePn	06	26	28		2.7	99	2.98	205	5.1
	iPg			38		−1.3	100			
	iSn			57		−3.0	99			

AMPLITUDES: WEL 59 NPZ 8.5 KAI 2.5
TUA 1.4 CHR 4.5

PRO: 49/68

FELT: Western parts of Wellington province (65, 68).

49/ 069

MAY 03 $14^h51^m49^s.3$ 35°.06S 179°.19E 12 km M = 5.4

± 3.6 0.16 0.21 R S.E. of RES. 2.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
AUC	ePn	14	52	50		0.6	100	4.00	242	
	iS*		53	50		−0.9	100			
TUA	iPn	14	52	46		−4.5	99	4.08	203	5.5
	eSn		53	40		3.3	99			
NPZ	ePn	14	53	16		3.2	99	5.71	224	5.2
	iSn		54	16		−0.0	100			
	e			38						
WEL	Pn	14	53	25		−7.0		7.12	208	5.4
	iSn		54	48.5		−1.3	100			
	iS*		55	24		−0.4	100			

AMPLITUDES: TUA 5.5 NPZ 2.0 WEL 4.5

No provisional solution.

ISS reports additional readings from API and BRS at 14h.

49/ 070

MAY 03 $17^h07^m20^s.8$ 42°.50S 172°.98E 12 km M = 4.4

± 0.3 0.02 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	17	07	40		−0.1	100	1.06	194	4.5
KAI	iP*	17	07	42		0.2	100	1.16	268	4.9
	S*			57		−0.3	100			
WEL	eP*	17	07	53		0.3	100	1.81	48	3.9
	iSn		08	13		−0.5	100			
	iS*			15.5		−1.0	99			
	iSg			22.5		0.8	99			
NPZ	eP*	17	08	23		0.8	99	3.53	14	4.3
	iS*		09	08		−0.3	100			

AMPLITUDES: CHR 9.0 KAI 11 WEL 2.0
NPZ 0.8

PRO: 49/69

FELT: North Canterbury (88, 95, 96), MM IV

49/ 071

MAY 03 $19^h59^m59^s.8$ 44°.68S 169°.09E 12 km M = 4.7

± 1.1 0.06 0.05 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	20	00	43		0.4	100	2.74	39	4.7
	eSn		01	15		0.1	100			
CHR	iSn	20	01	17		0.7	99	2.79	67	4.6
	i			19.5						
	iS*			25		−0.2	100			
WEL	e?	20	01	05				5.37	53	4.2s
	ePn			18		−0.6	100			
	eSn		02	17.5		−0.7	99			
NPZ	ePn	20	01	48		10.9		6.73	35	4.5s
	eSn		02	51		0.1	100			

AMPLITUDES: KAI 1.5 CHR 1.5 WEL 0.5
NPZ 0.3

PRO: 49/70

49/ 072

MAY 05 $15^h29^m52^s.4$ 41°.22S 172°.60E 181 km M ~ 4.2

± 0.3 0.01 0.01 2 S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iS	15	30	51		−0.1	100	1.57	214	4.0*
WEL	iP	15	30	26		−0.1	100	1.64	93	4.2
	iS			52		0.0	100			
CHR	iS	15	31	05		0.0	100	2.31	180	3.9*
NPZ	eS	15	31	07.5		0.0	100	2.43	28	3.4s

AMPLITUDES: KAI 1.0 WEL 3.0 CHR 1.0
NPZ 0.5

PRO: 49/71

49/ 073

MAY 06 $19^h02^m11^s.9$ 40°.55S 173°.65E 12 km M = 3.8

± 0.8 0.03 0.06 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	19	02	36.5		1.8	99	1.13	131	3.8
	iSn			47.5		−0.7	100			
	iSg			49		−0.8	100			
NPZ	Sg	19	03	03		−0.2	100	1.52	13	3.8
KAI	eSg	19	03	39		−0.3	100	2.59	220	3.5s

AMPLITUDES: WEL 4.5 NPZ 1.3 KAI 0.1

PRO: 49/72

49/ 074

MAY 08 $18^h16^m28^s.3$ 38°.46S 177°.14E 33 km M ~ 4.1

± 2.3 0.12 0.11 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	18	16	36		−0.6	100	0.35	179	3.4+

	iS*		43	0.4	100			
WEL	eP*	18	17 28	1.1	99	3.37	212	4.1
	iSn		54	−1.1	99			
	iS*		18 11	0.2	100			

AMPLITUDES: TUA 6.0+ WEL 1.0

PRO: 49/73

FELT: Opotiki (35), MM III.

49/ 075

MAY 12 $18^h25^m26^s.6$ 39°.45S 174°.35E 227 km M = 4.4

± 1.1 0.04 0.04 6 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iS	18	26	20		−0.1	100	0.43	331	3.4*
WEL	eP	18	26	10		3.8		1.86	170	4.1
	iS			37		0.2	100			
TUA	eS	18	26	44		0.1	100	2.27	75	4.6
KAI	eS	18	27	15		0.3	99	3.80	215	3.3s
CHR	iS	18	27	25		−0.3	99	4.28	197	4.3*

AMPLITUDES: NPZ 0.7 WEL 1.7 TUA 1.0
KAI 0.1 CHR 1.5

PRO: 49/74

49/ 076

MAY 13 $04^h04^m23^s.5$ 39°.85S 174°.89E 12 km M = 3.9

± 1.0 0.05 0.10 R S.E. of RES. 2.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	04	04	40		−1.8	100	1.01	321	3.4
	iS*			57		1.7	100			
WEL	ePn	04	04	47		−1.6	100	1.44	184	3.8
	i		05	01.5						
	iSn			09.5		2.1	99			
	iSg			18		5.9				
TUA	ePn	04	04	57		0.2	100	2.03	60	4.5
KAI	eS*	04	06	17		−0.5	100	3.74	223	4.3s

AMPLITUDES: NPZ 1.1 WEL 2.3 TUA 1.5
KAI 0.3

No provisional solution.

49/ 077

MAY 14 $12^h22^m09^s.7$ 38°.79S 174°.70E 12 km M = 4.2

± 4.8 0.24 0.17 R S.E. of RES. 2.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP*	12	22	20		−0.5	100	0.56	241	4.2
	iPg			25		3.7				
	iS*			27		−1.2	100			
TUA	e	12	23	51				1.92	91	3.6s
WEL	ePn	12	22	50		0.7	100	2.49	179	4.1
	i		23	16						
	iSn			17		−2.0	100			
KAI	eSn	12	24	10		3.0	99	4.49	213	4.0s

AMPLITUDES: NPZ 22 TUA 0.1 WEL 1.6
KAI 0.1

PRO: 49/75

49/ 078

MAY 16 $09^h15^m14^s.5$ 39°.31S 174°.78E 12 km M = 3.7

± 0.3 0.01 0.02 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP*	09	15	26		0.1	100	0.60	294	3.9
	iS*			34		−0.1	100			
WEL	ePn	09	15	47		0.1	100	1.97	180	3.5
	eSn		16	11		−0.2	100			
KAI	eSn	09	17	02.5		0.1	100	4.09	217	4.4s

AMPLITUDES: NPZ 10 WEL 0.7 KAI 0.3

PRO: 49/76

49/ 079

MAY 17 $02^h11^m06^s.1$ 39°.02S 175°.82E 125 km M = 4.6

± 1.8 0.07 0.06 16 S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	02	11	30		0.6	100	1.06	79	4.6
	S			46		−1.1	100			
NPZ	iP	02	11	33		0.3	100	1.36	267	3.5*
	iS			53		0.1	100			
WEL	P	02	11	46.5		0.9	100	2.40	199	4.6
	iS		12	16		0.7	100			
	i			18						
KAI	e	02	12	40.5				4.85	222	3.9s
	iS		13	12		−1.6	99			
CHR	iS	02	13	17		−3.1		5.11	207	4.0*

AMPLITUDES: TUA 5.0 NPZ 1.1 WEL 5.0
KAI 0.4 CHR 0.7

PRO: 49/77

49/ 080

MAY 17 $09^h57^m26^s.0$ 42°.38S 172°.86E 12 km M = 3.6

± 0.6 0.03 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	09	57	45		−0.7	100	1.08	262	3.7
	iS*		58	00.5		0.3	100			
CHR	iP*	09	57	48		0.9	99	1.16	188	3.5
	iS*		58	02		−0.6	100			
WEL	ePn	09	57	56		−0.1	100	1.80	53	3.3s

AMPLITUDES: KAI 0.9 CHR 0.7 WEL 0.5

PRO: 49/78

49/ 081

MAY 19 $04^h29^m47^s.0$ 41°.05S 173°.18E 12 km M ~ 3.2

± 0.6 0.04 0.05 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	04	30	09.5		0.4	100	1.22	102	3.2
	iS*			25		−0.3	100			
KAI	ePn	04	30	19		−0.5	100	1.98	221	3.8s
	ePg			27		−0.1	100			
NPZ	ePn	04	30	23		1.8	99	2.10	19	3.6s
	eSn			45.5		−1.3	99			

AMPLITUDES: WEL 0.8 KAI 0.3 NPZ 0.4

No provisional solution.

49/ 082

MAY 19 $07^h53^m56^s.5$ 42°.58S 173°.02E 12 km M = 3.6
± 0.3 0.02 0.02 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eP*	07	54	14.5		−0.1	100	0.99	197	3.4
	iS*			28		0.1	100			
	iSg			35		4.8				
KAI	eP*	07	54	17.5		−0.5	100	1.19	272	3.7
	iS*			33		−0.8	99			
	iS*			35		1.1	99			
WEL	ePn	07	54	27.5		0.4	100	1.84	46	3.2s
	eS*			53		−0.2	100			

AMPLITUDES: CHR 0.8 KAI 0.7 WEL 0.4

PRO: 49/79

49/ 083

MAY 20 $09^h41^m38^s.6$ 38°.42S 175°.75E 190 km M = 4.4
± 8.5 0.54 0.83 81 S.E. of RES. 3.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS	09	42	31		−1.0	100	1.16	110	4.7
WEL	iP	09	42	29.5		1.7	100	2.96	194	4.1
	iS		43	07.5		1.8	100			
KAI	eS	09	43	57		−0.6	100	5.26	218	3.9s
CHR	eS	09	44	04		−2.0	100	5.62	204	3.9s

AMPLITUDES: TUA 3.0 WEL 1.0 KAI 0.3
CHR 0.5

PRO: 49/80

49/ 084

MAY 22 $01^h21^m40^s.3$ 39°.58S 177°.16E 12 km M = 4.0
± 0.9 0.03 0.05 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	01	21	55		0.4	100	0.76	360	4.1
	iS*		22	04.5		−0.5	100			
NPZ	iP*	01	22	22.5		−0.7	100	2.45	281	4.0
	iSn			50		1.6	99			
	iS*			56		0.8	100			
	iSg		23	01.5		−1.2	99			
WEL	ePg	01	22	35.5		4.7		2.49	226	3.8
	iSn			50		0.3	100			
KAI	eSn	01	23	55		−0.8	100	5.25	234	4.1s

AMPLITUDES: TUA 6.0 NPZ 0.7 WEL 0.8
KAI 0.1

PRO: 49/81

49/ 085

MAY 22 $10^h10^m53^s.4$ 38°.54S 176°.80E 169 km M = 4.2
± 1.8 0.08 0.07 10 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P	10	11	17		0.4	100	0.38	134	3.9
	iS			34		−0.4	100			
NPZ	eP	10	11	36		3.8		2.20	255	3.4s
	iS		12	02		−0.2	100			
WEL	iP	10	11	44		−0.1	100	3.15	209	4.5
	iS		12	24		0.9	99			
	i			25						
KAI	eS	10	13	23		0.5	100	5.71	224	3.4s
CHR	eS	10	13	25.5		−1.3	99	5.89	211	3.2s

AMPLITUDES: TUA 1.0 NPZ 0.5 WEL 2.3
KAI 0.1 CHR 0.1

PRO: 49/82

49/ 086

MAY 24 $22^h47^m17^s.5$ 38°.12S 176°.41E 156 km M = 4.5
± 0.1 0.01 0.02 1 S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P	22	47	42		−0.1	100	0.90	140	4.3
	S		48	01		0.0	100			
	i			04						
NPZ	e	22	49	05				2.06	242	2.7s
WEL	eP	22	48	11		0.0	100	3.40	201	4.7
	iS			52		0.0	100			
KAI	eS	22	49	49		0.0	100	5.82	219	3.4s
CHR	eS	22	49	56		−0.1	100	6.12	207	3.2s

AMPLITUDES: TUA 2.0 NPZ 0.1 WEL 3.3
KAI 0.1 CHR 0.1

PRO: 49/83

49/ 087

MAY 26 $03^h32^m10^s.8$ 33°.87S 178°.19E 12 km M = 6.0
± 1.7 0.07 0.14 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	03	33	25		0.5	100	5.00	189	6.2
	eSn		34	19		−1.3	99			
	iS*			43		0.7	100			
WEL	ePn	03	34	10		6.1		7.88	199	5.8
	iSn		35	30		0.3	100			
	iS*		36	09		0.2	100			
KAI	eSn	03	36	24		−0.1	100	10.15	210	6.1s
	e			32						

AMPLITUDES: TUA 2.5 WEL 1.2 KAI 0.3

No provisional solution.

49/ 088

MAY 27 $05^h19^m30^s.0$ 43°.54S 177°.66E 33 km M ~ 3.9
± 2.9 0.11 0.16 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	05	20	16		0.0	100	3.10	315	3.9
	iSn			50		−0.6	100			
	i			52						
CHR	eSn	05	21	03		−0.9	100	3.66	268	4.3s

49/ 095

JUN 07 $03^h28^m35^s.7$ 40°.03S 175°.15E 12 km M = 4.1
± 0.2 0.01 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iPn	03	28	58		−0.5	100	1.27	319	4.4
	iS*		29	15.5		0.1	100			
WEL	Pn	03	28	59		0.2	100	1.29	193	4.1
	S*		29	15.5		−0.4	100			
TUA	eP*	03	29	10		−0.5	100	1.97	52	3.9
	eSn			33		0.6	100			
KAI	e	03	29	53				3.76	227	4.3s
	eSn		30	16		0.5	100			

AMPLITUDES: NPZ 7.5 WEL 6.5 TUA 0.6
KAI 0.3

PRO: 49/90

49/ 096

JUN 07 $18^h28^m06^s.8$ 36°.42S 175°.81E 33 km M = 5.1
± 2.1 0.11 0.09 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	18	28	47		1.0	100	2.61	156	5.0
	iSn		29	15		−0.5	100			
WEL	Pn	18	29	16.5		−1.1	100	4.93	189	5.2
	e		30	07						
	iSn			12		0.9	100			
KAI	eSn	18	31	01		0.5	100	6.98	208	4.4s
CHR	eSn	18	31	12.5		−0.7	100	7.51	198	4.7s

AMPLITUDES: TUA 0.8 WEL 1.3 KAI 0.1
CHR 0.3

PRO: 49/91

49/ 097

JUN 08 $11^h16^m56^s.3$ 38°.76S 176°.16E 208 km M = 4.5
± 2.7 0.10 0.11 16 S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS	11	17	48		−0.5	100	0.77	94	4.6
NPZ	iP	11	17	32.5		0.2	100	1.66	259	3.4s
	iS		18	00		−0.2	100			
WEL	iP	11	17	44.5		0.8	100	2.74	202	4.4
	iS		18	21.5		1.1	100			
	i			23.5						
KAI	eS	11	19	11		−3.8		5.21	222	3.9s
CHR	eS	11	19	19		−1.5	99	5.45	208	3.9s

AMPLITUDES: TUA 2.5 NPZ 0.5 WEL 2.0
KAI 0.3 CHR 0.5

PRO: 49/92

49/ 098

JUN 11 $05^h16^m04^s.2$ 36°.01S 176°.37E 33 km M = 5.7
± 3.6 0.19 0.18 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	05	16	48		1.2	100	2.86	168	5.6

	iSn		17	19		0.1	100			
WEL	ePn	05	17	20		−1.6	100	5.41	193	5.8
	iSn		18	19		−1.2	100			
KAI	eSn	05	19	13		1.3	100	7.55	209	4.9s

AMPLITUDES: TUA 1.5 WEL 1.1 KAI 0.3

PRO: 49/93

49/ 099

JUN 12 $09^h27^m21^s.6$ 42°.35S 173°.09E 12 km M = 4.2
± 0.4 0.03 0.03 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iS*	09	28	00.5		0.2	100	1.23	196	3.4s
KAI	iP*	09	27	43		−1.2	98	1.25	261	4.2
	iS*		28	01.5		0.6	100			
WEL	ePn	09	27	49.5		−0.1	100	1.65	50	3.8
	iS*		28	12.5		−0.1	100			
NPZ	ePg	09	28	30		0.4	100	3.36	13	4.5
	e			42						

AMPLITUDES: CHR 0.5 KAI 2.2 WEL 2.0
NPZ 1.3

PRO: 49/95

FELT: Kahurangi Point (71), MM IV.

49/ 100

JUN 14 $16^h05^m18^s.8$ 39°.91S 175°.27E 12 km M = 4.0
± 0.3 0.02 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP*	16	05	42		0.6	100	1.25	312	4.1
	iS*			57.5		−0.5	100			
WEL	Pn	16	05	44.5		0.6	100	1.43	195	3.8
	iSn		06	02		−0.6	100			
	i			09						
TUA	eP*	16	05	51		−0.1	100	1.82	54	4.0
	S*		06	15		−0.1	100			

AMPLITUDES: NPZ 3.7 WEL 2.5 TUA 0.9

PRO: 49/96

49/ 101

JUN 15 $16^h18^m59^s.8$ 43°.17S 172°.46E 12 km M = 4.6
± 0.4 0.02 0.04 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	16	19	07		−0.5	100	0.39	162	4.5
	iS*			13		0.1	100			
KAI	ePg	16	19	21.5		1.3	99	1.01	309	4.6
	iS*			30		−1.6	99			
	iSn			34		0.7	100			
WEL	iP*	16	19	44.5		0.1	100	2.55	43	4.6
	iS*		20	17.5		−0.2	100			
	i			20						

AMPLITUDES: CHR 67 KAI 8.0 WEL 5.0

PRO: 49/97

FELT: Banks Peninsula (110, 111), MM IV, and Timaru (118).

49/ 102

JUN 16 $14^h01^m30^s.5$ 39°.36S 174°.63E 12 km M = 3.7
± 0.9 0.04 0.08 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	14	01	40		−0.6	100	0.52	304	3.7
	iS*			48		0.2	100			
WEL	eP*	14	02	05		0.4	100	1.93	177	3.7
	iSn			27		0.8	100			
	iS*			29		−1.0	99			
	i			31.5						
KAI	e	14	02	36				4.00	217	4.4s
	eSn		03	16		0.1	100			

AMPLITUDES: NPZ 9.5 WEL 1.2 KAI 0.3

PRO: 49/98

49/ 103

JUN 18 $08^h36^m44^s.2$ 39°.52S 175°.60E 12 km M ~ 3.7
± 0.3 0.02 0.02 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	08	37	07		0.0	100	1.27	290	3.7
	iS*			24		0.1	100			
TUA	eS*	08	37	28		0.2	100	1.39	60	3.4s
WEL	ePn	08	37	15		−0.3	100	1.88	199	3.3s
	iP*			16.5		−0.9	99			
	iS*			43		0.8	99			

AMPLITUDES: NPZ 1.6 TUA 0.3 WEL 0.5

PRO: 49/99

49/ 104

JUN 19 $01^h55^m22^s.9$ 39°.03S 175°.15E 235 km M = 4.6
± 2.0 0.11 0.12 12 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eS	01	56	21		0.1	100	0.84	267	3.1s
TUA	eP	01	56	03		2.4		1.57	83	4.8
	iS			29		−0.8	100			
WEL	iP	01	56	09		1.9	99	2.28	187	4.4
	iS			42		0.7	100			
KAI	eP	01	56	32		−0.8	100	4.51	218	3.9s
	S		57	23		−4.0				
CHR	eP	01	56	38		0.6	100	4.89	202	4.3*
	S		57	34		−1.5	99			

AMPLITUDES: NPZ 0.3 TUA 2.0 WEL 2.5
KAI 0.4 CHR 1.5

PRO: 49/100

49/ 105

JUN 20 $04^h35^m34^s.3$ 34°.76S 176°.98E 33 km M = 6.6
± 2.5 0.13 0.16 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	04	36	34		0.9	100	4.04	178	6.5
	eSn		37	18		0.5	100			
WEL	ePn	04	37	09		−0.9	100	6.75	194	6.8

	iP*			36		5.5				
	eSn			38	21.5	−0.9	100			
KAI	e	04	37	50.5				8.89	208	5.4s
	eSn			39	15.5	1.5	99			
CHR	iSn	04	39	25.5		−0.4	100	9.39	200	6.6
	e			31						

AMPLITUDES: TUA 2.5 WEL 5.0 KAI 0.4
CHR 0.6

PRO: 49/101

49/ 106

JUN 22 $00^h40^m36^s.3$ 40°.00S 174°.69E 33 km M = 5.2
± 0.2 0.01 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iPn	00	40	54		−0.2	100	1.04	333	5.0+
	iSn		41	08		0.5	100			
WEL	iP*	00	41	00		0.3	100	1.29	177	5.0
	iS*			17.3		0.3	100			
TUA	ePn	00	41	11		0.4	100	2.25	59	4.9
	iSn			36		−0.3	100			
AUC	iSn	00	41	54		−3.6		3.14	1	
KAI	ePn	00	41	27		−1.1	98	3.53	223	5.5
	i		42	03.5						
	iSn			07.5		0.3	100			
	i			08.5						
CHR	iP*	00	41	47		3.8		3.85	203	5.4
	iSn		42	14.5		−0.3	100			

AMPLITUDES: NPZ 41+ WEL 47 TUA 3.5
KAI 5.0 CHR 5.5

PRO: 49/102

FELT: Southern Taranaki, MM IV, Wellington (68), and Collingwood (72).

49/ 107

JUN 23 $08^h12^m11^s.3$ 39°.31S 175°.02E 214 km M ~ 4.3
± 2.6 0.24 0.38 33 S.E. of RES. 2.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eS	08	13	16		−1.3	100	1.74	74	4.1s
WEL	P	08	12	53		2.0	99	1.99	185	4.3
	iS		13	23		1.3	100			
KAI	eP	08	13	18		1.1	100	4.22	219	3.8s
	eS		14	06.5		−1.2	100			
CHR	eP	08	13	21.5		0.0	100	4.59	202	3.8s
	iS		14	14		−2.0	99			

AMPLITUDES: TUA 0.5 WEL 2.3 KAI 0.3
CHR 0.5

PRO: 49/103

49/ 108

JUN 24 $22^h14^m19^s.9$ 38°.95S 175°.84E 168 km M = 5.1
± 1.3 0.06 0.06 9 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	22	14	47		0.2	100	1.03	82	5.0
	iS		15	07		−0.6	100			
NPZ	iP	22	14	50		0.0	100	1.38	265	4.1*

	iS	15 13	−0.1	100				
WEL	iP	22 15 02.8	0.8	100	2.47	199		5.1
	iS	35.5	1.0	100				
CHR	eP	22 15 37	0.3	100	5.17	207		4.6*
	iS	16 34.5	−1.7	98				

AMPLITUDES: TUA 9.0 NPZ 3.8 WEL 15
CHR 2.5

PRO: 49/104

Listed in ISS additional readings.

49/ 109

JUN 25 $01^h11^m22^s.5$ 34°.10S 179°.70E 33 km M = 5.1
± 2.3 0.18 0.17 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	01	12	36		0.0	100	5.12	203	5.1
	i		13	06						
NPZ	eS*	01	14	45		0.1	100	6.70	221	4.5s
WEL	eSn	01	14	44		−0.6	100	8.16	207	5.0
KAI	eSn	01	15	44		0.1	100	10.63	215	5.2s
CHR	eSn	01	15	51.5		1.0	99	10.91	208	5.0s

AMPLITUDES: TUA 1.3 NPZ 0.3 WEL 1.2
KAI 0.3 CHR 0.3

No provisional solution.

49/ 110

JUN 27 $08^h06^m07^s.9$ 37°.57S 177°.09E 340 km M = 5.3
± 1.4 0.06 0.10 7 S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	08	06	54.5		0.6	100	1.24	178	5.3
	iS		07	29.5		−0.3	100			
AUC	iS	08	07	38		0.1	100	1.98	290	
WEL	P	08	07	18		0.0	100	4.12	205	5.3
	eS		08	12.5		−0.6	100			
KAI	eP	08	07	45		−0.9	99	6.60	220	4.2s
	S		09	00		−3.0				
CHR	eP	08	07	46.5		−2.5		6.86	208	4.5*
	iS		09	09.5		1.0	99			

AMPLITUDES: TUA 4.0 WEL 6.5 KAI 0.5
CHR 1.6

PRO: 49/105

Listed in ISS additional readings.

49/ 111

JUN 28 $14^h43^m28^s.6$ 40°.17S 175°.58E 12 km M = 4.3
± 0.3 0.02 0.04 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	14	43	52		0.6	100	1.27	209	4.4
	iS*		44	10		1.7	99			
NPZ	iPn	14	43	56		0.0	100	1.60	313	4.4
	iSn		44	17		0.5	100			
TUA	eP*	14	44	02		1.0	100	1.83	42	4.0
	e			17						
	eSn			22		0.1	100			
	eS*			24		−1.0	100			
KAI	eP*	14	44	35		−1.6	99	3.92	232	4.5s
	ePg			43		−4.8				

	eSn	45 13	0.8	100				
	eSg	40	−0.6	100				
CHR	ePg	14 44 50	0.3	100	4.01	212		4.3s
	eSn	45 13	−1.4	99				
	iSg	43.5	−0.3	100				

AMPLITUDES WEL 12 NPZ 4.3 TUA 0.9
KAI 0.4 CHR 0.4

PRO 49/106

FELT Taihape (58), MM III

49/ 112

JUL 01 $06^h07^m44^s.8$ 40°.49S 174°.09E 12 km M ~ 3.7
± 0.9 0.04 0.08 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	06	08	06.5		2.4	99	0.94	147	3.7
	iSg			15.3		−1.6	100			
NPZ	eSn	06	08	27		−1.4	100	1.42	359	2.9s
	eS*			30		0.9	100			
KAI	eSn	06	09	02		−1.0	100	2.86	224	3.6s
	eS*			13		0.7	100			

AMPLITUDES: WEL 5.0 NPZ 0.2 KAI 0.1

No provisional solution.

49/ 113

JUL 01 $16^h21^m25^s.9$ 39°.08S 176°.16E 33 km M = 5.1
± 0.4 0.03 0.03 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	16	21	40		−0.6	100	0.82	71	5.0
	iSn			52		0.5	100			
NPZ	ePn	16	21	52.5		0.9	100	1.63	270	3.9A
	iP*			55		0.0	100			
	iSn		22	10		−0.9	100			
	iS*			17		0.4	100			
WEL	iPn	16	22	02		−0.9	100	2.45	205	4.9
	iSn			32.5		1.8	98			
	i			33.5						
KAI	ePn	16	22	41.5		4.0		4.99	225	5.2
	iSn		23	32		0.3	100			
CHR	ePn	16	22	40		−0.2	100	5.18	210	5.1
	iSn		23	35		−1.4	99			

AMPLITUDES: TUA 35 NPZ 1.3 WEL 10
KAI 1.1 CHR 1.2

PRO: 49/107

FELT: Wairoa (53), MM II. Listed in ISS additional readings.

49/ 114

JUL 02 $11^h55^m51^s.9$ 39°.33S 179°.53E 33 km M = 4.6
± 0.8 0.02 0.05 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	11	56	22		0.3	100	1.93	285	4.3
	Sn			44		−0.1	100			
WEL	ePn	11	56	51.5		−0.3	100	4.14	240	4.9
	Sn		57	37.5		0.3	100			
NPZ	eSn	11	57	45		5.0		4.25	272	4.1s
CHR	eSn	11	58	38.5		0.2	100	6.68	229	4.8s
KAI	eSn	11	58	44		−0.4	100	6.93	240	4.8s

AMPLITUDES: TUA 1.5 WEL 3.5 NPZ 0.3
CHR 0.5 KAI 0.3

PRO: 49/108

49/ 115

JUL 03 $05^h38^m53^s.1$ 40°.63S 174°.65E 12 km M = 3.7
± 0.5 0.02 0.08 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	05	39	05.5		−0.0	100	0.66	172	3.7
	iS*			14.5		−0.1	100			
NPZ	eP*	05	39	23		1.0	100	1.63	344	3.7
	eSn			40		−1.5	99			
	eS*			44		0.5	100			
KAI	e	05	40	06				3.08	231	3.7s
	eSn			16.5		0.0	100			

AMPLITUDES: WEL 9.0 NPZ 0.9 KAI 0.1

PRO: 49/109

49/ 116

JUL 03 $08^h02^m19^s.0$ 38°.19S 176°.31E 152 km M = 4.4
± 0.8 0.07 0.10 7 S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	08	02	43		−0.2	100	0.90	133	4.2
	eS		03	02		0.1	100			
WEL	eP	08	03	11.5		0.3	99	3.31	201	4.6
	eS			53.5		2.4				
	i			55						
KAI	iS	08	04	48		−0.0	100	5.72	219	3.9s
CHR	eS	08	04	55		−0.1	100	6.02	206	3.7s

AMPLITUDES: TUA 1.5 WEL 2.5 KAI 0.3
CHR 0.3

PRO: 49/110

49/ 117

JUL 04 $06^h09^m30^s.9$ 40°.85S 174°.38E 12 km M = 4.5
± 0.4 0.02 0.05 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	06	09	39.8		−1.2	100	0.52	146	4.2+
	iS*			48.3		0.0	100			
NPZ	ePn	06	10	00.5		−0.4	100	1.80	352	4.5
	iP*			02		−0.7	100			
	iS*			27		0.5	100			
KAI	eP*	06	10	19		−0.6	100	2.78	232	4.5
	ePg			32.5		5.3				
	iSg		11	08.5		3.8				
TUA	ePn	06	10	16		−0.7	100	2.95	47	4.4
	ePg			33		2.4				
	iSn			53		1.8	99			
CHR	eSn	06	10	53.5		1.6	99	2.98	205	4.1s

AMPLITUDES: WEL 45+ NPZ 4.2 KAI 0.8
TUA 0.8 CHR 0.5

PRO: 49/111

FELT: Southern parts of Wellington province (65, 66, 68).

49/ 118

JUL 05 $09^h28^m26^s.7$ 42°.24S 174°.10E 33 km M ~ 3.1
± 2.0 0.10 0.11 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	09	28	45.5		0.5	100	1.08	28	3.1
	eSn			58.5		−0.0	100			
	e		29	06.5						
KAI	eS*	09	29	29		0.1	100	2.02	261	3.3s
NPZ	eSn	09	29	47		−1.9	99	3.17	360	3.6s
	eS*		30	05		1.5	99			

AMPLITUDES: WEL 0.8 KAI 0.1 NPZ 0.2

PRO: 49/112

49/ 119

JUL 06 $06^h18^m00^s.3$ 40°.58S 173°.89E 12 km M = 4.3
± 0.4 0.02 0.05 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	06	18	18.5		0.5	100	0.97	137	4.1
	iS*			30		−1.0	100			
NPZ	ePn	06	18	26.5		−0.0	100	1.52	5	4.2
	iSn			44.5		−1.7	99			
	eS*			48		0.5	100			
KAI	eP*	06	18	48		0.6	100	2.69	223	4.4
	eSn		19	19.5		5.2				
TUA	iSn	06	19	25		1.4	99	3.08	56	4.3
CHR	eSn	06	19	24		−0.1	100	3.10	197	4.2s

AMPLITUDES: WEL 10 NPZ 3.0 KAI 0.7
TUA 0.6 CHR 0.5

PRO: 49/113

49/ 120

JUL 07 $21^h05^m08^s.8$ 38°.78S 174°.22E 33 km M = 4.6
± 2.2 0.13 0.12 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eSn	21	06	10		0.2	100	2.29	92	4.7
WEL	ePn	21	05	46		−1.0	100	2.54	171	4.4
	iSn		06	17		1.2	100			
KAI	ePn	21	06	11.5		0.3	100	4.31	209	4.4s
	iSn		07	00		1.6	100			
CHR	eSn	21	07	10.5		−2.0	99	4.90	194	4.8

AMPLITUDES: TUA 0.9 WEL 3.0 KAI 0.3
CHR 0.8

No provisional solution.

49/ 121

JUL 11 $20^h22^m29^s.4$ 39°.92S 172°.50E 12 km M = 4.1
± 0.8 0.03 0.04 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	20	23	09		0.9	99	2.20	129	3.8
	iS*			37		−0.0	100			
KAI	eP*	20	23	17.5		0.3	100	2.73	197	4.2s
	iS*			52.5		−0.4	100			

CHR	eSn	20	24	05	−0.5	100	3.61	179	4.4
TUA	eSn	20	24	09	−0.4	100	3.77	74	4.6s

AMPLITUDES: WEL 1.1 KAI 0.4 CHR 0.6
TUA 0.3

PRO: 49/114

JUL 12 $04^h21^m40^s.3$ 39°.63S 176°.56E 12 km M = 3.9 — 49/ 122
± 0.8 0.05 0.07 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePg	04	22	02		2.5		0.94	29	3.4
	iS*			10		−0.2	100			
NPZ	ePn	04	22	14		0.7	100	2.02	286	4.3
	iSn			38		−0.1	100			
WEL	e	04	22	32				2.14	219	3.4s
	iSn			42		0.8	100			
	eSg		23	06		13.4				
KAI	eSn	04	23	45		−1.2	99	4.85	232	

AMPLITUDES: TUA 0.9 NPZ 2.5 WEL 0.4

PRO: 49/115

JUL 12 $05^h02^m19^s.5$ 37°.68S 175°.92E 274 km M = 4.5 — 49/ 123
± 1.1 0.12 0.20 15 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	05	03	00		−0.3	100	1.48	140	4.5
	iS			32		0.0	100			
WEL	iP	05	03	21		−0.5	100	3.71	194	4.5
	iS		04	10.5		0.5	100			
	i			13						
KAI	eP	05	03	49		0.9	99	5.95	214	4.0s
	S		04	57		−0.5	100			
CHR	iS	05	05	06.5		−0.2	100	6.36	202	4.4*

AMPLITUDES: TUA 1.0 WEL 1.3 KAI 0.4
CHR 1.5

PRO: 49/116

JUL 14 $19^h40^m17^s.8$ 32°.34S 179°.70W 33 km M = 5.5 — 49/ 124
± 4.1 0.29 0.68 R S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	19	42	08		11.9		6.95	201	5.6
	iSn		43	13		2.4	99			
WEL	ePn	19	42	36		−1.3	100	9.97	205	5.4
	iSn		44	22		−1.2	100			
KAI	ePn	19	43	11.5		1.3	100	12.37	212	5.6s
	i			14.5						
	Sn		45	22		0.9	100			
CHR	eSn	19	45	27		−2.0	100	12.70	206	5.6
API	eS	19	47	57		−27.5		19.82	23	

AMPLITUDES: TUA 2.5 WEL 2.0 KAI 0.5
CHR 0.8

No provisional solution.

ISS gives 32.8S 178.1W, and lists data from 12 additional stations.

JUL 17 $22^h38^m53^s.0$ 35°.05S 178°.81E 33 km M = 5.2 — 49/ 125
± 9.9 0.61 0.81 R S.E. of RES. 3.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	22	39	51		0.1	100	3.99	199	5.2
	Sn		40	34		−0.7	100			
WEL	ePn	22	40	47		14.9		6.99	206	5.1
	i		41	41						
	iSn			44.5		−2.6	100			
	i		42	13						
KAI	ePn	22	41	25.5		20.1		9.44	216	5.1s
	eSn		42	44.5		−1.3	100			
CHR	eSn	22	42	57.5		4.6	99	9.73	208	5.2

AMPLITUDES: TUA 3.0 WEL 2.3 KAI 0.3
CHR 0.6

No provisional solution.

JUL 18 $23^h07^m17^s.8$ 40°.54S 172°.88E 12 km M ~ 3.3 — 49/ 126
± 2.2 0.15 0.08 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	23	07	46		0.7	100	1.61	118	3.3
	eSn		08	05.5		−0.4	100			
KAI	ePn	23	07	53.5		−0.7	100	2.27	209	3.7s
	eSn		08	22		0.4	100			

AMPLITUDES: WEL 0.6 KAI 0.2

PRO: 49/117

FELT: Murchison (80).

JUL 19 $05^h12^m43^s.1$ 40°.90S 172°.70E 12 km M ~ 3.3 — 49/ 127
± 0.8 0.04 0.04 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPg	05	12	47		−0.6	99	0.19	172	
	iSg			50.8		0.3	100			
WEL	ePn	05	13	11		0.4	100	1.61	105	3.3
	Sn			31		−0.2	100			
KAI	eSg	05	13	47		0.1	100	1.89	210	3.7s

AMPLITUDES: COB 1.5 WEL 0.6 KAI 0.3

PRO: 49/118

JUL 19 $10^h56^m31^s.2$ 40°.54S 173°.25E 12 km M ~ 3.4 — 49/ 128
± 0.5 0.03 0.05 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP*	10	56	43		−0.9	100	0.67	216	2.1s
	eS*			52.5		−0.6	100			
WEL	iPn	10	56	54.5		−0.9	100	1.37	123	3.4
	iSn		57	14		0.5	100			
NPZ	eP*	10	57	01		1.3	99	1.60	23	3.2s
	ePg			03		−0.7	100			

KAI	eSg	10 57 54		1.2	100	2.42	214		3.5s

AMPLITUDES: COB 0.1 WEL 1.1 NPZ 0.3
KAI 0.1

No provisional solution.

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JUL 19 $17^h07^m16^s.6$ 38°.95S 175°.72E 182 km M = 4.6
± 2.1 0.09 0.12 16 S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS	17	08	07		−1.0	100	1.13	83	4.5
NPZ	P	17	07	48		1.0	100	1.29	264	3.3s
WEL	iP	17	08	00		0.8	100	2.45	197	4.6
	iS			33.8		1.8	99			
COB	e	17	08	23				3.13	226	3.3s
	eS			46		−0.8	100			
KAI	e	17	08	42.5				4.84	221	3.8s
	e			58.5						
	eS		09	24.5		−1.1	100			
CHR	eP	17	08	33.5		0.4	100	5.14	206	3.9s
	eS		09	31.5		−0.9	100			

AMPLITUDES: TUA 2.0 NPZ 0.5 WEL 4.0
COB 0.2 KAI 0.3 CHR 0.5

PRO: 49/119

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JUL 20 $12^h03^m26^s.9$ 38°.67S 175°.73E 202 km M ~ 4.1
± 5.2 0.25 0.27 33 S.E. of RES. 2.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eS	12	04	21		−0.8	100	1.12	98	
WEL	P	12	04	15.5		1.7	99	2.72	195	4.1
	iS			51		0.9	100			
COB	eS	12	05	04		0.9	100	3.34	223	3.3s
KAI	eS	12	05	40		−1.8	99	5.07	219	3.4s
CHR	eS	12	05	48.5		−0.9	100	5.39	205	3.2s

AMPLITUDES: WEL 1.1 COB 0.2 KAI 0.1
CHR 0.1

PRO: 49/120

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JUL 20 $22^h33^m52^s.6$ 40°.17S 173°.96E 124 km M ~ 3.6
± 2.9 0.06 0.10 23 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP	22	34	20		3.8		1.11	5	3.4*
	eS			34		−0.3	100			
WEL	P	22	34	19		1.0	99	1.28	151	3.6
	iS			37		−0.5	100			
COB	e	22	34	30				1.30	225	3.1s
	eS			39		0.8	100			
KAI	S	22	35	16		−0.7	100	3.04	218	3.6s

AMPLITUDES: NPZ 0.9 WEL 1.3 COB 0.3
KAI 0.3

PRO: 49/121

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JUL 21 $15^h10^m55^s.3$ 40°.10S 173°.73E 159 km M ~ 5.2
± 1.2 0.05 0.10 10 S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP	15	11	22		0.4	100	1.06	15	4.3*
	iS			40.5		−1.4	100			
COB	iP	15	11	25		1.8	100	1.24	217	4.7+
	iS			45.8		1.0	100			
WEL	iP	15	11	26.8		1.8	100	1.42	147	~5.3+
	iS			48		0.1	100			
TUA	P	15	11	42		−1.0	100	2.94	65	5.1
	i		12	05						
	S			14		−5.5				
KAI	eP	15	11	44		0.4	100	2.99	215	4.9*
	iS		12	19		−1.5	100			
CHR	iP	15	11	51.5		1.0	100	3.53	193	4.7*
	i		12	27						
	iS			30.5		−2.4	99			

AMPLITUDES: NPZ 7.0 COB 10+ WEL 52+
TUA 2.5 KAI 5.5 CHR 4.5

PRO: 49/122

FELT: Wellington (68) and Blenheim (77), MM III.

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JUL 22 $15^h27^m16^s.8$ 40°.12S 174°.88E 12 km M = 3.8
± 0.5 0.01 0.05 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	15	27	38.5		0.6	99	1.17	184	3.8
	iS*			53		−0.5	99			
NPZ	eS*	15	27	55		−0.1	100	1.22	329	3.7
	iSg			58		−0.1	100			
	i		28	00						
COB	eSn	15	28	12		0.2	100	1.90	239	3.3s

AMPLITUDES: WEL 3.8 NPZ 1.4 COB 0.2

PRO: 49/123

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JUL 24 $10^h30^m58^s.7$ 40°.15S 173°.73E 214 km M ~ 3.6
± 0.1 0.01 0.01 0 S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP	10	31	31.5		−0.0	100	1.21	219	3.2s
	eS			57		−0.0	100			
WEL	P	10	31	33		−0.0	100	1.39	146	3.6
	eS			59.5		−0.0	100			
KAI	eS	10	32	28		0.1	100	2.95	216	3.2s
CHR	iS	10	32	39		−0.0	100	3.48	193	4.0*

AMPLITUDES: COB 0.3 WEL 0.7 KAI 0.1
CHR 1.0

PRO: 49/124

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JUL 25 $21^h37^m05^s.0$ 39°.02S 177°.03E 12 km M ~ 4.0
± 0.8 0.08 0.13 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	21	37	09.5		−0.6	100	0.22	24	
	iS*			14		0.5	100			
WEL	ePn	21	37	48.5		−1.0	100	2.85	217	4.0
	iPg		38	05		2.3				
	iSn			23.5		0.5	100			
COB	ePg	21	38	29		5.3		3.90	237	4.1s
	eSn			49		1.0	100			
	eS*		39	02		−1.4	99			
KAI	ePn	21	38	32		6.1		5.53	229	4.2s
	eSn		39	28		0.9	100			

AMPLITUDES: TUA 36 WEL 0.9 COB 0.3
KAI 0.1

PRO: 49/125

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JUL 27 $01^h28^m54^s.2$ 38°.55S 175°.89E 166 km M = 4.5
± 3.0 0.10 0.15 24 S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS	01	29	41		−0.3	100	1.02	105	4.5
NPZ	iP	01	29	26		0.6	100	1.51	249	3.4*
	e		30	20						
	e			31						
WEL	iP	01	29	41		−0.2	100	2.87	197	4.5
	iS		30	18		0.8	99			
COB	eS	01	30	31		−0.8	100	3.51	223	3.5s
KAI	eS	01	31	08		−4.0		5.24	219	3.9s

AMPLITUDES: TUA 2.5 NPZ 0.7 WEL 2.5
COB 0.3 KAI 0.3

PRO: 49/126

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JUL 29 $12^h23^m38^s.4$ 38°.77S 175°.66E 12 km M = 4.3
± 2.0 0.14 0.08 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS*	12	24	15		0.0	100	1.17	92	4.3
WEL	iSn	12	24	50.5		0.1	100	2.61	195	4.2
COB	eSn	12	25	06		0.7	100	3.23	223	3.8s
KAI	eSn	12	25	46		−0.8	99	4.95	219	4.4s

AMPLITUDES: TUA 2.0 WEL 1.0 COB 0.1
KAI 0.1

PRO: 49/127

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JUL 30 $13^h18^m19^s.6$ 39°.46S 178°.90E 12 km M = 4.2
± 3.4 0.09 0.25 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	13	18	46		0.3	100	1.50	295	4.0
	iSn		19	05		−0.2	100			
WEL	ePn	13	19	14.5		−0.3	100	3.64	239	4.3
	eSn			58.5		1.9	99			
KAI	eSn	13	21	02		−1.7	99	6.44	239	4.3s

AMPLITUDES: TUA 1.3 WEL 1.3 KAI 0.1

No provisional solution.

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JUL 30 $15^h04^m02^s.4$ 39°.45S 176°.74E 12 km M = 4.3
± 0.8 0.05 0.09 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	15	04	16		0.1	100	0.72	27	4.1
	iS*			26		0.3	100			
NPZ	ePn	15	04	37		0.4	100	2.11	280	3.9
	iSn		05	02		−0.3	100			
WEL	ePn	15	04	38		−2.2	99	2.37	219	4.5
	iSn		05	07.5		−1.2	100			
KAI	eSn	15	06	14		0.5	100	5.07	231	4.8s
CHR	iSn	15	06	17		2.4	99	5.11	216	4.8

AMPLITUDES: TUA 7.5 NPZ 0.8 WEL 4.5
KAI 0.5 CHR 0.8

PRO: 49/128

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AUG 01 $12^h55^m42^s.4$ 41°.73S 174°.16E 33 km M ~ 3.9
± 0.4 0.02 0.03 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	12	55	55.5		0.8	99	0.64	46	3.9
	iSn		56	03		−0.7	99			
COB	ePn?	12	55	53.5		−9.5		1.25	300	3.4s
	iS*		56	22		0.0	100			
CHR	eS*	12	56	48		−0.1	100	2.12	212	3.6s
KAI	eSn	12	56	41		−0.1	100	2.20	248	3.8s

AMPLITUDES: WEL 18 COB 0.5 CHR 0.3
KAI 0.3

PRO: 49/129

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AUG 02 $03^h47^m45^s.8$ 42°.03S 174°.18E 12 km M ~ 4.2
± 0.4 0.03 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	03	48	01.5		−0.2	100	0.86	31	4.2
	iS*			14		0.7	100			
COB	iPn	03	48	10		−1.0	99	1.44	310	3.5s
	iSn			30		0.2	100			
CHR	eSn	03	48	41		0.4	100	1.89	217	3.7s
	e		49	10						
KAI	eP*	03	48	22.5		−0.6	100	2.12	256	3.9s
	ePg			28.5		−0.2	100			
	iSg			58		0.7	100			

AMPLITUDES: WEL 16 COB 0.5 CHR 0.5
KAI 0.4

PRO: 49/130

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AUG 05 $06^h54^m33^s.6$ 37°.04S 177°.09E 33 km M = 4.8
± 7.2 0.33 0.28 R S.E. of RES. 2.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iSn	06	55	22		0.0	100	1.76	178	4.5
WEL	iPn	06	55	40		−0.0	100	4.61	202	5.1
	eSn		56	30.5		0.2	100			
COB	eSn	06	56	49		2.7	99	5.27	219	4.7s
KAI	eSn	06	57	25		−3.0	99	7.01	217	5.2s
	e			39						

AMPLITUDES: TUA 1.4 WEL 2.5 COB 0.3
KAI 0.3

No provisional solution.

Identification of minute at KAI is uncertain.

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AUG 06 $13^h19^m18^s.1$ 44°.94S 168°.15E 12 km M = 4.9
± 0.3 0.01 0.02 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	e	13	20	05.5				3.37	46	4.9
	e			13						
	iSn			48.5		−0.1	100			
	iS*		21	01		0.0	100			
CHR	eP*	13	20	19		−0.2	100	3.51	68	4.9
	eSn			52		0.1	100			
	eS*		21	05		−0.0	100			
COB	e	13	20	27				5.11	43	4.4s
	eSn		21	17		−13.2				
WEL	ePn	13	20	46.5		0.1	100	6.07	55	4.1s
	eSn		21	42		−11.2				

AMPLITUDES: KAI 1.3 CHR 2.0 COB 0.3
WEL 0.3

PRO: 49/131

FELT: Queenstown (132), MM IV; Cromwell (133), MM III.

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AUG 06 $22^h31^m37^s.8$ 45°.25S 168°.46E 12 km M ~ 4.5
± 2.8 0.14 0.18 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eSn	22	33	10		0.0	100	3.45	62	4.0s
KAI	ePn	22	32	30.5		0.0	100	3.46	39	~4.5s
	eSn		33	09.5		−0.8	99			
COB	eSn	22	33	53		0.8	99	5.20	38	3.9s

AMPLITUDES: CHR 0.3 KAI 0.5 COB 0.1

PRO: 49/132

FELT: Queenstown (132), MM II.

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AUG 07 $22^h10^m05^s.0$ 38°.95S 175°.66E 182 km M ~ 5.1
± 0.8 0.03 0.06 5 S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP	22	10	35		0.0	100	1.24	264	3.7*
	iS			58		−0.3	100			
WEL	iP	22	10	47		−0.5	100	2.43	196	5.1
	iS		11	20.5		0.4	100			
COB	e	22	11	06.5				3.10	226	4.2*
	iS			35		0.5	100			
KAI	eP	22	11	18		0.6	99	4.81	221	4.6*
	e			21						

	iS		12	13		−0.4	100			
CHR	iS	22	12	20		−0.4	100	5.12	206	4.8*

AMPLITUDES: NPZ 1.5 WEL 13 COB 1.8
KAI 2.0 CHR 4.5

PRO: 49/133

Listed in ISS additional readings.

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AUG 08 $00^h16^m53^s.6$ 39°.37S 174°.81E 194 km M ~ 4.3
± 3.2 0.16 0.13 18 S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP	00	17	31		0.0	100	1.91	181	4.3
	iS			59.5		−0.4	100			
COB	S	00	18	08.5		0.5	100	2.33	222	3.5s
KAI	eP	00	18	01		4.4		4.07	218	3.8s
	eS			44.5		−0.9	99			
CHR	iS	00	18	55		0.6	100	4.46	201	3.8s

AMPLITUDES: WEL 2.8 COB 0.4 KAI 0.3
CHR 0.5

PRO: 49/134

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AUG 08 $21^h26^m06^s.3$ 39°.43S 174°.62E 12 km M = 4.4
± 1.0 0.04 0.09 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP*!	21	26	17		−0.1	100	0.57	311	4.0+
	iS*!			25.5		0.6	100			
WEL	iPn	21	26	37		−0.1	100	1.85	177	4.4
	iSn		27	02		1.8	99			
	iS*			03		−0.5	100			
COB	eP*	21	26	45		0.0	100	2.20	221	4.1
	iSn		27	08		−0.4	100			
KAI	ePn	21	27	03.5		−2.0	98	3.93	217	4.7
	e			09.5						
	iSn			51		0.8	100			

AMPLITUDES: NPZ 15+ WEL 6.5 COB 0.8
KAI 0.6

PRO: 49/136

FELT: New Plymouth (47), MM III.

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AUG 08 $23^h33^m12^s.5$ 40°.50S 174°.42E 12 km M ~ 3.3
± 2.8 0.13 0.08 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	23	33	28		0.3	100	0.83	162	3.3
	iS*			38.5		−0.3	100			
COB	iSn	23	33	55		−0.7	100	1.41	245	2.8s
KAI	eSn	23	34	35.5		0.7	100	3.03	227	3.7s

AMPLITUDES: WEL 2.5 COB 0.1 KAI 0.1

PRO: 49/137

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AUG 09 $07^h11^m01^s.0$ 41°.49S 172°.13E 12 km M = 3.3
± 0.0 0.00 0.00 R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iP*	07	11	12.5		−0.1	100	0.61	49	2.9
	iS*			21		0.1	100			
KAI	iP*	07	11	22		0.0	100	1.16	207	3.7
	eS*			37.5		0.0	100			
WEL	eS*	07	12	02.5		0.0	100	2.00	85	3.2s

AMPLITUDES: COB 0.7 KAI 0.7 WEL 0.3

PRO: 49/138

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AUG 10 $19^h29^m08^s.7$ 41°.47S 173°.87E 12 km M ~ 3.0

± 0.4 0.04 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	19	29	21.3		−0.5	99	0.70	75	3.0
	iS*			31.8		0.4	100			
COB	iS*	19	29	38.5		0.0	100	0.94	294	2.7s
KAI	eSn	19	30	09		0.1	100	2.12	239	3.3s

AMPLITUDES: WEL 1.8 COB 0.2 KAI 0.1

PRO: 49/139

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AUG 11 $13^h34^m06^s.5$ 41°.70S 173°.22E 12 km M = 3.6

± 0.6 0.03 0.04 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP*	13	34	19		−0.8	100	0.71	329	3.4
	iS*			30.5		0.9	100			
WEL	ePg	13	34	39		7.4		1.23	71	3.0s
	iS*			45		−0.2	100			
KAI	iSn	13	34	53		−0.8	100	1.58	238	3.7s
CHR	eSn	13	35	02		0.9	100	1.88	193	3.8

AMPLITUDES: COB 1.5 WEL 0.5 KAI 0.4
CHR 0.6

PRO: 49/140

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AUG 18 $01^h53^m59^s.7$ 40°.93S 172°.65E 5 km M ~ 3.5

± 0.6 0.03 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPg	01	54	02.5		−0.8	99	0.17	158	
	iSg			06		0.2	100			
WEL	eP*	01	54	30		0.4	100	1.64	103	3.5
	iS*			51.5		−0.0	100			
KAI	eP*	01	54	33		−0.1	100	1.84	210	3.8s
	S*			58		0.3	100			

AMPLITUDES: COB 6.0+ WEL 0.9 KAI 0.4

PRO: 49/141

FELT: Kahurangi Point (71), MM IV.

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AUG 24 $16^h45^m24^s.8$ 41°.75S 173°.33E 12 km M ~ 3.2

± 1.4 0.09 0.09 R S.E. of RES. 2.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP*	16	45	37		−2.6	99	0.80	325	2.8s
	iS*			52		1.6	100			
WEL	ePn	16	45	45		−1.3	100	1.17	67	3.2
	iSn			46 04		1.6	100			
KAI	ePn?	16	45	36		−16.5		1.63	241	3.6s
	iS*			46 16		0.7	100			

AMPLITUDES: COB 0.3 WEL 1.0 KAI 0.3

PRO: 49/142

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AUG 25 $09^h22^m34^s.6$ 36°.41S 178°.44E 258 km M = 5.5

± 1.8 0.16 0.22 12 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	09	23	23		−0.8	100	2.60	203	5.5
	iS		24	02		0.0	100			
WEL	eP	09	24	00		0.8	100	5.65	209	5.5
	S		25	06		0.8	100			
COB	eS	09	25	23		−0.2	100	6.45	222	3.9s
KAI	eS	09	26	02		0.0	100	8.17	220	4.2s
CHR	eS	09	26	06		−1.0	99	8.40	210	4.3*

AMPLITUDES: TUA 6.0 WEL 7.5 COB 0.4
KAI 0.4 CHR 0.9

PRO: 49/143

FELT: Tolaga Bay (37), MM III. Listed in ISS additional readings.

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AUG 26 $01^h06^m42^s.8$ 40°.97S 173°.37E 89 km M ~ 3.2

± ND ND ND ND S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eS	01	07	09		−0.0	100	0.49	256	2.3s
WEL	eP	01	07	04		−0.0	100	1.11	107	3.2
	iS			20		−0.0	100			
KAI	eS	01	07	43		−0.0	100	2.14	223	3.3s

AMPLITUDES: COB 0.1 WEL 0.8 KAI 0.2

PRO: 49/144

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AUG 26 $13^h59^m17^s.2$ 39°.61S 179°.08E 33 km M ~ 3.8

±28.1 0.17 1.73 R S.E. of RES. 3.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eSn	14	00	04		0.0	100	1.70	297	3.5s
WEL	eSn	14	00	54		2.0	99	3.69	242	~3.8s
CHR	eSn	14	01	53		0.1	100	6.23	229	4.6s
KAI	eSn	14	01	57		−2.1	99	6.49	241	4.3s

AMPLITUDES: TUA 0.3 WEL 0.4 CHR 0.3
KAI 0.1

PRO: 49/145

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AUG 28 $19^h30^m02^s.3$ 41°.26S 174°.34E 107 km M ~ 3.5
± 0.2 0.01 0.01 1 S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP	19	30	18		−0.1	100	0.32	94	3.5
	iS			30		0.0	100			
COB	eP	19	30	26		0.0	100	1.22	278	2.9s
	S			44		0.0	100			
NPZ	e?	19	30	14				2.20	355	3.1s
	e?			31	28					
KAI	eP?	19	30	34		−8.8		2.53	239	3.5s
	iS			31	13	0.0	100			

AMPLITUDES: WEL 5.0 COB 0.2 NPZ 0.3
KAI 0.3

PRO: 49/146

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AUG 28 $22^h42^m57^s.7$ 40°.53S 174°.14E 103 km M ~ 3.6
± 1.0 0.02 0.04 9 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP	22	43	18		0.6	99	0.89	148	3.6
	iS			32		−0.4	100			
COB	eP	22	43	21		0.1	100	1.21	242	3.6*
	S			39		0.4	100			
NPZ	eP	22	43	29		4.9		1.47	358	3.5*
	eS			44		−0.1	100			
KAI	eP?	22	43	37		−5.6		2.86	225	3.4s
	eS			44	16	−0.4	100			

AMPLITUDES: WEL 2.8 COB 1.0 NPZ 1.0
KAI 0.2

PRO: 49/147

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AUG 29 $22^h44^m08^s.6$ 41°.54S 173°.03E 58 km M ~ 3.8
± 0.8 0.06 0.03 14 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP	22	44	21		0.1	100	0.50	334	3.2*
	iS			30		−0.1	100			
WEL	eP	22	44	31		−0.5	99	1.33	80	3.8
	iS			49		0.4	100			
KAI	eP	22	44	35		0.4	100	1.56	230	3.5s
	iS			54		−0.1	100			

AMPLITUDES: COB 1.0 WEL 3.0 KAI 0.5

PRO: 49/148

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AUG 31 $21^h29^m06^s.8$ 41°.32S 172°.24E 5 km M = 4.8
± 0.8 0.05 0.06 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	Pg	21	29	15		−0.7	100	0.44	58	2.3s
KAI	ePg	21	29	34		−0.2	100	1.36	207	4.8+
	iS*			51		0.9	99			

WEL	iPn	21	29	40		0.7	100	1.91	90	4.8
	iSn		30	04		0.6	100			
CHR	iPg	21	29	51		−0.9	100	2.23	173	4.8
	iSn		30	11		−0.2	100			

AMPLITUDES: COB 0.3 KAI 7.0+ WEL 14
CHR 4.0

PRO: 49/149

FELT: Kahurangi Point (71), Cobb River (72), MM IV.

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SEP 01 $13^h10^m13^s.4$ 40°.40S 174°.46E 12 km M ~ 2.9
± 2.8 0.11 0.06 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iS*	13	10	42.5		−0.0	100	0.92	165	2.9
COB	eS*	13	10	59.5		0.0	100	1.48	242	2.8s
KAI	eSn	13	11	38		0.1	100	3.12	226	4.0s
CHR	eSn	13	11	45		0.1	100	3.42	203	4.0s

AMPLITUDES: WEL 0.7 COB 0.1 KAI 0.2
CHR 0.3

PRO 49/150

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SEP 02 $16^h54^m40^s.9$ 39°.00S 179°.08E 12 km M = 4.6
± 1.1 0.07 0.05 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	S*-Pn			21		0.1	100	1.51	277	
WEL	ePn	16	55	41.5		0.3	100	4.01	234	4.2
	Sn		56	26		−0.8	99			
CHR	iS*	16	58	02		0.3	100	6.64	225	4.9
KAI	eSn	16	57	34		0.2	100	6.80	236	4.7s

AMPLITUDES: WEL 0.9 CHR 0.6 KAI 0.2

No provisional solution.

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SEP 03 $04^h07^m58^s.6$ 39°.49S 174°.55E 12 km M = 3.6
± 0.4 0.02 0.05 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP*	04	08	09		−0.4	100	0.56	318	3.8
	iS*			17.5		0.4	100			
WEL	ePn	04	08	28.5		−0.2	100	1.80	175	3.4
	ePg			35		−0.1	100			
	Sn			52		0.7	99			
KAI	eSn	04	09	40.5		−0.1	100	3.85	217	3.9s

AMPLITUDES: NPZ 10 WEL 0.7 KAI 0.1

PRO: 49/151

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SEP 05 $11^h43^m40^s.5$ 39°.70S 174°.65E 119 km M ~ 4.2
± 1.7 0.05 0.09 13 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP	11	44	01		0.5	100	0.77	325	3.9*
	eS			15		−0.8	100			

	i		17						
WEL	iP	11	44	10	0.7	100	1.58	177	4.2
	iS			31	−0.1	100			
COB	eP	11	44	19.5	5.0		2.02	226	4.1*
	iS			41	1.0	100			
KAI	eP	11	44	42	4.4		3.73	220	4.1*
	eS		45	21	−0.0	100			
CHR	e?	11	45	27			4.12	201	4.2*
	iS			29	−1.2	99			

AMPLITUDES: NPZ 4.0 WEL 4.5 COB 2.0
KAI 0.8 CHR 1.5

PRO: 49/152

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SEP 06 $10^h47^m04^s.8$ 42°.22S 172°.84E 12 km M = 3.7
± 0.4 0.02 0.03 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	P*	10	47	24		−0.8	99	1.11	253	3.7
	S*			40		0.4	100			
COB	eP*	10	47	24.5		−0.8	99	1.13	356	3.1s
	eS*			41		0.6	100			
CHR	P*	10	47	29		0.4	100	1.32	187	3.7
WEL	ePn?	10	47	25		−8.7		1.72	58	3.2s
	iS*			58		0.0	100			

AMPLITUDES: KAI 0.8 COB 0.3 CHR 1.0
WEL 0.4

PRO: 49/153

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SEP 06 $16^h09^m32^s.1$ 41°.49S 173°.80E 12 km M = 3.3
± 0.3 0.03 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	16	09	45.5		−0.7	99	0.76	75	3.4
	iS*			57		0.6	100			
COB	eP*	16	09	48		−0.6	100	0.90	296	3.2
	iS*		10	01		0.3	100			
KAI	ePn	16	10	06		0.3	100	2.06	239	3.6s
	eSn			31		0.0	100			

AMPLITUDES: WEL 3.5 COB 0.6 KAI 0.2

PRO: 49/154

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SEP 08 $11^h50^m50^s.1$ 40°.56S 173°.76E 125 km M ~ 4.2
± 0.9 0.03 0.05 8 S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iP	11	51	13		0.8	100	0.94	236	4.2*
	iS			29.5		0.5	100			
WEL	iP	11	51	14		0.7	100	1.05	134	4.2
	iS			30.5		-0.4	100			
NPZ	iP	11	51	19		0.7	100	1.51	9	4.2+
	iS			39		−0.9	99			
KAI	eP	11	51	32		−0.7	100	2.65	221	4.3*
	i		52	03						
	iS			04.5		−0.3	100			

AMPLITUDES: COB 4.5 WEL 6.5 NPZ 5.0+
KAI 1.8

PRO: 49/155

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SEP 10 $20^h50^m12^s.9$ 38°.34S 176°.71E 165 km M ~ 5.4
± 0.9 0.03 0.09 6 S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	S-P			18		−0.1	100	0.58	144	5.2+
HNZ	S-P			22		−0.7	100	1.34	174	
AUC	iP	20	50	50		−0.7	100	2.12	313	
	iS		51	20		0.1	100			
NPZ	iP	20	50	51		−0.4	100	2.19	250	4.4*
	iS!		51	22		0.8	100			
WEL	iP	20	51	05.5		0.2	100	3.30	206	5.4
	iS			46		0.5	100			
KAI	eP	20	51	39		0.9	100	5.81	222	4.8*
	e			41						
	e		52	41						
	iS			43		−1.3	99			
CHR	eP	20	51	43		2.0		6.04	209	

AMPLITUDES: TUA 17+ NPZ 5.1 WEL 18
KAI 2.5

PRO: 49/156

FELT: Opotiki (35), Tolaga Bay (37), MM II. Listed in ISS additional readings.

49/ 169

SEP 11 $20^h23^m33^s.7$ 38°.44S 176°.20E 148 km M ~ 5.5
± 1.2 0.03 0.12 8 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	S-P			17		−1.0	100	0.83	117	5.5
AUC	iP	20	24	08		−0.3	100	1.93	324	
	iS			35		0.3	100			
WEL	iP	20	24	22		−0.4	100	3.05	201	5.3+
	iS		25	01		1.4	99			
KAI	eP	20	24	55		0.7	100	5.48	220	4.7*
	iS		25	56		−0.8	100			
CHR	eP	20	24	58		−0.1	100	5.76	207	4.8*
	e		25	06						
	iS		26	03		−0.7	100			

AMPLITUDES: TUA 36 WEL 15+ KAI 2.0
CHR 4.0

PRO: 49/157

FELT: Opotiki (35), MM II. Listed in ISS additional readings.

49/ 170

SEP 12 $11^h47^m35^s.3$ 40°.75S 175°.33E 12 km M ~ 3.8
± 3.3 0.05 0.29 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	11	47	48.5		0.5	100	0.68	218	3.8
	iS*			56.2		−1.1	99			
NPZ	eSn?	11	48	31		−0.3	100	1.94	330	
KAI	eSn	11	49	08		0.9	100	3.43	238	4.1s

AMPLITUDES: WEL 11 KAI 0.2

No provisional solution.

49/ 171

SEP 13 $01^h56^m19^s.5$ 39°.28S 174°.84E 12 km M = 4.2
± 0.7 0.04 0.05 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	01	56	50		−0.3	100	1.85	76	4.7
WEL	iPn	01	56	53		0.6	99	2.01	182	3.6
	Sg		57	27		−0.1	100			
COB	Sg	01	57	41		−0.2	100	2.42	221	3.6s

AMPLITUDES: TUA 1.2 WEL 0.8 COB 0.2

PRO: 49/158

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SEP 14 $09^h40^m30^s.6$ 41°.10S 172°.70E 12 km M ~ 3.4
± R R R R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPg	09	40	33		0.1	100	0.03	65	
	iSg			36		1.6	99			
WEL	ePn	09	40	57		−0.6	100	1.57	97	3.4
	Sn		41	16.5		−1.2	100			

AMPLITUDES: WEL 0.8

PRO: 49/159

FELT: Takaka (72), MM II.

49/ 173

SEP 14 $22^h29^m51^s.4$ 38°.60S 176°.08E 12 km M = 4.1
± 0.5 0.05 0.04 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	22	30	07.5		0.1	100	0.86	104	3.6
	iS*			22		3.0				
NPZ	ePn	22	30	20		0.8	100	1.63	253	4.6
	iSn			40		0.0	100			
	iS*			42		0.0	100			
AUC	iPn	22	30	24		−0.5	100	2.02	329	
	i			40						
WEL	ePn	22	30	37		1.0	100	2.86	200	4.1
	eP*			40		−1.4	99			
	eS*		31	25		6.1				
COB	eP*	22	30	57.5		3.9		3.57	225	4.4s
	eS*		31	49.5		9.2				

AMPLITUDES: TUA 1.0 NPZ 3.5 WEL 0.6
COB 0.3

PRO: 49/160

FELT: Taupo (41), MM II.

49/ 174

SEP 14 $22^h35^m56^s.4$ 38°.83S 176°.13E 33 km M ~ 4.2
± 0.3 0.02 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	Pn	22	36	10		−0.8	99	0.79	89	3.0s
	Sn			22		0.6	100			
NPZ	ePn	22	36	22		−0.1	100	1.63	261	4.2
	iSn			42		0.6	100			

AUC	i	22	36	50			2.24	331	
	iS*		37	05	−0.3	100			
WEL	eP*	22	36	44	0.8	99	2.67	203	3.6s
	eS*		37	17.5	−0.7	100			
COB	e	22	37	05.5			3.46	228	
	eS*			41.5	−0.1	100			

AMPLITUDES: TUA 0.4 NPZ 1.8 WEL 0.3

PRO: 49/161

FELT: Taupo (41), MM I.

49/ 175

SEP 14 $22^h39^m15^s.1$ 38°.88S 175°.95E 12 km M ~ 4.1
± 0.1 0.01 0.00 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P*	22	39	32		−0.2	100	0.94	86	3.3s
	S*			45		0.2	100			
NPZ	ePg	22	39	45		0.0	100	1.48	262	4.1
	S*		40	01		0.0	100			
AUC	iPg	22	40	00		0.0	100	2.22	335	
WEL	ePg	22	40	07		0.0	100	2.56	200	3.5s

AMPLITUDES: TUA 0.5 NPZ 1.3 WEL 0.2

No provisional solution.

49/ 176

SEP 15 $07^h38^m13^s.1$ 41°.27S 176°.01E 12 km M = 3.7
± 1.1 0.04 0.07 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	07	38	33		0.8	100	0.94	269	3.4
	iSg			44.5		−0.4	100			
COB	ePn	07	38	51.5		−1.0	99	2.48	273	3.9s
	eP*			57		0.4	100			
	eSn		39	21.5		−0.6	100			
NPZ	eP*	07	38	59		−0.6	100	2.65	325	4.0
	eSn		39	27		0.7	100			
KAI	eSn	07	39	51		0.6	100	3.66	248	4.1s

AMPLITUDES: WEL 2.5 COB 0.4 NPZ 0.7
KAI 0.2

PRO: 49/162

49/ 177

SEP 16 $00^h25^m48^s.5$ 40°.08S 177°.03E 12 km M = 4.6
± 0.9 0.04 0.10 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	00	26	12.5		1.1	99	1.28	4	4.8
	iS*			27.5		−0.8	99			
WEL	eP*	00	26	25		−0.4	100	2.10	234	4.7
	ePg			33		2.1				
	iSn			48.5		0.3	100			
NPZ	e	00	26	35				2.50	293	3.9
	eSn		27	00		2.1				
COB	e	00	27	04				3.42	252	4.4
	Sn			20.5		0.5	100			
CHR	e	00	27	51				4.77	222	4.9
	iSn			52		−0.3	100			
KAI	eP*	00	27	19.5		6.5		4.89	238	5.1

	ePg		24		−3.2				
	eSn		55		−0.2	100			

AMPLITUDES: TUA 12 WEL 8.5 NPZ 0.6
COB 0.7 CHR 1.2 KAI 1.0

PRO: 49/163

FELT: Dannevirke (63), MM III.

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SEP 16 $00^h39^m56^s.3$ 34°.67S 178°.82E 12 km M = 4.8
± 9.7 0.56 0.38 R S.E. of RES. 2.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P*	00	41	11.5		−0.1	100	4.35	198	4.7
	eSn			52		1.9	100			
NPZ	eSg	00	43	12		−0.0	100	5.81	220	4.9
WEL	iSn	00	42	59		−3.1	99	7.34	205	4.9
KAI	eSn	00	44	01.5		1.4	100	9.76	214	5.1s

AMPLITUDES: TUA 0.6 NPZ 0.8 WEL 1.0
KAI 0.2

No provisional solution.

49/ 179

SEP 16 $05^h45^m16^s.1$ 39°.25S 173°.41E 12 km M = 5.2
± 0.4 0.02 0.05 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TAK	Sn-Pn			13		−8.2		1.66	196	
COB	ePn	05	45	48		0.3	100	1.91	196	4.8
	iP*			51		1.1	100			
	iSn		46	10		−1.4	99			
WEL	iPn	05	45	53		0.2	100	2.29	153	5.5
	iP*			55		−1.2	99			
	iSn		46	20.5		0.1	100			
AUC	ePg	05	46	10		1.0	100	2.62	25	
	iSn			27		−1.4	99			
TUA	ePn	05	46	02.5		0.7	100	2.94	83	4.7s
	iP*			07.5		0.0	100			
	e			13						
	eSn			42		5.8				
KAI	ePn	05	46	13		2.1		3.61	204	5.5
	eP*			15		−3.9				
	iPg			28		−1.1				
	iSn			52		−0.2	100			
CHR	iP*	05	46	36		5.0		4.32	188	5.1
	ePg			42		−1.4				
	iSn		47	10		0.7	100			

AMPLITUDES: COB 6.0 WEL 45 TUA 0.5
KAI 4.5 CHR 2.1

PRO: 49/164

FELT: New Plymouth (47), MM IV; Takaka (72), MM II. Listed in ISS additional readings.

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SEP 17 $02^h27^m03^s.0$ 43°.70S 178°.94E 12 km M ~ 4.1
± 3.3 0.05 0.17 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eS*	02	29	02.5		0.3	100	3.92	307	~3.9s
CHR	eSn	02	29	03		0.3	100	4.59	270	~4.3s

COB	eSn	02	29	19		−0.4	100	5.29	297	3.9s
KAI	eS*	02	29	53.5		−0.2	100	5.64	279	4.5s

AMPLITUDES: WEL 0.4 CHR 0.3 COB 0.1
KAI 0.2

No provisional solution

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SEP 17 $09^h35^m59^s.6$ 42°.63S 174°.57E 33 km M ~ 3.3
± 2.3 0.10 0.09 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	09	36	21		−0.6	100	1.35	6	3.3
	iP*			26		1.9	99			
	iS*			40.5		−1.7	99			
COB	eSn	09	36	56		0.8	100	2.06	318	3.1s
	eS*		37	04		0.6	100			
KAI	eS*	09	37	10.5		−1.0	100	2.34	272	

AMPLITUDES: WEL 1.0 COB 0.1

PRO: 49/165

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SEP 18 $04^h55^m34^s.5$ 37°.38S 176°.50E 256 km M ~ 4.3
± 0.6 0.04 0.07 4 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eSn	04	56	44		−0.1	100	1.51	160	4.2s
WEL	Pn	04	56	40.5		0.0	100	4.12	198	4.3
	eSn		57	32		0.1	100			
KAI	eSn	04	58	23		−0.1	100	6.45	216	
CHR	eSn	04	58	31		−0.1	100	6.81	204	3.3s

AMPLITUDES: TUA 0.5 WEL 0.8 CHR 0.1

No provisional solution.

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SEP 20 $07^h20^m39^s.7$ 41°.62S 172°.63E 12 km M = 3.8
± 0.4 0.04 0.05 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	07	21	02		−0.7	100	1.29	225	3.7
	S*			20.5		0.6	100			
WEL	Pn	07	21	07		−0.6	100	1.64	79	3.6
	eSn			29		0.5	100			
NPZ	e	07	21	48				2.77	24	4.1
	eSn			56		0.2	100			

AMPLITUDES: KAI 0.6 WEL 1.3 NPZ 0.8

PRO: 49/166

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SEP 26 $02^h14^m48^s.9$ 38°.61S 173°.55E 33 km M ~ 4.4
± 1.7 0.08 0.08 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP*	02	15	34.5		0.8	100	2.55	194	3.6s
	eSn			57		0.8	100			
	eS*		16	06.5		−0.6	100			

WEL	P*	02 15 38	−0.4	100	2.83	161		4.4
	eSn	16 03	0.1	100				
KAI	eP*	02 16 01.5	−0.8	100	4.23	202		4.2s
	eSn	43	6.4					

AMPLITUDES: COB 0.2 WEL 2.3 KAI 0.2

PRO: 49/167

FELT: New Plymouth (47), MM V.

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SEP 27 $17^h13^m27^s.0$ 42°.19S 172°.93E 12 km M = 5.4

± 0.5 0.03 0.06 R S.E. of RES. 1.5

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
COB	iP*	17 13 46.8		−0.4	100	1.12	352	5.2+
	iS*	14 03		1.0	100			
KAI	iP*	17 13 47		−1.2	100	1.17	253	5.7+
CHR	iPn	17 13 49		−2.1	99	1.36	189	5.5
	iS*	14 11		1.6	100			
	iSg	17		4.0				
WEL	iPn	17 13 55.5		0.4	100	1.65	57	5.3+
	i	14 29						
	i	31.5						
TUA	eP*	17 14 50		2.1	99	4.67	45	5.3
	Sn	15 33		4.4				
	iS*	48		−0.6	100			
	iSg	16 03		−1.2	100			
AUC	eSn	17 16 50		61.1		5.52	16	
RIV	iP	17 17 55		3.6		19.04	289	
	iS	21 33		12.7				
BRS	iP	17 18 24		0.4	100	22.10	306	

AMPLITUDES: COB 40+ KAI 70+ CHR 50 WEL 58+ TUA 2.5

PRO: 49/168

FELT: Northern parts of the South Island. Intensity MM V at Karamea (74) and Murchison (80). ISS gives 42.5S 172.9E and lists 2 additional readings. See Hayes, R.C., 1950 for isoseismal map .

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SEP 27 $17^h24^m03^s.2$ 42°.24S 172°.80E 12 km M = 3.8

± 0.2 0.02 0.02 R S.E. of RES. 0.6

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
KAI	P*	17 24 23		0.4	100	1.07	254	4.0
	iS*	37		0.1	100			
COB	eP*	17 24 22		−1.9		1.15	357	3.3s
	iS*	39		−0.3	100			
CHR	iPn	17 24 26		−0.4	100	1.30	186	3.9
WEL	iP*	17 24 34.5		0.2	100	1.75	58	3.6
	iSn	54		−0.6	99			
	iS*	58		0.6	99			

AMPLITUDES: KAI 2.0 COB 0.5 CHR 1.7 WEL 1.0

PRO: 49/169

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SEP 27 $17^h27^m09^s.3$ 42°.19S 172°.78E 12 km M = 4.0

± 0.4 0.03 0.03 R S.E. of RES. 0.9

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
KAI	P*	17 27 28.8		0.1	100	1.07	251	4.1
	S*	43.5		0.5	100			
COB	eP*	17 27 28		−1.3	99	1.10	358	3.3s
	eS*	44.5		0.5	100			
CHR	iPn	17 27 33		−0.2	100	1.35	185	4.1
WEL	ePn	17 27 37.5		−1.0	99	1.74	59	3.7
	iP*	40.5		0.3	100			
	Sn	28 01.5		1.0	99			

AMPLITUDES: KAI 2.5 COB 0.5 CHR 2.3 WEL 1.3

PRO: 49/170

49/ 188

SEP 27 $17^h35^m27^s.9$ 42°.26S 172°.83E 12 km M = 3.7

± 0.3 0.02 0.02 R S.E. of RES. 0.8

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	17 35 48.5		0.9	100	1.09	255	3.7
	eS*	36 02		−0.1	100			
	eSg	04		−0.6	100			
COB	eP*	17 35 49.5		0.5	100	1.17	356	2.9s
	eS*	36 04		−0.6	100			
CHR	ePn	17 35 52		1.1	99	1.29	187	3.7
	eS*	36 07		−1.0	99			
WEL	ePn	17 35 57.5		0.3	100	1.75	57	3.3s
	iSn	36 19.5		0.3	100			
	eSg	26		−0.7	100			

AMPLITUDES: KAI 0.8 COB 0.2 CHR 1.0 WEL 0.5

PRO: 49/171

49/ 189

SEP 27 $17^h39^m08^s.4$ 42°.41S 172°.60E 12 km M = 3.8

± 0.4 0.02 0.03 R S.E. of RES. 1.0

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
KAI	Pg	17 39 35		8.4		0.89	262	3.9
	iSg	39.5		0.8	100			
CHR	ePg	17 39 38		6.8		1.12	179	3.9
	iS*	43		−0.6	100			
COB	ePg	17 39 34.5		−0.8	100	1.33	4	
	eSn	50		0.3	100			
	iSg	52.5		−0.8	100			
WEL	eP*	17 39 43		−0.2	100	1.97	56	3.6
	iS*	40 10.5		1.4	99			

AMPLITUDES: KAI 2.0 CHR 2.0 WEL 0.8

PRO: 49/172

49/ 190

SEP 27 $17^h42^m39^s.1$ 42°.13S 172°.66E 12 km M ~ 2.9

± ND ND ND R S.E. of RES. ND

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
KAI	eS*	17 43 11		0.0	100	1.01	246	3.2s
COB	eS*	17 43 12		0.0	100	1.04	3	2.5s

	WEL	eSn	17	43	31.5	0.0	100	1.79	63	~2.9s

AMPLITUDES: KAI 0.3 COB 0.1 WEL 0.2

No provisional solution.

49/ 191

SEP 27 $17^h57^m59^s.3$ 41°.71S 172°.34E 12 km M ~ 3.1

± 0.7 0.05 0.05 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eSg	17	58	34.5		11.7		0.69	26	2.2s
KAI	eP*	17	58	19		0.3	100	1.07	220	~3.0s
	eS*			32.5		−0.5	100			
CHR	ePg	17	58	41		4.6		1.84	173	3.0s
	eSn			53		0.3	100			
WEL	ePn	17	58	31		0.6	100	1.87	78	~3.2s
	eSn			53		−0.7	100			

AMPLITUDES: COB 0.1 KAI 0.2 CHR 0.1
WEL 0.4

PRO: 49/173

49/ 192

SEP 27 $18^h24^m32^s.6$ 42°.22S 172°.81E 5 km M = 3.6

± 0.6 0.04 0.06 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	18	24	52		−0.9	100	1.08	253	3.7
	eS*		25	09		1.4	100			
COB	eP*	18	24	52		−1.8	99	1.13	357	3.1s
	eS*		25	10		0.8	100			
CHR	eP*	18	24	56		−0.9	100	1.31	186	3.7
	iP*			58		1.0	100			
WEL	ePn	18	25	01.5		−1.3	100	1.74	58	3.3
	iS*			29		1.6	100			

AMPLITUDES: KAI 0.8 COB 0.3 CHR 1.0
WEL 0.6

PRO: 49/174

49/ 193

SEP 27 $18^h52^m56^s.5$ 42°.59S 173°.01E 33 km M ~ 3.1

± 0.1 0.01 0.01 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eSn	18	53	26		0.0	100	0.98	196	2.5s
KAI	ePn	18	53	16		−0.2	100	1.18	273	3.1s
	eSn			31		0.1	100			
COB	eSn	18	53	32		−6.9		1.52	352	3.2s
WEL	eP*	18	53	29.5		0.1	100	1.85	46	~3.1s
	iSn			47		0.0	100			

AMPLITUDES: CHR 0.1 KAI 0.2 COB 0.2
WEL 0.3

No provisional solution.

49/ 194

SEP 27 $18^h58^m57^s.1$ 42°.04S 172°.83E 33 km M ~ 3.0

± 0.8 0.07 0.07 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	18	59	20		1.7	99	1.16	245	3.3s
	eSn			29.5		−1.4	99			
CHR	eSn	18	59	39		0.0	100	1.49	186	2.8s
WEL	ePn	18	59	23		−0.0	100	1.64	63	~3.0s
	eS*			48		−0.2	100			
	i	19	00	01.5						

AMPLITUDES: KAI 0.3 CHR 0.1 WEL 0.3

PRO: 49/175

49/ 195

SEP 27 $20^h49^m14^s.4$ 42°.23S 172°.82E 12 km M = 3.8

± 0.4 0.03 0.03 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	20	49	33		−1.1	100	1.09	254	3.9
	iP*			35		0.9	100			
	iS*			48		−0.7	100			
	iS*			50		1.3	99			
COB	eP*	20	49	36		0.9	100	1.14	357	3.2s
	eS*			49		−1.4	99			
CHR	ePn	20	49	38		0.3	100	1.30	186	3.7
	eSn			54		−1.1	100			
WEL	eP*	20	49	46		0.9	100	1.74	58	3.3s
	eS*		50	08		−0.0	100			

AMPLITUDES: KAI 1.3 COB 0.4 CHR 1.0
WEL 0.5

PRO: 49/176

49/ 196

SEP 28 $22^h55^m22^s.5$ 42°.48S 173°.09E 12 km M ~ 3.4

± 0.5 0.03 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eP*	22	55	42		−0.5	100	1.11	198	~3.3s
KAI	eP*	22	55	45		0.1	100	1.24	267	~3.5s
	eS*		56	02		0.5	100			
COB	eSn	22	56	05		−0.8	99	1.41	349	3.1s
WEL	eSn	22	56	14		0.7	100	1.73	47	2.9s

AMPLITUDES: CHR 0.5 KAI 0.4 COB 0.2
WEL 0.2

PRO: 49/177

49/ 197

SEP 29 $00^h24^m42^s.6$ 38°.81S 175°.19E 229 km M = 4.5

± 4.8 0.24 0.25 32 S.E. of RES. 2.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS	00	25	47		−1.0	100	1.53	91	4.5
WEL	iP	00	25	30.5		1.9	99	2.49	187	4.5
	iS		26	05.5		1.2	100			
COB	eS	00	26	13.5		0.1	100	2.96	219	3.0s
KAI	eS	00	26	50		−0.6	100	4.70	217	3.6s
CHR	eS	00	26	58		−1.6	99	5.10	201	4.2*

AMPLITUDES: TUA 1.1 WEL 2.8 COB 0.1
KAI 0.2 CHR 1.0

PRO: 49/178

49/ 198

SEP 29 $07^h22^m08^s.7$ 42°.17S 172°.81E 33 km M = 3.8
± 0.2 0.01 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	ePn	07	22	26.5		−0.5	100	1.09	357	3.0s
	S*			43		−0.4	100			
KAI	Pn	07	22	27.5		0.3	100	1.10	251	3.8
	iS*			44		0.3	100			
CHR	ePn	07	22	31		0.1	100	1.37	185	3.7
	eS*			51		−0.7	99			
WEL	eP*	07	22	40		0.7	99	1.72	60	3.2s
	eS*			23 02		0.0	100			

AMPLITUDES: COB 0.3 KAI 1.0 CHR 0.8
WEL 0.4

PRO: 49/179

49/ 199

SEP 30 $08^h17^m38^s.0$ 42°.21S 172°.91E 12 km M ~ 3.2
± 0.6 0.04 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP*	08	17	58		−0.3	100	1.13	353	2.6s
	eS*		18	13.5		0.1	100			
KAI	eP*	08	17	58		−0.8	99	1.15	254	~3.4s
	eS*		18	15		0.8	99			
WEL	eS*	08	18	30		0.3	100	1.67	57	~3.0s

AMPLITUDES: COB 0.1 KAI 0.4 WEL 0.3

No provisional solution.

49/ 200

SEP 30 $08^h28^m53^s.2$ 40°.71S 174°.05E 103 km M ~ 3.6
± 1.9 0.08 0.04 11 S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP	08	29	12		0.0	100	0.79	137	3.6
	iS			26		−0.2	100			
COB	eS	08	29	31.5		0.3	100	1.06	249	3.0s
KAI	eS	08	30	07		−0.6	99	2.68	227	3.4s
CHR	eS	08	30	16		0.3	100	3.01	200	3.8*

AMPLITUDES: WEL 3.0 COB 0.3 KAI 0.2
CHR 0.8

PRO: 49/180

49/ 201

OCT 01 $01^h18^m37^s.9$ 42°.27S 172°.80E 12 km M = 4.2
± 0.3 0.02 0.02 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	01	18	57.5		0.3	100	1.06	256	4.5
	iS*		19	10.5		−0.9	99			
	iSg			15		1.1	99			
COB	iP*	01	18	59		−0.2	100	1.18	357	4.0
	S*		19	15		0.0	100			

CHR	iPn	01 19 00	−0.7	100	1.27	186		4.0
	i	13						
	iS*	18	0.4	100				
WEL	ePn	01 19 07	−0.5	100	1.76	57		4.1
	iSn	29.5	−0.2	100				
	iS*	33.5	0.9	99				

AMPLITUDES: KAI 5.5 COB 2.5 CHR 2.0
WEL 3.0

PRO: 49/181

49/ 202

OCT 01 $08^h32^m16^s.2$ 42°.26S 172°.83E 12 km M = 4.1
± 0.3 0.02 0.03 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	08	32	36.5		0.6	100	1.08	255	4.5
	iPg			38		−0.2	100			
	iSn			52		0.4	100			
	iSg			53.5		0.6	100			
COB	iP*	08	32	37		−0.4	100	1.18	357	3.8
	iS*			53		−0.1	100			
	iSg			55		−1.0	100			
CHR	ePn	08	32	38		−1.2	99	1.28	186	4.0
	iP*			40		0.8	100			
	iPg			47		4.8				
	iSn			55		−1.3	99			
	iSg		33	07		7.6				
WEL	Pn	08	32	46		0.4	100	1.75	57	3.9
	iSn		33	09		1.4	99			
	iS*			13		2.6				

AMPLITUDES: KAI 5.0 COB 1.4 CHR 2.0
WEL 2.3

PRO: 49/182

49/ 203

OCT 03 $11^h42^m23^s.9$ 41°.26S 174°.24E 12 km M = 4.4
± 0.7 0.06 0.04 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	11	42	31		−0.9	100	0.40	94	3.9+
	iSg			39		1.1	100			
COB	eP*	11	42	43		−1.7	99	1.15	278	4.1
	S*		43	01.5		1.5	100			
KAI	Pn	11	43	03.5		0.4	100	2.47	238	4.6
	ePg			16		2.3				
	i			35.5						
CHR	eP*	11	43	08		−0.9	100	2.56	207	4.5
	iPg			23		7.1				
	iSn			35.5		0.5	100			
	i			37						
TUA	ePn	11	43	18		3.3		3.31	43	4.2s
	ePg			37		6.0				

AMPLITUDES: WEL 45+ COB 3.0 KAI 1.5
CHR 1.7 TUA 0.4

PRO: 49/183

FELT: Paraparaumu (65), Wellington (68), and Blenheim (77).

49/ 204

OCT 06 $01^h20^m46^s.4$ 33°.01S 179°.99W 33 km M ~ 4.9
± 9.0 0.64 0.98 R S.E. of RES. 3.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	Pn	01	22	15		−0.0	100	6.24	201	4.8s
	eSn		23	24		1.8	100			
	i			48						
	eS*		24	12		17.3				
WEL	iSn	01	24	32		−2.8	99	9.26	205	4.9
KAI	eSn	01	25	34		1.0	100	11.68	213	5.1s

AMPLITUDES: TUA 0.5 WEL 0.7 KAI 0.2

No provisional origin.

Unsatisfactory solution. Stations inadequately distributed in azimuth.

49/ 205

OCT 08 $06^h49^m12^s.7$ 40°.00S 175°.10E 12 km M ~ 3.4
± R R R R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	06	49	37		1.0	100	1.30	191	3.4
	iSn			52.5		−1.0	100			

AMPLITUDES: WEL 1.3

PRO: 49/185

FELT: Wanganui (57), MM III.

49/ 206

OCT 10 $16^h52^m19^s.2$ 40°.95S 172°.75E 12 km M = 4.1
± 1.2 0.06 0.05 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TAK	i	16	53	00				0.11	23	
COB	iPg	16	52	22.5		−0.2	100	0.13	185	
	iSg			25.3		0.2	100			
WEL	iPg	16	52	50		−0.8	100	1.56	103	4.0
	iSg		53	12.5		0.6	100			
KAI	Pg	16	52	56		−1.0	100	1.87	212	4.1
	iS*		53	17		0.1	100			
	e			20						
	iSg			23		0.8	100			
CHR	ePg	16	53	13		1.6	99	2.58	182	3.9s
	eSg			45		−1.3	99			

AMPLITUDES: COB 10+ WEL 3.5 KAI 0.8
CHR 0.4

PRO: 49/186

FELT: Takaka (72), MM IV; and Nelson (76), MM II.

49/ 207

OCT 11 $11^h37^m13^s.8$ 32°.91S 179°.24E 33 km M = 5.9
± 1.6 0.15 0.44 R S.E. of RES. 3.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
AUC	iPn	11	37	55		−35.7		5.38	222	
	iSn!		38	55		−34.0				
TUA	Pn	11	38	37		−3.9	99	6.12	195	5.9
	iP*		39	05		5.7				
	Sn			48		1.2	100			
			41	12						

NPZ	eP*	11	39	25	3.5	100	7.42	213	
	e			35					
	e		40	47					
WEL	ePn	11	39	12.5	−8.8		9.09	202	5.8
	e			30.5					
	iSn		40	55	−3.1	100			
COB	eSn	11	41	14	1.8	100	9.67	211	5.8
KAI	ePn	11	39	55	1.8	100	11.42	211	5.8s
	eSn		41	53	−1.1	100			
CHR	eSn	11	42	03	−0.3	100	11.80	204	5.9
SUV	iPn	11	40	35	−3.2	100	14.71	357	
	iSn		43	50	36.6				
API	iP	11	41	57	3.2	100	20.71	25	

AMPLITUDES: TUA 2.0 WEL 2.0 COB 0.6
KAI 0.3 CHR 0.6

PRO: 49/187

ISS gives 32.5S 179.0W, and lists data from 19 additional stations.

49/ 208

OCT 11 $19^h23^m22^s.9$ 41°.30S 175°.87E 12 km M = 4.2
± 0.8 0.02 0.05 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	19	23	39		0.8	99	0.83	271	4.2
	iS*			49		−0.3	100			
COB	iP*	19	24	05		0.4	100	2.38	274	4.0
	eSn			32		2.7				
	eSg			43		0.1	100			
NPZ	e	19	23	26				2.62	328	4.3
	ePg		24	15		−0.9	99			
	iSn			36		0.7	100			
	iS*			43		−0.2	100			
KAI	ePg	19	24	34		−0.5	100	3.55	248	4.1s
	eSn			57		−0.4	100			
	e		25	04						
	eS*			11		0.2	100			

AMPLITUDES: WEL 21 COB 0.6 NPZ 1.3
KAI 0.2

PRO: 49/188

FELT: Paraparaumu (65), MM II.

49/ 209

OCT 11 $20^h25^m47^s.4$ 41°.10S 172°.63E 12 km M ~ 3.5
± 0.8 0.05 0.04 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPg	20	25	49		−1.0	99	0.08	78	
	iSg			52		0.2	100			
WEL	ePg	20	26	20.5		0.3	100	1.62	97	3.5
	eSn			36.5		0.8	100			
	eSg			41.5		−0.6	100			
KAI	ePg	20	26	22		0.4	100	1.69	212	3.8s
	eSn			38		0.7	100			
	eSg			43.5		−0.8	100			
	i			51						

AMPLITUDES: COB 5.0+ WEL 0.9 KAI 0.5

PRO: 49/189

49/ 210

OCT 14 $09^h49^m54^s.1$ 42°.39S 173°.01E 12 km M = 3.6
± 0.3 0.02 0.02 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	ePg	09	50	18		0.1	100	1.17	194	3.4
	eS*			31		0.1	100			
KAI	iP*	09	50	14.5		−1.1	99	1.19	263	4.0
	iS*			31.5		0.0	100			
	iSg			35		0.6	100			
WEL	ePn	09	50	22.5		−0.6	100	1.72	51	3.3
	e			40						
	eSn			45.5		0.7	100			

AMPLITUDES: CHR 0.6 KAI 1.5 WEL 0.6

No provisional solution.

49/ 211

OCT 16 $00^h32^m34^s.0$ 41°.58S 172°.35E 12 km M = 4.0
± 0.5 0.04 0.03 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	S*-P*			06		−1.9		0.58	30	
KAI	Pn	00	32	55		−0.5	100	1.18	216	4.2
	iSn			33 12		0.4	100			
	iSg			14		0.3	100			
WEL	eP*	00	33	06		−0.5	100	1.84	82	4.0
	iSn			28		0.5	100			
	iS*			31		0.2	100			
CHR	eSn	00	33	30		−0.4	100	1.96	174	3.9

AMPLITUDES: KAI 2.5 WEL 2.4 CHR 0.6

PRO: 49/190

FELT: Karamea (74), MM IV.

49/ 212

OCT 17 $23^h49^m06^s.6$ 41°.20S 172°.59E 12 km M = 4.1
± 0.5 0.03 0.06 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	23	49	33		−0.8	100	1.59	213	4.1
	iPg			43		4.2				
	Sn			54		−0.2	100			
WEL	iPn	23	49	34		−0.6	100	1.65	94	4.0
	eSn			55		−0.6	100			
CHR	ePg	23	49	53		−0.7	100	2.33	179	3.9s
	eS*			50 20		1.9	98			
NPZ	eSn	23	50	15		0.9	100	2.42	29	
	iS*			21		0.2	100			

AMPLITUDES: KAI 1.0 WEL 3.0 CHR 0.5

PRO: 49/191

49/ 213

OCT 19 $18^h42^m57^s.4$ 44°.92S 167°.80E 12 km M = 4.6
± 2.6 0.18 0.22 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
MNW	S*-P*			12		0.3		0.87	188	
KAI	ePn	18	43	51		−0.2	100	3.55	49	4.6

	iSn		44	33		1.1	100			
CHR	iPn	18	43	54		0.2	100	3.73	70	4.5
	iSn		44	37		0.5	100			
	e			40						
WEL	eSn	18	45	35.5		−1.6	99	6.25	57	4.3s

AMPLITUDES: KAI 0.6 CHR 0.8 WEI 0.4

PRO: 49/192

FELT: Lumsden (140), MM III; and Monowai (139).

49/ 214

OCT 24 $17^h15^m04^s.4$ 40°.53S 172°.22E 33 km M = 3.7
± 1.3 0.05 0.12 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iSn	17	15	27.5		0.7	100	0.68	145	2.6s
NPZ	ePn	17	15	38		2.2	99	2.04	45	3.8
	iP*			41		0.5	100			
	iS*		16	06		−1.4	100			
WEL	iPn	17	15	34		−2.3	99	2.08	112	3.6
	eSn		16	01		0.8	100			
KAI	eSn	17	16	00		−0.5	100	2.09	197	3.8s

AMPLITUDES: COB 0.3 NPZ 0.7 WEL 0.7
KAI 0.3

PRO: 49/193

49/ 215

OCT 24 $17^h16^m32^s.6$ 41°.15S 172°.30E 12 km M ~ 3.1
± 1.4 0.09 0.08 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	ePg	17	16	40		0.4	100	0.33	80	3.1
	S*			43		−1.1	99			
	iS*			44		−0.1	100			
KAI	eP*	17	17	00.5		0.6	100	1.53	206	3.7s
	eS*			19.5		−0.6	100			
WEL	ePg	17	17	12		1.7		1.86	95	3.1s
	eS*			31		0.9	100			

AMPLITUDES: COB 3.5 KAI 0.4 WEL 0.3

PRO: 49/194

49/ 216

OCT 26 $07^h39^m41^s.6$ 37°.60S 176°.20E 12 km M ~ 4.1
± R R R R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	07	40	06		−0.4	100	1.42	148	4.1
	eSn			25		−0.1	100			
	eSg			30		0.5	100			

AMPLITUDES: TUA 0.8

PRO: 49/195

FELT: Tauranga (26), MM IV; and Te Puke (26).

49/ 217

OCT 26 $09^h01^m09^s.9$ 37°.60S 176°.20E 12 km M ~ 4.3
± R R R R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	09	01	35		0.2	100	1.42	148	4.3
	eSn			53		−0.4	99			
	eSg			58		0.2	100			

AMPLITUDES: TUA 1.2

PRO: 49/196

FELT: Western Bay of Plenty (21,26), MM IV.

49/ 218

OCT 28 $00^h21^m10^s.9$ 40°.29S 174°.11E 12 km M = 3.5
± 0.5 0.02 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iS*	00	21	46		0.1	100	1.12	154	3.0
NPZ	iSn	00	21	49.5		−0.1	100	1.22	359	3.6
COB	eP*	00	21	35.5		0.9	99	1.31	232	4.0
	iS*			52.3		0.2	100			
KAI	eSn	00	22	32		−0.9	99	3.02	221	3.6s

AMPLITUDES: WEL 0.7 NPZ 1.3 COB 2.0
KAI 0.1

PRO: 49/197

49/ 219

OCT 29 $06^h59^m47^s.1$ 43°.32S 173°.04E 33 km M = 4.1
± 0.4 0.02 0.03 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iP*	06	59	56		0.3	100	0.37	234	4.1
	iS*	07	00	02		0.1	100			
KAI	eP*!	07	00	13		0.0	100	1.43	303	4.3
	iS*			31.5		−0.7	100			
COB	eP*	07	00	26.5		−0.1	100	2.24	354	4.0
	eSn			48		1.1	98			
WEL	iPn	07	00	23		−0.4	100	2.40	33	3.8
	iSn			50.5		−0.3	100			

AMPLITUDES: CHR 33 KAI 2.0 COB 0.7
WEL 0.9

PRO: 49/198

FELT: Christchurch (110), MM III. Listed in ISS additional readings.

49/ 220

OCT 29 $08^h38^m39^s.9$ 39°.98S 174°.87E 12 km M ~ 3.8
± 0.5 0.01 0.05 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	08	39	00		0.1	100	1.11	326	3.8
	ePg			05		2.7				
	iS*			15		0.4	100			
	iSg			17		−0.2	100			
WEL	eSn	08	39	20		−0.6	99	1.30	183	2.9s
	eSg			24.5		0.5	100			
COB	eSn	08	39	36.5		−0.1	100	1.97	235	3.6s

AMPLITUDES: NPZ 2.2 WEL 0.4 COB 0.3

PRO: 49/199

49/ 221

OCT 30 $23^h54^m01^s.8$ 33°.67S 178°.93W 33 km M = 5.5
± 1.6 0.30 0.58 R S.E. of RES. 2.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	23	55	30		2.4	100	6.02	211	5.7
	iP*			45		−0.6	100			
	iSn		56	36		3.5				
NPZ	ePn	23	55	50.5		−1.3	100	7.79	224	5.1
	iSn		57	27		11.9				
WEL	ePn	23	56	08		−1.5	100	9.10	212	5.8
	iSn		57	44.5		−1.9	100			
	iS*		58	50		14.2				
COB	eSn	23	58	06.5		0.0	100	9.94	219	5.3
KAI	ePn	23	56	49		4.6	97	11.65	218	5.7
	eSn		58	48		0.2	100			
API	eP	23	58	42		−0.9	100	20.82	20	
	eS	24	02	18		−10.4				

AMPLITUDES: TUA 3.8 NPZ 1.0 WEL 6.0
COB 0.6 KAI 0.8

PRO: 49/200

ISS gives 33.5S 179.0W and lists readings from 37 additional stations.

49/ 222

OCT 31 $10^h26^m11^s.8$ 40°.15S 174°.20E 12 km M = 3.2
± 0.3 0.01 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	10	26	32		0.5	100	1.09	355	3.3
	iSg			48		−0.5	100			
WEL	ePg	10	26	37		0.5	100	1.21	159	3.1
	iSg			52.5		−0.4	100			
COB	Sg	10	27	01		−0.0	100	1.46	229	3.3s

AMPLITUDES: NPZ 0.8 WEL 0.7 COB 0.3

PRO: 49/201

49/ 223

OCT 31 $15^h52^m01^s.2$ 40°.45S 175°.44E 12 km M ~ 3.4
± 1.0 0.03 0.05 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	15	52	19		−0.0	100	0.97	211	2.8
	eS*			32		−0.1	100			
TUA	ePn	16	51	26		−69.5		2.11	39	~3.7s
COB	eSn	15	53	02		−0.2	100	2.15	252	~3.2s
KAI	eSn	15	53	39		0.3	99	3.66	234	~3.8s

AMPLITUDES: WEL 0.6 TUA 0.3 COB 0.1
KAI 0.1

No provisional solution.

Movements at TUA not seismic, or from an independent event.

49/ 224

NOV 07 $01^h28^m36^s.8$ 41°.32S 174°.37E 12 km M = 3.9
± 0.3 0.02 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	01	28	43		−0.3	100	0.31	84	3.5
	iSg			48		0.3	100			
COB	P*	01	28	59.5		0.1	100	1.25	280	4.0
	iS*		29	16.5		0.4	100			
NPZ	iS*	01	29	46		−0.3	100	2.27	354	3.5s
KAI	eP*	01	29	21.5		0.6	100	2.51	240	4.3
	ePg			24		−3.6				
	eS*			53		−0.8	99			

AMPLITUDES: WEL 28 COB 2.0 NPZ 0.3
KAI 0.6

PRO: 49/202

49/ 225

NOV 08 $15^h12^m43^s.9$ 40°.61S 176°.22E 12 km M = 4.3
± 0.6 0.04 0.05 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	15	13	08.5		1.4	99	1.29	238	4.2
	iPg			11		0.9	100			
	i			13						
	i			22						
	iS*			24		−0.3	100			
TUA	ePn	15	13	15		−0.9	100	1.93	22	4.0
	iPg			23		−0.1	100			
	i			33						
	eSn			40		0.2	100			
	i			57						
NPZ	ePn	15	13	17		−3.3		2.26	312	4.8
	eP*			24		0.3	100			
	iPg			30		0.3	100			
	i			33						
	iSn			48		0.4	100			
COB	ePg	15	13	37		−1.3	99	2.69	259	4.2
	eSn			56		−1.9	98			
	e		14	00.5						
	iS*			07		0.8	100			
KAI	ePg	15	14	02.5		−4.0		4.09	240	4.4s

AMPLITUDES: WEL 8.0 TUA 0.8 NPZ 6.0
COB 0.7 KAI 0.3

PRO: 49/203

FELT: Manawatu (61, 62), and Dannevirke (63), MM IV.

49/ 226

NOV 09 $16^h08^m31^s.1$ 41°.47S 172°.97E 108 km M ~ 3.6
± 1.0 0.04 0.04 8 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	P	16	08	47		−0.4	100	0.41	335	3.3*
	iS		09	00		0.1	100			
WEL	iP	16	08	56		−0.6	100	1.37	83	3.6
	iS		09	16.5		0.5	100			
	i			23						
KAI	eP	16	09	00		0.9	99	1.57	227	3.8*
	e			03						
	iS			20		−0.3	100			
	i			21						
CHR	eS	16	09	31		−0.1	100	2.08	187	3.7*
NPZ	eP?	16	09	35		23.2		2.55	20	3.6*

	i			39.5						
	iS			57		14.6				

AMPLITUDES: COB 0.9 WEL 1.5 KAI 0.8
CHR 0.8 NPZ 0.7

PRO: 49/204

49/ 227

NOV 09 $16^h39^m31^s.0$ 42°.50S 172°.90E 12 km M ~ 3.2
± 0.2 0.01 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eP*	16	39	50		−0.0	100	1.04	191	~3.2s
	S*		40	04		−0.1	100			
KAI	eP*	16	39	51		0.1	100	1.10	268	~3.2s
	eS*		40	06		0.3	100			
COB	eSn	16	40	14		−0.4	100	1.42	355	2.8s
WEL	eP*	16	40	03		−0.7	99	1.85	50	2.9s
	eS*			29		0.9	99			

AMPLITUDES: CHR 0.5 KAI 0.3 COB 0.1
WEL 0.2

PRO: 49/205

49/ 228

NOV 09 $22^h23^m34^s.6$ 44°.97S 168°.14E 12 km M ~ 4.4
± 1.5 0.08 0.11 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
MNW	S*-P*			12		−0.0	100	0.89	204	
KAI	ePn	22	24	26		−0.4	100	3.40	45	4.4s
	iP*			34.5		0.8	100			
	ePg			53		9.7				
	eSn		25	07		1.4	99			
	i			09						
CHR	ePg	22	24	50		4.2		3.53	68	4.4
	eSn		25	12		3.4				
	iS*			22		0.1	100			
	eSg			44		10.7				
COB	eSn	22	25	46		−1.2	99	5.13	43	3.9s
WEL	eSn	22	26	09.5		−0.6	100	6.08	55	4.1s

AMPLITUDES: KAI 0.5 CHR 0.6 COB 0.1
WEL 0.3

PRO: 49/206

FELT: Monowai (139).

49/ 229

NOV 12 $12^h11^m41^s.8$ 42°.28S 172°.83E 12 km M = 3.7
± 0.2 0.01 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	12	12	01.5		0.1	100	1.08	256	4.1
	iPg			03		−0.8	100			
	iSg			19		0.6	100			
COB	P*	12	12	03		−0.3	100	1.19	357	3.6
	Sg			22		0.0	100			
CHR	eP*	12	12	04		−0.6	100	1.27	187	3.7
	iS*			22		0.6	100			
WEL	ePn	12	12	10.5		−0.8	99	1.75	56	3.4
	iPg			19		1.6				

	iSn		34		0.6	100			
NPZ	ePg	12	12	50	0.6	100	3.34	17	3.7s
	eS*		13	28	4.3				

AMPLITUDES: KAI 2.4 COB 1.0 CHR 1.1
WEL 0.7 NPZ 0.2

PRO: 49/207

49/ 230

NOV 15 $04^h22^m12^s.1$ 40°.87S 174°.36E 12 km M = 3.8
± 0.2 0.01 0.01 R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	04	22	22		−0.1	100	0.52	144	3.9
	iS*			29.3		0.0	100			
COB	eP*	04	22	35		0.4	99	1.25	259	3.6
	S*			51		−0.2	100			
NPZ	eSn	04	23	05		−0.1	100	1.82	353	

AMPLITUDES: WEL 27 COB 0.9

PRO: 49/208

FELT: Wellington (68).

49/ 231

NOV 16 $13^h22^m22^s.8$ 40°.06S 174°.51E 12 km M = 3.6
± 0.2 0.01 0.03 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	13	22	42		0.2	100	1.04	341	3.9
	iS*			55.5		−0.2	100			
WEL	eP*	13	22	45.5		0.3	100	1.24	171	3.2
	iS*		23	01.5		−0.3	100			
COB	Sn	13	23	13		0.0	100	1.70	232	3.6s
KAI	e	13	23	34				3.39	222	3.7s

AMPLITUDES: NPZ 3.2 WEL 0.8 COB 0.4
KAI 0.1

PRO: 49/209

49/ 232

NOV 16 $15^h55^m49^s.0$ 40°.39S 174°.07E 12 km M = 3.6
± 0.4 0.02 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	15	56	10		−0.1	100	1.04	150	3.6
	iS*			22		0.1	100			
	iSg			24		−0.2	100			
COB	ePg	15	56	14		−0.1	100	1.23	235	3.5
	eSg			30		−0.8	99			
NPZ	e	15	56	28				1.32	360	3.7
	iSn			30		−0.1	100			
KAI	eSn	15	57	10		1.2	98	2.93	222	4.1s

AMPLITUDES: WEL 3.0 COB 0.7 NPZ 1.2
KAI 0.3

PRO: 49/210

49/ 233

NOV 18 $04^h54^m47^s.7$ 40°.21S 174°.93E 12 km M = 3.5
± 0.6 0.02 0.05 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	04	55	07		−0.2	100	1.08	186	3.2
	iS*			21		−0.6	100			
	iSg			25		0.9	99			
NPZ	iSn	04	55	29		0.1	100	1.32	330	3.7
KAI	eSg	04	56	46		−0.1	100	3.52	228	4.3s

AMPLITUDES: WEL 1.2 NPZ 1.4 KAI 0.3

No provisional solution.

49/ 234

NOV 19 $03^h45^m18^s.4$ 42°.20S 172°.92E 12 km M ~ 3.2
± 0.3 0.02 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	P*	03	45	38		−0.7	99	1.13	353	~3.1s
	S*			54		0.3	100			
KAI	e	03	45	39				1.16	253	~3.4s
	iP*			39.5		0.1	100			
	S*			55		0.1	100			
CHR	ePn	03	45	42		−0.2	100	1.34	189	
WEL	ePg	03	45	53		1.0	99	1.66	57	~3.2s
	eSg		46	14		−0.4	100			

AMPLITUDES: COB 0.3 KAI 0.4 WEL 0.5

No provisional solution.

49/ 235

NOV 19 $15^h01^m42^s.8$ 41°.59S 173°.45E 12 km M ~ 3.1
± 0.4 0.03 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP*	15	01	57.4		0.8	99	0.74	312	3.1
	eS*		02	06		−0.5	100			
WEL	eP*	15	02	01.5		−0.2	100	1.03	74	2.8s
	iS*			15.5		−0.0	100			
KAI	eSn	15	02	35		−0.1	100	1.79	238	3.2s

AMPLITUDES: COB 0.8 WEL 0.5 KAI 0.1

PRO: 49/211

49/ 236

NOV 20 $11^h01^m25^s.3$ 42°.17S 172°.90E 33 km M = 3.6
± 0.3 0.02 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	ePn	11	01	43.5		−0.1	100	1.09	353	3.4
	Sn			58		0.7	99			
KAI	ePn	11	01	44		−0.7	100	1.16	252	4.0
	eP*			50		3.5				
	iSn			59		−0.1	100			
CHR	eSn	11	02	05		0.6	100	1.38	188	3.5s
WEL	ePn	11	01	53.5		2.1		1.66	58	3.5
	eP*		02	01		6.2				
	iSn			10.5		−0.4	100			
	iS*			11.5		−5.2				

AMPLITUDES: COB 0.7 KAI 1.6 CHR 0.5
WEL 0.9

PRO: 49/212

49/ 237

NOV 22 $00^h51^m47^s.4$ 29°.30S 178°.20W 190 km M ~ 7.0
± R R R R S.E. of RES. 7.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
AUC	e	00	54	06				9.57	216	
	iS		56	00		12.8	99			
TUA	eP	00	54	06		−4.6	100	10.23	201	7.0
	i			24						
	iS		56	07		4.1	100			
	e		58	18						
WEL	P	00	54	51		1.8	100	13.26	204	
	iS		57	11		−1.7	100			
CHR	P	00	55	31		7.8	100	15.99	205	
	S		58	11		−3.3	100			
API	eP	00	55	25		−4.7	100	16.52	22	
	e		57	23						
	eS		58	14		−12.3	99			

AMPLITUDES: TUA 18

PRO: 49/213

FELT: Tolaga Bay (37), and Wellington (68), MM III. ISS epicentre and depth adopted. Readings from 162 additional stations are listed. The N.Z. register notes that the shock was recorded at "various other stations", but gives no phase details. ScS is reported from TUA, WEL, and CHR.

49/ 238

NOV 23 $11^h58^m49^s.4$ 40°.20S 176°.15E 12 km M = 3.7
± 0.6 0.02 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	11	59	15		−0.6	100	1.51	224	3.4
	iSn			35.5		0.4	100			
	iS*			36.5		0.1	100			
TUA	eP*	11	59	17		−0.6	100	1.58	29	3.4s
	eSg			52		9.0				
NPZ	ePn	11	59	23		1.3	99	1.96	304	3.9
	iP*			25		1.0	100			
	iSn			46		0.1	100			
	iS*			49		−0.8	100			
COB	eSn	12	00	04		−0.8	100	2.74	250	4.0s

AMPLITUDES: WEL 0.8 TUA 0.3 NPZ 0.9
COB 0.4

PRO: 49/214

FELT: Dannevirke (63), MM IV.

49/ 239

NOV 23 $12^h23^m52^s.4$ 40°.23S 173°.48E 12 km M = 4.5
± 0.8 0.03 0.06 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eSg	12	24	39		11.7		1.03	213	3.5A
NPZ	iP*?	12	24	06		−8.8		1.24	22	3.1s
	iS*			31		−0.4	100			
WEL	ePn	12	24	16.5		−1.0	100	1.44	138	4.0
	eS*			38		0.8	100			
	iSg			41		0.0	100			

KAI	ePn	12	24	29		−6.8		2.78	214	4.3s
	i			30						
	eSn		25	10		1.5	100			
	e			11						
TUA	ePg	12	24	57		0.5	100	3.17	65	4.9
CHR	ePn	12	24	45		1.2	100	3.37	191	4.5
	eSn		25	20		−2.6	98			

AMPLITUDES: COB 0.9 NPZ 0.4 WEL 4.0
KAI 0.5 TUA 1.4 CHR 1.0

PRO: 49/215

49/ 240

NOV 23 $14^h54^m34^s.7$ 40°.15S 175°.39E 12 km M = 3.6
± 0.1 0.01 0.01 R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	14	54	57		0.2	100	1.22	203	3.3
	iS*		55	13		−0.1	100			
NPZ	ePn	14	55	00		−0.5	99	1.49	316	3.9
	iPg			05		0.1	100			
	iSn			20		0.2	100			
	iS*			21		0.0	100			
TUA	eSn	14	55	30		0.0	100	1.91	46	3.1s
COB	eSn	14	55	40		2.4		2.23	244	3.7s

AMPLITUDES: WEL 1.0 NPZ 1.8 TUA 0.1
COB 0.3

PRO: 49/216

49/ 241

NOV 24 $05^h06^m29^s.4$ 40°.31S 174°.66E 12 km M = 4.0
± 0.3 0.02 0.03 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	05	06	46		−1.4	99	0.98	175	4.1
	iS*		07	00.5		−0.0	100			
NPZ	ePn	05	06	52		−0.9	100	1.32	340	4.0+
	iSn		07	10		−0.5	100			
COB	eP*	05	07	00		1.1	99	1.66	241	3.8
	iS*			21		0.2	100			
ARA	ePn	05	07	05		−2.1		2.36	19	4.3s
TUA	ePn	05	07	09		0.7	100	2.44	53	3.9s
	eSn			38		0.5	100			
KAI	eP*	05	07	27		0.1	100	3.29	227	4.4s
	eSn		08	06		7.9				

AMPLITUDES: WEL 11 NPZ 2.5+ COB 0.8
ARA 0.3 TUA 0.4 KAI 0.5

PRO: 49/217

49/ 242

NOV 24 $06^h02^m23^s.3$ 41°.33S 173°.77E 12 km M = 4.2
± 0.3 0.02 0.02 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	06	02	37.5		0.1	100	0.76	87	3.9
	iS*			48		0.4	100			
COB	iP*	06	02	38.5		0.1	100	0.82	287	4.0
	S*			50		0.6	100			

KAI	Pn	06	02	59	1.2	99	2.12	235	4.4
	iSn		03	23	−0.8	100			
NPZ	ePn	06	03	00	0.2	100	2.27	6	4.4
	eSn			26	−1.2	99			
CHR	eS*	06	03	35	−0.6	100	2.36	201	4.1

AMPLITUDES: WEL 12 COB 4.6 KAI 1.2
NPZ 2.5 CHR 0.8

PRO: 49/218

49/ 243

NOV 26 $17^h12^m18^s.0$ 43°.26S 176°.84E 12 km M = 4.5
± 2.6 0.10 0.15 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	e	17	14	45				2.50	321	2.9s
CHR	ePn	17	13	06		0.4	100	3.08	263	4.3
	eS*			51		−1.0	100			
COB	eP*	17	13	22		−1.1	100	3.74	304	4.1s
	eS*		14	12		0.1	100			
KAI	ePn	17	13	10		−8.9		4.06	279	4.7
	e			53						
	iSn		14	06.5		1.6	99			

AMPLITUDES: WEL 0.1 CHR 0.7 COB 0.3
KAI 0.7

No provisional solution.

49/ 244

DEC 01 $17^h07^m25^s.1$ 40°.98S 174°.36E 12 km M = 3.6
± 1.1 0.10 0.05 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	17	07	34		0.3	100	0.43	135	3.6
	iS*			39.5		−0.2	100			
COB	eP*	17	07	47		−0.3	100	1.23	265	3.5
	iS*		08	04		0.2	100			

AMPLITUDES: WEL 16 COB 0.6

PRO: 49/219

FELT: Karori (68), MM IV.

49/ 245

DEC 03 $10^h03^m15^s.5$ 40°.27S 175°.45E 12 km M ~ 4.0
± 2.1 0.05 0.12 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	10	03	40		1.3	100	1.14	207	4.0
	iS*			50		−1.3	100			
NPZ	eS*	10	04	05		−0.3	100	1.60	318	2.7s
COB	eS*	10	04	23		−0.8	100	2.22	248	3.9s
	eSg			31.5		1.1	100			

AMPLITUDES: WEL 6.0 NPZ 0.1 COB 0.5

No provisional solution.

49/ 246

DEC 03 $16^h36^m30^s.1$ 41°.22S 173°.58E 61 km M ~ 3.1
± 0.6 0.03 0.03 7 S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iS	16	36	55		0.2	100	0.65	282	3.1*
WEL	P	16	36	40.5		−6.8		0.90	94	3.1
	iS		37	00		−0.2	100			
KAI	eS	16	37	27.5		−0.5	99	2.08	230	3.4s
NPZ	iP	16	37	05		0.1	100	2.19	10	
CHR	eS	16	37	37		0.5	99	2.41	197	3.7*

AMPLITUDES: COB 0.6 WEL 1.1 KAI 0.3
CHR 0.8

PRO: 49/220

49/ 247

DEC 04 $16^h29^m03^s.0$ 40°.52S 173°.70E 12 km M = 4.3
± 1.0 0.04 0.09 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	16	29	27		1.5	100	1.11	134	
	i			33						
	iSn			37		−2.0	99			
	eSg			41		0.5	100			
NPZ	iPg	16	29	34		1.0	100	1.48	11	4.1
	iSn			47		−0.9	100			
CHR	iSn	16	30	27		−0.1	100	3.11	195	4.4

AMPLITUDES: NPZ 2.9 CHR 0.9

No provisional solution.

49/ 248

DEC 05 $16^h49^m16^s.2$ 40°.27S 173°.62E 146 km M ~ 3.7
± 1.6 0.04 0.07 11 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	P	16	49	42		0.8	100	1.06	219	3.1s
	S		50	01		0.5	100			
NPZ	iS	16	50	03		−0.6	100	1.25	16	3.3*
WEL	P	16	49	45		1.0	99	1.34	140	3.7
	iS		50	05		−0.3	100			
KAI	e	16	49	15				2.81	216	3.4s
	eS		50	35.5		−0.6	100			
CHR	eS	16	50	48		−0.6	100	3.35	192	3.5s

AMPLITUDES: COB 0.3 NPZ 0.7 WEL 1.5
KAI 0.2 CHR 0.3

PRO: 49/221

49/ 249

DEC 07 $18^h37^m12^s.3$ 38°.55S 176°.07E 169 km M = 4.7
± 0.9 0.04 0.03 4 S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	S-P			18		−0.5	100	0.58	325	4.3*
TUA	e	18	37	39				0.88	107	4.2
	S			58		−0.1	100			
NPZ	iP	18	37	45		−0.1	100	1.65	251	3.9*
	iS		38	11		0.6	99			
WEL	iP	18	38	00		0.0	100	2.92	200	5.1
	iS			37		0.4	100			
COB	e?	18	38	26				3.61	224	4.3*

	e?			36						
	iS			51.5	−0.8	99				
	e			55						
KAI	eP	18	38	33	1.9		5.33	220		4.7*
	iS		39	30	−2.2					
CHR	S	18	39	39	−0.1	100	5.62	207		

AMPLITUDES: ARA 4.5 TUA 1.4 NPZ 2.2
WEL 11 COB 1.9 KAI 2.2

PRO: 49/222

FELT: Opotiki (35), MM III. ISS gives 38.4S 176.5E, depth .020r (159 km). No further readings are listed.

49/ 250

DEC 09 $09^h29^m55^s.4$ 43°.19S 171°.31E 12 km M = 4.5
± 1.1 0.04 0.08 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	09	30	08.5		0.5	100	0.67	6	4.4
	iS*			17		−0.1	100			
CHR	iP*	09	30	14		−0.0	100	1.03	110	4.7
	iS*			28		0.3	100			
WEL	eP*	09	30	50		−1.1	98	3.19	55	4.1
	eSn		31	22		0.4	100			
NPZ	eP*	09	31	13		−2.4		4.62	28	4.6
	eSn		32	00		4.3				

AMPLITUDES: KAI 13 CHR 16 WEL 1.1
NPZ 0.8

PRO: 49/223

49/ 251

DEC 09 $18^h49^m28^s.2$ 30°.35S 179°.18E 33 km M = 7.2
±11.8 0.67 0.97 R S.E. of RES. 4.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	18	51	29		−0.1	100	8.60	191	7.1
	Sn		53	03		2.2	100			
WEL	e?	18	54	05				11.48	197	7.3
	eSn			09		−1.0	100			
	e			10						
COB	eSn	18	54	26		5.4	99	11.92	204	6.7s
KAI	eSn	18	55	01		−1.3	100	13.65	205	
CHR	eSn	18	55	09		−5.2	99	14.16	200	
	e			38						

AMPLITUDES: TUA 1.3 WEL 3.4 COB 0.3

No provisional solution.

Listed in ISS additional readings. Unidentified phase recorded at RIV. Stations inadequately distributed in azimuth.

49/ 252

DEC 14 $00^h12^m37^s.9$ 31°.73S 178°.36W 33 km M ~ 5.4
± 5.8 0.49 0.70 R S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	00	14	30		−0.0	100	7.96	206	4.9s
	e			36						
	i		15	00						
	eSn			57		2.0	100			
WEL	e	00	17	02				11.02	208	5.4

	eSn			06	−2.6	99				
COB	eSn	00	17	27	0.4	100	11.76	215		4.6s
KAI	e	00	18	04			13.50	214		5.4s
	iSn			08.5	0.2	100				

AMPLITUDES: TUA 0.4 WEL 1.7 COB 0.1
KAI 0.3

No provisional solution.

49/ 253

DEC 14 $03^h56^m24^s.1$ 41°.17S 174°.05E 12 km M ~ 3.0
± 0.2 0.03 0.01 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	03	56	34.5		−0.2	100	0.55	103	3.0
	iS*			42.5		0.2	100			
COB	eP*	03	56	42		−0.3	100	1.00	274	2.5s
	iS*			56		0.3	100			
KAI	eSn	03	57	31		−0.0	100	2.39	235	3.4s

AMPLITUDES: WEL 2.5 COB 0.1 KAI 0.1

PRO: 49/224

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DEC 18 $05^h39^m10^s.4$ 35°.12S 179°.97E 300 km M ~ 6.7
± 1.3 0.08 0.13 12 S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P	05	40	19		−1.6	99	4.32	211	6.7
	i			47						
	iS		41	17		1.3	100			
AUC	iP	05	40	24		0.6	100	4.55	246	
	iS		41	20		−0.5	100			
NPZ	iP	05	40	42		0.0	100	6.15	228	
	i			49.5						
	iS		41	47		−6.9				
WEL	iP	05	40	56		−1.3	100	7.40	212	6.6+
	iS		42	20.5		−0.8	100			
COB	e?	05	41	04				8.24	222	5.0*
	eP			08		0.2	100			
	S		42	40		0.0	100			
KAI	eP	05	41	30.5		1.7	99	9.96	220	5.6*
	iS		43	17		−1.2	100			
CHR	eP	05	41	36		4.9		10.14	212	
	eS		43	23		0.9	100			
	i			25.5						
API	P	05	43	50		4.2		22.49	21	
	S		47	16		−11.8				

AMPLITUDES: TUA 47 WEL 50+ COB 4.5
KAI 8.0

PRO: 49/225

FELT: Scattered places in the east of the North Island from Opotiki (35) to Wellington (68). Maximum intensity MM IV. ISS gives 34.7S 179.7E, depth .025r (190km), and lists data from 67 additional stations.

49/ 255

DEC 18 $09^h35^m27^s.2$ 39°.46S 176°.01E 12 km M = 5.7
± 0.3 0.02 0.03 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
HNZ	S*-P*			17		7.4	0	0.71	108	
TUA	iP*	09	35	47		−0.0	100	1.10	54	5.6
	iS*		36	02.5		0.8	100			
ARA	Sn-Pn			17		−1.5		1.41	348	5.5
NPZ	iPn	09	35	54		0.1	100	1.56	284	4.8+
	Pg		36	01		2.3				
WEL	iPn	09	36	00		−0.8	100	2.06	207	5.5+
	iSn			26		−0.0	100			
AUC	iP*	09	36	15		−0.6	100	2.77	339	
	iSn			43		−0.0	100			
COB	Pn	09	36	12.5		−1.0	99	2.99	236	5.3
	P*			22		2.6				
	Sn			48.5		0.1	100			
	iS*			59.5		1.0	99			
	iSg		37	11.5		3.6				
KAI	ePn	09	36	37		1.0	99	4.64	227	6.0
	e		37	25						
	iSn			28.5		0.5	100			
CHR	ePn	09	36	37		−1.2	99	4.80	211	6.0
	e		37	25						
	e			25						
	iSn			28.5		−3.4				

AMPLITUDES: TUA 86 ARA 43 NPZ 12+
WEL 68+ COB 7.0 KAI 10
CHR 13

PRO: 49/226

FELT: Eastern and central parts of the North Island from Opotiki (35) to Wellington (68). Maximum reported intensity MM V at Taihape (58). ISS gives 39.5S 175.3E, and adds a doubtful reading from OTT.

49/ 256

DEC 19 $07^h06^m57^s.1$ 42°.30S 172°.86E 12 km M = 3.9
± 0.3 0.02 0.03 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	07	07	17		−0.1	100	1.10	258	3.9
	iS*			31.5		−0.3	100			
	iS*			33		1.2	99			
COB	eP*	07	07	16		−3.0		1.21	355	3.4s
	eS*			33.5		−1.6	99			
CHR	iP*	07	07	20		0.5	100	1.24	188	4.0
	iS*			35		−1.1	100			
WEL	P*	07	07	28		−0.1	100	1.75	55	3.8
	Sn			48		−0.4	100			
	iS*			52		0.9	100			
NPZ	ePg	07	08	06		1.0	100	3.36	16	3.9s
	eSn			32		4.8				
	eS*			44		4.6				

AMPLITUDES: KAI 1.4 COB 0.5 CHR 2.0
WEL 1.6 NPZ 0.3

PRO: 49/227

49/ 257

DEC 19 $08^h52^m56^s.0$ 39°.89S 176°.60E 12 km M = 4.0
± 1.0 0.04 0.07 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS*	08	53	32.5		−0.1	100	1.16	22	3.8
WEL	ePn	08	53	29		0.6	100	1.97	224	4.1
	Sn			52.5		−0.2	100			
NPZ	eS*	08	54	01		−0.2	100	2.12	292	3.3s
COB	eSn	08	54	23.5		1.7	99	3.18	247	3.5s
KAI	Sn	08	54	57		−1.7	99	4.72	234	4.5s

AMPLITUDES: TUA 1.5 WEL 2.5 NPZ 0.2
COB 0.1 KAI 0.3

PRO: 49/228

49/ 258

DEC 19 $13^h55^m26^s.0$ 40°.91S 172°.92E 214 km M ~ 4.4
± 1.1 0.04 0.06 7 S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iP	13	55	55		0.8	100	0.22	219	
	iS		56	16.5		0.7	100			
WEL	iP	13	56	01		0.4	100	1.45	106	4.4
	e			22						
	S			27		−0.5	100			
KAI	iP	13	56	05.5		−0.0	100	1.97	215	3.8s
	iS			35		−1.1	99			
NPZ	eS	13	56	37		−0.4	100	2.04	26	3.6*
CHR	eS	13	56	49		0.5	100	2.63	185	3.5s

AMPLITUDES: COB 0.5 WEL 4.0 KAI 0.5
NPZ 0.7 CHR 0.4

PRO: 49/229

49/ 259

DEC 21 $04^h09^m18^s.3$ 42°.53S 173°.35E 12 km M ~ 3.5
± 0.7 0.03 0.07 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eP*	04	09	37		−1.8	99	1.13	208	3.5
	eSg			58		1.3	100			
KAI	ePn	04	09	44		0.6	100	1.43	269	3.5s
	iSn		10	01.5		−0.6	100			
COB	eS*	04	10	05.5		0.2	100	1.51	342	3.3s
WEL	ePn?	04	09	38		−8.1		1.63	41	3.0s
	eP*		10	00		12.7				
	eSn			07		0.1	100			

AMPLITUDES: CHR 0.8 KAI 0.3 COB 0.3
WEL 0.3

PRO: 49/230

49/ 260

DEC 22 $13^h12^m50^s.0$ 41°.36S 172°.32E 12 km M = 5.4
± 0.5 0.03 0.06 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iP*	13	12	59		0.7	100	0.41	49	4.4+
	S*		13	05		0.9	100			
KAI	iP*	13	13	15.5		1.3	100	1.35	210	5.8+
	iPg			17		−0.3	100			
	S*			33.5		1.4	100			

WEL	iP*	13	13	24	1.3	100	1.84	88		5.3
	iS*			48.5	1.5	100				
CHR	eP*	13	13	27	−1.4	100	2.18	174		5.7
	iPg			33.5	−0.6	100				
	Sn			52	0.2	100				
	S*			55.5	−1.6	100				
ARA	eP*	13	14	00	−2.3	99	4.17	39		5.7
	e			02						
	ePg			21	6.8					
	iSg		15	09	−1.3	100				
TUA	eP*	13	14	07	−0.9	100	4.50	57		5.0
	iPg			18	−2.9					
	iSn			55	7.5					
	iSg		15	18	−3.5					
AUC	ePg	13	14	30	1.3	100	4.89	24		
	i		15	54						

AMPLITUDES: COB 50+ KAI 70+ WEL 48
CHR 37 ARA 5.0 TUA 1.3

PRO: 49/231

FELT: North-western parts of the South Island. Maximum reported intensity MM V at Cobb River (72), Karamea (74), and Murchison (80).

49/ 261

DEC 22 $13^h16^m54^s.8$ 41°.32S 172°.32E 33 km M = 4.0
± 0.9 0.04 0.08 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iP*	13	17	04		0.4	100	0.39	53	3.8+
	iS*			10		−0.1	100			
KAI	iS*	13	17	39.5		1.3	100	1.38	209	4.1
WEL	Pn	13	17	24		0.5	100	1.84	90	3.8
	S*			53		1.1	100			
CHR	eS*	13	18	01		−2.1	99	2.22	174	3.7s
NPZ	S*	13	18	14		−1.2	100	2.63	31	3.9s

AMPLITUDES: COB 12+ KAI 1.5 WEL 1.7
CHR 0.3 NPZ 0.5

PRO: 49/232

49/ 262

DEC 23 $13^h09^m35^s.5$ 41°.77S 173°.39E 12 km M ~ 3.0
± 0.4 0.03 0.02 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iSg	13	10	04		0.0	100	0.84	324	~3.0s
WEL	ePg	13	09	58		−0.6	99	1.14	65	2.8s
	eSg		10	14.5		0.5	100			
KAI	eSg	13	10	31.5		0.1	100	1.66	242	3.1s

AMPLITUDES: COB 0.5 WEL 0.4 KAI 0.1

No provisional solution.

49/ 263

DEC 24 $09^h24^m13^s.7$ 38°.91S 175°.67E 160 km M ~ 4.1
± 6.8 0.27 0.17 42 S.E. of RES. 3.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS	09	25	01		−0.9	100	1.16	85	3.7s
NPZ	iS	09	25	04		0.4	100	1.26	262	2.5s

WEL	iP	09	24	57.5	2.0	99	2.47	196		4.1
	S		25	28	0.4	100				
	i		29	00.5						
KAI	eS	09	26	20	−2.1	99	4.85	221		3.3s

AMPLITUDES: TUA 0.4 NPZ 0.1 WEL 1.4
KAI 0.1

PRO: 49/233

49/ 264

DEC 26 $10^h12^m35^s.8$ 39°.83S 173°.57E 12 km M ~ 3.5
± 2.0 0.09 0.04 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	ePg	10	13	05		0.6	100	1.41	207	3.3s
	eSg			24		0.6	100			
WEL	ePg	10	13	10.5		−0.1	100	1.72	148	3.5
	iSn			27.5		1.0	99			
	iS*			28.5		−0.5	100			
	eSg			30		−3.8				
KAI	iSn	10	14	00		−0.8	100	3.15	210	4.2s

AMPLITUDES: COB 0.3 WEL 0.9 KAI 0.3

No provisional solution.

49/ 265

DEC 27 $22^h27^m37^s.3$ 41°.22S 172°.21E 12 km M = 3.6
± 0.8 0.05 0.05 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iP*	22	27	46		0.4	100	0.41	72	3.3
	iS*			51		−0.4	99			
KAI	eSn	22	28	21		−0.1	100	1.43	204	3.9
WEL	eS*	22	28	37		0.2	100	1.93	93	3.1s

AMPLITUDES: COB 4.0 KAI 0.8 WEL 0.3

PRO: 49/234

49/ 266

DEC 29 $09^h50^m53^s.8$ 41°.21S 172°.14E 12 km M = 3.6
± 0.7 0.05 0.05 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iP*	09	51	03		0.1	100	0.46	74	3.4
	iS*			09		−0.3	100			
KAI	Pn	09	51	19		0.3	100	1.42	202	3.8
	Pg			22		−0.6	99			
	iSn			37.5		0.2	100			
WEL	eP*	09	51	32		3.2		1.98	93	3.2s
	eSn			51		0.3	100			

AMPLITUDES: COB 3.5 KAI 0.7 WEL 0.3

PRO: 49/235

49/ 267

DEC 30 $19^h44^m42^s.9$ 39°.59S 177°.26E 12 km M = 3.8
± 1.1 0.04 0.10 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPg	19	45	00		1.1	100	0.78	354	3.5
	iS*			07		−1.1	100			
NPZ	Pn	19	45	23		0.1	100	2.53	281	4.0
	iP*			27		−0.2	100			
	i			44						
	iSn			53		0.0	100			
WEL	ePn	19	45	23		−0.2	100	2.55	227	3.9
	eP*			30		2.4	99			
	Sn			51		−2.5	98			
	eSg		46	09.5		0.7	100			
COB	eP*	19	45	51.5		3.1		3.77	245	4.1s
	eS*		46	38		0.4	100			
CHR	eSn	19	46	57		−1.5	100	5.26	220	4.4s
KAI	ePg	19	46	31		0.8	100	5.31	235	4.1s

AMPLITUDES: TUA 1.5 NPZ 0.8 WEL 0.9
COB 0.3 CHR 0.3 KAI 0.1

No provisional solution.

1950

50/ 001

JAN 03 $18^h34^m30^s.6$ 33°.97S 176°.49E 33 km M = 5.8
± 4.0 0.18 0.22 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iSn	18	36	34		0.7	100	4.86	174	6.0
WEL	Pn	18	36	15.5		−0.0	100	7.43	190	5.6
	Sn		37	34		−1.1	99			
KAI	eSn	18	38	24		0.9	100	9.43	204	
	e			30						

AMPLITUDES: TUA 0.7 WEL 1.0

PRO: 50/1

50/ 002

JAN 06 $16^h25^m10^s.6$ 40°.17S 174°.90E 33 km M = 3.7
± 1.0 0.03 0.12 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	16	25	30		0.6	100	1.12	185	3.5
	Sn			43		−0.4	100			
	e			47						
NPZ	e	16	25	31.5				1.28	330	3.8
	iSn			46		−1.2	99			
	iSn			48		0.8	100			
TUA	e	16	26	17.5				2.21	53	3.7s
KAI	eSn	16	26	41.5		0.2	100	3.53	227	3.8s

AMPLITUDES: WEL 2.0 NPZ 2.0 TUA 0.3
KAI 0.1

PRO: 50/2

50/ 003

JAN 07 $14^h21^m03^s.4$ 41°.14S 174°.56E 33 km M = 5.6
± 0.5 0.04 0.07 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	14	21	09		−0.9	100	0.21	132	
	S*			15		0.3	100			
COB	Sn-Pn			17.5		0.7	100	1.39	272	5.5
	iPn		21	21.5		−4.3				
	iSn			39		−3.5				
NPZ	Pn	14	21	33.5		−2.2	100	2.11	350	
	P*			41		0.4	100			
	Sn			58		−2.0	100			
KAI	i?	14	21	44				2.73	239	5.9
	i			49						
	Sn		22	15.5		0.6	100			
CHR	iPn	14	21	44.5		−0.4	100	2.78	210	5.6
	i			55.5						
	Sn		22	14		−2.2	100			
	e			19						
	iS*			31		2.5	99			
TUA	ePn?	14	21	44		−4.7		3.07	41	5.3
	i			53						
	e		22	04						
	Sn			21		−2.0	100			
	i			29						
	S*			38		1.1	100			
	i			50						
ARA	iP*	14	22	01.5		2.7	99	3.18	16	5.8
	Sn			28		2.3	99			

AMPLITUDES: WEL 75+ COB 52 KAI 22
CHR 17 TUA 60 ARA 13

PRO: 50/3

FELT: Central and southern parts of the North Island, and northern parts of the South Island. Maximum intensity MM V at Wellington (68). See Hayes, R.C., 1952a for isoseismal map.

50/ 004

JAN 07 $14^h28^m54^s.8$ 41°.14S 174°.51E 33 km M ~ 3.6
± 0.8 0.06 0.06 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	14	29	01		−0.8	100	0.24	126	
	iS*			07		0.2	100			
COB	iSn	14	29	31.5		−1.5	99	1.34	272	3.6
NPZ	e	14	29	34				2.11	351	3.5s
	iSn			52		0.7	100			
KAI	eSn	14	30	07		1.4	99	2.70	238	3.9s
	e			25.5						

AMPLITUDES: WEL 9.0 COB 0.7 NPZ 0.3
KAI 0.2

PRO: 50/4

50/ 005

JAN 07 $15^h12^m24^s.2$ 40°.95S 174°.40E 33 km M ~ 3.1
± 0.4 0.03 0.01 R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	15	12	34		0.2	100	0.43	140	3.1
	Sn			40.5		−0.1	100			
COB	eSn	15	13	00.5		−0.1	100	1.27	263	3.4s
KAI	eS*	15	13	48		0.0	100	2.74	234	3.6s

AMPLITUDES: WEL 5.0 COB 0.5 KAI 0.1

PRO: 50/5

50/ 006

JAN 07 $16^h17^m17^s.4$ 40°.00S 173°.82E 141 km M ~ 3.8
± 1.7 0.04 0.06 12 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	e	16	17	45				0.95	12	3.0s
	iS			59		−0.3	100			
COB	e	16	17	43				1.36	217	3.1s
	iS			18 06.5		0.2	100			
WEL	eP	16	17	47		0.7	100	1.47	151	3.8
	iS			18 08.5		0.1	100			
KAI	S	16	18	44.5		0.5	100	3.10	215	3.6s
CHR	i	16	18	53.5				3.64	194	3.9*
	iS			55.5		−1.0	99			

AMPLITUDES: NPZ 0.4 COB 0.3 WEL 1.5
KAI 0.3 CHR 0.8

PRO: 50/6

50/ 007

JAN 07 $18^h29^m00^s.7$ 40°.52S 174°.98E 33 km M ~ 3.5
± 2.5 0.08 0.24 R S.E. of RES. 2.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	18	29	17.5		1.9	99	0.77	192	3.5
	Sn			23.5		−1.8	100			
NPZ	eSn	18	29	45		−0.4	100	1.61	334	2.8s
COB	eSn	18	29	50		0.3	100	1.79	251	3.3s

AMPLITUDES: WEL 4.0 NPZ 0.1 COB 0.2

PRO: 50/7. Aftershock of PRO: 50/3.

50/ 008

JAN 07 $21^h36^m43^s.5$ 40°.72S 174°.86E 33 km M ~ 3.6
± 7.3 0.33 0.29 R S.E. of RES. 2.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	21	36	56		0.8	100	0.58	187	3.6
	Sn		37	02		−1.2	100			
COB	e	21	37	26.5				1.66	256	3.5s
	iSn			28		−1.3	100			
KAI	eSn	21	38	07		1.6	100	3.16	234	3.7s

AMPLITUDES: WEL 9.0 COB 0.4 KAI 0.1

PRO: 50/8. Aftershock of PRO: 50/3.

FELT: Paremata (68), MM III.

50/ 009

JAN 08 $02^h33^m15^s.9$ 41°.11S 174°.33E 12 km M = 3.4
± 0.3 0.02 0.02 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	02	33	23		−0.5	100	0.38	118	3.1
	S*			29		0.2	100			
COB	eP*?	02	33	34.5		−3.1		1.21	271	3.7
	iS*			54		0.4	100			
	i			55.5						
NPZ	Sn	02	34	14		−0.6	100	2.05	354	3.3s
KAI	ePg	02	34	07.5		−0.9	99	2.60	236	3.5s
	e			19						
	eSn			28.5		0.8	100			
TUA	eSg?	02	35	03		0.6	100	3.16	44	3.5s

AMPLITUDES: WEL 7.0 COB 1.2 NPZ 0.2
KAI 0.1 TUA 0.1

PRO: 50/9. Aftershock of PRO: 50/3

FELT: Paraparaumu (65) MM II.

50/ 010

JAN 08 $22^h25^m55^s.5$ 41°.19S 174°.31E 33 km M = 3.7
± 0.2 0.02 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	22	26	04		0.1	100	0.36	107	3.5
	S*			10		−0.0	100			
COB	eP*	22	26	16.5		−0.9	98	1.20	274	3.8
	eS*			34		0.4	100			
	i			35						
KAI	e	22	26	46				2.55	237	4.1s
	e		27	09						
	eS*			14		0.2	100			
TUA	eS*	22	27	34		0.2	100	3.22	43	3.6s

AMPLITUDES: WEL 19 COB 1.5 KAI 0.4
TUA 0.1

PRO: 50/10

50/ 011

JAN 09 $08^h40^m07^s.5$ 38°.29S 177°.64E 110 km M = 5.4
± 1.3 0.06 0.08 8 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	08	40	26		0.5	100	0.64	217	5.3
	iS			39		−0.3	100			
ARA	iP	08	40	37		1.2	99	1.59	277	4.4*
	iS			56.5		−0.8	100			
NPZ	S-P			35.5		1.2	99	2.90	253	4.3*
	i		40	56.5						
	i		41	32						
WEL	iP	08	41	04		−0.2	100	3.72	216	5.4
	iS			48		0.7	100			
COB	eP	08	41	20.5		3.0		4.71	232	4.2*
	e			29.5						
	iS		42	10.5		−0.9	100			
	e			13						
KAI	e	08	41	46.5				6.36	226	4.7*
	e		42	07.5						
	iS			50		−2.0				
	i			52						
CHR	eP	08	41	44		2.5		6.47	214	4.7*
	iS		42	50.5		−4.0				

AMPLITUDES: TUA 46 ARA 5.0 NPZ 3.5
WEL 15 COB 1.1 KAI 1.8
CHR 2.5

PRO: 50/11

FELT: Eastern Bay of Plenty and northern Hawke's Bay. Maximum intensity MM IV.

50/ 012

JAN 09 $13^h09^m50^s.6$ 37°.36S 176°.83E 309 km M = 5.1
± 0.7 0.05 0.09 6 S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	13	10	35		0.2	100	1.47	170	5.0
	S		11	09		−0.1	100			
NPZ	eP	13	10	45		−0.1	100	2.75	231	3.2s
	e		11	20						
WEL	iP	13	11	00		−0.3	99	4.23	202	5.2
	iS			55		0.1	100			
COB	S	13	12	06		−2.3		4.90	219	3.5s
KAI	S	13	12	42		−3.0		6.62	217	4.0s
CHR	S	13	12	50.5		−1.4		6.95	206	4.3*

AMPLITUDES: TUA 2.5 NPZ 0.2 WEL 5.0
COB 0.2 KAI 0.3 CHR 1.0

PRO: 50/12

50/ 013

JAN 09 $15^h29^m59^s.9$ 40°.85S 174°.67E 33 km M = 3.5
± 0.3 0.01 0.03 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	15	30	10		0.5	99	0.44	171	3.2
	iSn			16		−0.5	99			
COB	ePn	15	30	23.5		−0.2	100	1.48	260	3.8
	Sn			41.5		−0.1	100			
NPZ	eSn	15	30	50		−0.1	100	1.84	345	3.3s
KAI	eP*	15	30	52		0.3	100	2.96	235	3.9s
	e		31	20						
	eS*			26.5		−3.9				

AMPLITUDES: WEL 7.0 COB 1.0 NPZ 0.3
KAI 0.2

PRO: 50/13. Aftershock of PRO: 50/3.

50/ 014

JAN 10 $01^h21^m42^s.9$ 41°.26S 174°.34E 33 km M ~ 4.1
± 0.2 0.03 0.01 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	01	21	50.5		−0.4	100	0.32	95	3.1A
	S*			57		0.3	100			
COB	eP*	01	22	05		−0.2	100	1.22	278	4.1
	S*			22		0.2	100			
	e			24						
KAI	ePn	01	22	23		2.0		2.53	239	4.0s
	eS*		23	00.5		0.0	100			
TUA	e	01	23	19				3.27	42	3.6s
	e			27						

AMPLITUDES: WEL 9.0 COB 2.5 KAI 0.3
TUA 0.1

PRO: 50/14

50/ 015

JAN 12 $20^h48^m19^s.5$ 41°.06S 174°.36E 6 km M ~ 5.7
± 0.7 0.03 0.02 7 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	20	48	27		−0.3	100	0.39	126	4.0+
	iSg			33		0.5	100			
COB	iP*	20	48	42		−0.2	100	1.22	268	~5.5+
	iS*			59.5		0.7	99			
BUN	S*-P*			17		0.2	100	1.24	52	
	eP*		48	58		15.6				
	eS*		49	15		15.8				
NPZ	iPn	20	48	53		−0.2	100	2.01	354	
	iSn		49	18.5		0.1	100			
KAI	iPn	20	49	01.5		−0.5	100	2.65	235	~5.8+
	eP*			10		3.5				
	Sn			39		5.2				
RIV	iP	20	53	07		14.1		19.75	284	

AMPLITUDES: WEL 55+ COB 65+ KAI 20+

PRO: 50/15

FELT: Southern part of the North Island and northern part of the South Island. Maximum intensity MM IV. For isoseismal map, see Hayes, 1952a.

50/ 016

JAN 12 $20^h49^m50^s.5$ 41°.15S 174°.61E 33 km M ~ 5.6
± 0.9 0.13 0.06 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	20	49	57		0.2	100	0.18	140	
COB	iPn	20	50	13		−0.4	100	1.42	272	5.6
	iSn			31		0.4	100			
KAI	Pn	20	50	31.5		−0.2	100	2.76	239	

AMPLITUDES: WEL 55+ COB 70

PRO: 50/16

FELT: Southern part of the North Island, and northern part of the South Island. Maximum intensity MM V. For isoseismal map, see Hayes, R.C., 1952a.

50/ 017

JAN 12 $20^h59^m14^s.5$ 41°.13S 174°.52E 33 km M = 4.6
± 0.3 0.02 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	20	59	21		−0.5	100	0.24	131	
	S*			27		0.4	100			
COB	Pn	20	59	35.5		−1.1	99	1.35	271	4.7
	e			54.5						
NPZ	ePn	20	59	46		−0.6	100	2.09	350	4.4
	iP*			52		0.6	100			
	eSn	21	00	11		0.4	100			
KAI	ePn	20	59	58		2.8		2.72	238	4.7
	iSn	21	00	26.5		0.7	100			
	i			30.5						
	iS*			32.5		−5.2				
CHR	e	21	00	25				2.79	210	4.1s

AMPLITUDES: WEL 55+ COB 9.0 NPZ 2.5

KAI 1.5 CHR 0.5

PRO: 50/17

FELT: Paraparaumu Beach (65) MM IV, and Wellington (68) MM II.

50/ 018

JAN 12 $21^h29^m16^s.7$ 39°.21S 177°.63E 33 km M ~ 4.0
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	e	21	29	41				2.76	272	3.2s
	ePn			58		0.0	100			
WEL	eSn	21	30	35		0.0	100	3.01	226	4.0
	e		31	05.5						
KAI	eSn	21	31	41		0.0	100	5.76	233	

AMPLITUDES: NPZ 0.1 WEL 1.0

PRO: 50/18

FELT: Gisborne (45), MM III.

50/ 019

JAN 13 $01^h19^m08^s.5$ 41°.14S 174°.56E 33 km M ~ 3.5
± 1.0 0.10 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	01	19	14.5		−0.6	99	0.21	133	
	S*			20.5		0.6	100			
COB	iSn	01	19	48		0.2	100	1.39	272	~3.5s
KAI	eSn	01	20	20		−0.2	100	2.74	239	3.6s

AMPLITUDES: WEL 10 COB 0.5 KAI 0.1

PRO: 50/19

50/ 020

JAN 13 $05^h30^m37^s.3$ 40°.91S 174°.46E 12 km M = 4.3
± 0.4 0.02 0.03 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	05	30	46		0.1	100	0.44	148	4.1+
	S*			52		−0.1	100			
COB	iP*	05	31	02		1.1	100	1.31	262	4.4
	iS*			19		0.6	100			
NPZ	eP*	05	31	12		1.7	99	1.87	351	3.9
	iSn			30		−1.5	99			
	S*			35		0.0	100			
	iSg			40		−0.3	100			
KAI	eP*	05	31	26		−0.1	100	2.79	234	4.5
	eSn			53		−0.8	100			
	iS*		32	02		−0.7	100			
	iSg			06		−5.4				

AMPLITUDES: WEL 55+ COB 4.5 NPZ 1.0
KAI 0.9

PRO: 50/20

FELT: Wellington (68) MM III.

50/ 021

JAN 13 $06^h56^m40^s.0$ 40°.44S 174°.98E 33 km M = 3.8
± 1.0 0.03 0.09 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
	[illegible]	06	56	57		0.7	99	0.86	191	3.7
	n		57	06		−0.7	99			

NPZ	e	06	57	26			1.54	333	3.6
	S*			28	−0.1	100			
COB	e	06	57	14			1.83	248	4.1
	Sn			30	0.1	100			
KAI	eSn	06	58	11	3.3		3.40	231	

AMPLITUDES: WEL 5.0 NPZ 0.7 COB 1.1

PRO: 50/21

50/ 022

JAN 13 $07^h52^m33^s.1$ 41°.04S 174°.53E 33 km M = 3.9
± 0.8 0.04 0.07 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	07	52	40.5		−0.3	100	0.31	144	3.5
	S*			46.5		0.1	100			
COB	Pn	07	52	54		−1.2	100	1.36	267	4.2
	iSn!		53	12		0.2	100			
NPZ	e	07	53	20				2.01	350	4.0
	eSn			30		2.8	99			
	iS*			33		−2.0	99			
KAI	e	07	53	24				2.76	237	4.3s
	Sn			46		0.4	100			
CHR	eSn	07	53	44		−3.8		2.86	209	

AMPLITUDES: WEL 25 COB 2.5 NPZ 1.2
KAI 0.5

PRO: 50/22

FELT: Karori (68), MM I.

50/ 023

JAN 13 $10^h13^m26^s.3$ 39°.15S 174°.96E 226 km M ~ 5.6
± 1.4 0.06 0.12 10 S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP	10	13	59		1.7	99	0.69	277	4.3+
	S		14	22		0.7	100			
ARA	iP!	10	14	00		−0.3	100	1.20	27	5.1*
	iS			25.5		−1.2	100			
WEL	iP	10	14	09		0.5	100	2.14	184	~5.8+
	S			41.5		0.4	100			
AUC	iS-P!			34		0.2	100	2.29	356	
COB	iP!	10	14	12.5		−0.6	100	2.58	221	~5.4+
	iS!			48		−1.4	99			
KAI	P	10	14	32		−1.5		4.32	217	~5.5+
	iS		15	23		−2.6				
CHR	P	10	14	36		−2.5		4.72	201	5.9*
	S		15	32		−2.6				

AMPLITUDES: NPZ 6.0+ ARA 18 WEL 72+
COB 26+ KAI 15+ CHR 56

PRO: 50/23

FELT: Scattered places from Bay of Plenty to Wellington, Maximum intensity MM III.

50/ 024

JAN 14 $12^h49^m16^s.6$ 41°.10S 174°.33E 12 km M = 3.9
± 0.2 0.02 0.01 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pg	12	49	24		−0.5	100	0.38	119	3.6
	Sg			30		0.2	100			
COB	eP*	12	49	39		0.7	99	1.21	270	3.9

	i			56					
	iSg			57	−0.3	100			
NPZ	eSn	12	50	15	−0.0	100	2.04	354	3.4s
KAI	e	12	50	16			2.61	236	4.3
	eSn			28.5	−0.0	100			
	iS*			40	3.7				
CHR	eSn	12	50	27.5	−4.2		2.74	207	
	eSg			55	6.2				

AMPLITUDES: WEL 24 COB 1.7 NPZ 0.3
KAI 0.6

PRO: 50/24

50/ 025

JAN 15 $02^h04^m04^s.0$ 40°.82S 174°.43E 12 km M = 4.1
± 1.7 0.09 0.05 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pg	02	04	15.5		0.6	100	0.53	151	4.0
	Sg			21.5		−0.6	100			
COB	Pg	02	04	30		−0.5	100	1.31	258	4.1
	iSg			48		−0.2	100			
NPZ	e	02	04	50				1.77	351	4.0
	iSg			05 08		4.1				
	e			10						
KAI	e	02	05	02				2.83	232	4.4
	e			05.5						
	eSn			22		0.7	100			
TUA	e	02	05	46				2.91	47	3.9s

AMPLITUDES: WEL 30 COB 2.2 NPZ 1.5
KAI 0.6 TUA 0.3

PRO: 50/25

FELT: Paremata (68) and Paraparaumu Beach (65) MM III.

50/ 026

JAN 15 $02^h09^m20^s.4$ 41°.03S 174°.34E 12 km M = 3.3
± 0.3 0.01 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pg	02	09	29		−0.0	100	0.41	128	3.1
	Sg			35		0.2	100			
COB	Sg	02	10	02		0.6	99	1.21	267	3.4
NPZ	eS*	02	10	21		−0.2	100	1.97	354	3.4s
KAI	eS*	02	10	41		−0.6	99	2.65	235	4.0s

AMPLITUDES: WEL 6.0 COB 0.6 NPZ 0.3
KAI 0.3

PRO: 50/26

FELT: Paremata (68) MM I.

50/ 027

JAN 16 $02^h00^m04^s.4$ 40°.97S 178°.76W 33 km M = 4.8
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	Pn	02	01	00		0.0	100	3.82	303	4.5
	Sn			42		0.0	100			
WEL	eSn	02	02	08		0.0	100	4.90	264	4.5
ARA	Sn	02	02	21		5.6		5.20	302	5.3
KAI	e	02	03	27				7.51	255	4.9s

AMPLITUDES: TUA 0.6 WEL 1.0 ARA 2.0
KAI 0.3

PRO: 50/27

50/ 028

JAN 16 $11^h38^m10^s.2$ 37°.68S 177°.33E 33 km M = 4.2
± 2.3 0.11 0.13 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	11	38	30		0.7	100	1.13	187	4.4
	iSn			43		−0.4	100			
ARA	ePn	11	38	32		−0.7	100	1.39	253	4.0
	i			42						
	Sn			50		0.4	100			
WEL	eP*	11	39	27		5.5		4.11	208	4.0s

AMPLITUDES: TUA 5.5 ARA 1.6 WEL 0.5

PRO: 50/28

FELT: Whakatane (27), MM III.

50/ 029

JAN 16 $18^h43^m02^s.8$ 40°.87S 174°.60E 12 km M ~ 3.6
± 0.0 0.00 0.00 R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pg	18	43	12		0.0	100	0.44	163	3.6
	Sg			18		−0.0	100			
NPZ	eSg	18	44	05		−0.0	100	1.84	347	3.3s
KAI	e	18	44	14				2.91	234	4.1s
	eSn			22		0.0	100			

AMPLITUDES: WEL 18 NPZ 0.3 KAI 0.3

PRO: 50/29

FELT: Paraparaumu Beach (65) MM II, and Karori (68), MM I.

50/ 030

JAN 17 $04^h15^m46^s.4$ 38°.87S 175°.82E 142 km M ~ 5.0
± 0.5 0.02 0.03 4 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	iP	04	16	08.5		−0.4	100	0.81	350	4.1*
	iS			26		−0.1	100			
TUA	iP!	04	16	11		0.0	100	1.04	87	5.0
	iS!			30		0.2	100			
NPZ	iP	04	16	15		0.7	98	1.37	261	
WEL	P	04	16	28		−0.2	100	2.55	198	
	S		17	00		−0.1	100			
KAI	eP	04	17	00		0.0	100	4.96	221	4.5*
	S			52		−4.8				
CHR	eP	04	17	06		2.1		5.24	206	4.3*
	S		18	00		−3.7				

AMPLITUDES: ARA 3.2 TUA 9.5 KAI 1.4
CHR 1.5

PRO: 50/30

FELT: Dannevirke (63), MM III. These readings are listed in ISS.

50/ 031

JAN 19 $19^h10^m57^s.5$ 40°.95S 174°.12E 12 km M = 4.2
± 0.2 0.01 0.01 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pg	19	11	09.5		−0.2	100	0.59	125	3.8+
	Sg			18		0.2	100			
COB	P*	19	11	16.5		−0.3	100	1.06	262	3.9
	iS*			31		0.0	100			
NPZ	Sn	19	11	52		0.0	100	1.88	359	
KAI	eP*	19	11	43		0.4	99	2.57	231	4.4
	Sn		12	09		0.3	100			
CHR	e	19	12	02.5				2.82	203	3.9s
	eSn			14		−0.5	99			

AMPLITUDES: WEL 16+ COB 2.2 KAI 0.7
CHR 0.3

PRO: 50/31

FELT: Lower Hutt (68), MM III.

50/ 032

JAN 19 $20^h27^m51^s.1$ 37°.94S 177°.11E 33 km M = 4.1
± 2.5 0.12 0.16 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	20	28	05		−1.5	100	0.87	178	3.6
	iSn			18		0.1	100			
ARA	ePn	20	28	11		0.4	100	1.17	263	4.4
NPZ	eP*	20	28	36		−1.3	100	2.64	244	
WEL	ePn	20	28	49		2.5	99	3.81	208	4.4
	e		29	25						
	Sn			36		7.6				
	e			46						
COB	eSn	20	29	54.5		6.4		4.63	226	4.5s
KAI	eSn	20	30	29		−0.1	100	6.33	222	4.8s

AMPLITUDES: TUA 1.5 ARA 5.5 WEL 1.5
COB 0.5 KAI 0.3

PRO: 50/32

FELT: Opotiki (35), MM IV.

50/ 033

JAN 21 $02^h13^m02^s.3$ 41°.03S 174°.30E 12 km M = 5.1
± 0.6 0.04 0.04 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pg	02	13	12		0.6	100	0.44	126	4.2+
	Sg			18		0.5	100			
TAK	S*-P*			14		−1.3	100	1.14	278	
KAI	Pn	02	13	45		1.4	100	2.63	234	5.4
	iSn		14	16		1.2	100			
	iS*			23		0.3	100			
CHR	ePn	02	13	44		−1.9	99	2.79	206	4.8
	iSn		14	17		−1.7	99			
	e			46						
TUA	eP*	02	14	00		3.3		3.12	46	4.7
	iSn			25		−1.6	100			
	i			50						
	i		15	00						
ARA	P*	02	13	58		1.2	100	3.13	20	5.4
	iS*		14	45.5		7.8				
	e		15	15						

AMPLITUDES: WEL 68+ KAI 7.0 CHR 2.5
TUA 1.4 ARA 2.7

PRO: 50/33

FELT: About Cook Strait, Maximum intensity, MM IV.

50/ 034

JAN 21 $22^h54^m55^s.2$ 39°.05S 176°.07E 0 km M = 5.1
± 2.9 0.05 0.12 21 S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	22	55	13		0.6	100	0.87	75	5.0+
	iSg			25		0.3	100			
HNZ	Sg-P*			11		−1.4	100	0.89	135	
ARA	iP*!	22	55	16.5		1.5	100	1.03	341	4.8
	iS*!			30		0.8	100			
WEL	Pn	22	55	37		1.3	100	2.45	204	5.1
	Sn		56	08		2.1	99			
	i			20						
KAI	e	22	56	23				4.96	224	5.3
	Sn		57	10		3.8				
CHR	Sn	22	57	10		−1.5		5.17	209	5.1

AMPLITUDES: TUA 27+ ARA 12 WEL 12
KAI 1.1 CHR 1.1

PRO: 50/34

50/ 035

JAN 22 $05^h58^m00^s.1$ 42°.43S 172°.81E 33 km M = 3.5
± 0.8 0.04 0.07 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP*	05	58	19		−0.3	100	1.04	264	3.6
	S*			32		−1.6	100			
CHR	eP*	05	58	21		0.5	100	1.11	187	3.4
	S*			37		1.4	100			
COB	e	05	58	37				1.34	358	3.3s
	eS*			45		2.6	99			
WEL	P*	05	58	31		−2.1	100	1.85	53	3.1s
	e			52						
	S*			57		−0.6	100			

AMPLITUDES: KAI 0.8 CHR 0.6 COB 0.4
WEL 0.3

PRO: 50/35

50/ 036

JAN 23 $10^h20^m24^s.8$ 41°.00S 174°.75E 12 km M ~ 3.6
± R R R R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pg	10	20	31		0.0	100	0.29	177	
	Sg			36		0.9	100			
COB	Sn	10	21	11		0.1	100	1.53	266	~3.6s
KAI	ePg	10	21	23		−1.0	99	2.92	238	3.6s

AMPLITUDES: WEL 18 COB 0.5 KAI 0.1

PRO: 50/36

FELT: Paraparaumu (65), MM II, and Paraparaumu Beach (65).

50/ 037

JAN 23 $16^h24^m42^s.3$ 40°.96S 172°.72E 0 km M = 4.1
± 0.6 0.02 0.03 3 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPg!	16	24	44		−0.9	100	0.13	174	
	iSg!			46		−0.7	100			
WEL	Pn	16	25	11.5		0.5	100	1.58	103	4.0
	eP*			12.7		1.0	100			
	ePg			14.6		0.3	100			
	e			15.7						
	Sn			32.7		0.4	100			
	S*			34.0		0.9	100			
	eSg			36.0		0.4	100			
KAI	eP*	16	25	17.5		1.3	99	1.84	212	4.1
	S*			41		0.0	100			
	Sg			45		0.5	100			
NPZ	ePn	16	25	20		1.2	99	2.16	29	
	S*			50		−0.2	100			
CHR	e	16	25	41				2.57	181	
	eSn			57.5		1.4	99			

AMPLITUDES: COB 20 WEL 3.0 KAI 0.8

PRO: 50/37

FELT: Takaka (72), MM II.

50/ 038

JAN 24 $00^h33^m10^s.1$ 41°.09S 175°.84E 33 km M = 4.4

± 1.6 0.08 0.11 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*!	00	33	26.5		0.6	100	0.83	256	4.3
	iS*!			38		0.5	100			
COB	ePn	00	33	46		0.3	100	2.35	269	4.4
	P*			52.0		0.6	100			
	e			59.0						
	iSn		34	15.0		2.5	99			
	iS*			19.8		−2.5	99			
NPZ	eP*	00	33	54		1.1	100	2.44	326	4.3
	Sn		34	15		0.4	100			
TUA	eSn	00	34	14		−2.0	100	2.49	24	3.8s
	e			49						
KAI	eP*	00	34	15		2.1	100	3.61	245	4.6
	eSn			42		−0.8	100			
	eS*			57		−2.9	99			

AMPLITUDES: WEL 24 COB 1.5 NPZ 1.6
TUA 0.3 KAI 0.7

PRO: 50/38

FELT: Paraparaumu (65).

50/ 039

JAN 25 $07^h45^m07^s.0$ 39°.03S 177°.28E 81 km M ~ 4.3

± 1.1 0.05 0.06 8 S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	07	45	19		−0.5	100	0.25	336	
	iS			29		0.1	100			
NPZ	eP	07	45	47		0.5	100	2.50	268	3.4s
	e			53						
	eS		46	16		0.1	100			
WEL	P	07	45	53		0.0	100	2.96	220	4.3
	S		46	28		0.5	100			
COB	e	07	46	12				4.05	238	3.8s
	eS			53.5		−1.0	99			
		07	47	02				5.66	230	3.9s

AMPLITUDES: TUA 4.3 NPZ 0.5 WEL 2.0
COB 0.5 KAI 0.3

PRO: 50/39

FELT: Eskdale (52), MM IV.

50/ 040

JAN 28 $05^h21^m09^s.6$ 41°.06S 174°.29E 25 km M = 3.3

± 0.4 0.03 0.03 4 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	05	21	18.5		0.0	100	0.42	123	3.0
	S*			25		0.2	100			
COB	ePn	05	21	28		−1.9	92	1.18	268	3.6
	Sn			45.5		0.4	100			
	eS*			47		0.2	100			
NPZ	P*	05	21	45		0.2	100	2.00	355	3.6s
	eSn		22	05		0.2	100			
KAI	eSn	05	22	20		0.5	100	2.61	235	4.0s

AMPLITUDES: WEL 5.0 COB 0.9 NPZ 0.5
KAI 0.3

PRO: 50/40

50/ 041

JAN 30 $09^h04^m39^s.5$ 40°.18S 176°.40E 96 km M ~ 3.9

± 3.1 0.07 0.21 31 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP	09	05	07		−1.0	99	1.66	228	3.9
	S			30		0.7	100			
NPZ	eP	09	05	15		1.0	100	2.12	301	3.7*
	i			17						
	eS			39		−0.5	100			
	i			40						
KAI	S	09	06	36.5		0.1	100	4.43	236	4.0s

AMPLITUDES: WEL 2.0 NPZ 1.2 KAI 0.5

PRO: 50/41

50/ 042

JAN 30 $14^h58^m54^s.5$ 41°.45S 174°.32E 33 km M ~ 2.9

± 0.6 0.04 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	14	59	03.5		0.4	100	0.38	64	2.9
	S*			09		−0.4	99			
COB	eS*	14	59	34		−0.1	100	1.25	286	3.4s
NPZ	eSn	14	59	58		0.1	100	2.39	355	3.1s

AMPLITUDES: WEL 5.0 COB 0.5 NPZ 0.1

PRO: 50/42

50/ 043

JAN 31 $19^h21^m36^s.0$ 39°.55S 177°.10E 33 km M = 4.6

± 2.5 0.07 0.16 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
HNZ	S*-P*			05		0.3	100	0.21	233	
NPZ	ePn	19	22	14		1.8	99	2.39	281	4.4
	Sn			38		−1.5	100			

	e		54						
	i		23 02						
WEL	P*	19	22 18		−1.6	99	2.48	225	4.6
	Sn		43		1.3	100			
COB	e	19	22 43				3.67	244	4.5
	eSn		23 11		0.8	100			
CHR	eSn	19	23 46		−1.0	100	5.20	219	4.6s
KAI	e	19	23 12.5				5.23	234	5.0
	eSn		48		0.4	100			

AMPLITUDES: NPZ 2.0 WEL 5.0 COB 0.7
CHR 0.5 KAI 0.8

PRO: 50/43

FELT: Waipukurau (60).

50/ 044

FEB 01 $03^h35^m03^s.4$ 37°.23S 177°.09E 223 km M ~ 5.0
± 5.3 0.29 0.37 24 S.E. of RES. 2.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	eS	03	36	06		−0.2	100	1.42	233	4.0*
NPZ	eS	03	36	28		−6.4		3.00	231	3.3s
	e			42						
WEL	P	03	36	12		0.0	100	4.43	203	5.0
	S		37	04.5		−0.6	100			
	i			07						
COB	S	03	37	22.5		1.8	99	5.13	220	3.9s
KAI	eS	03	37	58		−2.1	99	6.86	218	4.0s
CHR	eS	03	38	08		0.9	100	7.15	207	3.8s

AMPLITUDES: ARA 1.6 NPZ 0.3 WEL 3.4
COB 0.5 KAI 0.3 CHR 0.3

PRO: 50/44

50/ 045

FEB 01 $10^h03^m17^s.6$ 41°.52S 174°.90E 12 km M ~ 3.6
± 2.1 0.05 0.14 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg!	10	03	22.2		−1.0	99	0.25	337	
	iSg!			27.5		0.6	100			
COB	ePn	10	03	47		0.9	100	1.69	284	~3.6s
	Sn		04	07		−0.5	100			
KAI	eSn	10	04	34		0.0	100	2.79	248	3.6s

AMPLITUDES: WEL 33 COB 0.5 KAI 0.1

PRO: 50/45

FELT: Wellington (68), MM II.

50/ 046

FEB 01 $10^h17^m35^s.3$ 41°.17S 175°.23E 12 km M = 3.6
± R R R R S.E. of RES. 0.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg!	10	17	43.0		−0.0	100	0.37	251	3.4
	iSg!			48.2		0.0	100			
COB	e	10	18	27				1.89	272	3.8
	Sn			30		0.0	100			
KAI	eS*	10	19	08		−3.7		3.16	243	3.7s

AMPLITUDES: WEL 15 COB 0.6 KAI 0.1

PRO: 50/46

FELT: Wellington (68).

50/ 047

FEB 01 $12^h54^m33^s.6$ 41°.49S 175°.15E 12 km M = 3.7
± 3.7 0.07 0.22 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg!	12	54	41.8		0.7	100	0.36	305	3.5
	iSg!			47.1		1.0	100			
COB	ePg	12	55	10		−1.4	100	1.87	282	3.8
	eSn			26		−1.8	99			
NPZ	eSg	12	56	00		0.1	100	2.56	341	3.2s
KAI	eSn	12	55	56		1.5	100	2.98	248	3.6s

AMPLITUDES: WEL 19 COB 0.6 NPZ 0.1
KAI 0.1

PRO: 50/47

FELT: Wellington (68).

50/ 048

FEB 01 $19^h13^m43^s.9$ 40°.31S 174°.11E 12 km M = 3.6
± 0.1 0.00 0.01 R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	e	19	14	15				1.10	153	3.5
	Sg			21		0.0	100			
NPZ	iSn	19	14	23		−0.0	100	1.24	359	3.7
COB	ePg	19	14	10.5		0.1	100	1.30	233	3.4s
	Sg			28		−0.1	100			

AMPLITUDES: WEL 2.0 NPZ 1.6 COB 0.5

PRO: 50/48

50/ 049

FEB 02 $02^h22^m09^s.7$ 38°.97S 177°.67E 33 km M ~ 4.2
± 4.6 0.17 0.25 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eSn	02	23	23		0.0	100	2.80	267	3.2s
WEL	Pn	02	22	57		−0.1	100	3.21	223	4.2
	Sn		23	34		1.2	100			
COB	eSn	02	24	01		1.1	100	4.34	239	3.8s
KAI	eSn	02	24	36		−2.3	99	5.93	231	4.7s

AMPLITUDES: NPZ 0.1 WEL 1.3 COB 0.1
KAI 0.3

PRO: 50/49

50/ 050

FEB 02 $03^h38^m55^s.3$ 41°.20S 174°.14E 12 km M ~ 2.6
± 0.6 0.08 0.02 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	03	39	04		−0.7	99	0.49	101	2.6
	eS*			12		0.6	100			
COB	eS*	03	39	29		0.2	100	1.06	276	3.0s
KAI	eSn	03	40	03		−0.0	100	2.43	236	3.5s

AMPLITUDES: WEL 1.5 COB 0.3 KAI 0.1

PRO: 50/50

50/ 051

FEB 03 $16^h06^m16^s.1$ 40°.81S 174°.43E 7 km M = 5.5
± 0.4 0.02 0.03 3 S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg!	16	06	27.6		0.5	100	0.55	152	4.5+
	iS*			34.0		−0.8	100			
TAK	iS*-P*			17		0.4	100	1.23	267	
COB	i	16	06	42				1.31	257	5.5
	iSg		07	00		−0.3	100			
NPZ	eP*	16	06	49		1.2	99	1.75	351	4.9+
	eSg		07	15		−0.3	100			
KAI	ePn	16	06	57		−4.0		2.84	232	5.5+
	i		07	21						
	Sn			34		−0.8	100			
ARA	eP*	16	07	07		0.0	100	2.89	19	5.7
	iSn			40		4.1				
CHR	ePn	16	07	05		1.3	99	3.03	206	5.4
	Sn			39		−0.5	100			
	iS*			50		0.6	100			
AUC	ePg	16	07	35		−0.8	100	3.95	4	
	i			45						
	iSg		08	31		1.9				

AMPLITUDES: WEL 80+ COB 54 NPZ 11+
KAI 9.0+ ARA 6.0 CHR 8.0

PRO: 50/52

Included in ISS additional readings. For isoseismal map see Hayes,R.C., 1952. Felt Southern part of the North Island and northern part of the South Island. Maximum intensity, MM IV.

50/ 052

FEB 04 $04^h24^m54^s.8$ 40°.75S 174°.47E 12 km M ~ 2.9
± 0.6 0.03 0.04 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	04	25	08		1.2	99	0.58	158	2.9
	iSg			14		−0.8	100			
COB	ePg	04	25	22		−0.4	100	1.36	255	3.2s
	eSg			41		0.2	100			
NPZ	eSn	04	25	45		−0.2	100	1.71	350	3.5s
	e			48						

AMPLITUDES: WEL 2.0 COB 0.3 NPZ 0.5

PRO: 50/53

50/ 053

FEB 04 $12^h07^m41^s.5$ 39°.35S 176°.50E 20 km M ~ 3.5
± 3.5 0.07 0.25 8 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	12	08	15		−0.1	100	1.90	278	3.4s
	iSn			35		−0.3	100			
WEL	eP*	12	08	24		1.4	99	2.34	214	~3.5s
	eSn			44.5		−1.3	100			
	eS*			53		−0.3	100			
COB	P*	12	08	39		−1.0	100	3.36	238	4.0s

	eSn		09	12		1.6	99			

AMPLITUDES: NPZ 0.3 WEL 0.5 COB 0.3

PRO: 50/54

50/ 054

FEB 04 $12^h52^m49^s.2$ 41°.37S 174°.39E 12 km M ~ 3.6
± 0.4 0.07 0.03 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	12	52	54.5		−1.0	99	0.30	74	
	iSg		53	00.5		0.8	100			
COB	eP*	12	53	12		−0.3	100	1.29	282	3.6
	ePg			16		0.8	100			
	Sn			29		−0.4	100			
KAI	eSn	12	53	59		0.1	100	2.51	242	4.0s

AMPLITUDES: WEL 14 COB 0.8 KAI 0.3

PRO: 50/55

50/ 055

FEB 04 $18^h52^m40^s.2$ 41°.15S 174°.29E 11 km M = 3.6
± 0.1 0.01 0.01 1 S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	18	52	48		−0.3	99	0.39	110	3.6
	iSg			54		0.3	99			
COB	Pg	18	53	04		−0.0	100	1.17	273	3.6
	Sg			20		0.1	100			
NPZ	eSn	18	53	40		0.0	100	2.09	355	3.7s
KAI	eSn	18	53	51		0.0	100	2.55	237	4.0s

AMPLITUDES: WEL 24 COB 1.0 NPZ 0.5
KAI 0.3

PRO: 50/56

FELT: Karori (68), MM II.

50/ 056

FEB 05 $01^h23^m42^s.1$ 49°.08S 164°.18E 33 km M = 6.6
± 2.7 0.23 0.20 R S.E. of RES. 2.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	i	01	25	34				8.05	50	7.1
	iSn		27	03		1.4	100			
KAI	e	01	25	48				8.27	40	7.1
	i		26	49						
	iSn		27	05		−1.8	100			
COB	ePn	01	26	00		−2.3	100	10.02	40	6.6
	Sn		27	47.5		−1.2	100			
WEL	ePn	01	26	11		−1.8	100	10.79	48	6.3
	iSn		28	07		−0.3	100			
NPZ	Pn	01	26	35		1.9	100	12.27	39	6.0
	eSn		28	47		4.2	98			
ARA	e	01	26	38				13.77	41	
	eSn		29	19		0.1	100			
AUC	iPn	01	27	05		2.2	100	14.44	36	
	iSn		29	33		−2.2	100			
RIV	iP	01	27	52		0.0	100	18.05	323	
	eSn		31	08		6.1				

AMPLITUDES: CHR 65 KAI 36 COB 12

WEL 15 NPZ 3.0

PRO: 50/57

FELT: About Foveaux Strait. Minor damage reported from Halfmoon Bay (158), but maximum intensity probably not above MM VI. For isoseismal map, see Hayes, R.C., 1952. U.S.C.G.S. gives 50S 164E, M = 6.8. ISS adopts N.Z. provisional epicentre. Phase readings reported from 90 stations.

50/ 057

FEB 06 $09^h22^m06^s.7$ 41°.39S 174°.30E 12 km M = 3.8
± 0.5 0.03 0.03 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg!	09	22	14		−0.5	100	0.37	74	3.9
	iSg!			20		0.3	100			
COB	Pg	09	22	31		−0.4	100	1.21	284	3.7
	Sg			48		0.1	100			
NPZ	e	09	22	58				2.33	356	
	eSn		23	10		−2.0	99			
	eS*			20		1.8	99			
CHR	eP*	09	22	51		1.0	100	2.47	209	
	eSn		23	15		−0.4	100			

AMPLITUDES: WEL 44 COB 1.0

PRO: 50/59

FELT: Wellington (68), MM II.

50/ 058

FEB 06 $10^h40^m41^s.8$ 42°.74S 172°.90E 5 km M = 4.9
± 0.8 0.04 0.14 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	ePg	10	40	59		0.7	100	0.82	194	5.1+
	Sg		41	09		−0.3	100			
COB	Pg	10	41	16		0.7	100	1.66	356	4.8
	Sg			37		−0.6	100			
WEL	P*	10	41	18		0.0	100	2.01	44	4.7
	Sn			41		0.0	100			
NPZ	Pg	10	41	55		−3.1	99	3.78	14	4.8
	eSn		42	27		3.6	98			
TUA	ePg	10	42	22		−2.5		5.08	41	4.7
	iSn			58		3.2				
	e		43	41						
ARA	eP*	10	42	10		−0.8	100	5.11	25	5.3
	eSg		43	29		−4.9				

AMPLITUDES: CHR 67+ COB 7.0 WEL 10
NPZ 2.2 TUA 0.6 ARA 0.8

PRO: 50/60

FELT: North Canterbury and Kaikoura (90). Maximum intensity MM V at Cheviot (96). For isoseismal map see Hayes, R.C., 1952.

50/ 059

FEB 06 $22^h53^m27^s.0$ 46°.25S 161°.00E 33 km M = 5.8
± 7.8 0.65 0.71 R S.E. of RES. 4.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	22	55	23		−1.2	100	8.33	67	5.9
	eSn		56	51		−2.1	100			
CHR	ePn	22	55	30		0.9	100	8.68	76	6.0
			57	06		4.3	100			

COB	e	22	57	06			9.94	63	5.4
	eSn			34	2.2	100			
WEL	e	22	57	53			11.11	68	
	eSn			56	−4.1	100			
	e		59	21					
NPZ	eSn	22	58	26	4.8	99	12.00	58	5.1s
TUA	eSn	22	59	05	−4.9	99	14.02	64	
	e	23	00	38					

AMPLITUDES: KAI 2.2 CHR 4.3 COB 0.8
NPZ 0.4

PRO: 50/61

Stations poorly distributed in azimuth, leaving the longitude almost uncontrolled. The provisional solution at 48 S 164 E rests strongly upon the known distribution of seismicity. A position near 46.2 S 165 E is likely.

50/ 060

FEB 06 $23^h53^m14^s.8$ 46°.23S 166°.00E 33 km M = 5.2
± 4.6 0.31 0.26 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	23	54	32		0.5	100	5.36	48	5.5
	e			37						
	Sn		55	29		−0.5	100			
CHR	e	23	55	00				5.43	63	5.5
	Sn			37		5.9				
	iS*		56	00		1.1	100			
COB	e	23	55	38				7.08	46	5.0
	Sn		56	11		−0.1	100			
	e			14						
WEL	e	23	56	29				8.04	55	4.9
NPZ	eSn	23	57	06		1.7	100	9.31	43	4.8s
TUA	Sn	23	57	44		−2.7	99	11.07	52	4.6s

AMPLITUDES: KAI 2.2 CHR 3.5 COB 0.6
WEL 1.1 NPZ 0.3 TUA 0.1

PRO: 50/62

Listed in ISS additional readings.

50/ 061

FEB 07 $13^h40^m01^s.8$ 41°.05S 174°.44E 12 km M = 3.6
± 0.5 0.03 0.03 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	13	40	08		−1.0	100	0.34	133	3.5
	iSg			14		0.1	100			
COB	ePg	13	40	31		3.1		1.29	268	3.6
	S*			41		−1.0	100			
NPZ	eSn	13	41	00		0.7	100	2.01	352	3.7
KAI	eSn	13	41	16		0.0	100	2.70	236	3.6s
CHR	eS*	13	41	29		1.1	99	2.82	208	3.4s

AMPLITUDES: WEL 22 COB 0.8 NPZ 0.6
KAI 0.1 CHR 0.1

PRO: 50/63

50/ 062

FEB 10 $17^h20^m22^s.9$ 40°.92S 174°.42E 12 km M = 3.4
± 0.3 0.02 0.01 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	17	20	32.5		0.1	100	0.45	145	3.3
	iSg			38.5		−0.1	100			
COB	ePg	17	20	49		−0.1	100	1.29	262	3.5
	iSg		21	06.5		−0.0	100			
KAI	eSn	17	21	39		0.1	100	2.77	234	3.6s

AMPLITUDES: WEL 8.5 COB 0.6 KAI 0.1

PRO: 50/64

50/ 063

FEB 11 $02^h45^m42^s.8$ 41°.23S 174°.27E 12 km M = 4.1
± 0.5 0.04 0.03 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg!	02	45	51		0.2	100	0.38	99	4.0
	iSg!			57		0.9	100			
COB	Pg	02	46	06		−0.6	100	1.17	276	3.7
	iSg			23		0.6	100			
NPZ	ePn	02	46	18		0.1	100	2.17	356	4.1+
	Sn			44		−0.2	100			
KAI	eP*	02	46	26		−0.7	100	2.50	238	4.1s
	iPg			37		3.6	93			
	Sn			52		−0.3	100			
CHR	Sn	02	46	52.5		−2.3	99	2.60	207	4.2
TUA	e	02	47	00				3.28	43	4.4
	Sn			10		−0.9	100			

AMPLITUDES: WEL 55 COB 1.3 NPZ 1.2+
KAI 0.4 CHR 0.8 TUA 0.7

PRO: 50/65

50/ 064

FEB 12 $14^h23^m38^s.4$ 42°.31S 174°.97E 5 km M ~ 3.3
± 1.4 0.04 0.06 4 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	14	24	00		0.6	100	1.03	352	3.3
	Sg			13		−0.3	100			
	iSn			14		−0.2	100			
COB	eS*	14	24	43		−0.2	100	2.07	305	
	eSg			48		−0.2	100			
CHR	eSn	14	24	39		−0.9	99	2.11	234	
	e		25	15						
	e			16						
KAI	eSn	14	24	54		1.2	99	2.65	264	

AMPLITUDES: WEL 1.7

PRO: 50/66

50/ 065

FEB 12 $20^h06^m07^s.9$ 41°.58S 172°.04E 12 km M = 4.1
± 0.5 0.02 0.05 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	Pn	20	06	25		1.8	97	0.72	47	3.8
	eSn			34		−0.5	100			
KAI	iPn	20	06	28		0.2	100	1.05	206	4.6+
	iSn			41.5		−1.0	100			

CHR	Pg	20	06	48		−0.3	100	2.00	168	4.2
	iSn		07	05		−0.2	100			
	Sg			16		0.7	100			
WEL	P*	20	06	45		0.6	100	2.08	83	4.1
	S*		07	11		−0.7	100			
NPZ	eSg	20	07	47		−0.4	100	2.95	32	4.2

AMPLITUDES: COB 3.8 KAI 7.0+ CHR 1.2
WEL 2.3 NPZ 0.9

PRO: 50/67

50/ 066

FEB 13 $08^h14^m59^s.8$ 38°.92S 175°.79E 138 km M = 4.6
± 1.0 0.03 0.04 8 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	iP!	08	15	21.5		−0.8	99	0.85	352	4.0*
TUA	iS!	08	15	43		0.2	100	1.06	85	4.7
NPZ	iP!	08	15	28		0.9	99	1.35	263	3.8+
	iS!			48		0.0	100			
WEL	P	08	15	41		0.2	100	2.49	198	4.5
	S		16	12		−0.1	100			
	i			15						
COB	S	08	16	28		−0.4	100	3.19	226	3.9*
KAI	S	08	17	02		−7.1		4.90	221	4.1*
CHR	S	08	17	11		−4.9		5.19	206	4.2*

AMPLITUDES: ARA 2.4 TUA 5.0 NPZ 1.8+
WEL 3.3 COB 0.9 KAI 0.6
CHR 1.0

PRO: 50/68

50/ 067

FEB 14 $01^h57^m57^s.6$ 39°.84S 172°.96E 12 km M ~ 3.5
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	S*	01	58	34		0.0	100	1.16	49	3.5
COB	S*	01	58	37		0.0	100	1.26	188	2.7s
WEL	Sn	01	58	55		0.0	100	2.00	137	3.4s

AMPLITUDES: NPZ 1.1 COB 0.1 WEL 0.5

PRO: 50/69

50/ 068

FEB 14 $15^h17^m26^s.5$ 40°.92S 174°.48E 12 km M = 3.6
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*!	15	17	35		0.0	100	0.42	150	3.6
	iS*!			41		0.0	100			
COB	Sn	15	18	08		0.0	100	1.33	262	3.6

AMPLITUDES: WEL 17 COB 0.7

PRO: 50/70

FELT: Wellington (68), MM II.

50/ 069

FEB 14 $15^h52^m06^s.6$ 39°.96S 173°.26E 12 km M = 3.5
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iS*	15	52	41		0.0	100	1.10	35	3.6
COB	S*	15	52	44		0.0	100	1.20	199	2.6s
WEL	Sn	15	52	58		0.0	100	1.75	140	3.4

AMPLITUDES: NPZ 1.6 COB 0.1 WEL 0.6

PRO: 50/71

50/ 070

FEB 15 $09^h16^m00^s.4$ 41°.15S 172°.62E 12 km M = 4.0
± 0.9 0.04 0.07 3 S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPg!	09	16	03.5		0.0	100	0.11	57	
	iSg			05		−0.5	100			
WEL	iP*	09	16	30		0.6	100	1.63	96	3.9
	eSn			49		0.1	100			
	iS*			51		0.1	100			
KAI	Sg-Pg			23		0.8	100	1.65	213	4.1
	ePg		16	38		4.3				
	eSg		17	01		5.0				
	e			12						
NPZ	ePn	09	16	40		1.9	98	2.36	29	4.1
	eSn		17	05		−1.4	99			
CHR	eSn	09	17	06		−1.1	100	2.38	180	3.7s

AMPLITUDES: COB 19 WEL 2.4 KAI 0.9
NPZ 1.1 CHR 0.3

PRO: 50/73

50/ 071

FEB 16 $19^h22^m50^s.0$ 38°.66S 176°.01E 33 km M ~ 4.1
± 2.3 0.14 0.10 R S.E. of RES. 2.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*!	19	23	08		1.0	100	0.91	100	4.1
	iS*!			18		−1.6	100			
NPZ	eSn	19	23	33		−0.5	100	1.57	254	3.1s
WEL	eP*	19	23	43		4.1	99	2.79	200	4.0s
	eSn		24	00		−3.1	99			
	eS*			17		1.5	100			
COB	eS*	19	24	35		−1.5	100	3.50	225	3.9s

AMPLITUDES: TUA 2.7 NPZ 0.1 WEL 0.5
COB 0.1

PRO: 50/75

50/ 072

FEB 17 $01^h15^m05^s.1$ 37°.98S 176°.61E 12 km M = 4.6
± 2.6 0.14 0.10 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPg!	01	15	23		−0.9	100	0.93	153	4.7
	iS*!			35		0.6	100			
NPZ	ePn	01	15	40		−1.5	100	2.27	241	4.2
	eSn		16	08		−0.9	100			
	e			33						
	e			58						
WEL	iPn	01	16	00		0.4	100	3.59	203	4.8

	e			32.5						
	Sn			39		−1.7	100			
COB	eP*	01	16	22		2.2	99	4.31	223	4.7s
	ePg			34		1.8	100			
KAI	e?	01	15	41				6.03	220	

AMPLITUDES: TUA 11 NPZ 0.8 WEL 2.2
COB 0.5

PRO: 50/76

50/ 073

FEB 17 $17^h10^m22^s.3$ 37°.54S 178°.30E 289 km M = 4.6
± 0.3 0.04 0.04 1 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	17	11	05		0.0	100	1.56	215	4.6
	S			38		−0.1	100			
WEL	P	17	11	35.5		−0.1	100	4.63	215	4.6
	S		12	33		0.1	100			
COB	e	17	12	49				5.58	229	3.7s
	S			53		0.1	100			

AMPLITUDES: TUA 1.1 WEL 1.2 COB 0.3

PRO: 50/77

Included in ISS additional readings.

50/ 074

FEB 17 $19^h21^m04^s.1$ 40°.20S 174°.26E 1 km M = 4.5
± 0.6 0.02 0.03 4 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP*	19	21	27		1.2	99	1.14	353	4.3+
	iS*			40		−1.4	99			
WEL	iP*	19	21	26		0.0	100	1.15	161	4.7
	iS*!			40.5		−1.3	99			
COB	P*	19	21	31		−0.3	100	1.47	232	4.2
	iS*			51.5		0.3	100			
TUA	eP*	19	21	50		−1.2	100	2.63	59	4.4
	Sn		22	20		1.0	100			
	eSg			33		0.4	100			
KAI	ePn	19	21	55		0.7	100	3.17	222	4.5
	Sn		22	31		−0.8	100			
	e			46						
CHR	ePg	19	22	16		0.2	100	3.55	200	4.1s
	eSn			42		0.9	100			

AMPLITUDES: NPZ 7.0+ WEL 31 COB 2.3
TUA 0.8 KAI 0.7 CHR 0.3

PRO: 50/78

50/ 075

FEB 17 $20^h23^m08^s.6$ 40°.91S 175°.74E 7 km M = 4.2
± 1.6 0.05 0.08 8 S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*!	20	23	25		0.6	100	0.83	243	4.2
	iS*!			36		0.2	100			
NPZ	e	20	23	51				2.24	325	4.4
	ePg			55		1.1	100			
	iSn		24	15		2.0	99			
	iS*			17		−1.2	100			

COB	ePn	20 23 44	−2.0	99	2.29	265		4.1
	iSn	24 12	−2.0	99				
TUA	eP*	20 23 50	−0.6	100	2.36	28		4.1
	eSn	24 16	0.1	100				
	e	50						
KAI	e	20 24 38			3.63	242		4.3s
	eSn	48	1.8	100				

AMPLITUDES: WEL 17 NPZ 2.3 COB 0.8
TUA 0.6 KAI 0.3

PRO: 50/79

FELT: Masterton (66), MM III.

50/ 076

FEB 18 $21^h54^m16^s.8$ 41°.98S 172°.34E 0 km M = 4.1
± 0.6 0.04 0.05 5 S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	Pg	21	54	34		−0.5	100	0.88	231	4.2
	iSg			46		−0.4	100			
COB	Pg	21	54	35.5		−0.3	100	0.94	19	4.0
	iS*			47.5		−0.8	100			
WEL	Pn	21	54	49.5		−1.0	100	1.95	70	3.8
	P*			55		2.6	98			
	Pg			58		1.8	99			
	Sn		55	15		−0.6	100			
	S*			18		−0.6	100			
	Sg			21		−1.5	100			
NPZ	ePn	21	55	09		1.4	100	3.19	25	4.3
	e			32						
	eSn			46		0.4	100			

AMPLITUDES: KAI 4.0 COB 3.6 WEL 1.4
NPZ 0.8

PRO: 50/80

50/ 077

FEB 19 $03^h35^m12^s.0$ 41°.04S 174°.36E 10 km M = 3.6
± 1.8 0.16 0.08 6 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	03	35	20		−0.3	100	0.40	129	3.2
	iSg			26		0.2	100			
COB	Pg	03	35	36		−0.8	100	1.22	267	3.4
	Sg			54		0.6	100			
NPZ	e	03	36	31				1.98	354	3.6s
KAI	ePn	03	35	55		1.0	99	2.65	235	4.3
	eSn		36	25		−0.6	100			

AMPLITUDES: WEL 9.0 COB 0.6 NPZ 0.5
KAI 0.6

PRO: 50/81

50/ 078

FEB 19 $23^h18^m39^s.4$ 40°.10S 176°.35E 33 km M = 3.7
± 1.5 0.08 0.12 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	S*	23	19	25		0.7	100	1.43	26	3.6
WEL	P*	23	19	09		−0.5	100	1.69	225	3.7
	iSn			25		−0.9	100			

NPZ	Sn	23 19 33	−1.4	100	2.04	300		3.6s
COB	eS*	23 20 11	2.2	99	2.92	249		3.9s

AMPLITUDES: TUA 0.6 WEL 1.3 NPZ 0.4
COB 0.3

PRO: 50/82

50/ 079

FEB 20 $10^h44^m48^s.0$ 37°.67S 177°.38E 289 km M = 5.5
± 2.7 0.22 0.23 16 S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	10	45	28		−0.1	100	1.14	189	5.5
	iS			58		−1.4	100			
AUC	e	10	45	58				2.22	291	
NPZ	eP	10	45	44		1.2	100	2.94	241	3.6*
	S			46	27	1.5	100			
WEL	P	10	45	57		1.4	100	4.13	208	5.4
	S			46	51	2.5	99			
COB	eP	10	46	04		−1.1	100	4.96	225	4.2*
	S			47	02	−3.5	98			
KAI	eP	10	46	25		−0.6	100	6.66	221	4.7*
	S			47	50	7.6				
CHR	P	10	46	32		3.7		6.88	210	4.7*
	iS			47	53	5.9				

AMPLITUDES: TUA 9.0 NPZ 0.6 WEL 10
COB 1.0 KAI 1.7 CHR 2.3

PRO: 50/83

FELT: Napier (52), MM III. Included in ISS additional readings.

50/ 080

FEB 20 $12^h29^m38^s.7$ 43°.22S 169°.89E 18 km M = 4.3
± 2.3 0.06 0.14 7 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iPn	12	30	02		0.3	100	1.31	59	4.5
	iSn			17		−1.8	99			
CHR	Pn	12	30	12		0.7	100	2.02	100	4.3
	eSn			34		−1.7	99			
	e			37						
	eS*			42		1.0	100			
COB	eP*	12	30	30		−1.1	100	3.01	46	4.2
	iSn		31	01		1.7	99			
	eS*			10		−0.4	100			
WEL	eSn	12	31	27		1.2	100	4.10	64	3.8s

AMPLITUDES: KAI 4.1 CHR 1.5 COB 0.6
WEL 0.3

PRO: 50/84

50/ 081

FEB 20 $22^h17^m33^s.7$ 41°.20S 172°.84E 8 km M ~ 3.4
± 0.1 0.00 0.01 0 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPg	22	17	37		0.1	100	0.14	326	
	iSg!			39		−0.1	100			
WEL	ePg	22	18	03		−0.2	100	1.46	94	3.4
	eSg			23		0.1	100			

KAI	eSg	22	18	31		0.0	100	1.70	218	3.6s
NPZ	eSn	22	18	40		0.0	100	2.33	24	3.6s

AMPLITUDES: COB 90+ WEL 0.9 KAI 0.3
NPZ 0.3

PRO: 50/85

50/ 082

FEB 21 $01^h57^m06^s.6$ 32°.43S 178°.77W 33 km M ~ 5.3
± 4.7 0.40 0.62 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	01	58	48		0.0	100	7.17	206	4.9s
	eSn	02	00	06		1.1	100			
WEL	e	01	59	36				10.23	208	5.3
	iSn	02	01	17		−1.4	99			
COB	eSn	02	01	37		0.3	100	10.99	216	5.0s
KAI	e	01	59	54				12.73	215	5.5s
	e	02	00	06						

AMPLITUDES: TUA 0.4 WEL 1.5 COB 0.3
KAI 0.4

PRO: 50/86

Poor solution. Little control in azimuth.

50/ 083

FEB 22 $04^h27^m35^s.4$ 39°.63S 174°.94E 125 km M = 4.6
± 0.3 0.01 0.02 3 S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP	04	27	57		0.2	100	0.87	310	4.1+
	iS		28	13		−0.2	100			
ARA	eS	04	28	28		0.2	100	1.65	20	
WEL	iP!	04	28	06		0.6	98	1.66	184	4.6
	iS!			28		−0.2	100			
TUA	eP	04	28	12		3.7		1.91	65	4.6
	e			25						
	iS			33		−0.2	100			
COB	eP	04	28	12		−0.4	99	2.23	228	3.9*
	i			13						
	iS			40.5		0.2	100			
KAI	eP	04	28	35		−0.2	100	3.93	221	4.2*
	e		29	12						
	eS			21		0.0	100			

AMPLITUDES: NPZ 5.0+ WEL 10 TUA 2.0
COB 1.1 KAI 0.8

PRO: 50/87

50/ 084

FEB 25 $09^h32^m57^s.0$ 39°.01S 178°.48E 11 km M = 4.8
± 1.7 0.07 0.13 13 S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	09	33	15		−1.2	100	1.05	281	4.9
	iS*			30		−0.4	100			
ARA	ePn	09	33	36		0.4	100	2.41	292	4.4
NPZ	iPn	09	33	50		0.6	100	3.43	268	4.9
	iSn		34	30		1.0	100			
WEL	Pn	09	33	51		−1.3	100	3.64	230	4.6
	iP*		34	02		1.7	99			

	e			27					
	iSn			35		1.0	100		
COB	eSn	09	35	03		−0.6	100	4.87	243	4.6
CHR	Sn	09	35	37		−1.2	100	6.31	222	5.0
KAI	e	09	34	56				6.41	235	5.4
	Sn		35	37		−3.6				

AMPLITUDES: TUA 20 ARA 1.3 NPZ 3.1
WEL 2.7 COB 0.6 CHR 0.8
KAI 1.2

PRO: 50/89

FELT: Motu (36), Tolaga Bay (37), and Wairoa (53), MM III. Included in ISS additional readings.

50/ 085

FEB 25 $23^h46^m22^s.4$ 41°.56S 172°.80E 115 km M ~ 3.4
± ND ND ND ND S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iS	23	46	53		0.0	100	0.48	354	3.3*
KAI	iS	23	47	09		0.0	100	1.41	226	~3.5s
WEL	iP	23	46	50		0.0	100	1.51	80	~3.2s
	iS		47	11		0.0	100			

AMPLITUDES: COB 0.8 KAI 0.5 WEL 0.5

PRO: 50/90

50/ 086

FEB 28 $18^h58^m43^s.6$ 38°.88S 176°.70E 30 km M = 5.7
± 0.4 0.02 0.03 3 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*!	18	58	52		0.2	100	0.35	79	
HNZ	Sn-Pn			10		−0.9	99	0.80	170	
ARA	iPn	18	59	02		−1.2	98	1.16	314	5.2+
	iSn			18.5		0.6	100			
NPZ	iP*!	18	59	20		−0.0	100	2.06	264	5.5
	iS*!			47		−0.2	100			
AUC	iPn	18	59	18		−3.9		2.53	322	
	iSn			44		−6.8				
WEL	iPn	18	59	26		0.0	100	2.83	211	5.7+
	iSn			58		0.1	100			
COB	Sn-Pn			42		0.3	100	3.76	233	5.6
	e		59	41						
	iPn			43		4.2				
	i	19	00	20.5						
	iSn			25		4.5				
CHR	ePn	19	00	04		0.5	100	5.57	212	5.9
	Sn		01	02		−1.9				

AMPLITUDES: ARA 33+ NPZ 38 WEL 55+
COB 10 CHR 8.0

PRO: 50/91

FELT: Bay of Plenty to northern Wairarapa. Maximum reported intensity MM V in northern Hawke's Bay. ISS adopts N.Z. provisional epicentre. Recorded at 17 stations. Also recorded at BUN and TAK. For isoseismal map, see Hayes, R.C., 1952.

50/ 087

FEB 28 $19^h09^m36^s.9$ 39°.06S 176°.90E 12 km M ~ 3.6
± 0.7 0.07 0.09 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	19	09	42		−1.5	99	0.32	39	3.2+
	iS*			49		0.9	100			
NPZ	eSn	19	10	39		0.0	100	2.20	269	~3.7s
	e			46						
WEL	ePn	19	10	21		1.0	100	2.75	216	~3.4s
	eSn			52		−0.5	100			

AMPLITUDES: TUA 5.0+ NPZ 0.5 WEL 0.3

PRO: 50/92

50/ 088

MAR 01 $21^h16^m23^s.6$ 38°.61S 174°.05E 0 km M = 4.0
± 1.3 0.06 0.09 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	ePg	21	16	32		−0.8	100	0.45	177	3.8
	iSg!			39		0.1	100			
ARA	S*	21	17	08		0.1	100	1.37	67	4.2
WEL	ePn	21	17	09		1.0	100	2.73	168	4.0
	ePg			16.5		−2.2	98			
	Sn			42.5		1.4	99			
KAI	e	21	18	16				4.39	206	4.5s
	eSn			21		−0.1	100			
	eS*			39		0.3	100			

AMPLITUDES: NPZ 14 ARA 2.0 WEL 1.0
KAI 0.3

PRO: 50/93

50/ 089

MAR 03 $18^h25^m01^s.3$ 41°.72S 173°.14E 12 km M = 3.6
± 1.1 0.05 0.09 R S.E. of RES. 2.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	Pg	18	25	16		0.3	100	0.70	334	3.1
	Sg			26		0.7	100			
WEL	iSn	18	25	41		−0.9	100	1.30	71	3.0s
KAI	e	18	25	41				1.51	238	4.0
	eSn			45		−2.1	99			
CHR	Sn	18	25	57		2.0	99	1.84	192	3.7s

AMPLITUDES: COB 0.8 WEL 0.5 KAI 0.8
CHR 0.5

PRO: 50/94

50/ 090

MAR 03 $23^h02^m59^s.2$ 39°.88S 177°.24E 5 km M = 4.8
± 1.1 0.03 0.07 6 S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*!	23	03	18		−1.4	100	1.07	356	4.8
	iS*!			32		−2.0	99			
ARA	ePn	23	03	35		−0.5	100	2.19	325	4.7
	i			54						

	iSn	04 04	1.4 100					
	S*	09	1.5 100					
WEL	ePn	23 03 38	0.4 100	2.35	232			4.7
	iP*	44	2.9					
	iSn	04 06	−0.3 100					
NPZ	ePn	23 03 43	2.2 99	2.58	287			4.7
	iP*	46	0.9 100					
	iPg	49	−2.4					
	iSn	04 13	1.0 100					
	iS*	17	−2.1 99					
COB	eP*	23 04 04	0.9 100	3.64	249			4.6
	iPg	13	0.2 100					
	iS*	49	−1.9 99					
CHR	ePg	23 04 41	0.3 100	5.02	222			5.0
	eSn	05 10	−0.6 100					
	eSg	06 14	25.7					
KAI	P*	23 04 35	6.4	5.13	237			5.0
	iSn	05 11	−2.2					
	iS*	38	2.5					

AMPLITUDES: TUA 15 ARA 3.0 WEL 8.0
NPZ 3.5 COB 0.9 CHR 1.3
KAI 0.8

PRO: 50/95

FELT: Napier (52), MM III.

50/ 091

MAR 05 $10^h32^m09^s.8$ 35°.28S 175°.40W 12 km M = 5.0
±12.6 1.10 1.39 R S.E. of RES. 5.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	10	33	47		−2.7	100	6.92	237	5.0
	Sn		35	04		−1.4	100			
WEL	eP*	10	35	02		4.2	100	9.78	229	4.9
	iSn		36	10		−4.1	100			
COB	e	10	36	33				10.99	235	5.0s
CHR	eSn	10	37	14		−2.8	100	12.38	225	5.4s
KAI	eSn	10	37	28		7.1	99	12.55	231	5.5s

AMPLITUDES: TUA 0.6 WEL 0.7 COB 0.3
CHR 0.5 KAI 0.4

PRO: 50/96

Poor solution. Insufficient coverage in azimuth.

50/ 092

MAR 05 $14^h14^m16^s.6$ 40°.79S 174°.61E 12 km M = 3.5
± 3.3 0.16 0.13 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	14	14	27		0.5	100	0.51	167	3.2
	iS*!			33		−0.6	100			
COB	iSn	14	15	00		−0.8	100	1.45	257	3.7
KAI	eSn	14	15	38		0.9	100	2.96	233	4.1s

AMPLITUDES: WEL 5.5 COB 0.8 KAI 0.3

PRO: 50/97

50/ 093

MAR 05 $15^h14^m04^s.8$ 38°.77S 176°.95E 67 km M ~ 4.0
± 4.7 0.13 0.25 37 S.E. of RES. 2.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	15	14	16		0.7	100	0.16	103	
	iS			23		−0.2	100			
ARA	e	15	14	39				1.24	304	3.7*
	iS			41		−2.2	100			
NPZ	P	15	14	42		1.3	100	2.26	262	3.6*
	e		15	06						
	iS			10		2.7	99			
WEL	e	15	15	01.5				3.01	213	4.0
	iS			26		−0.6	100			
	i			35						
COB	e	15	15	54				3.98	233	3.6s
KAI	eS	15	16	30		−2.0	100	5.64	227	4.1s
	e		17	03						
CHR	e	15	16	29				5.77	213	3.2s

AMPLITUDES: TUA 30 ARA 1.4 NPZ 0.8 WEL 0.8 COB 0.4 KAI 0.5 CHR 0.1

PRO: 50/98

50/ 094

MAR 05 $15^h33^m27^s.3$ 42°.67S 174°.28E 12 km M = 4.1
± 0.5 0.02 0.04 2 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg	15	33	56		−0.3	100	1.43	15	4.1
	i			57.5						
	iSn		34	11		−0.1	100			
CHR	Sn	15	34	12		−0.2	100	1.48	234	3.9
COB	P*	15	34	02		0.1	100	1.96	323	3.7s
	iSn			23.5		−0.2	100			
KAI	iP*	15	34	05		0.3	100	2.12	273	4.3
	iSn			27		−0.6	99			

AMPLITUDES: WEL 5.0 CHR 1.1 COB 0.4 KAI 0.9

PRO: 50/99

50/ 095

MAR 10 $15^h40^m20^s.2$ 40°.87S 173°.03E 12 km M = 2.9
± 0.4 0.02 0.03 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP*	15	40	23		−3.7		0.31	226	2.6
WEL	ePn	15	40	44		−0.5	99	1.38	108	3.1
	Sn		41	03		0.3	100			
NPZ	eSn	15	41	17		0.1	100	1.97	24	3.6s
KAI	eSn	15	41	19		0.1	100	2.05	216	3.8s

AMPLITUDES: COB 1.3 WEL 0.6 NPZ 0.5 KAI 0.3

PRO: 50/100

Artificial interference present at COB.

50/ 096

MAR 12 $16^h44^m29^s.2$ 39°.05S 176°.64E 33 km M = 4.9
± 0.5 0.03 0.04 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*!	16	44	40		0.8	100	0.47	59	4.5
	Sn			46		−0.3	100			
ARA	iP*	16	44	52		0.1	100	1.24	321	4.6
	iS*		45	07		−1.6	99			
NPZ	iP*!	16	45	05		0.4	100	2.00	269	4.9
	iS*!			32		1.1	100			
WEL	eP*	16	45	15		−0.7	100	2.65	212	4.9
	iS*			49		−1.6	99			
COB	eP*	16	45	34		1.8	99	3.63	235	4.9
	iS*		46	17		−2.4				
KAI	eP*	16	46	01		0.7		5.27	227	5.2
	e			57						
	iS*		47	21		12.2				
CHR	e	16	46	27				5.41	213	5.1
	e			52						
	Sn			58		12.9				
	S*		47	17		4.3				

AMPLITUDES: TUA 45 ARA 8.0 NPZ 10 WEL 9.5 COB 2.2 KAI 1.3 CHR 1.4

PRO: 50/101

FELT: Bay of Plenty and northern Hawke's Bay, maximum intensity MM V at Wairoa (53). Listed in ISS additional readings.

50/ 097

MAR 13 $09^h38^m28^s.2$ 40°.55S 174°.04E 33 km M = 5.7
± 0.4 0.03 0.05 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn!	09	38	45		0.8	100	0.92	143	4.9+
	iSn			58		1.9	99			
TAK	Sn-Pn			12		−0.6	100	0.99	252	
COB	iPn!	09	38	48		0.9	100	1.13	241	5.4
	iSn!		39	04		2.8	98			
NPZ	iPn!	09	38	52		−0.0	100	1.48	1	5.1
	iSn!		39	10		0.1	100			
ARA	Pn	09	39	10		0.4	100	2.77	27	6.1
	iSn			40		−0.7	100			
KAI	ePn	09	39	08		−1.8	100	2.79	224	5.8
	e			33						
TUA	ePn	09	39	13		0.8	100	2.96	55	5.4
	iP*			19		−0.9	100			
	iSn			45		−0.4	100			
CHR	ePn	09	39	14		−0.8	100	3.16	199	6.2
	iSn!			47		−3.0	98			

AMPLITUDES: WEL 70+ COB 62 NPZ 25 ARA 16 KAI 18 TUA 9.0 CHR 57

PRO: 50/102

FELT: Northern Taranaki and Hawke's Bay to Banks Peninsula and northern Westland. No confirmed intensities above MM IV. Listed in ISS additional readings.

50/ 098

MAR 13 $16^h10^m30^s.6$ 38°.75S 176°.75E 12 km M ~ 2.8
± R R R R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	16	10	37		−0.2	100	0.31	101	2.8
	iS*			42		0.2	100			

AMPLITUDES: TUA 1.8

PRO: 50/103

FELT: Te Whaiti (42), MM IV.

50/ 099

MAR 13 $18^h10^m48^s.6$ 38°.29S 178°.00E 33 km M = 5.3
± 0.8 0.07 0.10 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	18	11	04		−0.6	100	0.85	232	5.2+
	S*			17		0.6	100			
NPZ	Pn	18	11	31		−4.4		3.17	255	5.0
WEL	ePn	18	11	46		0.7	99	3.90	219	5.2
COB	ePn	18	11	59		−0.5	100	4.93	234	5.1
KAI	ePn	18	12	22		0.1	100	6.57	228	5.7
	Sn		13	32		−0.5	100			
CHR	eP*	18	12	39		−3.8		6.63	216	5.4
RIV	iP	18	15	43		0.3	100	22.12	273	

AMPLITUDES: TUA 67+ NPZ 5.0 WEL 9.0
COB 1.7 KAI 2.2 CHR 1.8

PRO: 50/104

FELT: Bay of Plenty to northern Hawke's Bay. Maximum intensity MM VI at Whakatane (27). Possible tsunami in Bay of Plenty reported. For isoseismal map, see Hayes, R.C., 1952. Listed in ISS, with data from 3 additional stations.

50/ 100

MAR 13 $19^h11^m59^s.8$ 38°.05S 177°.03E 12 km M = 4.1
± 1.9 0.07 0.08 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	19	12	12		−2.0	99	0.76	173	4.0
	Sg			27		1.2	100			
NPZ	eP*	19	12	44		−0.1	100	2.53	245	3.6s
	e		13	02						
	iSn			11		1.1	100			
WEL	P*	19	13	05		1.4	100	3.67	208	4.1
	i			27						
	iSg		14	03		−0.5	100			
COB	eS*	19	14	15		−1.2	100	4.49	226	3.8s

AMPLITUDES: TUA 5.0 NPZ 0.3 WEL 0.8
COB 0.1

PRO: 50/105

FELT: Opotiki (35), MM IV, and Te Teko (34), MM III.

50/ 101

MAR 13 $22^h21^m14^s.2$ 38°.22S 175°.43E 12 km M = 4.7
± 2.6 0.17 0.10 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	22	21	39		−0.8	100	1.48	114	4.7
	ePg			44		−0.0	100			
	iSn		22	00		1.1	100			
WEL	Pn	22	22	01		−1.1	100	3.10	189	4.7
	eSn			37		−1.1	100			
		22	22	51		2.4	99	3.54	215	4.3s

KAI	Sn	22	23	30		−0.5	100	5.28	214	4.6s

AMPLITUDES: TUA 2.6 WEL 1.2 COB 0.5
KAI 0.3

Provisional solution discarded by Hayes.

50/ 102

MAR 14 $00^h43^m25^s.2$ 37°.75S 177°.25E 12 km M ~ 3.9
± R R R R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	00	43	45		0.6	100	1.06	184	3.9
	iS*			58		−0.6	100			

AMPLITUDES: TUA 2.2

PRO: 50/106

FELT: Whakatane (27), MM V.

50/ 103

MAR 14 $11^h26^m16^s.7$ 37°.75S 176°.52E 12 km M = 4.3
± 3.4 0.16 0.08 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*!	11	26	38		0.2	100	1.17	155	4.1
	iS*			53		−0.3	100			
WEL	eSn	11	27	58		1.0	99	3.78	200	4.4
COB	eP*	11	27	27		−6.6		4.44	220	4.7s
	ePg			57		10.6				
	eSn		28	12		−0.7	100			

AMPLITUDES: TUA 1.5 WEL 0.6 COB 0.3

PRO: 50/107

FELT: Whakatane (27), MM V.

50/ 104

MAR 15 $19^h43^m29^s.1$ 40°.99S 174°.40E 12 km M = 3.9
± 0.2 0.01 0.01 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*!	19	43	37		−0.2	100	0.40	137	3.9
	iS*!			43		0.1	100			
COB	iP*	19	43	52		0.2	100	1.26	265	3.9
	iS*		44	09		0.3	100			
NPZ	e	19	44	13				1.93	352	3.9
	iSn			25		−0.0	100			
KAI	ePg	19	44	24		0.0	100	2.71	235	4.0s
	eSn			43		−0.7	98			

AMPLITUDES: WEL 43 COB 1.8 NPZ 1.0
KAI 0.3

PRO: 50/108

FELT: Paraparaumu (65) MM III, and Karori (68), MM II.

50/ 105

MAR 16 $01^h40^m56^s.5$ 40°.29S 174°.10E 12 km M = 3.5
± 0.5 0.02 0.04 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	01	41	16		−0.7	100	1.12	153	3.4
	iS*			32		0.4	100			
NPZ	iS*	01	41	35		0.2	100	1.22	359	3.6
COB	iSn	01	41	38		0.7	100	1.30	232	3.5
KAI	ePg	01	41	58		0.6	100	3.01	221	4.1s

	eSn		42	17		−1.3	99		

AMPLITUDES: WEL 1.5 NPZ 1.3 COB 0.6
KAI 0.3

PRO: 50/109

50/ 106

MAR 16 $02^h20^m53^s.4$ 38°.27S 176°.39E 189 km M = 4.6
± 0.5 0.04 0.05 3 S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P	02	21	21		0.1	100	0.80	132	4.6
	e			29						
	iS			42		−0.1	100			
WEL	eP	02	21	46		−0.2	100	3.26	202	4.6
	S		22	27		0.1	100			
COB	e	02	22	30				3.98	224	3.7s
	iS			43		0.0	100			
KAI	eS	02	23	18		−4.6		5.70	220	4.1s
CHR	eS	02	23	31		2.0		5.98	207	3.8s

AMPLITUDES: TUA 3.1 WEL 2.7 COB 0.4
KAI 0.5 CHR 0.4

PRO: 50/110

50/ 107

MAR 17 $10^h08^m31^s.0$ 38°.38S 176°.84E 12 km M = 4.0
± 1.5 0.09 0.07 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	10	08	40		−0.6	100	0.49	151	3.9
	iS*			48		0.6	100			
NPZ	iPn	10	09	08		0.5	100	2.27	252	4.0
	iSn			35		0.1	100			
WEL	eP*	10	09	28		−0.7	100	3.31	208	4.1
	i			51						
	iS*		10	07		−4.9				

AMPLITUDES: TUA 9.0 NPZ 0.8 WEL 0.9

PRO: 50/111

50/ 108

MAR 18 $02^h52^m25^s.1$ 41°.08S 178°.02E 33 km M = 4.3
± 2.1 0.08 0.17 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	02	53	02		1.0	100	2.37	343	3.8s
	iSn			27		−0.9	100			
WEL	ePn	02	53	02		−0.2	100	2.46	264	3.9
	iSn			31		0.8	100			
CHR	iSn	02	54	23		−0.7	100	4.69	237	4.7
KAI	eP*	02	54	11		17.0		5.15	252	4.6s

AMPLITUDES: TUA 0.3 WEL 1.2 CHR 0.8
KAI 0.3

PRO: 50/113

50/ 109

MAR 18 $05^h38^m17^s.9$ 41°.52S 173°.90E 12 km M = 5.4
± 0.2 0.02 0.02 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPg!	05	38	32		−0.0	100	0.69	70	4.6+
	iSg!			42		0.5	100			
COB	S*-P*			14		0.8	99	0.98	296	
TAK	S*-P*			11		−3.2		1.06	309	
KAI	iPn	05	38	53		0.8	99	2.12	241	5.3
	Sn		39	18		−0.0	100			
CHR	Pn	05	38	54		0.3	100	2.22	205	5.5+
	iSn		39	20		−0.6	100			
NPZ	iPn	05	38	57		0.1	100	2.46	3	5.4+
	i		39	24						
	iSn			26		−0.3	100			
TUA	iSn	05	39	50		−5.6		3.68	44	5.2
ARA	ePn	05	39	13		−0.8	99	3.70	22	5.8
	eSn			45		−11.0				

AMPLITUDES: WEL 62+ KAI 9.0 CHR 23+
NPZ 18+ TUA 3.2 ARA 4.5

PRO: 50/114

FELT: About Cook Strait and in northern parts of the South Island. Maximum intensity MM IV, in Marlborough Sounds (78). Listed in ISS additional readings.

50/ 110

MAR 19 $06^h48^m48^s.0$ 41°.50S 173°.75E 12 km M ~ 2.8
± R R R R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	e	06	49	03				0.79	75	2.8
	iS*			12		−1.5				

AMPLITUDES: WEL 0.8

PRO: 50/115

SPURIOUS EPICENTRE. The provisional epicentre was allotted because of a felt report from Nelson that probably refers to event 50/109 25 hours earlier. The movements recorded at WEL are seismic, but there are too few data to establish an epicentre.

50/ 111

MAR 19 $10^h01^m19^s.9$ 40°.83S 173°.00E 12 km M = 4.2
± 0.9 0.06 0.10 R S.E. of RES. 2.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	S*-P*			03		−1.8		0.33	218	
WEL	iPn	10	01	43		−1.7	100	1.41	110	4.0
	iSn		02	02.5		−0.7	100			
NPZ	Pn	10	01	52		0.0	100	1.94	25	4.1
	iSn		02	17		1.0	100			
KAI	Pn	10	01	52		−1.8	100	2.08	215	4.6
	Sn		02	17.5		−1.7	100			
CHR	Pn	10	02	05		2.5	99	2.72	186	
	Sn			37		2.4	99			

AMPLITUDES: WEL 4.3 NPZ 1.7 KAI 1.7

PRO: 50/116

FELT: West Nelson district (72), maximum intensity MM IV. COB record poorly focussed. Solution suggests that there is an error in absolute time at CHR or KAI. The latter is more probable.

50/ 112

MAR 20 $15^h28^m46^s.9$ 38°.00S 179°.00E 12 km M ~ 4.4
± R R R R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	i(Sn)	15	30	32		−0.5	100	4.00	253	4.4
	i			48						
WEL	eSn?	15	30	48		0.5	100	4.63	224	4.0s
	e		31	22						

AMPLITUDES: NPZ 0.8 WEL 0.4

PRO: 50/117

FELT: Tolaga Bay (37), MM III. The recorded movements do not afford definite instrumental confirmation of the felt report, particularly in the absence of data from TUA. The available readings are too few to yield an epicentre.

50/ 113

MAR 21 $14^h49^m47^s.7$ 38°.75S 178°.50E 12 km M ~ 3.8
± R R R R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P*	14	50	07		0.1	100	1.05	266	3.8
	eS*			22		0.9	100			
WEL	eSn	14	51	28		−1.0	100	3.82	227	3.7s

AMPLITUDES: TUA 1.7 WEL 0.3

PRO: 50/118

FELT: Tolaga Bay (37), MM IV.

50/ 114

MAR 23 $18^h15^m00^s.0$ 37°.75S 177°.00E 12 km M ~ 3.5
± R R R R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	S*-P*			15		0.8	100	1.06	174	3.5

AMPLITUDES: TUA 0.7

PRO: 50/119

FELT: Whakatane (27), MM IV.

50/ 115

MAR 24 $04^h43^m00^s.7$ 42°.08S 173°.52E 33 km M = 3.5
± 0.6 0.04 0.05 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	ePn	04	43	19		−1.0	100	1.15	329	3.5
	Sn			34		−0.3	100			
WEL	Pn	04	43	22		1.0	100	1.22	50	3.4
	Sn			36		−0.1	100			
CHR	eSn	04	43	44		−0.9	100	1.59	204	3.5s
KAI	eSn	04	43	47		1.3	99	1.63	253	3.8s

AMPLITUDES: COB 0.8 WEL 1.3 CHR 0.4
KAI 0.5

50/ 116

MAR 26 $00^h51^m41^s.9$ 39°.67S 174°.61E 193 km M ~ 5.2
± 2.2 0.07 0.08 14 S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iS	00	52	30		−0.6	100	0.73	325	3.2s
WEL	eS	00	52	43		0.1	100	1.62	176	5.2
	i			47.5						
COB	S	00	52	51		0.9	100	2.02	225	3.3s
TUA	eS	00	52	53		0.4	100	2.15	67	4.2s
KAI	eS	00	53	27		0.6	100	3.74	219	3.8s
CHR	S	00	53	34		−1.2	99	4.14	200	3.9*

AMPLITUDES: NPZ 0.5 WEL 25 COB 0.3
TUA 0.5 KAI 0.4 CHR 0.6

PRO: 50/121

50/ 117

MAR 26 $16^h13^m15^s.0$ 37°.75S 177°.25E 12 km M ~ 3.2
± R R R R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	S*	16	13	49		0.6		1.06	184	~3.2s

AMPLITUDES: TUA 0.4

PRO: 50/122

FELT: Whakatane (27), MM V.

50/ 118

MAR 26 $17^h58^m27^s.7$ 41°.05S 172°.49E 5 km M ~ 3.5
± 2.5 0.16 0.09 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	Pg	17	58	31		−0.6	100	0.19	101	
	Sg			34		−0.2	100			
KAI	Sn	17	59	19		0.0	100	1.68	208	~3.6s
WEL	Sn	17	59	21		0.7	99	1.74	98	~3.3s

AMPLITUDES: COB 4.5 KAI 0.3 WEL 0.5

PRO: 50/123

50/ 119

MAR 26 $20^h29^m46^s.6$ 37°.75S 177°.00E 12 km M ~ 3.8
± R R R R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*!	20	30	06		0.1	100	1.06	174	3.8
	iS*!			20		−0.1	100			

AMPLITUDES: TUA 1.5

PRO: 50/124

FELT: Whakatane (27), MM V.

50/ 120

MAR 27 $01^h24^m45^s.2$ 37°.75S 177°.25E 12 km M ~ 4.1
± R R R R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*!	01	25	05		0.6	100	1.06	184	4.1
	iS*!			18		−0.6	100			

AMPLITUDES: TUA 3.0

PRO: 50/125

FELT: Whakatane (27), MM IV, and Opotiki (35), MM III.

50/ 121

MAR 27 $04^h08^m01^s.8$ 40°.39S 173°.50E 153 km M ~ 4.1
± 0.3 0.01 0.01 2 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP	04	08	26		−0.1	100	0.90	220	3.5*
	S			45		0.0	100			
WEL	iP!	04	08	30		0.0	100	1.31	133	4.1
	iS!			51.5		−0.1	100			
NPZ	iS	04	08	53		−0.1	100	1.39	19	3.4*
KAI	e	04	08	16				2.65	216	3.1s

AMPLITUDES: COB 0.8 WEL 3.2 NPZ 0.8
KAI 0.1

PRO: 50/126

KAI movement apparently an unrelated event.

50/ 122

MAR 28 $00^h37^m36^s.4$ 39°.36S 177°.51E 12 km M = 5.2
± 1.4 0.03 0.11 R S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	00	37	48		0.0	100	0.61	333	4.8+
	iS*			55		−1.4	100			
ARA	Pn	00	38	08		−0.3	100	1.94	311	5.2
	S*			38		1.8	99			
NPZ	Pn	00	38	18		−0.5	100	2.68	275	5.2
	e			46						
	iSn			50		−0.2	100			
WEL	Pn	00	38	20.5		−0.2	100	2.84	227	4.9
	iP*			29		2.9	98			
	iPg			32.5		−1.4	100			
	S*		39	02		−1.4	100			
	e			25.5						
CHR	ePg	00	39	23		−5.6		5.55	220	5.2
	e		41	12						
KAI	eP*	00	39	14		0.9	100	5.60	234	5.4
	eSg		40	40		−4.9				

AMPLITUDES: TUA 50+ ARA 11 NPZ 11
WEL 8.0 CHR 1.8 KAI 1.8

PRO: 50/127

FELT: Napier (52) and Wairoa (53), MM IV. Listed in ISS additional readings.

50/ 123

MAR 28 $02^h00^m47^s.7$ 39°.15S 177°.86E 33 km M ~ 3.6
± 4.5 0.08 0.30 R S.E. of RES. 2.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	02	01	00		−0.0	100	0.65	302	3.6
	e			03						
	iSn			09		−0.2	100			
NPZ	eSn	02	02	05		0.6	100	2.94	270	3.8s
WEL	iSn	02	02	12		1.9	99	3.19	227	3.7s
		02	03	14		−2.3	99	5.94	233	4.2s

JA 3.0 NPZ 0.3 WEL 0.4
AI 0.1

PRO: 50/128

50/ 124

MAR 28 $02^h37^m53^s.5$ 38°.94S 177°.83E 5 km M = 4.3
± 1.9 0.05 0.12 R S.E. of RES. 2.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPg	02	38	03		−1.6	100	0.55	284	4.0
	iSg			10		−1.9	100			
	i			26						
ARA	Pn	02	38	28		1.8	100	1.92	296	4.4
	e			41						
	S*			56		2.3	100			
NPZ	iPn	02	38	38		−1.9	100	2.92	266	4.4
	iSn			39	15	0.2	100			
AUC	eP*	02	38	50		0.3	100	3.19	310	
	iSg			39	37	−3.7				
	i			40	00					
WEL	ePn	02	38	46		0.7	100	3.32	224	4.3
	Sn			39	26	1.9	100			
	iS*			34		−1.6	100			
CHR	e	02	40	12				6.04	219	4.7s
	e			41	27					
	e			42	43					
KAI	eP*	02	39	36		−2.6	99	6.05	232	4.9s
	eS*			41	00	2.5	99			

AMPLITUDES: TUA 9.0 ARA 2.1 NPZ 1.4
WEL 1.5 CHR 0.4 KAI 0.4

PRO: 50/129

FELT: Wairoa (53), MM III.

50/ 125

MAR 28 $03^h51^m14^s.1$ 38°.40S 177°.31E 12 km M ~ 3.9
± 3.1 0.12 0.17 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	03	51	22		−0.5	100	0.42	197	3.6+
	iS*			30		1.5	100			
NPZ	iSn	03	52	27		0.7	100	2.62	254	3.9s
WEL	ePn	03	52	08		0.9	100	3.48	213	3.9
	ePg			24		−0.5	100			
	iSn			45		−2.1	99			
KAI	e?	03	54	10				6.10	226	4.3s

AMPLITUDES: TUA 7.0+ NPZ 0.5 WEL 0.6
KAI 0.1

PRO: 50/130

50/ 126

MAR 28 $08^h41^m05^s.4$ 39°.25S 177°.81E 33 km M = 5.2
± 1.9 0.05 0.15 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn!	08	41	18		−0.2	100	0.68	311	4.8
	Sn			26		−1.7	100			
ARA	iPn	08	41	39		1.8	100	2.07	304	5.1
	iSn			42	01	−0.0	100			
NPZ	iPn	08	41	49		0.3	100	2.92	273	5.4
	i			42	09					

	iSn		22		0.6	100			
WEL	iPn	08	41	49	−2.1	99	3.09	228	5.1
	iP*		42	00	0.7	100			
	iSn			23	−2.6	99			
AUC	iP*	08	42	00	−4.3		3.38	314	
	iSn			35	2.3				
CHR	ePn	08	42	31	3.1		5.79	221	5.4
	e		43	45					
KAI	ePn	08	42	30	1.2	100	5.85	234	5.6
	eSn		43	34	2.0	99			

AMPLITUDES: TUA 36 ARA 9.0 NPZ 14
WEL 11 CHR 2.7 KAI 2.4

PRO: 50/131

FELT: Taupo (41) to central Hawke's Bay (52,53). Maximum intensity MM V. For isoseismal map, see Hayes, R.C., 1952. Listed in ISS. N.Z. provisional epicentre adopted.

50/ 127

MAR 28 $11^h04^m19^s.9$ ± 0.8 39°.13S 0.05 176°.96E 0.07 12 km R M = 3.7 S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	11	04	26		−1.2	100	0.36	25	3.2
	iS*			33		0.7	100			
ARA	ePg	11	04	54		4.2		1.48	315	3.9
	eSg		05	17		7.3				
	e		13	00						
NPZ	ePn	11	04	57		0.9	100	2.24	271	3.8
	eSg		05	36		0.4	100			
WEL	P*	11	05	07		−0.6	100	2.73	217	3.8
	iSg			53		1.2	100			
KAI	e	11	06	05				5.40	229	4.2s
	eSn			37		−2.1	99			
	eS*		07	02		−1.5	100			
CHR	eSn	11	06	43		2.2	99	5.47	215	4.0s

AMPLITUDES: TUA 4.0 ARA 1.0 NPZ 0.6
WEL 0.7 KAI 0.1 CHR 0.1

PRO: 50/132

FELT: Napier (52), MM III.

50/ 128

MAR 29 $19^h20^m46^s.9$ ± 1.5 40°.02S 0.04 174°.42E 0.09 120 km 16 M ~ 4.3 S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP!	19	21	10		1.0	100	0.99	344	4.8*
	iS!			25		−0.9	100			
WEL	iP	19	21	15		2.8	99	1.29	168	4.3
	iS			32		0.4	100			
COB	iP	19	21	18		1.3	100	1.66	230	4.2*
	iS			39		−0.2	100			
ARA	iP	19	21	23		0.0	100	2.17	26	4.1*
	iS			50		0.0	100			
TUA	iS	19	21	55		−1.4	100	2.44	61	
KAI	iS-P			39		−0.7	100	3.37	221	4.1*
CHR	e	19	22	03				3.75	200	4.5*
	i			23						
	iS!			25		−3.0	98			

AMPLITUDES: NPZ 25 WEL 7.0 COB 3.4

ARA 1.9 KAI 0.9 CHR 2.9

PRO: 50/134

50/ 129

MAR 30 $15^h34^m04^s.4$ ± 2.5 47°.62S 0.31 166°.77E 0.60 12 km R M ~ 4.7 S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eSn-Pn		1	08		1.2	100	6.06	35	
COB	ePn	15	35	55		−1.3	100	7.80	35	4.7s
	eSn		37	19		−2.1	99			
WEL	ePn	15	36	06		−0.2	100	8.53	45	4.7
	eSn		37	39		0.4	100			
NPZ	ePn	15	36	30		2.8	99	10.06	35	4.9s
	eSn		38	16		0.5	100			

AMPLITUDES: COB 0.3 WEL 0.6 NPZ 0.4

PRO: 50/135

50/ 130

APR 01 $08^h24^m22^s.8$ ± 2.5 46°.75S 0.25 164°.24E 0.21 33 km R M = 5.2 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	08	25	55		−1.8	99	6.63	53	5.3
	Sn		27	14		5.9				
CHR	P*	08	26	20		1.1	100	6.74	65	5.0
	Sn		27	06		−4.8				
	S*			46		−0.4	100			
COB	ePn	08	26	21		0.8	100	8.34	50	4.9s
	eSn		27	45		−4.2				
WEL	e	08	28	09				9.34	58	4.5s
NPZ	iSn	08	28	42		0.3	100	10.53	47	5.0s

AMPLITUDES: KAI 0.9 CHR 0.8 COB 0.4
WEL 0.3 NPZ 0.4

PRO: 50/136

Listed in ISS additional readings.

50/ 131

APR 01 $14^h40^m14^s.4$ ± 2.6 41°.13S 0.17 174°.42E 0.05 12 km R M ~ 2.3 S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	14	40	20		−0.8	100	0.31	120	2.3
	S*			26		0.7	100			
KAI	Sn	14	41	28		0.7	100	2.65	237	4.0s
CHR	Sn	14	41	29		−0.6	100	2.74	208	4.0s

AMPLITUDES: WEL 1.6 KAI 0.3 CHR 0.4

PRO: 50/137

50/ 132

APR 01 $17^h52^m21^s.7$ ± 0.7 41°.37S 0.06 173°.43E 0.04 12 km R M ~ 3.0 S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	17	52	40		−0.1	100	1.02	86	3.0
	S*			54		0.3	100			
KAI	Sn	17	53	17		0.4	100	1.90	232	3.2s

CHR	Pn	17	52	57	−0.7	99	2.24 195	3.7s
	Sn		53	25	0.2	100		

AMPLITUDES: WEL 0.8 KAI 0.1 CHR 0.3

PRO: 50/138

50/ 133

APR 01 $19^h52^m30^s.7$ 40°.53S 175°.91E 102 km M ~ 3.7
± 1.8 0.03 0.14 12 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP	19	52	54		0.8	100	1.14	229	3.7
	iS		53	10		−0.2	100			
	i			11						
NPZ	iP	19	53	04		−0.3	100	2.03	315	3.5*
	i			17						
	iS			29		−0.2	100			
CHR	e	19	54	04				3.87	218	3.5s
	eS			13		−1.0	99			
KAI	S	19	54	16		0.7	100	3.92	238	3.8s

AMPLITUDES: WEL 2.5 NPZ 0.8 CHR 0.3
KAI 0.4

PRO: 50/139

FELT: Waipawa (60), Dannevirke (63), MM III.

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APR 02 $01^h38^m45^s.1$ 38°.34S 176°.48E 95 km M ~ 4.0
± 1.0 0.05 0.07 10 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	iP	01	39	02		−0.4	100	0.71	292	3.6*
	iS			16		0.5	100			
NPZ	iP	01	39	18		−0.2	100	2.02	248	3.5*
	iS			42		−0.6	100			
WEL	eP	01	39	35		0.1	100	3.22	204	4.0
	eS		40	12		−0.4	100			
KAI	e	01	40	58				5.70	221	3.9s
	eS		41	14		0.7	99			

AMPLITUDES: ARA 1.3 NPZ 0.7 WEL 0.7
KAI 0.3

PRO: 50/141

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APR 02 $12^h34^m22^s.7$ 42°.12S 174°.10E 33 km M ~ 3.8
± 0.5 0.03 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	12	34	39		−0.6	100	0.97	31	3.8
	iSn			52		−0.1	100			
COB	iPn	12	34	47		0.9	99	1.46	315	3.4s
	iSn		35	04		0.4	100			
CHR	e	12	35	01				1.78	217	3.5s
	eSn			12		0.6	100			
KAI	e	12	35	04				2.03	258	3.8s
	eSn			17		−0.6	100			
	eS*			25		−0.6	100			

AMPLITUDES: WEL 5.0 COB 0.4 CHR 0.3
KAI 0.3

PRO: 50/142

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APR 04 $18^h04^m02^s.0$ 40°.44S 174°.20E 92 km M ~ 3.9
± 0.8 0.02 0.04 10 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP	18	04	22		0.4	100	0.94	153	3.9
	iS			36		−0.3	100			
COB	P	18	04	26		0.3	100	1.29	239	3.6*
	S			44		0.4	100			
NPZ	eP	18	04	27		0.2	100	1.38	356	3.9*
	iS			45		−0.4	100			
KAI	eS	18	05	22		−0.7	99	2.96	224	3.1s
CHR	e	18	05	24				3.30	200	3.0s

AMPLITUDES: WEL 6.0 COB 1.0 NPZ 2.6
KAI 0.1 CHR 0.1

PRO: 50/143

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APR 05 $10^h13^m02^s.1$ 31°.83S 177°.22W 333 km M = 6.0
± 3.4 0.39 0.80 49 S.E. of RES. 3.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
AUC	e	10	15	32				8.30	231	
	i			48						
TUA	eP	10	14	58		−2.8	100	8.34	212	6.0
	i			16	00					
ARA	e	10	15	25				8.55	221	4.3*
	eS			16	40	1.1	100			
WEL	eP	10	15	39		0.9	100	11.42	212	6.0
	e			17	36					
	iS			40		−1.6	100			
COB	iS	10	18	00		−0.1	100	12.27	218	4.0s
CHR	e	10	16	28				14.17	212	4.4*
	S			18	43	1.8	100			
API	eP	10	17	02		4.4	99	18.62	17	
	eS			20	05	−2.8	100			

AMPLITUDES: TUA 2.7 ARA 0.7 WEL 6.0
COB 0.3 CHR 0.7

No provisional epicentre given. Further readings are listed in ISS, where it is classified as an "undetermined shock".

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APR 06 $03^h32^m42^s.4$ 40°.86S 175°.68E 12 km M ~ 3.3
± 2.7 0.05 0.19 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	03	32	58		0.6	100	0.81	238	3.3
	iS*		33	09		0.6	100			
NPZ	eSn	03	33	44		−0.1	100	2.18	325	3.0s
COB	Sn	03	33	46		0.3	100	2.24	263	3.2s
KAI	eSn	03	34	17		−1.4	99	3.61	241	3.8s

AMPLITUDES: WEL 2.6 NPZ 0.1 COB 0.1
KAI 0.1

PRO: 50/144

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APR 06 $10^h01^m31^s.6$ 41°.86S 172°.38E 5 km M = 4.2

± 0.4 0.03 0.05 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	P*	10	01	46		−1.3	99	0.82	19	4.1
	iS*!			58		−0.6	100			
KAI	iP*	10	01	50		−0.2	100	0.98	227	4.4
	iS*		02	04		0.3	100			
CHR	ePn	10	02	02		1.0	100	1.68	174	4.1
	iSn			22		−0.8	100			
	i			25						
WEL	Pn	10	02	03		−0.6	100	1.88	73	3.9
	Sn			28		0.4	100			
NPZ	eSn	10	02	58		1.7	99	3.08	25	4.4

AMPLITUDES: COB 6.0 KAI 5.0 CHR 1.5
WEL 1.7 NPZ 1.1

PRO: 50/145

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APR 07 $04^h59^m05^s.0$ 40°.28S 173°.61E 175 km M = 4.3

± 2.2 0.06 0.09 15 S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eP	04	59	33		0.3	100	1.04	219	3.6*
	iS			53		−1.1	99			
NPZ	iS!	04	59	58		0.7	100	1.26	17	3.7*
WEL	iP!	04	59	36		0.8	100	1.34	139	4.1
	S			59		0.4	100			
TUA	eS	05	00	33		−1.0	99	3.10	63	4.5

AMPLITUDES: COB 0.8 NPZ 1.5 WEL 3.1
TUA 0.6

PRO: 50/146

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APR 07 $13^h59^m10^s.3$ 39°.83S 176°.94E 97 km M ~ 4.8

± 1.2 0.04 0.10 20 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	S-P			12		−3.8		1.03	9	5.5+
	iP!		59	20		−11.1				
	i!			25						
	iS			32		−14.9				
ARA	P	13	59	43		−0.5	100	2.02	330	4.2*
	i			54						
	S	14	00	08		−0.1	100			
WEL	P	13	59	45		−0.9	100	2.20	228	4.8
	iS	14	00	13		0.7	100			
NPZ	eiP	13	59	49		1.1	99	2.34	288	4.4*
	iS	14	00	16		0.1	100			
COB	eP	14	00	04		0.9	100	3.45	247	3.9*
	S			42		−1.0	99			
CHR	iS	14	01	16		−3.1		4.90	220	4.5*

AMPLITUDES: TUA 45+ ARA 2.3 WEL 10
NPZ 5.0 COB 0.9 CHR 2.5

PRO: 50/147

FELT: Opotiki (35) and Hawke's Bay, maximum intensity MM V. For isoseismal map, see Hayes, R.C., 1952. Listed in ISS, which adopts N.Z. provisional epicentre.

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APR 11 $03^h18^m13^s.6$ 42°.99S 173°.35E 12 km M = 3.4

± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iS*	03	18	38		0.0	100	0.76	224	3.2
KAI	iSn	03	18	59		0.0	100	1.50	287	3.6s
WEL	Sn	03	19	11		0.0	100	2.00	32	3.5

AMPLITUDES: CHR 0.9 KAI 0.4 WEL 0.7

PRO: 50/150

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APR 12 $14^h47^m03^s.6$ 38°.51S 176°.29E 181 km M = 5.0

± 1.7 0.06 0.12 9 S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	iP	14	47	29		−0.4	100	0.67	311	4.2*
	iS			48		−1.3	100			
TUA	iS-P!			20		−0.2	100	0.73	114	5.1
NPZ	iP	14	47	40		0.9	100	1.82	252	3.9*
	iS!		48	08		1.5	99			
WEL	iP	14	47	54		1.1	100	3.01	202	4.8
	iS		48	32		1.2	100			
COB	e	14	48	19				3.75	226	4.2*
	iS			47		−0.6	100			
KAI	e	14	48	58				5.46	221	4.4*
	e		49	23						
	iS			26		−1.1	100			
CHR	e	14	49	29				5.72	208	4.7*
	eS			32		−1.2	100			
	i			33						

AMPLITUDES: ARA 3.6 TUA 12 NPZ 2.0
WEL 5.0 COB 1.3 KAI 1.0
CHR 3.3

PRO: 50/151

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APR 14 $07^h43^m28^s.9$ 42°.10S 172°.81E 12 km M = 4.4

± 0.2 0.01 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	P*	07	43	47		−0.4	100	1.02	357	4.1
	iS*		44	01		0.1	100			
KAI	iP*	07	43	50		0.8	100	1.13	247	4.6
	iS*		44	04		−0.2	100			
CHR	ePn	07	43	55		1.0	99	1.44	185	4.4
	iSn!		44	12		−0.8	99			
WEL	Pn	07	43	57		−0.3	100	1.67	62	4.1
	iSn		44	19		0.4	100			
NPZ	ePn	07	44	17		−0.8	99	3.18	18	4.6
	i			20						
	iSn			55		0.3	100			

AMPLITUDES: COB 4.0 KAI 6.5 CHR 4.1

			WEL	4.0		NPZ	1.7				
PRO:	50/152										

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APR 15 $13^h19^m15^s.9$ 40°.67S 174°.54E 33 km M = 4.4

± 8.1 0.35 0.26 R S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eSn	13	19	37		−0.3	100	0.64	164	2.8A
	i			52						
COB	eSn	13	19	57		0.7	100	1.43	252	3.4s
TUA	Sn	13	20	00		−27.6		2.74	48	4.2
KAI	eSn	13	20	32		−1.8	99	3.00	231	4.3s
CHR	eSn	13	20	40		1.3	100	3.19	206	4.5

AMPLITUDES: WEL 1.4 COB 0.4 TUA 0.6
KAI 0.5 CHR 1.0

No provisional solution.

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APR 17 $05^h17^m55^s.5$ 39°.75S 176°.28E 33 km M = 4.1

± 4.0 0.08 0.32 R S.E. of RES. 3.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	Sn-Pn			12		−2.4	100	1.16	36	4.4
ARA	eS*	05	18	49		−0.8	100	1.75	343	3.5s
NPZ	eSn	05	18	47		1.3	100	1.84	291	3.3s
WEL	eP*	05	18	33		3.4	99	1.92	216	3.8
	eS*			53		−1.9	100			
KAI	eSn	05	19	50		−2.1	100	4.61	231	4.5s

AMPLITUDES: TUA 6.0 ARA 0.3 NPZ 0.3
WEL 1.3 KAI 0.3

No provisional solution.

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APR 17 $06^h46^m56^s.3$ 38°.54S 175°.56E 164 km M = 4.1

± 0.3 0.01 0.01 1 S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	eS	06	47	37		−0.1	100	0.47	8	3.6*
TUA	eP	06	47	25		0.0	100	1.28	103	4.3
	iS			47		−0.1	100			
WEL	eS	06	48	18		0.0	100	2.81	192	3.9
COB	eS	06	48	30		−0.1	100	3.35	220	3.5s

AMPLITUDES: ARA 1.0 TUA 1.5 WEL 0.7
COB 0.3

PRO: 50/153

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APR 20 $15^h09^m59^s.9$ 41°.42S 171°.89E 112 km M ~ 3.7

± 0.6 0.02 0.03 8 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP	15	10	23		−0.2	100	1.16	198	3.8*
	iS			41		−0.0	100			
WEL	eP	15	10	36		0.3	100	2.17	88	3.7
	iS			11 02		−0.4	99			

CHR	iS	15	11	03	0.3	100	2.19	166		3.6*
NPZ	eP	15	10	45	−0.3	100	2.88	36		3.2s
	iS		11	20	0.5	99				

AMPLITUDES: KAI 1.0 WEL 0.7 CHR 0.6
NPZ 0.3

PRO: 50/155

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APR 22 $12^h33^m05^s.1$ 41°.13S 173°.74E 12 km M = 3.2

± 0.4 0.05 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	P*	12	33	19		−0.2	100	0.76	273	3.3
	S*			30		0.4	100			
WEL	eP*	12	33	19		−0.7	99	0.79	102	3.1
	S*			31		0.6	100			
KAI	eP*	12	33	45		0.7		2.23	231	3.9s
	eSn		34	08		−0.1	100			
CHR	eP*	12	33	52		2.4		2.54	199	

AMPLITUDES: COB 1.2 WEL 1.8 KAI 0.3

PRO: 50/157

Not the event at 12h in the ISS additional readings. P-movements at KAI and CHR possibly not seismic.

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APR 23 $14^h27^m43^s.1$ 39°.24S 175°.92E 12 km M = 4.0

± 1.2 0.09 0.09 R S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS*	14	28	16		−0.2	100	1.05	66	4.2
NPZ	e	14	28	04				1.45	276	3.7
	iSn			28		0.8	100			
WEL	ePg	14	28	28		−0.2	100	2.23	203	4.1
	Sn			48		2.0	99			
	i			50						
KAI	eSn	14	29	44		−2.4	99	4.74	225	4.6s

AMPLITUDES: TUA 3.0 NPZ 0.8 WEL 1.7
KAI 0.3

No provisional solution.

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APR 23 $19^h32^m57^s.2$ 40°.91S 175°.27E 5 km M = 3.9

± 7.7 0.15 0.56 R S.E. of RES. 3.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eiPg	19	33	06		−2.0	100	0.54	225	3.7
	iSg			15		−0.3	100			
COB	eSn	19	33	52		−2.4	100	1.93	264	3.9
NPZ	e	19	33	23				2.06	333	4.1
	Sn			58		0.5	100			
TUA	eSg	19	34	28		5.0		2.55	35	3.4s
KAI	eSn	19	34	32		4.3	99	3.31	240	4.4s

AMPLITUDES: WEL 15 COB 0.7 NPZ 1.3
TUA 0.1 KAI 0.5

PRO: 50/158

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APR 24 $16^h37^m58^s.6$ 42°.45S 172°.88E 12 km M ~ 3.4
± 0.2 0.01 0.02 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	P*	16	38	18		−0.3	100	1.09	265	~3.5s
	S*			33		0.1	100			
CHR	eP*	16	38	19		0.5	99	1.10	190	~3.3s
	eS*			33		−0.2	100			
WEL	eS*	16	38	55		−0.0	100	1.83	51	2.6s

AMPLITUDES: KAI 0.5 CHR 0.5 WEL 0.1

PRO: 50/159

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APR 27 $09^h53^m42^s.5$ 37°.18S 178°.87E 106 km M = 4.7
± 1.8 0.08 0.14 18 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P	09	54	16		−1.3	100	2.12	219	4.6
	iS			43		−0.3	100			
ARA	eP	09	54	26		0.5	100	2.72	250	4.1*
	eS			58		0.2	100			
AUC	eP	09	54	32		−1.4	100	3.29	274	
	e			47						
NPZ	eP	09	54	47		0.9	100	4.23	242	4.0*
	iS			55	36	1.4	100			
WEL	eP	09	55	01		1.8	99	5.19	217	4.7
	eS			59		0.6	100			
KAI	e	09	55	52				7.84	225	4.2s
	eS			57	01	−2.1	99			
CHR	e	09	56	51				7.94	215	

AMPLITUDES: TUA 1.5 ARA 1.5 NPZ 1.2
WEL 1.4 KAI 0.5

PRO: 50/160

Listed in ISS additional readings.

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APR 30 $11^h58^m21^s.5$ 41°.10S 172°.63E 5 km M = 4.4
± 1.5 0.07 0.16 R S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	11	58	48		−2.1	100	1.62	97	4.2
	iSn		59	12		0.6	100			
NPZ	ePn	11	59	00		0.4	100	2.31	29	4.5
	i			05						
	iSn!			29		1.0	100			
CHR	ePn	11	58	59		−2.1	100	2.43	180	4.5
	i		59	01						
	eSn			33		2.3	99			
TUA	e	12	00	23				4.16	58	3.8s

AMPLITUDES: WEL 4.8 NPZ 2.7 CHR 1.6
TUA 0.1

PRO: 50/161

FELT: Western Nelson, MM IV.

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MAY 04 $11^h38^m12^s.6$ 37°.91S 176°.44E 183 km M = 5.1
± 2.2 0.10 0.13 12 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	P	11	38	38		−0.6	100	0.65	255	4.1*
	S			58		−0.6	100			
TUA	iP	11	38	42		0.8	100	1.05	148	5.1
	S			39	03	−0.3	100			
NPZ	iP	11	38	54		1.7	99	2.19	237	3.4s
	iS			39	27	4.1				
WEL	P	11	39	08		−1.6	99	3.61	200	5.1
	S			55		1.5	100			
KAI	e	11	39	55				6.00	218	4.3*
	e			40	03					
	iS			45		−3.9				
CHR	eS	11	40	55		−1.2	100	6.32	206	4.4*

AMPLITUDES: ARA 2.4 TUA 8.0 NPZ 0.5
WEL 6.5 KAI 0.8 CHR 1.5

PRO: 50/164

Listed in ISS additional readings.

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MAY 06 $20^h22^m50^s.3$ 40°.23S 174°.29E 5 km M = 4.5
± 0.3 0.01 0.03 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eiP*	20	23	11		−0.2	100	1.12	161	4.0
	iS*!			26		−0.4	100			
NPZ	P*	20	23	13		0.8	100	1.18	352	4.3
	iS*			28		−0.1	100			
ARA	eSn	20	23	58		−0.7	100	2.39	26	4.7
TUA	e	20	24	01				2.63	58	4.0s
	eSn			05		0.7	100			
KAI	ePn	20	23	39		−0.8	100	3.16	222	4.5
	i		24	13						
	iSn			17		−0.0	100			
CHR	e	20	24	19				3.53	200	4.8
	i			21						
	iSn			27		1.1	99			

AMPLITUDES: WEL 7.0 NPZ 6.0 ARA 0.7
TUA 0.4 KAI 0.6 CHR 1.7

PRO: 50/165

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MAY 08 $20^h20^m25^s.4$ 38°.95S 176°.91E 33 km M ~ 3.8
± 0.6 0.07 0.06 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*!	20	20	31		−1.3	99	0.23	54	
	iS*!			38		0.8	100			
NPZ	ePn	20	21	00		0.9	100	2.21	266	3.7s
	eSn			24		−0.5	100			
WEL	i	20	20	56				2.85	214	3.8
	i		21	30						
	eSn			40		0.1	100			
KAI	eSn	20	22	57		13.5		5.50	228	4.2s

AMPLITUDES: TUA 9.0 NPZ 0.5 WEL 0.6
KAI 0.1

PRO: 50/166

FELT: Te Whaiti (42), MM IV.

50/ 158

MAY 09 $03^h55^m57^s.5$ 38°.70S 175°.87E 12 km M = 4.7
± 0.5 0.03 0.04 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	iPg	03	56	10		−0.8	100	0.65	344	4.4
TUA	iPn	03	56	17		0.2	100	1.01	97	4.5
	iSn			30		−1.1	100			
NPZ	iPn	03	56	22		−0.8	100	1.45	255	5.1
	iSn			40		−1.6	99			
AUC	ePg	03	56	40		1.4	100	2.02	334	
	eSn			56		0.4	100			
	eSg		57	15		9.1				
WEL	ePn	03	56	42		1.9	99	2.72	198	4.9
	iS*		57	21		0.4	100			
CHR	eP*	03	57	45		14.0		5.41	206	4.3s
	eSn		58	32		15.1				

AMPLITUDES: ARA 8.0 TUA 5.0 NPZ 15
WEL 4.5 CHR 0.1

PRO: 50/167

FELT: Rotorua-Taupo district (33, 40, 41), MM III-IV.

50/ 159

MAY 09 $04^h20^m43^s.6$ 38°.51S 175°.91E 12 km M = 4.2
± 1.1 0.06 0.09 R S.E. of RES. 3.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	Pg	04	20	54		0.4	100	0.48	334	3.8
	Sg		21	03		2.8	100			
TUA	ePn	04	21	00		−3.0	100	1.02	108	3.9
	iPg			08		3.7	99			
	iSn			15		−2.5	100			
NPZ	iPn	04	21	08		−2.1	100	1.54	248	4.8
	iSn			26		−3.9	99			
AUC	i	04	22	04				1.87	331	
WEL	ePn	04	21	28		−0.8	100	2.91	197	4.4
	eSn		22	05		2.1	100			
	e			11						
	eSg			25		3.3	100			
CHR	e?	04	22	39				5.60	205	

AMPLITUDES: ARA 5.0 TUA 1.3 NPZ 6.0
WEL 1.0

PRO: 50/168

50/ 160

MAY 09 $04^h23^m12^s.9$ 38°.81S 175°.87E 12 km M ~ 4.4
± 0.6 0.04 0.03 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	e	04	23	40				1.01	91	3.4s
	iSg			47		0.1	100			
	e			55						
NPZ	Pn	04	23	37		−0.7	99	1.42	259	4.4
	iSn			57		0.6	100			
WEL	e	04	24	26				2.62	198	3.8s
	iSg			41		−0.0	100			

AMPLITUDES: TUA 0.5 NPZ 2.8 WEL 0.4

PRO: 50/169

In coda of preceding shock.

50/ 161

MAY 09 $15^h39^m58^s.9$ 38°.71S 178°.49E 12 km M = 4.0
± 1.5 0.04 0.07 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	15	40	18		0.0	100	1.05	264	3.9
	eS*			32		−0.1	100			
WEL	eSn	15	41	41		0.4	99	3.84	227	4.1
CHR	eSn	15	42	45		−0.4	100	6.54	221	4.1s

AMPLITUDES: TUA 2.0 WEL 0.7 CHR 0.1

PRO: 50/170

FELT: Tolaga Bay (37), MM III.

50/ 162

MAY 11 $16^h32^m33^s.9$ 41°.24S 173°.51E 33 km M ~ 2.9
± 0.2 0.02 0.01 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	eS*	16	32	55		0.0	100	0.61	284	
WEL	ePn	16	32	50		−0.4	100	0.94	93	2.9
	iSn		33	03		0.4	100			
KAI	eSn	16	33	29		0.3	100	2.03	230	3.8s
CHR	Sn	16	33	37		−0.2	100	2.38	196	3.7s

AMPLITUDES: WEL 0.8 KAI 0.3 CHR 0.3

PRO: 50/171

50/ 163

MAY 18 $01^h31^m35^s.7$ 41°.11S 175°.79E 33 km M = 3.9
± 1.1 0.03 0.07 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	01	31	50		−0.0	100	0.79	257	3.5
	iSn		32	01		0.3	99			
NPZ	iSn	01	32	40		−0.1	100	2.43	327	4.2
KAI	eS*	01	33	24		−0.3	100	3.56	245	3.8s

AMPLITUDES: WEL 3.8 NPZ 1.3 KAI 0.1

PRO: 50/172

FELT: Eketahuna (66), MM IV.

50/ 164

MAY 19 $19^h57^m21^s.9$ 39°.04S 174°.99E 33 km M ~ 3.8
± 0.5 0.02 0.02 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iSn!	19	57	45		0.1	100	0.71	268	4.0+
WEL	ePn	19	57	56		−0.1	100	2.25	184	3.8
	iSn		58	22		0.2	100			
COB	eSn	19	58	32		−0.1	100	2.67	220	3.8s

AMPLITUDES: NPZ 9.0+ WEL 0.9 COB 0.3

PRO: 50/173

50/ 165

MAY 22 $00^h46^m53^s.4$ 39°.96S 175°.34E 33 km M = 3.6
± 0.5 0.01 0.04 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	ePn	00	47	15		0.0	100	1.32	312	3.7
	iSn			31		−0.1	100			
WEL	Pn	00	47	16		−0.0	100	1.39	198	3.5
	Sn			33		0.0	100			
COB	eSn	00	47	55		0.7	99	2.29	240	3.7s
KAI	eS*	00	48	52		−0.5	99	3.92	228	3.9s

AMPLITUDES: NPZ 1.4 WEL 1.3 COB 0.3
KAI 0.1

PRO: 50/174

50/ 166

MAY 24 $07^h21^m26^s.0$ 40°.03S 177°.54E 33 km M = 4.2
± 2.3 0.07 0.24 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	07	21	50		1.2	99	1.25	346	4.1
	iSn		22	01		−1.1	100			
WEL	Pn	07	22	02		−1.0	100	2.46	238	4.4
	Sn			31		0.1	100			
NPZ	iPn	07	22	09		0.6	100	2.84	289	4.1
CHR	eSn	07	23	34		0.1	100	5.08	225	4.4s
KAI								5.25	240	4.7s

AMPLITUDES: TUA 2.4 WEL 3.2 NPZ 0.7
CHR 0.3 KAI 0.4

PRO: 50/175

50/ 167

MAY 25 $22^h52^m52^s.8$ 41°.16S 172°.44E 12 km M = 4.5
± 0.9 0.03 0.06 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	Sg-Pg			21		−0.2	100	1.57	209	4.5
	S*-P*			23		2.3	98			
	Pn		53	10		−9.6				
	P*			15		−5.7				
	Pg			23		−1.5				
	S*			38		−3.4				
	Sg			44		−1.7				
WEL	P*	22	53	26		2.0	99	1.76	95	4.4
	Pg			28		−0.4	100			
	e			31						
	e			34						
	eSn			45		0.5	100			
	S*			47		−0.3	100			
	e			49						
	Sg			52		−0.3	100			
CHR	eSn	22	53	58		−1.3	100	2.38	177	3.9s
	e		54	19						
NPZ	eP*	22	53	36		0.5	100	2.44	32	4.5
	eSn		54	00		−0.7	100			

AMPLITUDES: KAI 2.5 WEL 6.0 CHR 0.5
NPZ 2.7

PRO: 50/176

FELT: Collingwood, Takaka (72) MM III.

50/ 168

MAY 26 $00^h14^m39^s.4$ 41°.86S 173°.60E 12 km M = 4.2
± 1.1 0.07 0.12 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	00	14	56		−2.4	99	1.04	57	4.0
	iSg		15	16		1.1	100			
KAI								1.75	247	4.0
CHR	iSn	00	15	33		0.5	100	1.82	203	4.4
NPZ	iPg	00	15	37		0.7	100	2.82	8	4.4
	iSn			56		−0.4	100			

AMPLITUDES: WEL 7.0 KAI 0.7 CHR 2.5
NPZ 1.3

No provisional solution.

50/ 169

MAY 30 $20^h10^m19^s.6$ 37°.79S 178°.02E 12 km M = 5.5
± 1.4 0.08 0.08 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
AUC	i	20	11	27				2.74	289	
NPZ	Pn	20	11	13		2.1	99	3.36	246	5.2
	P*			17		−1.0	100			
	Pg			21.5		−5.9				
	e			23						
	Sn			50		0.5	100			
	S*		12	00.5		−1.3	100			
WEL	Pn	20	11	23.6		−0.2	100	4.30	215	5.7
	P*			33.0		−1.2	100			
	Pg			39.1		−7.4				
	Sn		12	12.0		−0.3	100			
	S*			27.4		−2.8				
COB	Pn	20	11	38.0		1.2	100	5.26	230	5.8
	P*			49.0		−1.4	100			
	e		12	00.9						
	Sn			42.0		6.8				
	S*		13	00.0		1.3	100			
KAI								6.93	225	5.3
CHR	P*	20	12	20.2		−0.8	100	7.05	214	5.3
	Pg			35.9		−6.2				
	Sn		13	19.6		1.2	100			
	S*			41.2		−11.4				

AMPLITUDES: NPZ 6.0 WEL 20 COB 7.0
KAI 0.8 CHR 1.3

PRO: 50/177

FELT: Motu (36), MM III. Listed in ISS additional readings.

50/ 170

MAY 31 $11^h02^m16^s.7$ 42°.06S 173°.92E 12 km M = 3.8
± 0.6 0.04 0.06 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eiP*	11	02	35		0.1	100	1.00	40	3.9
	iS*			49		0.6	100			
COB	ePn	11	02	39		−1.2	99	1.31	317	3.6
	iSn			59		1.3	99			
CHR	eS*	11	03	11		0.1	100	1.75	212	3.5s
KAI								1.92	255	3.7s
NPZ	eSn	11	03	37		−1.0	100	3.00	2	3.3s

	eS*		42		−6.1			
AMPLITUDES:	WEL	6.5	COB	0.7	CHR	0.3		
	KAI	0.3	NPZ	0.1				
PRO:	50/178							

No timing at KAI.

50/ 171

JUN 03 $05^h30^m35^s.2$ 38°.82S 175°.93E 12 km M = 4.1
± 0.6 0.04 0.04 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	eS*	05	30	59		−1.2	100	0.78	343	4.1
	e		31	14						
TUA	eP*	05	30	51		−1.6	100	0.95	89	4.1
	iS*		31	07		1.6	100			
NPZ	eP*	05	31	03		1.6	100	1.47	260	4.2
	iS*			22		1.2	100			
WEL	ePn	05	31	17		0.6	100	2.62	200	4.1
	eS*			54		−1.3	100			
COB	e	05	31	59				3.34	226	4.3s
	eS*		32	16		−0.9	100			

AMPLITUDES:	ARA	2.5	TUA	2.5	NPZ	1.5		
	WEL	0.8	COB	0.3				
PRO:	50/181							

50/ 172

JUN 04 $06^h37^m11^s.9$ 33°.59S 177°.57E 33 km M = 6.6
± 1.8 0.10 0.21 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	eP*	06	38	33		−0.8	100	4.73	199	6.5
	iS*		39	36		0.6	100			
TUA	eiPn	06	38	27		0.4	100	5.21	184	6.7
	iSn		39	23		−0.2	100			
	i			44						
WEL	eP*	06	39	27		−2.3		7.99	195	6.6
	iSn		40	31		1.0	99			
	eS*		41	12		−0.9	100			
COB	eS*	06	41	21		−4.3		8.41	206	5.6s
CHR	eSn	06	41	39		5.2		10.65	200	6.7s

AMPLITUDES:	ARA	1.4	TUA	2.0	WEL	2.0		
	COB	0.5	CHR	0.5				
PRO:	50/182							

Listed in ISS. N.Z. provisional epicentre adopted. Readings from 6 additional stations.

50/ 173

JUN 11 $07^h55^m28^s.9$ 41°.00S 172°.50E 12 km M ~ 3.5
± R R R R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iP*	07	55	32		−1.4	100	0.20	116	
	iSg			35		−1.5	100			
WEL	ePn	07	55	59		0.9	100	1.74	100	3.5
	Sn		56	22		2.0	100			

AMPLITUDES:	COB	14	WEL	0.8				
PRO:	50/183							

, MM III.

50/ 174

JUN 14 $00^h51^m49^s.2$ 41°.16S 174°.46E 77 km M ~ 4.8
± 0.6 0.02 0.05 6 S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP!	00	52	02.5		1.0	99	0.26	119	
	iS!			10		−0.5	100			
COB	iP!	00	52	13		0.6	100	1.30	273	4.8+
	iS			30		0.1	100			
NPZ	eP	00	52	24		0.8	100	2.12	352	4.6+
	iS			47		−1.2	99			
KAI	iS-P			31.5		0.4	100	2.65	238	4.7*
CHR	eP	00	52	32		0.1	100	2.74	209	4.5*
	S		53	03		−0.9	100			
TUA	e	00	52	49				3.13	42	~4.8+
	iS		53	10		−3.8				
ARA	e	00	52	49				3.21	17	4.3*
	e		53	02						
	eS			16		0.1	100			

AMPLITUDES:	WEL	75+	COB	16+	NPZ	9.0+		
	KAI	4.0	CHR	4.0	TUA	1.4+		
	ARA	2.0						
PRO:	50/184							

FELT: Wellington (68), MM IV, Paraparaumu (65) and Blenheim (77). Listed in ISS additional readings.

50/ 175

JUN 14 $05^h16^m01^s.6$ 40°.75S 174°.50E 12 km M ~ 2.4
± R R R R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	05	16	13		0.4	100	0.58	159	2.4
	S*			20		−0.4	100			

AMPLITUDES:	WEL	0.6						

Recorded movements may be related to an otherwise unconfirmed report of a shock felt at Wanganui (57), MM IV, but the identification is considered unlikely. No provisional solution.

50/ 176

JUN 15 $06^h39^m26^s.3$ 43°.60S 172°.70E 12 km
± R R R R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	iPg	06	39	29		−0.1	100	0.08	322	
	iSg			31		0.1	100			

AMPLITUDES:	CHR	10						
PRO:	50/185							

FELT: Christchurch (110), MM II.

50/ 177

JUN 16 $07^h14^m20^s.6$ 39°.86S 173°.02E 12 km M = 4.0
± 0.5 0.02 0.05 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	07	14	41		−0.2	100	1.14	46	4.2
	iS*!			57		0.6	100			
COB	eP*	07	14	43		−0.0	100	1.24	190	3.9
	iS*		15	00		0.4	100			

WEL	ePn	07 14 52	−0.7	99	1.95	137		3.9
	Sn	15 17	0.1	100				

AMPLITUDES: NPZ 5.0 COB 1.5 WEL 1.8

PRO: 50/186

JUN 16 $20^h53^m00^s.5$ 41°.27S 173°.19E 90 km 50/ 178 M ~ 4.9

± 0.5 0.02 0.05 6 S.E. of RES. 0.9

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
COB	iP	20 53 16		1.3	99	0.39	298	4.4*
	iS	25		−0.5	100			
WEL	iP	20 53 23.5		0.8	100	1.19	91	4.9
	iS	39.5		−0.2	100			
KAI	iS-P	22		−0.6	100	1.83	226	4.9*
CHR	eP	20 53 38		0.7	100	2.29	190	5.1*
	iS	54 04		−0.7	100			
NPZ	P	20 53 37		−0.4	100	2.30	17	4.2*
	S	54 05		0.2	100			
ARA	eP	20 53 56		−0.9	100	3.71	31	
	eS	54 37		−2.7				

AMPLITUDES: COB 12 WEL 42 KAI 10
CHR 20 NPZ 3.5

PRO: 50/187

FELT: South Island, north of Christchurch (110) and Greymouth (85). Maximum intensity MM IV at Tadmor (75). Listed in ISS additional readings.

JUN 17 $15^h56^m33^s.4$ 38°.92S 175°.25E 185 km 50/ 179 M ~ 5.9

± 0.9 0.04 0.11 8 S.E. of RES. 1.7

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
ARA	iP!	15 57 01		−0.0	100	0.90	20	5.5*
	iS!	21		−1.3	100			
NPZ	iP	15 57 02		0.8	100	0.93	261	
TUA	iP	15 57 05		−0.9	100	1.48	86	
AUC	iP!	15 57 10		−2.1	99	2.09	350	
	iS	44		2.0	99			
	i	56						
WEL	iP!	15 57 18.5		3.0	98	2.39	189	~5.9+
	iS!	50		2.0	99			
COB	iP	15 57 21		−0.6	100	2.90	221	5.3*
	iS	59		0.2	100			
KAI	iP	15 57 43		−0.5	100	4.63	218	5.6*
	iS	58 36		−1.7	100			
CHR	eiP	15 57 48		−0.4	100	5.01	202	5.9*
	iS	58 45		−1.4	100			
RIV	i	16 05 56				20.03	277	
BRS	iP	16 01 14		1.1	100	22.00	295	

AMPLITUDES: ARA 63 WEL 88+ COB 22
KAI 20 CHR 57

PRO: 50/188

FELT: Eastern parts of both islands, from Bay of Plenty to Banks Peninsula. Maximum reported intensity MM V at Eketahuna (66). Listed in ISS. N.Z. provisional epicentre adopted. Data from 11 additional stations given. For isoseismal map, see Hayes, R.C., 1952.

JUN 17 $23^h43^m51^s.1$ 40°.15S 174°.57E 33 km 50/ 180 M = 4.0

± 0.3 0.01 0.03 R S.E. of RES. 0.6

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
NPZ	ePn	23 44 10		−0.3	100	1.14	340	3.9
	iSn	25		0.4	100			
WEL	Pn	23 44 10		−0.3	100	1.14	172	4.1
	iSn	25		0.4	100			
COB	e	23 44 24				1.68	236	3.9
	iSn	37		−0.5	100			
KAI	e	23 45 19				3.37	224	4.2s
	eS*	34		0.4	100			

AMPLITUDES: NPZ 3.0 WEL 8.5 COB 0.9
KAI 0.3

PRO: 50/189

JUN 23 $11^h25^m57^s.6$ 40°.88S 172°.19E 12 km 50/ 181 M = 4.3

± 0.4 0.02 0.04 R S.E. of RES. 0.9

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
COB	iP*	11 26 06		−0.6	100	0.46	117	3.8
	iS*	12.5		−0.6	100			
KAI	iPn	11 26 26		−0.9	100	1.75	199	4.6
	iS*	52		0.5	100			
	iSg	57		0.6	100			
WEL	ePn	11 26 31		0.7	100	1.99	103	4.0
	iSn	56		1.2	99			
	i	58						
NPZ	e	11 26 42				2.32	39	4.6
	iSn	27 02		−0.7	100			
	eS*	08		−0.8	100			
	eSg	17		1.2	99			
CHR	iSn	11 27 11		−0.1	100	2.67	173	4.3
	eSg	27		−0.6	100			
	i	39						

AMPLITUDES: COB 9.5 KAI 2.5 WEL 2.3
NPZ 3.6 CHR 0.9

PRO: 50/190

FELT: Tadmor (72) and Takaka (75), MM III.

JUN 23 $19^h31^m59^s.9$ 41°.16S 172°.27E 12 km 50/ 182 M = 4.0

± 0.5 0.03 0.04 R S.E. of RES. 0.7

STN	PHASE	H M S	DIR	RES	WT	DIST	AZ	MAG
COB	eiP*	19 32 07		−0.1	100	0.35	78	4.0
	iS*	11.5		−0.7	100			
KAI	ePn	19 32 26		0.1	100	1.50	205	4.3
	Sn	45		−0.4	100			
WEL	ePn	19 32 30		−1.1	99	1.88	95	3.8
	eP*	34		0.8	100			
	iSn	55		0.5	100			
CHR	eP*	19 32 43.5		1.8		2.38	174	4.1
	eSn	33 07		0.5	100			
NPZ	eSn	19 33 10		0.5	100	2.51	34	3.9
	eSg	27		2.6				

AMPLITUDES: COB 24 KAI 1.8 WEL 1.5
CHR 0.7 NPZ 0.6

PRO: 50/191

FELT: Tadmor (75), MM III.

50/ 183

JUN 24 $21^h02^m12^s.1$ 41°.35S 173°.11E 12 km M = 4.1
± 0.3 0.02 0.02 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	21	02	35		0.4	99	1.25	88	3.8
	iS*			51		−0.2	100			
KAI	e	21	02	45				1.73	227	4.2
	Sn		03	03		−0.1	100			
NPZ	e	21	03	15				2.39	18	4.4
	iSn			19		−0.1	100			

AMPLITUDES: WEL 3.6 KAI 1.0 NPZ 2.0

PRO: 50/192

50/ 184

JUN 25 $04^h22^m16^s.1$ 38°.73S 176°.15E 168 km M = 4.3
± 5.8 0.23 0.16 32 S.E. of RES. 2.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eS	04	23	00		−0.5	100	0.79	96	4.0
NPZ	e	04	22	53				1.65	258	3.6*
	iS		23	14		−0.1	100			
WEL	iP	04	23	03		1.2	100	2.76	202	4.5
	iS			38		1.1	100			
KAI	eS	04	24	30		−3.6		5.23	222	
CHR	eS	04	24	38		−1.7	99	5.48	208	

AMPLITUDES: TUA 0.9 NPZ 0.9 WEL 3.1

PRO: 50/193

50/ 185

JUN 27 $07^h57^m38^s.7$ 41°.17S 172°.55E 12 km M = 3.9
± 0.3 0.02 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPg	07	57	43		0.4	100	0.16	59	
	iSg			48		2.8				
KAI	ePg	07	58	11		−0.1	100	1.60	212	4.1
	eS*			29		0.6	100			
	iSg			32		−0.7	100			
WEL	P*	07	58	09		0.5	100	1.67	95	3.7
	Sg			35		−0.3	100			
CHR	e	07	58	38				2.36	179	3.9s
NPZ	eS*	07	58	53		0.5	100	2.40	30	4.0
	iSg			59		−0.8	99			

AMPLITUDES: COB 4.3+ KAI 1.0 WEL 1.3
CHR 0.5 NPZ 0.8

PRO: 50/194

50/ 186

JUN 29 $05^h53^m51^s.6$ 37°.75S 177°.00E 12 km M ~ 4.1
± R R R R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	05	54	11		0.1	100	1.06	174	4.1
	S*			25		−0.1	100			

AMPLITUDES: TUA 2.5

PRO: 50/195

FELT: Whakatane (27), MM V.

50/ 187

JUN 29 $12^h15^m41^s.2$ 41°.61S 174°.18E 12 km M = 3.5
± 0.7 0.06 0.04 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	12	15	51		−0.7	99	0.55	54	3.5
	iS*		16	00		0.7	100			
COB	eS*	12	16	19		−0.0	100	1.21	295	3.4
KAI	eSn	12	16	45		0.2	100	2.26	245	3.9s

AMPLITUDES: WEL 9.0 COB 0.6 KAI 0.3

PRO: 50/196

50/ 188

JUN 30 $11^h23^m46^s.5$ 40°.89S 174°.98E 12 km M ~ 3.2
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*!	11	23	55		0.0	100	0.42	202	3.2
	iS*!		24	01		0.0	100			
COB	Sn	11	24	37		0.0	100	1.71	263	3.7s
KAI	e	11	24	45				3.13	237	3.7s

AMPLITUDES: WEL 7.0 COB 0.5 KAI 0.1

No provisional solution.

50/ 189

JUL 02 $10^h12^m59^s.1$ 42°.10S 173°.69E 12 km M ~ 3.1
± 1.2 0.07 0.06 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	10	13	18.5		−1.4	99	1.14	45	3.1
	eS*			36.5		1.3	99			
COB	eP*	10	13	21		−0.4	100	1.24	324	3.2s
	eS*			38		0.1	100			
KAI	eSn	10	13	51		0.6	100	1.75	255	3.2s

AMPLITUDES: WEL 0.7 COB 0.3 KAI 0.1

PRO: 50/198

50/ 190

JUL 02 $18^h51^m33^s.5$ 41°.64S 178°.50E 12 km M ~ 3.9
± 3.8 0.17 0.28 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	18	52	19		1.4	99	2.83	276	3.9
	Sn			51		0.2	100			
NPZ	ePn	18	52	36		−1.0	100	4.25	306	3.6s
CHR	eSn	18	53	36		−0.5	100	4.73	244	4.5s
KAI	eSn	18	53	56		4.5		5.35	258	4.1s

AMPLITUDES: WEL 0.9 NPZ 0.1 CHR 0.5

	KAI					0.1				

No provisional solution.

50/ 191

JUL 03 $12^h19^m50^s.2$ 41°.19S 173°.70E 12 km M = 4.0
± 1.5 0.12 0.07 R S.E. of RES. 2.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iS*	12	20	15		1.0	100	0.74	278	3.2
WEL	eP*	12	20	05		−0.2	100	0.81	97	2.6s
	S*			16		−0.1	100			
KAI	Sn	12	20	49		−2.7	99	2.17	231	4.1
CHR	Sn	12	21	01		2.0	100	2.47	198	4.7

AMPLITUDES: COB 1.0 WEL 0.5 KAI 0.6
CHR 2.5

PRO: 50/201

Anomalously large amplitude at CHR.

50/ 192

JUL 03 $12^h36^m18^s.1$ 40°.63S 173°.88E 12 km M ~ 4.1
± 4.8 0.25 0.09 R S.E. of RES. 2.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	12	36	36		0.7	100	0.94	135	2.6s
	eS*			47		−0.9	100			
COB	e	12	37	30				0.98	242	2.5s
KAI	eSn	12	37	30		−1.1	100	2.65	224	~4.2s
CHR	eSn	12	37	42		1.3	100	3.05	197	~3.9s

AMPLITUDES: WEL 0.4 COB 0.1 KAI 0.5
CHR 0.3

PRO: 50/202

FELT: Paraparaumu Beach, MM III. Movements recorded at TUA and possibly those at COB are more probably associated with a shock between Tonga and the Kermadec Islands with an origin at 12h. 29m. See ISS.

50/ 193

JUL 04 $22^h01^m07^s.2$ 39°.93S 173°.92E 128 km M ~ 3.7
± 1.4 0.04 0.06 12 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP	22	01	28		−0.9	99	0.87	8	3.0s
	iS			46		0.6	100			
COB	eS	22	01	56		−0.4	100	1.47	218	
WEL	iP	22	01	36		0.5	100	1.50	155	3.7
	iS			57		−0.2	100			
KAI	eS	22	02	36		0.5	100	3.21	215	3.2s

AMPLITUDES: NPZ 0.4 WEL 1.4 KAI 0.1

PRO: 50/203

50/ 194

JUL 05 $19^h37^m50^s.3$ 39°.13S 179°.70E 12 km M = 4.6
± 2.3 0.07 0.14 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eSn	19	38	48		−0.1	100	2.02	279	
WEL	ePn	19	38	56		0.9	100	4.35	239	4.7
	Sn		39	44		−0.1	100			

NPZ	eP*	19	39	05		−1.2	99	4.38	269	4.4
	iSn			46		1.1	99			
KAI	eSn	19	40	51		−0.3	100	7.15	239	

AMPLITUDES: WEL 2.0 NPZ 0.6

PRO: 50/204

50/ 195

JUL 06 $05^h17^m41^s.7$ 40°.85S 172°.61E 12 km M ~ 3.3
± 1.3 0.06 0.05 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iP*!	05	17	48		0.9	99	0.25	159	
	iS*!			51		0.1	100			
WEL	ePg	05	18	16		0.2	100	1.68	106	3.3
	eSg			38		−0.6	100			
KAI	eSn	05	18	36		−0.6	100	1.90	208	3.8s
	eSg			43		−2.7				

AMPLITUDES: COB 21 WEL 0.6 KAI 0.4

PRO: 50/205

50/ 196

JUL 06 $19^h26^m19^s.0$ 38°.20S 177°.05E 12 km M ~ 4.0
± 8.0 0.35 0.27 R S.E. of RES. 3.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	19	26	30		−0.6	100	0.61	173	
	iS*			40		1.0	100			
WEL	ePg	19	27	32		1.2	100	3.55	209	4.0
	eSn			50		−3.7	99			
KAI	eSn	19	28	57		2.0	100	6.10	223	4.3s

AMPLITUDES: WEL 0.6 KAI 0.1

PRO: 50/206

FELT: Motu (36), MM III.

50/ 197

JUL 08 $03^h31^m51^s.0$ 33°.47S 179°.02E 33 km M = 5.9
± 3.5 0.22 0.39 R S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	03	33	11		0.8	100	5.53	195	5.8+
	eSn		34	12		1.9	100			
NPZ	ePn	03	33	30		1.7	100	6.87	214	5.2s
	e		34	15						
WEL	Pn	03	33	48		−2.6	99	8.50	202	5.8
	Sn		35	19		−2.3	100			
COB	e	03	34	07				9.11	212	5.6s
	eSn		35	37		1.2	100			
KAI	ePn	03	34	28		5.3		10.85	211	6.0
	eSn		36	17		−0.7	100			
	e			28						

AMPLITUDES: TUA 2.0+ NPZ 0.5 WEL 2.5
COB 0.5 KAI 0.6

PRO: 50/207

ISS gives 03h 31m 34s, 33.5S 179.0W, and lists data from 12 additional stations.

50/ 198

JUL 09 $01^h01^m03^s.3$ 39°.48S 175°.75E 12 km M = 3.9
± 1.1 0.09 0.09 R S.E. of RES. 2.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	01	01	29		2.7	100	1.28	59	3.8
	iS*			42		−1.4	100			
NPZ	eSn	01	01	45		−0.3	100	1.36	287	3.5
WEL	iPn	01	01	34		−1.4	100	1.95	202	3.9
	iPg			45		2.2	100			
	iSn			58		−1.5	100			
COB	eSn	01	02	17		−3.1	99	2.81	234	4.2
	eS*			32		2.9	100			
KAI	e	01	02	50				4.47	226	4.6s

AMPLITUDES: TUA 0.9 NPZ 0.8 WEL 1.8
COB 0.7 KAI 0.4

No provisional solution.

50/ 199

JUL 13 $12^h54^m13^s.1$ 41°.18S 172°.00E 12 km M = 3.8
± 1.5 0.08 0.09 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	P*	12	54	24		0.1	100	0.57	81	3.7
	iS*			31		−0.6	100			
KAI	Pn	12	54	37		−1.0	100	1.42	198	4.1
	eSn			55		−1.5	99			
	iSg		55	02		1.0	100			
WEL	ePn	12	54	49		1.8	99	2.09	94	3.7
	S*		55	17		−0.5	100			
CHR	eP*	12	54	56		0.8	100	2.40	169	3.2s

AMPLITUDES: COB 5.5 KAI 1.3 WEL 1.0
CHR 0.1

PRO: 50/208

50/ 200

JUL 15 $06^h50^m36^s.0$ 41°.02S 174°.48E 12 km M = 3.7
± 0.9 0.06 0.07 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	06	50	42		−1.0	100	0.34	141	3.5
	iS*			48		0.1	100			
COB	Pn	06	50	58		−1.6	100	1.32	267	3.8
	iSn		51	15		−2.2	99			
NPZ	eSn	06	51	34		1.1	100	1.98	351	3.6s
KAI	eP*	06	51	26		2.0	100	2.74	236	4.0s
	eSn			53		1.6	100			

AMPLITUDES: WEL 21 COB 1.2 NPZ 0.5
KAI 0.3

PRO: 50/209

FELT: Wellington (68).

50/ 201

JUL 16 $01^h42^m02^s.0$ 41°.24S 173°.87E 57 km M ~ 3.3
± 0.9 0.05 0.02 11 S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP!	01	42	16		−0.3	99	0.67	94	3.3
	iS			27		0.2	100			
COB	iP	01	42	19		0.3	99	0.87	280	3.2*
	iS			31		−0.2	100			
KAI	eS	01	43	04		0.0	100	2.24	234	3.0s

AMPLITUDES: WEL 3.0 COB 0.7 KAI 0.1

PRO: 50/210

50/ 202

JUL 17 $03^h02^m50^s.0$ 39°.81S 176°.97E 12 km M = 4.5
± 0.4 0.02 0.04 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
HNZ	Sg-Pg			02.5		0.0	100	0.14	335	
TUA	eiP*	03	03	09		0.7	100	1.01	8	
	iS*			21		−0.8	100			4.5
ARA	eP*	03	03	26		0.5	100	2.02	329	
	eS*			55		3.0				4.4
WEL	ePn	03	03	25		−0.9	99	2.23	228	
	iPg			35		−0.1	100			4.4
	iSn			54		1.0	99			
	e		04	13						
NPZ	ePg	03	03	38		0.3	100	2.36	287	
	eS*		04	02		−0.3	100			4.3
COB	eP*	03	03	51		0.6	100	3.47	247	
	iSn		04	23		0.2	100			4.4
CHR	ePn	03	04	03		0.1	100	4.94	220	4.7
KAI	ePg	03	04	26		−4.9		4.99	235	5.0
	iSn			58		−1.4	98			

AMPLITUDES: TUA 9.0 ARA 1.6 WEL 4.0
NPZ 1.5 COB 0.7 CHR 0.7
KAI 0.8

PRO: 50/214

FELT: Havelock North (60), MM IV; and Napier (52), MM III.

50/ 203

JUL 18 $02^h45^m50^s.8$ 40°.85S 172°.33E 0 km M = 3.9
± 0.7 0.03 0.05 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPg	02	45	57		−1.6	100	0.39	128	3.2
	iSg		46	04		0.2	100			
KAI	ePn	02	46	23		0.4	100	1.81	202	
	Sn			47		0.8	100			4.3
WEL	ePn	02	46	25		1.3	100	1.89	104	
	eS*			52		1.1	100			3.8
NPZ	ePg	02	46	37		1.2	100	2.23	37	
	eSn			54		−2.3	99			4.4
	eS*		47	01		0.1	100			
CHR	eSg	02	47	20		−1.3	100	2.69	175	3.8s
TUA	eP*	02	47	10		4.6		4.24	63	4.4s

AMPLITUDES: COB 3.7 KAI 1.2 WEL 1.3
NPZ 2.2 CHR 0.3 TUA 0.3

PRO: 50/215

JUL 18 $12^h31^m20^s.7$ 40°.66S 175°.32E 5 km M = 4.1 — 50/ 204
± 0.5 0.02 0.04 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	12	31	34.5		−0.8	99	0.76	214	4.0
	iS*			46		0.2	100			
NPZ	e	12	31	52				1.86	329	4.3
	Sn			32 16		−0.2	100			
COB	ePn	12	31	55		0.5	100	2.01	257	3.9
	S*			32 23		−0.4	100			
TUA	eSg	12	32	42		3.0		2.32	38	3.9s
ARA	eP*	12	32	07		0.2	100	2.59	6	4.3
KAI	e	12	32	40				3.47	236	4.2s
	eS*			33 08		0.5	100			

AMPLITUDES: WEL 16 NPZ 2.6 COB 0.7
TUA 0.4 ARA 0.8 KAI 0.3

PRO: 50/216

FELT: Foxton (61), MM III.

JUL 21 $04^h46^m55^s.3$ 39°.73S 174°.19E 207 km M = 5.6 — 50/ 205
± 0.9 0.04 0.10 8 S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iP	04	47	26		2.1	99	0.67	352	4.3+
	S			47		0.8	100			
WEL	eiP	04	47	32		1.2	100	1.62	164	5.5
	iS			58.5		0.1	100			
COB	iP	04	47	33		0.8	100	1.75	219	4.9*
	iS			48 00		−0.6	100			
ARA	iP	04	47	34		−0.6	100	2.01	35	4.4*
	eS			48 03		−2.1	99			
TUA	iP	04	47	40.5		0.9	100	2.47	69	5.6
	S			48 11		−3.0				
AUC	iP	04	47	45		0.4	100	2.90	9	
	iS			48 22		−0.7	100			
KAI	eP	04	47	50.5		−1.2	100	3.49	216	5.2*
	iS			48 31.5		−3.8				
CHR	iP	04	47	59		1.4	100	3.98	197	5.4*
	iS			'48 44		−1.9	99			

AMPLITUDES: NPZ 6.0+ WEL 47 COB 12
ARA 3.2 TUA 9.0 KAI 9.5
CHR 21

PRO: 50/218

FELT: In several scattered places between Dannevirke (63) and Christchurch (110). No intensities above MM III were reported. Listed in ISS, which adopts N.Z. provisional epicentre.

JUL 22 $07^h48^m19^s.6$ 41°.71S 174°.29E 12 km M = 3.9 — 50/ 206
± 1.5 0.08 0.05 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	07	48	31		0.7	100	0.56	41	4.1
	iS*			38		0.1	100			
COB	ePn	07	48	42		−1.2	99	1.32	297	3.5
	eS*			49 02		1.0	100			
				49 13				2.20	213	3.2s

NPZ	eS*	07	49	40	−0.6	100	2.65 356	4.1
TUA	eSg	07	50	30	8.1		3.63 38	3.7s
ARA	eSg	07	50	34	7.1		3.78 16	4.3s

AMPLITUDES: WEL 35 COB 0.6 CHR 0.1
NPZ 0.9 TUA 0.1 ARA 0.3

PRO: 50/219

Readings at ARA and TUA are possibly from a different earthquake

JUL 22 $08^h24^m46^s.4$ 38°.89S 175°.62E 12 km M = 4.3 — 50/ 207
± 1.8 0.12 0.08 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iS*	08	25	24		−0.0	100	1.20	87	4.3
WEL	eSn	08	25	56		0.5	100	2.48	195	4.2
COB	Sn	08	26	11		0.2	100	3.12	224	4.5
CHR	eSn	08	26	59		−0.8	99	5.16	205	4.6s

AMPLITUDES: TUA 2.0 WEL 1.2 COB 0.6
CHR 0.3

PRO: 50/220

JUL 22 $12^h19^m18^s.3$ 39°.05S 176°.58E 12 km M = 3.7 — 50/ 208
± 0.3 0.01 0.02 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	e	12	19	20				0.50	62	3.4
	iS*			35		−0.1	100			
ARA	eS*	12	19	56		−0.4	100	1.21	323	3.6
	eSg		20	00		0.6	99			
NPZ	e	12	20	02				1.95	269	3.7
	Sn			14		−0.5	100			
WEL	ePn	12	20	00		0.3	100	2.63	211	4.0
	iSn			31		0.1	100			
COB	i	12	20	35				3.58	234	4.2s
	e			48						

AMPLITUDES: TUA 2.6 ARA 0.7 NPZ 0.6
WEL 1.3 COB 0.4

PRO: 50/221

FELT: Napier (52), MM III.

JUL 23 $06^h06^m50^s.2$ 41°.28S 175°.65E 12 km M = 3.7 — 50/ 209
± 2.3 0.08 0.12 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	06	07	03		0.3	100	0.67	269	3.3
	iS*			11		−0.7	100			
COB	e	06	07	43				2.20	274	4.0
	eSn			52		−0.6	100			
	eS*			59		1.0	99			
NPZ	eSn	06	08	00		−0.1	100	2.52	331	3.1s
KAI	eSn	06	08	31		9.8		3.40	247	3.8s

AMPLITUDES: WEL 3.8 COB 0.6 NPZ 0.1
KAI 0.1

No provisional solution.

Timing at KAI uncertain.

JUL 24 $21^h04^m39^s.4$ 39°.49S 174°.63E 161 km 50/ 210 M ~ 4.4
± 3.7 0.10 0.14 27 S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP	21	05	04		1.3	99	0.60	314	3.5+
	eS			20		−0.7	100			
WEL	iP!	21	05	12		−1.2	100	1.80	177	4.4
	e			20						
	iS			40		0.7	100			
TUA	eS	21	05	45		−0.0	100	2.08	72	4.0s
KAI	iS	21	06	17		−8.4		3.89	218	4.3*
CHR	eS	21	06	25		−10.2		4.31	200	4.1*

AMPLITUDES: NPZ 1.2+ WEL 4.8 TUA 0.4
KAI 1.0 CHR 1.0

PRO: 50/222

FELT: Wellington (68), MM II. Timing at KAI uncertain.

JUL 25 $07^h17^m15^s.1$ 42°.15S 173°.50E 29 km 50/ 211 M = 4.1
± 1.2 0.02 0.03 8 S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPn	07	17	36		0.5	100	1.21	331	3.8
	iSn			51		0.3	100			
WEL	iPn	07	17	37		0.4	100	1.28	48	3.8
	iSn			52		−0.5	100			
CHR	iSn!	07	17	59		0.5	100	1.53	205	4.4
KAI	ePn	07	17	40		−0.9	99	1.59	256	4.5
	Sn		18	00		−0.1	100			
NPZ	eSn	07	18	40		3.5		3.10	8	3.9s

AMPLITUDES: COB 1.5 WEL 3.0 CHR 3.2
KAI 2.5 NPZ 0.4

PRO: 50/223

JUL 28 $05^h17^m18^s.6$ 39°.59S 175°.70E 12 km 50/ 212 M = 5.3
± 0.6 0.04 0.06 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	P*	05	17	45		1.9	100	1.36	292	4.7+
	iSn		18	02		1.3	100			
TUA	ePg	05	17	47		0.6	100	1.37	56	5.0
	Sn		18	02		1.1	100			
ARA	Pg	05	17	47		−2.2	99	1.51	358	5.1
	Sn		18	03		−1.3	100			
WEL	ePn	05	17	50		0.8	100	1.84	202	5.4
	iSn		18	10		−2.2	99			
COB	Pn	05	18	03		1.8	100	2.72	236	5.2
	Sn			32		−1.2	100			
AUC	ePg	05	18	19		3.4		2.82	345	
	iSn			35		−0.6	100			
KAI	eP*	05	18	30		−4.4		4.37	226	5.7
	Sn		19	10		−3.1				
	iS*			35		3.6				
CHR	ePn	05	18	28		1.6		4.56	209	5.4
	Sn		19	14		−3.7				

AMPLITUDES: NPZ 12+ TUA 14 ARA 12

WEL 64 COB 6.5 KAI 6.0
CHR 3.8

PRO: 50/224

FELT: Central and southern parts of the North Island, with intensities up to MM IV. Listed in ISS additional readings.

JUL 28 $12^h41^m07^s.6$ 39°.87S 175°.01E 12 km 50/ 213 M = 4.4
± 0.6 0.03 0.05 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	12	41	26		−1.3	100	1.09	318	4.3
	iS*			43		1.2	100			
WEL	Pn	12	41	31		−1.6	99	1.42	187	4.1
	iSn			52		0.8	100			
TUA	e	12	41	29				1.97	58	4.9
	ePg			48		0.6	100			
COB	eP*	12	41	44		−1.0	100	2.12	234	4.0
	eS*		42	13		0.1	100			
	i			35						
KAI	eP*	12	42	18		4.4		3.80	225	4.5s
	eSn			50		1.8				
	e			53						
	eSg		43	16		0.4				
CHR	e	12	42	00				4.07	205	4.5
	eSn			56		1.2	100			

AMPLITUDES: NPZ 8.0 WEL 5.5 TUA 4.8
COB 0.8 KAI 0.5 CHR 0.6

PRO: 50/226

FELT: Taihape (58), MM III.

JUL 28 $13^h26^m51^s.7$ 39°.87S 175°.47E 12 km 50/ 214 M = 4.1
± 0.3 0.02 0.02 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	ePg	13	27	20		1.0	99	1.35	306	4.2
	iSn			33		−0.4	100			
WEL	Pn	13	27	18		0.1	100	1.51	200	3.7
	iSn			38		0.6	100			
TUA	ePg	13	27	26		0.2	100	1.68	51	4.1
	iSn			41		−0.5	100			
COB	eP*	13	27	34		−0.1	100	2.41	239	4.2
KAI	eS*	13	28	54		−0.8	99	4.05	228	4.4s
	eSg		29	17		8.8				

AMPLITUDES: NPZ 3.6 WEL 1.7 TUA 1.3
COB 0.8 KAI 0.3

PRO: 50/227

JUL 28 $18^h59^m00^s.2$ 40°.92S 175°.84E 12 km 50/ 215 M = 3.9
± 3.4 0.17 0.20 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	18	59	17		0.5	100	0.89	245	3.7
	iS*			29		0.6	100			
COB	eSn	19	00	06		−0.1	100	2.36	265	4.0
KAI	eSn	19	00	37		−1.0	99	3.68	243	3.8s

AMPLITUDES: WEL 4.8 COB 0.6 KAI 0.1

No provisional solution.

AUG 02 $10^h05^m09^s.3$ 37°.59S 175°.65E 12 km 50/ 216 M ~ 3.7
± 0.9 0.03 0.08 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	P*	10	05	18.5		−0.2	100	0.49	181	
	S*			25		−0.4	100			
AUC	P*	10	05	29		1.4	99	1.01	316	
	iS*			40		−1.1	99			
NPZ	eSn	10	06	05		0.1	100	1.93	220	~3.4s
	eS*			09		0.3	100			
WEL	eS*	10	07	07		3.5		3.75	190	~4.0s

AMPLITUDES: NPZ 0.3 WEL 0.1

PRO: 50/228

FELT: Te Aroha (25), MM III.

AUG 04 $18^h28^m18^s.3$ 38°.92S 176°.06E 12 km 50/ 217 M = 4.3
± 0.6 0.04 0.05 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	18	28	34		−0.0	100	0.85	83	4.4
	iS*			47		1.4	100			
ARA	iP*	18	28	34		−0.9	100	0.91	339	4.1
NPZ	e	18	28	54				1.56	264	3.4s
	eS*		29	08		1.4	100			
WEL	ePn	18	28	56		−2.7	98	2.56	202	4.5
	iP*		29	03		−0.1	100			
	e			05						
	Sn			28		−1.2	100			
	iS*			38		1.3	100			
COB	eSn	18	29	49		0.9	100	3.35	229	4.2s
KAI	eSn	18	30	24		−4.9		5.05	223	4.3s
CHR	eSn	18	30	29		−5.6		5.28	208	4.1s

AMPLITUDES: TUA 7.5 ARA 2.5 NPZ 0.3
WEL 2.7 COB 0.3 KAI 0.1
CHR 0.1

PRO: 50/229

AUG 05 $09^h17^m00^s.9$ 49°.05S 164°.06E 33 km 50/ 218 M = 6.5
± 1.1 0.08 0.04 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	Pn	09	18	55		−0.0	100	8.10	50	6.9
KAI	Pn	09	18	58		0.2	100	8.30	41	6.8
COB	Pn	09	19	21		−0.6	99	10.04	41	6.3
WEL	iPn	09	19	32		−0.2	100	10.83	48	6.1
NPZ	ePn	09	19	53		0.7	99	12.30	39	6.5
ARA	ePn	09	20	13		0.2	100	13.80	42	6.5
TUA	Pn	09	20	14		−0.2	100	13.90	47	6.1
AUC	iPn	09	20	17		−5.0		14.47	37	
RIV	iPn	09	21	10		0.1	100	17.98	323	
	iSn		24	19		−0.1	100			
BRS	iP	09	22	05		−1.9		23.33	334	

eS 26 22 8.4

AMPLITUDES: CHR 41 KAI 21 COB 6.0
WEL 9.0 NPZ 9.0 ARA 2.5
TUA 2.0

PRO: 50/230

FELT: About Foveaux Strait. Maximum intensity MM IV at Halfmoon Bay (158). ISS gives 48.2S 164E, and additional readings from 145 other stations.

AUG 06 $00^h53^m56^s.4$ 39°.04S 177°.60E 12 km 50/ 219 M = 4.0
± 1.5 0.03 0.11 R S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	00	54	05		0.2	100	0.42	304	3.9+
	iS*			10		−0.7	100			
ARA	eSn	00	54	50		0.7	100	1.81	302	4.0
WEL	ePn	00	54	44		−0.5	100	3.12	223	4.0
	eSn		55	21		0.3	100			

AMPLITUDES: TUA 12+ ARA 0.8 WEL 0.8

PRO: 50/231

FELT: Wairoa (53), MM III.

AUG 09 $22^h44^m12^s.2$ 39°.37S 177°.18E 12 km 50/ 220 M ~ 3.8
± 4.1 0.13 0.31 R S.E. of RES. 2.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	22	44	55		0.1	100	2.44	276	3.6s
WEL	ePn	22	44	53		−0.9	100	2.65	223	3.8
	eSn		45	28		2.6	99			
	iS*			32		−1.5	100			
COB	eSn	22	45	53		−0.2	100	3.82	242	4.3s
KAI	e	22	46	11				5.39	232	4.2s

AMPLITUDES: NPZ 0.3 WEL 0.8 COB 0.5
KAI 0.1

PRO: 50/232

FELT: Napier (52), MM II.

AUG 10 $18^h12^m59^s.5$ 38°.00S 177°.75E 12 km 50/ 221 M = 3.9
± R R R R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	18	13	15		−1.6	99	0.94	210	3.6
	iP*			18		1.4	100			
WEL	ePn	18	14	00		0.3	100	4.00	214	4.1
	e			24						
	eSn			45		−0.1	100			

AMPLITUDES: TUA 1.2 WEL 0.7

PRO: 50/233

FELT: Opotiki (35), MM III.

AUG 11 $01^h44^m04^s.8$ 41°.29S 172°.26E 12 km 50/ 222 M = 3.7
± 0.6 0.04 0.06 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iP*	01	44	12		−1.0	100	0.41	60	3.7

	iS*		18	−0.9	100					
KAI	ePn	01	44 30	0.8	100	1.39	207			4.0
	iSn		47	−0.4	100					
WEL	e	01	44 41			1.89	91			3.4
	iS*		45 04	0.8	100					
NPZ	eSg	01	45 34	0.8	100	2.63	33			3.2s

AMPLITUDES: COB 9.0 KAI 1.0 WEL 0.6
NPZ 0.1

PRO: 50/234

50/ 223

AUG 11 $03^h10^m48^s.1$ 42°.15S 173°.61E 12 km M = 3.9
± 0.5 0.03 0.05 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	03	11	11		0.9	100	1.22	46	3.4
	S*			26		−0.4	100			
COB	iP*	03	11	10		−0.5	100	1.24	328	3.8
	iS*			28		0.9	100			
CHR	ePg	03	11	19		−0.8	100	1.57	207	4.0
	e			26						
	eS*			38		1.4	99			
KAI	ePn	03	11	15		−1.5	99	1.67	256	4.2
	Sn			34		−3.7				

AMPLITUDES: WEL 1.4 COB 1.4 CHR 1.3
KAI 1.1

PRO: 50/235

50/ 224

AUG 11 $07^h16^m54^s.3$ 39°.12S 177°.81E 5 km M = 4.2
± 2.0 0.05 0.13 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	P*	07	17	06		−0.5	100	0.60	301	4.2
	iSg			16		1.3	100			
ARA	ePn	07	17	28		0.0	100	2.00	301	4.2
	eSn			54		0.9	100			
NPZ	eP*	07	17	44		−1.8	100	2.91	270	3.7s
WEL	ePn	07	17	42		−2.1	100	3.18	226	4.2
	eSn		18	24		2.5	99			
COB	eSn	07	18	48		−1.9	100	4.36	242	4.5s
	eSg		19	19		−2.1	100			
CHR	eSn	07	19	29		2.4	99	5.89	220	4.5s
KAI	e	07	19	12				5.93	233	4.7s
	eSn			29		1.4	100			

AMPLITUDES: TUA 14 ARA 1.2 NPZ 0.3
WEL 1.4 COB 0.5 CHR 0.3
KAI 0.3

PRO: 50/236

FELT: Gisborne district (36, 37, 54), MM IV

50/ 225

AUG 12 $00^h43^m37^s.7$ 36°.98S 177°.25E 253 km M = 4.7
± 2.0 0.11 0.26 15 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	eP	00	44	18		−0.0	100	1.68	229	3.8*
TUA	eP	00	44	20		0.7	100	1.83	182	4.7

	S		51	−0.4	100					
WEL	P	00	44 50	−0.7	99	4.72	203			4.7
	S		45 48	0.4	100					

AMPLITUDES: ARA 0.8 TUA 1.4 WEL 1.7

PRO: 50/237

50/ 226

AUG 12 $10^h44^m27^s.6$ 34°.92S 178°.42W 33 km M = 5.4
± 2.1 0.13 0.11 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	Pn	10	45	43		0.1	100	5.26	221	5.5
	eSn		46	46		6.0				
	i		47	19						
ARA	Pn	10	45	49		−0.3	100	5.72	235	5.2
	e		47	01						
AUC	ePn	10	45	46		−5.0		5.85	249	
	iS*		47	25		0.5	100			
NPZ	e	10	46	20				7.30	233	4.1s
	e		47	45						
WEL	ePn	10	46	23		−1.7	100	8.32	218	5.3
	eSn		47	54		0.5	100			
COB	e	10	47	27				9.31	226	
	eSn		48	18		0.8	100			
KAI	ePn	10	47	07		5.9		10.99	223	5.5
	eSn		48	55		−2.5	99			
CHR	ePn	10	47	04		2.1	99	11.05	216	5.3s
	eSn		49	00		0.9	100			

AMPLITUDES: TUA 3.1 ARA 1.5 NPZ 0.1
WEL 2.5 KAI 0.6 CHR 0.5

PRO: 50/238

50/ 227

AUG 15 $08^h46^m37^s.8$ 39°.74S 174°.59E 33 km M = 4.4
± 0.2 0.01 0.02 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	P*	08	46	53		0.2	100	0.78	329	
	iS*		47	04		0.2	100			
WEL	eP*	08	47	06		0.4	100	1.55	175	4.0
	S*			26		−0.2	100			
ARA	ePn	08	47	07		0.3	100	1.85	27	5.0
	eSn			28		−0.4	100			
COB	eP*	08	47	12		−0.4	100	1.95	226	4.1
	eSn			26		−4.7				
KAI	e	08	47	51				3.67	220	4.4s
	eS*		48	36		6.4				

AMPLITUDES: WEL 3.5 ARA 2.6 COB 1.0
KAI 0.4

PRO: 50/240

FELT: Southern Taranaki.

50/ 228

AUG 20 $14^h57^m47^s.0$ 38°.75S 174°.75E 12 km M = 4.3
± R R R R S.E. of RES. 5.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	e?	14	58	00				1.88	93	4.4

	eSn			43	1.5	100			
WEL	eS*	14	59	07	2.4	100	2.53	180	4.2
KAI	eS*	15	00	09	4.0	100	4.54	213	4.7s
CHR	eS*	15	00	12	−7.7	99	5.04	198	4.5s

AMPLITUDES: TUA 0.7 WEL 1.9 KAI 0.5
CHR 0.4

No provisional solution.

50/ 229

AUG 22 $06^h16^m31^s.7$ 38°.00S 178°.50E 12 km M = 4.0
± R R R R S.E. of RES. 2.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	06	16	54		−1.4	100	1.33	232	3.7
	e		17	40						
ARA	eS*	06	17	44		3.0	100	2.26	267	3.7s
WEL	ePg	06	18	00		0.1	100	4.36	220	4.2
	Sn			28		2.0	100			
KAI	eSn	06	19	27		−3.7	99	7.06	228	4.4s

AMPLITUDES: TUA 0.8 ARA 0.3 WEL 0.7
KAI 0.1

No provisional solution.

50/ 230

AUG 28 $00^h38^m03^s.9$ 43°.12S 165°.68E 12 km M = 4.9
± 3.8 0.41 0.34 R S.E. of RES. 2.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	00	39	05		−2.4	99	4.26	84	5.2
	iSn			54		−1.5	100			
CHR	ePn	00	39	21		2.2	100	5.08	97	4.8
	eS*		40	29		−8.9				
COB	ePn	00	39	25		−1.1	100	5.62	71	4.9
	eSn		40	30		1.6	100			
WEL	ePn	00	39	46		1.2	100	6.99	78	4.6
	e		40	52						

AMPLITUDES: KAI 1.8 CHR 0.8 COB 0.8
WEL 0.6

PRO: 50/242

Listed in ISS additional readings. Unusually great distance from the coast seems adequately established. Alternative solutions mainly affect the latitude.

50/ 231

AUG 28 $10^h09^m01^s.8$ 38°.54S 176°.03E 12 km M ~ 3.4
± 0.0 0.00 0.00 R S.E. of RES. 0.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	eS*	10	09	20		0.0	100	0.56	327	3.4
TUA	eS*	10	09	31		0.0	100	0.92	107	
WEL	ePn	10	09	47		0.0	100	2.91	199	4.0s
	eSn		10	21		−0.0	100			

AMPLITUDES: ARA 1.4 WEL 0.4

PRO: 50/243

FELT: Tokaanu (40), MM IV.

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AUG 28 $10^h19^m03^s.7$ 38°.54S 176°.35E 163 km M ~ 3.9
± 2.4 0.08 0.14 15 S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	e	10	19	33				0.67	113	
	eS			46		0.0	100			
ARA	iP	10	19	27		−0.9	99	0.73	310	4.1*
	iS			47		0.5	100			
WEL	eP	10	19	53		0.8	99	3.00	203	3.9
	eS		20	29		−0.4	100			
COB	eS	10	20	35		−12.2		3.77	226	3.0s
KAI	e	10	21	43				5.48	222	3.4s

AMPLITUDES: ARA 3.2 WEL 0.7 COB 0.1
KAI 0.1

PRO: 50/244

FELT: Tokaanu (40), MM IV.

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AUG 30 $07^h40^m21^s.1$ 44°.26S 166°.45E 33 km M = 4.9
± 1.9 0.18 0.20 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	07	41	20		0.6	100	4.00	66	5.3
	iSn		42	04		0.6	100			
COB	ePn	07	41	40		−1.2	100	5.62	58	4.8
	iSn		42	43		1.1	100			
WEL	ePn	07	41	58		0.5	100	6.80	67	4.6
	iSn		43	09		−1.5	99			
NPZ	eSn	07	43	32		−0.3	100	7.71	50	4.6s

AMPLITUDES: KAI 2.6 COB 0.7 WEL 0.7
NPZ 0.3

PRO: 50/245

FELT: Cromwell (133), MM IV. Listed in ISS additional readings.

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AUG 31 $22^h49^m08^s.2$ 38°.30S 178°.28E 84 km M = 4.8
± 0.2 0.01 0.01 1 S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	22	49	28		−0.1	100	1.02	240	4.6
	iS			43		0.0	100			
NPZ	eP	22	50	00		0.0	100	3.37	256	3.4s
	S			39		−0.1	100			
WEL	e	22	50	15				4.02	221	4.9
	iS			55		0.0	100			
KAI	eS	22	51	56		−5.8		6.72	229	4.3*

AMPLITUDES: TUA 6.0 NPZ 0.4 WEL 4.4
KAI 0.6

PRO: 50/247

FELT: Opotiki (35) and Motu (36), MM III.

50/ 235

SEP 01 $00^h18^m11^s.0$ 39°.05S 175°.42E 168 km M = 5.8
± 1.0 0.04 0.07 9 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	iP!	00	18	37		−0.5	100	0.99	10	5.2*

STN	PHASE	H	M	S	RES	WT	DIST	AZ	MAG
	iS			56	−2.0	99			
NPZ	iP!	00	18	39	1.0	100	1.05	269	
	iS			19 00	1.1	100			
TUA	iP	00	18	42	1.1	100	1.37	80	5.9
	i			57					
	iS			19 03	−0.9	100			
AUC	iP!	00	18	50	−0.4	100	2.24	347	
	iS			19 21	0.2	100			
WEL	iP!	00	18	53	2.1	99	2.29	192	5.7
	iS			19 23	1.3	100			
COB	eP	00	19	00	1.6	100	2.90	225	5.1*
	iS			35	0.2	100			
KAI	eP	00	19	21	0.5	100	4.62	220	5.3*
	iS			20 11	−3.2	97			
CHR	P	00	19	25	0.2	100	4.95	204	5.4*
	iS			20 20	−1.9	99			

AMPLITUDES: ARA 30, TUA 48, WEL 58, COB 14, KAI 10, CHR 17

PRO: 50/248

FELT: Eastern parts of the North Island, Wellington (68), and Nelson (76). Maximum intensity MM IV. Listed in ISS additional readings.

SEP 01 $19^h13^m52^s.9$ 41°.20S 175°.68E 27 km M = 4.4 — 50/ 236

± 0.3 0.01 0.02 0 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*!	19	14	06		−0.1	100	0.69	262	4.5
	iS*			16		0.2	100			
COB	eP*	19	14	32		−0.1	100	2.22	272	4.3
	eSn			53		−0.3	99			
NPZ	P*	19	14	36		−0.0	100	2.46	329	4.4
	iSn			59		0.1	100			
CHR	eSn	19	15	18		0.1	100	3.25	223	4.0s
KAI	eP*	19	15	00		7.0		3.46	246	4.5
	eSn			31		8.2				
	i			51						

AMPLITUDES: WEL 50, COB 1.4, NPZ 2.0, CHR 0.3, KAI 0.6

PRO: 50/249

FELT: Paraparaumu (65), Masterton (66), MM III; and Wellington (68).

SEP 03 $09^h19^m41^s.5$ 38°.32S 175°.74E 33 km M = 4.4 — 50/ 237

± 0.8 0.05 0.06 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	ePn	09	20	05		−0.5	99	1.50	240	4.0
	iSn			24		0.5	100			
WEL	ePn	09	20	27		0.3	100	3.05	194	4.5
	e			54						
COB	eSn	09	21	14		−0.1	100	3.61	219	4.8
	eS*			31		−0.2	100			
KAI	eSn	09	22	03		7.1		5.35	217	4.6s

AMPLITUDES: NPZ 1.3, WEL 1.0, COB 0.7, KAI 0.1

PRO: 50/250

SEP 05 $02^h04^m01^s.9$ 39°.66S 179°.52E 33 km M = 5.8 — 50/ 238

± 1.3 0.04 0.09 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	02	04	32		−1.1	99	2.02	294	5.0+
	Sn			57		0.4	100			
ARA	eP*	02	05	02		0.6	100	3.42	296	4.9+
WEL	Pn	02	05	00		0.3	100	3.97	244	5.8
	Sn			42		−1.3	99			
NPZ	iPn	02	05	04		0.3	100	4.27	276	4.9+
	Sn			50		−0.3	100			
COB	eP*	02	05	30		−4.7		5.37	252	5.1+
	Sn			06 17		−0.1	100			
CHR	eSn	02	06	43		0.0	100	6.45	231	5.7
KAI	ePn	02	05	42		4.2		6.77	242	5.9
	iSn			06 52		1.6	99			

AMPLITUDES: TUA 7.0+, ARA 2.0+, WEL 34, NPZ 2.1+, COB 1.5+, CHR 4.1, KAI 3.3

PRO: 50/251

Listed in ISS additional readings.

SEP 05 $05^h38^m41^s.6$ 39°.55S 179°.26E 33 km M = 4.9 — 50/ 239

± 1.6 0.07 0.12 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	ePn	05	39	29		0.3	100	3.19	296	4.7
	eSn			40 11		6.8				
WEL	Pn	05	39	36		−1.6	99	3.84	242	5.0
	Sn			40 18		−1.9	99			
NPZ	Pn	05	39	40		−0.5	100	4.05	275	4.6
	Sn			40 25		0.0	100			
COB	ePn	05	39	58		1.6	99	5.22	251	4.8
	iSn			40 53		−0.0	100			
CHR	Sn	05	41	21		0.3	100	6.37	229	5.1
KAI	ePn	05	40	16		0.2	100	6.64	241	5.3
	iSn			41 29		1.9	99			

AMPLITUDES: ARA 1.3, WEL 6.2, NPZ 1.1, COB 0.8, CHR 0.9, KAI 1.0

PRO: 50/252

SEP 05 $15^h34^m17^s.1$ 40°.22S 174°.86E 33 km M = 3.9 — 50/ 240

± 0.4 0.02 0.05 R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	15	34	35		−0.2	100	1.06	184	4.0
	iSn			49		0.3	100			
NPZ	iPn	15	34	38		−0.5	100	1.30	332	4.0+
	iSn			55		0.6	99			
COB	iSn	15	35	07		−0.1	100	1.84	241	3.8
KAI	e(P*)	15	35	37		19.5		3.47	227	4.2s

AMPLITUDES: WEL 8.0, NPZ 3.0+, COB 0.6, KAI 0.3

PRO: 50/253

FELT: Wanganui (57), MM III.

50/ 241

SEP 06 $14^h02^m38^s.9$ 39°.43S 175°.28E 122 km M = 3.9

± 2.1 0.06 0.05 18 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eS	14	03	18		−0.3	100	1.00	291	3.2+
TUA	eS	14	03	30		0.2	100	1.58	68	4.1
WEL	P	14	03	11		−0.6	100	1.90	192	3.6
	S			36		−0.2	100			
COB	eS	14	03	52		0.7	99	2.56	229	3.3s

AMPLITUDES: NPZ 0.7+ TUA 0.9 WEL 0.8 COB 0.3

PRO: 50/254

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SEP 07 $11^h16^m30^s.4$ 38°.89S 175°.52E 202 km M ~ 4.2

± 7.0 0.28 0.19 39 S.E. of RES. 3.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	iS	11	17	26		0.6	100	1.13	261	3.1s
TUA	S	11	17	26		−1.4	100	1.28	87	4.1+
WEL	P	11	17	17		2.7	99	2.46	193	4.2
	S			49		0.8	100			
COB	eS	11	18	01		0.3	100	3.06	223	3.5s
KAI	eS	11	18	36		−2.9	99	4.79	219	3.3s

AMPLITUDES: NPZ 0.3 TUA 0.6+ WEL 1.6 COB 0.3 KAI 0.1

PRO: 50/255

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SEP 07 $14^h59^m00^s.1$ 34°.34S 176°.98W 318 km M = 6.2

± 3.4 0.31 0.40 50 S.E. of RES. 3.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP	15	00	38		1.7	100	6.49	225	6.4
	iS		01	51		−1.0	100			
ARA	eP	15	00	47		4.1	99	7.03	236	
	e		01	19						
AUC	eP	15	00	40		−4.5	99	7.17	247	
	iS		02	10		3.4	100			
NPZ	iP	15	01	00		−1.7	100	8.59	234	3.9s
	e		02	58						
WEL	eP	15	01	10		−3.0	100	9.52	221	5.9
	eS		02	57		−1.0	100			
COB	eP	15	01	32		6.2		10.57	227	4.3*
	iS		03	19		−2.1	100			
KAI	eP	15	01	47		0.9	100	12.22	225	4.7*
	S		03	55		−2.5	100			
CHR	eP	15	01	49		2.8	100	12.22	218	
	eS		04	02		4.4	99			
SUV	iP!	15	02	10		−26.3		16.64	345	

AMPLITUDES: TUA 10 NPZ 0.5 WEL 6.5 COB 0.7 KAI 1.0

PRO: 50/256

ISS gives 32.5S 179.0W, depth .005r.

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SEP 12 $01^h57^m18^s.6$ 38°.85S 177°.09E 33 km M = 5.1

± 1.6 0.26 0.36 R S.E. of RES. 2.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	01	57	21		−3.1	99	0.06	47	
	iS*			30		1.9	100			
WEL	ePn	01	58	06		2.7	100	3.01	215	4.3
	eSn			36		−1.0	100			
	S*			51		0.3	100			
COB	eSn	01	59	03		1.8	100	4.02	235	5.8
KAI	eSn	01	59	38		−2.7	100	5.67	228	4.8s

AMPLITUDES: TUA 13 WEL 1.7 COB 13 KAI 0.4

PRO: 50/257

FELT: Whakatane (27), MM IV.

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SEP 12 $07^h15^m14^s.0$ 35°.64S 178°.10E 33 km M = 4.8

±10.9 0.60 0.68 R S.E. of RES. 4.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	07	16	02		0.0	100	3.26	193	4.7
	iSn			39		0.9	100			
WEL	e	07	16	51				6.22	204	4.8
	eSn		17	45		−4.3	99			
KAI	eSn	07	18	47		−0.1	100	8.62	215	5.3s
CHR	eSn	07	18	59		4.2	99	8.95	206	5.1s

AMPLITUDES: TUA 0.8 WEL 0.8 KAI 0.3 CHR 0.3

PRO: 50/258

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SEP 14 $04^h51^m17^s.2$ 41°.61S 173°.70E 12 km M = 3.5

± 0.6 0.03 0.03 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	04	51	32		−1.2	99	0.86	68	3.5
	S*			46		1.2	99			
COB	eP*	04	51	34		0.3	100	0.89	305	3.5
	iS*			46		0.3	100			
KAI	e	04	52	01				1.93	241	3.7s
	eSn			13		−0.1	100			
NPZ	S*	04	52	35		−0.5	100	2.56	7	3.2s

AMPLITUDES: WEL 3.8 COB 1.2 KAI 0.3 NPZ 0.1

PRO: 50/259

50/ 247

SEP 15 $01^h54^m11^s.5$ 38°.25S 177°.50E 12 km M ~ 3.9

± R R R R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	01	54	23		−0.2	100	0.62	206	3.9
	iS*			32		0.2	100			

AMPLITUDES: TUA 6.5

PRO: 50/260

FELT: Motu (36), MM III.

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SEP 17 $16^h48^m09^s.8$ 40°.86S 177°.70E 12 km M = 4.5
± 1.7 0.05 0.11 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	16	48	46		−0.1	100	2.26	258	4.2
	iSn		49	13		−0.4	100			
NPZ	eS*	16	49	50		−0.8	100	3.31	302	4.5
	e		50	15						
	e			25						
	e			28						
COB	eP*	16	49	13		−2.2		3.76	265	4.5
	eSn			52		2.3	98			
AUC	ePn	16	49	18		−0.1	100	4.60	329	
	iSn		50	10		0.3	100			
CHR	e	16	49	52				4.62	233	4.4s
	eSn		50	18		7.9				
	e		51	27						
KAI	eP*	16	49	44		7.8		4.99	248	4.9
	eSn		50	18		−1.2	100			
	eS*			52		10.8				

AMPLITUDES: WEL 2.8 NPZ 1.2 COB 0.8
CHR 0.4 KAI 0.7

PRO: 50/261

FELT: Napier (52), MM V; Waipawa (60), MM IV. Movements at 16h 55m+ recorded at WEL, CHR, AND KAI are possibly ScS.

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SEP 17 $17^h40^m39^s.9$ 40°.13S 177°.19E 12 km M = 4.4
± 4.6 0.09 0.32 R S.E. of RES. 2.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	17	41	15		−0.1	100	2.18	237	4.3
	iSn			42		0.5	100			
NPZ	eP*	17	41	25		−1.0	100	2.64	293	4.1
	Sn			54		1.5	100			
COB	e	17	41	02				3.53	253	4.3s
	i			10						
	e			29						
CHR	e?	17	42	25				4.81	224	4.5s
	eSn			47		2.0	100			
KAI	e?	17	42	20				4.97	239	4.9
	iSn			46		−2.6	99			
	e		43	24						

AMPLITUDES: WEL 3.1 NPZ 0.9 COB 0.5
CHR 0.4 KAI 0.6

PRO: 50/262

FELT: Napier (52) and Waipawa (60), MM IV.

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SEP 18 $19^h15^m42^s.2$ 41°.44S 172°.74E 147 km M ~ 3.9
± 3.9 0.11 0.16 25 S.E. of RES. 2.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	P	19	16	04		1.3	100	0.35	359	3.6*
				19		0.5	100			
			5	32		−1.9	99	1.47	222	3.9*

WEL	iP	19	16	12		−0.2	100	1.54	85	3.9
	iS			34		−1.2	100			
CHR	S	19	16	48		1.7	100	2.10	182	3.7*

AMPLITUDES: COB 1.3 KAI 1.0 WEL 1.9
CHR 0.7

PRO: 50/263

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SEP 19 $16^h05^m01^s.2$ 40°.99S 172°.53E 4 km M ~ 3.4
± 1.3 0.05 0.04 4 S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
COB	iPg!	16	05	04		−0.9	99	0.19	124	
	iSg			08		0.5	100			
WEL	eP*	16	05	33		0.6	100	1.72	101	3.4
	eS*			55		−0.3	100			
KAI	ePn	16	05	32		0.4	100	1.75	208	3.8s
	Sn			54		−0.3	100			
NPZ	e	16	06	00				2.25	32	
CHR	eSg	16	06	27		0.1	100	2.55	178	3.3s

AMPLITUDES: COB 9.0 WEL 0.7 KAI 0.4
CHR 0.1

PRO: 50/264

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SEP 21 $08^h41^m16^s.0$ 40°.85S 172°.89E 0 km M = 4.2
± 1.1 0.03 0.05 6 S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	08	41	42		−1.4	98	1.48	108	4.0
	iSn		42	04		0.3	100			
NPZ	eP*	08	41	53		0.6	100	2.00	27	4.2
	eSn		42	16		0.1	100			
KAI	Pn	08	41	50		−0.5	100	2.01	213	4.4
	Sn		42	16		−0.2	100			
CHR	eP*	08	42	05		0.7	100	2.69	184	4.2
	eSn			33		0.4	100			
TUA	eSg	08	43	22		−4.0		3.86	60	3.8s

AMPLITUDES: WEL 3.6 NPZ 1.7 KAI 1.4
CHR 0.7 TUA 0.1

PRO: 50/265

FELT: West Nelson district. Intensity reached MM V at Takaka and Collingwood (72).

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SEP 22 $20^h28^m37^s.1$ 38°.22S 177°.77E 107 km M = 4.1
± 2.7 0.11 0.13 11 S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	20	28	56		0.1	100	0.76	219	4.0
	iS		29	10		−0.3	100			
NPZ	eS	20	30	00		0.2	100	3.01	253	2.8s
WEL	eS	20	30	20.5		0.7	99	3.84	216	4.1
KAI	eS	20	31	24		−0.7	99	6.49	226	3.9s

AMPLITUDES: TUA 2.1 NPZ 0.1 WEL 0.7
KAI 0.3

PRO: 50/267

FELT: Opotiki (35), MM III.

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SEP 23 $18^h24^m58^s.3$ 41°.60S 176°.05E 33 km M ~ 3.7
± 1.4 0.03 0.09 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	18	25	16		0.3	100	1.02	288	3.7
	iSn			29		0.3	100			
NPZ	eP*	18	25	58		8.1		2.95	329	3.9s
	e		26	12						
	eSn			15		−0.2	100			
KAI	eSn	18	26	30		−0.2	100	3.58	254	4.3s

AMPLITUDES: WEL 3.7 NPZ 0.4 KAI 0.3

No provisional solution.

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SEP 26 $13^h24^m08^s.0$ 39°.61S 174°.23E 239 km M = 4.7
± 2.1 0.08 0.14 15 S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	i	13	24	45				0.56	347	3.5*
	iS		25	05		0.4	100			
	i			07						
WEL	iP	13	24	50		2.7	99	1.73	166	4.4
	iS		25	18		0.3	100			
ARA	eP	13	24	51		2.2	99	1.89	36	3.6s
	eS		25	19		−1.3	100			
TUA	eS	13	25	28		−1.3	100	2.40	72	5.0
KAI	eP	13	25	05		−2.1	99	3.61	215	4.4*
	e			18						
	S			53		−0.1	100			
CHR	iS	13	26	03		−0.5	100	4.10	197	4.6*

AMPLITUDES: NPZ 0.9 WEL 3.5 ARA 0.5
TUA 2.0 KAI 1.3 CHR 3.2

PRO: 50/268

50/ 256

SEP 27 $19^h55^m39^s.3$ 32°.50S 179°.00E 33 km M = 5.8
± R R R R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	19	57	11		−0.2	100	6.47	193	5.8
	Sn		58	21		0.2	100			
WEL	eP*	19	58	27		6.3		9.40	200	5.8

AMPLITUDES: TUA 0.6 WEL 0.8

PRO: 50/270

FELT: Rotoma (33), and Te Teko (34), MM IV. Reports possibly refer to an unrelated small local event. Listed in ISS additional readings. No other data.

50/ 257

SEP 30 $00^h02^m38^s.8$ 41°.55S 174°.01E 33 km M = 4.6
± 0.3 0.02 0.02 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	00	02	51		0.0	100	0.63	65	4.4+

	iSn	03	00		0.1	100			
KAI	eSn	00	03	37	0.1	100	2.17	243	4.4
	i		04	29					
	i			38					
CHR	eS*	00	03	49	1.6		2.22	207	3.9s
	e		04	43					
NPZ	ePn	00	03	16	−0.3	100	2.48	1	4.8
	iSn			45	0.5	99			
AUC	eP*	00	04	00	−0.5	99	4.72	7	
	iSn			50	11.7				

AMPLITUDES: WEL 48+ KAI 1.1 CHR 0.5
NPZ 4.2

PRO: 50/271

FELT: South western parts of the North Island, maximum intensity MM III.

50/ 258

OCT 03 $11^h59^m58^s.0$ 33°.67S 179°.55E 33 km M ~ 4.8
±25.9 1.66 2.18 R S.E. of RES. 6.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
ARA	eP*	12	01	34		2.5	100	5.42	215	4.8
TUA	eP*	12	01	30		−2.6	100	5.48	200	4.5s
WEL	ePn	12	02	03		5.5	99	8.50	205	4.4s
KAI	ePn	12	02	25		−5.5	99	10.92	214	5.4s
CHR	ePn	12	02	35		0.1	100	11.23	207	5.1s

AMPLITUDES: ARA 0.6 TUA 0.3 WEL 0.3
KAI 0.4 CHR 0.3

No provisional solution.

50/ 259

OCT 08 $07^h02^m41^s.6$ 40°.72S 173°.52E 33 km M = 3.9
± 0.2 0.01 0.03 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	07	03	00		−0.1	100	1.10	121	3.7
	iSn			14		0.1	100			
NPZ	Pn	07	03	08		−0.5	99	1.71	15	4.1
	iSn			29		0.3	100			
KAI	ePn	07	03	18		0.1	100	2.39	221	3.4s
TUA	e	07	02	50				3.39	57	3.6s

AMPLITUDES: WEL 3.6 NPZ 2.0 KAI 0.1
TUA 0.1

PRO: 50/272

Movement at TUA apparently a separate event.

50/ 260

OCT 09 $16^h37^m06^s.9$ 38°.00S 176°.00E 33 km M ~ 3.9
± R R R R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eSn	16	37	42		0.0	100	1.21	132	3.9

AMPLITUDES: TUA 0.8

PRO: 50/273

FELT: Te Teko (34), MM V.

50/ 261

OCT 09 $20^h25^m00^s.4$ 38°.00S 176°.00E 33 km M ~ 3.8
± R R R R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	20	25	20		−0.5	100	1.21	132	3.8
	eSn			36		0.5	100			

AMPLITUDES: TUA 0.6

PRO: 50/275

FELT: Te Teko (34), MM III.

50/ 262

OCT 10 $10^h22^m52^s.5$ 38°.24S 177°.13E 12 km M ~ 3.6
± 4.3 0.18 0.23 R S.E. of RES. 2.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP*	10	23	02		−1.4	100	0.57	179	3.6
	iS*			12		0.8	100			
NPZ	ePn	10	23	34		1.4	100	2.54	250	3.1s
	eSn			24	02	−0.8	100			
WEL	eSg	10	24	56		4.0		3.55	210	3.8s

AMPLITUDES: TUA 3.3 NPZ 0.1 WEL 0.4

PRO: 50/276

FELT: Whakatane (27), MM V.

50/ 263

OCT 10 $18^h42^m23^s.8$ 45°.02S 166°.98E 33 km M = 5.8
± 1.0 0.08 0.06 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
MNW	S*-P*			12		−0.3	100	0.88	150	
KAI	ePn	18	43	23		0.2	100	4.06	54	6.2
	iSn			44	09	1.6	99			
CHR	ePn	18	43	26		−0.3	100	4.32	72	6.2
	iSn			44	13	−0.6	100			
WEL	ePn	18	44	02		1.7	99	6.80	60	5.6
	Sn			45	12	−1.4	100			
NPZ	Pn	18	44	17		1.1	100	7.95	44	5.4
	Sn			45	40	−0.8	100			
TUA	ePn	18	44	50		9.0		9.79	54	5.6
	eSn			46	41	15.9				
AUC	ePn	18	44	44		−0.6	100	10.05	39	
	eP*			45	30	13.7				
RIV	iPn	18	46	14		1.1	100	16.52	307	
	eSn			49	18	11.1				
BRS	iP	18	47	04		−2.1	99	20.94	322	
	iS			51	05	12.2				

AMPLITUDES: KAI 19 CHR 25 WEL 7.0
NPZ 1.8 TUA 1.1

PRO: 50/277

FELT: Throughout Otago and Southland. Maximum reported intensity MM V at Milford Sound (120), Centre Island (148), and Invercargill (148). ISS gives 45.0S 167.0E and lists data from 15 additional stations.

50/ 264

OCT 13 $12^h43^m12^s.9$ 40°.66S 175°.18E 12 km M = 4.4
0.03 0.28 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	12	43	25		−1.0	99	0.70	207	4.1
	iS*			36		0.4	100			
NPZ	ePn	12	43	44		0.9	100	1.81	331	
	eSn			44	05	−0.6	100			3.6s
KAI	e	12	43	39				3.39	235	4.6
	e			44	02					
	iPn				05	0.3	100			

AMPLITUDES: WEL 23 NPZ 0.5 KAI 0.7

No provisional solution.

50/ 265

OCT 13 $19^h07^m28^s.3$ 39°.83S 173°.88E 186 km M ~ 4.1
± 0.3 0.01 0.01 1 S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eS	19	08	16		0.0	100	0.77	11	3.0s
WEL	eP	19	08	02		0.0	100	1.60	155	4.1
	iS			28		−0.1	100			
KAI	eS	19	09	02		0.0	100	3.28	214	3.8s
CHR	eS	19	09	14		−0.1	100	3.82	194	3.8s

AMPLITUDES: NPZ 0.3 WEL 2.1 KAI 0.4
CHR 0.5

PRO: 50/278

50/ 266

OCT 15 $13^h46^m24^s.6$ 40°.25S 174°.00E 12 km M ~ 3.7
± R R R R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	13	46	46		−0.1	100	1.19	151	3.7
	S*		47	02		0.1	100			

AMPLITUDES: WEL 3.1

PRO: 50/279

FELT: Foxton (61), MM III.

50/ 267

OCT 18 $03^h47^m29^s.5$ 39°.45S 174°.71E 12 km M = 3.9
± 0.1 0.01 0.01 R S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	03	47	41		−0.3	100	0.62	308	3.5
	iS*			50		0.2	100			
WEL	Pn	03	48	00		−0.0	100	1.84	179	4.2
	iSn			23		0.1	100			
TUA	eSn	03	48	27		0.0	100	2.01	72	4.0s

AMPLITUDES: NPZ 4.0 WEL 3.7 TUA 0.3

PRO: 50/280

50/ 268

OCT 18 $09^h01^m24^s.2$ 40°.34S 173°.93E 33 km M = 4.2
± 0.6 0.03 0.07 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	09	01	43		−0.4	100	1.14	146	4.2
	iSn			59		1.4	99			

NPZ	Pn	09 01 45	−0.1	100	1.28	5		3.9
	iSn	02 02	1.2	100				
KAI	eSn	09 02 39	−0.7	100	2.89	220		4.2s
	e	03 29						
TUA	Sn	09 02 39	−1.4	99	2.92	60		4.6

AMPLITUDES: WEL 9.0 NPZ 2.2 KAI 0.4
TUA 1.1

PRO: 50/281

50/ 269

OCT 18 $17^h01^m49^s.8$ 41°.41S 171°.83E 33 km M = 4.1
± 0.9 0.05 0.10 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	Pn	17	02	09		−0.1	100	1.16	196	4.3
	Sn			24		0.4	100			
WEL	ePn	17	02	23		−0.5	100	2.21	88	3.8
	Sn			49		0.1	100			
NPZ	eSn	17	03	04		−1.4	99	2.90	37	3.7s
	iS*			20		1.6	99			

AMPLITUDES: KAI 2.8 WEL 1.1 NPZ 0.3

PRO: 50/282

50/ 270

OCT 18 $17^h24^m04^s.5$ 39°.89S 177°.35E 12 km M = 4.2
± 1.7 0.05 0.12 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
HNZ	S*-P*			01		−4.9		0.41	301	
TUA	iP*	17	24	25		0.7	100	1.09	352	4.2
	iS*			38		−0.9	100			
WEL	e	17	24	52				2.41	234	3.6s
	Sn			25	11	−0.7	100			
	e			47						
NPZ	eP*	17	24	52		0.8	100	2.66	287	4.1
	iSn			25	18	0.1	100			

AMPLITUDES: TUA 4.2 WEL 0.5 NPZ 0.8

PRO: 50/283

S-P at HNZ given as "very small".

50/ 271

OCT 19 $09^h51^m24^s.5$ 36°.10S 175°.92W 200 km M = 6.4
± 3.4 0.30 0.47 R S.E. of RES. 4.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	09	52	50		−4.3	100	6.14	242	6.3
	eS		54	00		−4.2	100			
NPZ	eP	09	53	25		0.2	100	8.48	247	4.0*
	iS		55	02		3.1	100			
WEL	eP	09	53	30		−0.7	100	8.93	232	6.4
	iS		55	09		−0.4	100			
CHR	e	09	54	20				11.51	226	5.1*
	eS		56	15		5.7	99			
KAI	eP	09	54	10		3.4	100	11.72	233	5.0*
	eS		56	11		−3.1	100			
SUV	iP	09	55	35		6.5	99	18.56	343	
	iS		58	00		−44.9				
API	eP	09	56	05		−2.9	100	22.51	11	

	eS	59 55	−1.4	100				

AMPLITUDES: TUA 9.5 NPZ 0.6 WEL 24
CHR 3.8 KAI 2.0

PRO: 50/284

ISS gives 32.8S 178.1W, and lists data from 55 additional stations. Distribution of stations in azimuth leaves longitude poorly controlled.

50/ 272

OCT 20 $07^h35^m04^s.8$ 42°.92S 173°.53E 33 km M = 3.6
± 0.8 0.06 0.07 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	e	07	35	30				0.90	227	3.2
	iSn			32		−0.4	100			
KAI	Pn	07	35	32		1.6	99	1.61	283	4.1
	Sn			49		−0.5	100			
WEL	ePn	07	35	34		0.1	100	1.87	30	3.6
	eSn			56		0.2	100			
NPZ	eP*	07	36	11		−1.0	100	3.87	6	3.5s

AMPLITUDES: CHR 0.6 KAI 0.9 WEL 1.0
NPZ 0.1

No provisional solution.

50/ 273

OCT 22 $19^h46^m56^s.9$ 40°.51S 173°.04E 12 km M = 3.6
± 0.2 0.01 0.02 R S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	19	47	23		−0.2	100	1.52	121	3.6
	eSn			43		0.2	100			
NPZ	iSn	19	47	46		0.1	100	1.65	29	3.6
KAI	eSn	19	48	03		0.1	100	2.36	211	3.4s

AMPLITUDES: WEL 1.5 NPZ 0.7 KAI 0.1

PRO: 50/285

50/ 274

OCT 24 $01^h45^m43^s.2$ 35°.21S 177°.38W 33 km M = 5.5
± 4.5 0.24 0.61 R S.E. of RES. 3.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	01	47	00		−4.0	99	5.66	229	5.3
	i			12						
	iSn		48	10		4.8	99			
AUC	i?	01	47	10				6.56	253	
	iPn			15		−1.3	100			
	i			27						
	i			42						
NPZ	eSn	01	49	17		19.6		7.84	238	4.6s
	e			57						
WEL	ePn	01	47	46		1.1	100	8.66	223	5.5
	e		48	17						
	iSn		49	18		0.9	100			
CHR	eSn	01	50	22		0.2	100	11.35	220	5.4
KAI	ePn	01	48	25		2.9	100	11.38	227	5.6
	Sn		50	19		−3.7	99			
SUV	iPn	01	49	45		0.9	100	17.39	347	
	Sn		53	06		18.9				

API	eP	01 50 03	−32.1	21.91	15
	eS	53 43	−47.1		

AMPLITUDES: TUA 2.0 NPZ 0.3 WEL 3.8
CHR 0.6 KAI 0.6

No N.Z. provisional solution. ISS gives 32.8S 178.1W, and lists data from 24 additional stations. Limited distribution of stations in azimuth does not provide adequate control in longitude.

50/ 275

OCT 26 $03^h49^m53^s.7$ 31°.54S 179°.48W 33 km M = 5.9
± 1.5 0.14 0.44 R S.E. of RES. 2.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
AUC	ePn	03	51	47		12.5		7.13	220	
	i			55						
TUA	ePn	03	51	42		−1.1	100	7.76	200	5.8
	iSn		53	09		2.9	99			
WEL	ePn	03	52	45		20.8		10.77	204	5.8
	iSn		54	17.5		−0.9	100			
KAI	ePn	03	53	20		23.3		13.15	211	5.9
	eSn		55	18		2.4	100			
SUV	iPn	03	53	01		0.0	100	13.46	352	
	i		56	40						
CHR	eSn	03	55	21		−3.1	99	13.50	205	5.9
API	eP	03	54	16		0.6	100	19.02	24	
	eSn		57	52		15.4				

AMPLITUDES: TUA 1.9 WEL 3.0 KAI 0.7
CHR 0.9

No N.Z. provisional solution. ISS gives 32.8S 178.1W, and lists data from 54 additional stations.

50/ 276

OCT 26 $15^h38^m47^s.3$ 33°.00S 176°.39W 33 km
± 1.1 0.09 0.18 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	15	40	38		0.6	100	7.81	220	
	Sn		41	59		−1.9	99			
AUC	ePn	15	40	36		−6.8		8.21	240	
	iSn		42	11		0.5	100			
NPZ	iPn	15	41	16		11.3		9.80	229	
	iSn		42	58		9.1				
WEL	ePn	15	41	21		1.9	99	10.86	218	
	iSn		43	07		−7.3				
KAI	ePn	15	41	56		0.5	100	13.54	222	
	eSn		44	06		−12.4				
CHR	ePn	15	41	55		−1.2	100	13.58	216	
	eSn		44	09		−10.7				
API	eP	15	43	07		−8.2		19.57	14	
	eSn		46	43		−0.4	100			

No N.Z. provisional solution. ISS gives 32.8S 178.1W, and lists data from 71 additional stations. Limited range of stations in azimuth gives inadequate control of longitude.

50/ 277

OCT 28 $05^h08^m20^s.4$ 38°.25S 178°.25E 12 km M ~ 4.3
± R R R R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP*	05	08	40		0.9	100	1.03	237	4.3
	eS*			52		−0.9	100			

AMPLITUDES: TUA 5.0

PRO: 50/286

FELT: Tolaga Bay (37), MM IV.

50/ 278

OCT 28 $09^h05^m20^s.6$ 28°.82S 174°.16E 33 km M = 6.0
±25.7 1.10 3.21 R S.E. of RES.22.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	ePn	09	08	25		41.3		10.22	180	4.8s
TUA	ePn	09	08	43		58.7		10.27	167	6.7
	iSn		09	55		21.7	99			
WEL	eSn	09	10	03		−22.7	99	12.45	178	5.7
KAI	ePn	09	09	00		26.7		13.86	189	5.7s
	eSn		11	07		7.4	100			
CHR	eSn	09	11	11		−9.7	100	14.73	184	5.6
API	eP	09	10	07		15.6	100	19.84	44	
	eSn		13	11		−12.3	100			

AMPLITUDES: NPZ 0.3 TUA 1.8 WEL 2.5
KAI 0.5 CHR 0.6

No N.Z. provisional solution. ISS gives 32.8S 178.1W, and lists data from 29 additional stations. Distribution of stations inadequate for reliable solution.

50/ 279

OCT 28 $16^h16^m14^s.5$ 38°.71S 177°.28E 102 km M ~ 4.3
± 0.3 0.01 0.02 1 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iP!	16	16	29		−0.0	100	0.13	228	
	iS!			40		0.1	100			
NPZ	iP	16	16	55		0.1	100	2.53	261	3.2s
	eS		17	25		−0.0	100			
WEL	e	16	17	13				3.21	216	4.3
	S			42		0.1	100			
KAI	eS	16	18	47		0.1	100	5.87	228	3.9s
CHR	eS	16	18	49		−0.2	100	5.96	215	3.7s

AMPLITUDES: TUA 10 NPZ 0.3 WEL 1.5
KAI 0.3 CHR 0.3

PRO: 50/287

50/ 280

OCT 29 $07^h57^m57^s.7$ 40°.92S 173°.97E 33 km M ~ 2.8
± 0.8 0.05 0.08 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	07	58	09		−1.9	99	0.71	121	2.8
	Sn			22		1.4	100			
NPZ	eP*	07	58	30		−0.6	100	1.85	3	3.4s
	eSn			49		0.8	100			
KAI	eSn	07	59	04		0.3	100	2.50	229	4.0s

AMPLITUDES: WEL 1.0 NPZ 0.3 KAI 0.3

No provisional solution.

50/ 281

NOV 01 $09^h13^m41^s.7$ 40°.43S 173°.94E 12 km M ~ 3.3

± 0.1 0.00 0.01 R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	09	14	01		0.1	100	1.05	144	3.3
	iS*			15		−0.1	100			
NPZ	iSn	09	14	24		−0.0	100	1.37	4	
KAI	eSn	09	14	59		0.0	100	2.83	222	4.1s

AMPLITUDES: WEL 1.6 KAI 0.3

PRO: 50/288

50/ 282

NOV 01 $13^h56^m18^s.7$ 41°.44S 173°.14E 12 km M ~ 3.2

± 0.9 0.07 0.06 R S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	eP*	13	56	40		−1.0	99	1.24	83	3.2
	eS*			58		0.6	100			
KAI	Pn	13	56	48		0.9	100	1.68	229	3.8s
	iSn		57	08		−0.4	100			
CHR	eSn	13	57	19		−0.0	100	2.12	190	3.6s

AMPLITUDES: WEL 0.8 KAI 0.5 CHR 0.3

PRO: 50/289

50/ 283

NOV 04 $08^h42^m14^s.4$ 40°.42S 177°.06E 33 km M = 4.5

± 1.5 0.06 0.12 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
HNZ	Sn-Pn			08		−2.3		0.76	350	
TUA	ePn	08	42	40		−0.0	100	1.61	3	4.0
	eP*			50		6.7				
WEL	iPn	08	42	46		1.5	100	1.94	243	4.8
	iSn		43	06		−1.0	100			
NPZ	P*	08	43	00		−1.2	100	2.67	300	4.4
	eSn			25		0.4	100			
CHR	eP*	08	43	40		7.0		4.54	225	4.4s
	eSn		44	08		−1.4	100			
KAI	eSn	08	44	16		1.8	99	4.73	242	4.8
	e		.	49						

AMPLITUDES: TUA 1.2 WEL 13 NPZ 1.8
CHR 0.4 KAI 0.6

PRO: 50/290

FELT: Southern Hawke's Bay (63, 64, 67), MM IV.

50/ 284

NOV 05 $09^h51^m22^s.7$ 38°.48S 176°.45E 33 km M = 3.9

± 4.9 0.35 0.24 R S.E. of RES. 1.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	09	51	35		−0.0	100	0.64	121	3.2
	e		52	19						
WEL	eSn	09	52	44		1.1	100	3.09	204	4.5
KAI	eSn	09	53	43		0.3	100	5.58	222	4.8s
CHR	eSn	09	53	47		−1.5	99	5.81	209	4.6s

AMPLITUDES: TUA 0.9 WEL 1.8 KAI 0.3

CHR 0.3

No provisional solution.

50/ 285

NOV 06 $21^h03^m08^s.3$ 37°.29S 174°.95E 12 km M = 4.8

± 2.9 0.15 0.12 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	21	03	45		−0.2	100	2.30	132	4.8
	ePg			55		0.2	100			
WEL	eSn	21	04	54		0.5	100	3.99	182	4.5
KAI	eSn	21	05	40		0.8	100	5.89	206	4.7s
CHR	eSn	21	05	52		−1.3	99	6.48	195	5.1

AMPLITUDES: TUA 1.0 WEL 1.7 KAI 0.3
CHR 0.9

No provisional solution.

50/ 286

NOV 08 $02^h39^m31^s.4$ 40°.11S 172°.42E 12 km M ~ 4.0

± 1.4 0.06 0.13 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	Pg	02	40	06		1.2	100	1.65	51	4.0
	Sn			19		−1.4	99			
WEL	e?	02	40	21				2.13	124	3.4s
	eSn			32		−0.0	100			
KAI	eS*	02	40	48		−0.8	100	2.53	197	4.0s
CHR	eP*?	02	40	32		1.1	100	3.42	178	3.6s

AMPLITUDES: NPZ 1.7 WEL 0.5 KAI 0.3
CHR 0.1

50/ 287

NOV 08 $18^h42^m03^s.1$ 40°.83S 173°.60E 12 km M ~ 3.4

± 0.4 0.02 0.04 R S.E. of RES. 0.9

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	18	42	22		0.8	99	0.99	118	3.4
	eS*			34		−0.5	100			
NPZ	ePg	18	42	40		0.5	100	1.80	12	3.5s
	iSn			55		−0.6	100			
KAI	eSn	18	43	09		−0.2	100	2.36	223	3.9s

AMPLITUDES: WEL 1.9 NPZ 0.5 KAI 0.3

PRO: 50/292

50/ 288

NOV 09 $06^h20^m16^s.9$ 35°.13S 177°.67E 33 km M ~ 5.4

± 5.1 0.23 0.39 R S.E. of RES. 2.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eSn	06	21	52		0.4	100	3.69	186	5.1s
WEL	ePn	06	21	50		0.1	100	6.55	199	5.4
	eSn		22	57		−3.3	99			
	eS*		23	35		0.3	100			
KAI	eSn	06	23	55		−0.4	100	8.85	212	5.8s
CHR	eSn	06	24	08		2.9	99	9.25	203	5.1s

AMPLITUDES: TUA 0.5 WEL 0.8 KAI 0.3
CHR 0.1

50/ 289

NOV 10 $00^h17^m26^s.7$ 31°.45S 176°.16E 33 km M = 6.1
± 0.2 0.01 0.02 R S.E. of RES. 0.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eSn	00	20	30		−0.0	100	7.38	174	6.7
WEL	ePn	00	19	45		0.0	100	9.87	186	5.5
	eSn		21	30		0.1	100			
KAI	eSn	00	22	30		16.7		11.68	198	5.5s
CHR	eSn	00	22	30		−0.0	100	12.37	192	5.4s

AMPLITUDES: TUA 1.6 WEL 1.4 KAI 0.5
CHR 0.5

PRO: 50/293

Listed in ISS additional readings.

50/ 290

NOV 10 $08^h30^m33^s.6$ 38°.27S 177°.75E 125 km M = 4.7
± 1.8 0.06 0.11 9 S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	08	30	55		1.3	99	0.72	221	4.5
	eS		31	08		−1.1	100			
AUC	eP	08	31	12		−5.6		2.75	300	
	eS			51		0.2	100			
NPZ	eP	08	31	20		−0.8	100	2.99	253	3.4s
	eS			57		0.5	100			
WEL	eP	08	31	31		−0.5	100	3.79	216	4.8
	iS		32	17		1.3	99			
	e			34						
KAI	e	08	32	12				6.44	227	3.9s
	eS		33	19		−0.9	100			
CHR	eS	08	33	18		−4.2		6.53	215	3.3s

AMPLITUDES: TUA 5.0 NPZ 0.4 WEL 3.4
KAI 0.3 CHR 0.1

PRO: 50/294

50/ 291

NOV 10 $09^h29^m00^s.1$ 41°.06S 173°.50E 33 km M = 4.1
± 0.3 0.02 0.02 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	09	29	17		−0.1	100	0.98	104	3.9
	iSn!			30		0.3	100			
NPZ	e	09	29	20				2.04	13	3.4s
	eSn			55		−0.1	100			
KAI	eSn	09	29	58		0.4	100	2.14	226	3.8s
CHR	iSn	09	30	07		−0.5	99	2.56	194	4.2

AMPLITUDES: WEL 6.8 NPZ 0.3 KAI 0.3
CHR 0.8

PRO: 50/295

50/ 292

NOV 11 $08^h36^m39^s.1$ 40°.35S 173°.29E 149 km M ~ 4.4
± 1.2 0.02 0.06 12 S.E. of RES. 0.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP	08	37	08		−0.0	100	1.42	26	3.0s

	eS			30		−0.2	100			
WEL	iP	08	37	09		0.6	100	1.46	130	4.4
	iS			31		0.1	100			
KAI	eS	08	37	55		0.5	100	2.59	212	3.8s
CHR	eS	08	38	08		−0.7	99	3.21	189	3.9*

AMPLITUDES: NPZ 0.3 WEL 5.8 KAI 0.5
CHR 0.9

PRO: 50/297

50/ 293

NOV 11 $14^h49^m50^s.7$ 44°.22S 169°.60E 12 km M = 4.5
± 2.7 0.10 0.20 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	14	50	24		−1.5	100	2.15	38	4.6
	eSn			53		1.3	100			
	eS*			57		0.3	100			
CHR	ePn	14	50	29		1.5	100	2.29	74	4.4
	eSn			55		−0.1	100			
WEL	eSn	14	51	54		−1.5	100	4.81	54	3.9s

AMPLITUDES: KAI 1.6 CHR 1.5 WEL 0.3

PRO: 50/298

50/ 294

NOV 12 $13^h43^m54^s.9$ 38°.00S 177°.00E 33 km M ~ 3.8
± R R R R S.E. of RES. 0.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	13	44	10		0.4	100	0.82	172	3.8
	eSn			20		−0.4	100			

AMPLITUDES: TUA 2.5

PRO: 50/299

FELT: Whakatane (27), MM IV.

50/ 295

NOV 13 $10^h21^m13^s.0$ 41°.20S 174°.72E 33 km M = 4.9
± 0.6 0.05 0.09 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP*	10	21	17		−1.7	100	0.10	159	
	iS*			23		0.2	100			
KAI	ePn	10	21	50		−4.9		2.81	241	5.0
	iSn		22	25		−1.5	100			
CHR	eP*	10	22	05		2.9	98	2.81	213	4.8
	eS*			43		4.2				
TUA	ePn	10	21	57		−0.8	100	3.02	39	4.9
	eSn		22	32		0.3	100			
AUC	eP*	10	22	28		0.0	100	4.33	1	
	iS*		23	25		0.6	100			

AMPLITUDES: WEL 73+ KAI 2.8 CHR 2.6
TUA 2.5

PRO: 50/300

FELT: Southern parts of the North Island, and at Collingwood (72); maximum reported intensity MM IV.

50/ 296

NOV 16 $13^h12^m13^s.1$ 33°.03S 178°.14E 33 km M = 6.9
± 4.4 0.26 0.43 R S.E. of RES. 2.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	ePn	13	13	34		−2.1	100	5.82	188	6.9
	Sn		14	40		1.1	100			
NPZ	ePn	13	14	08		17.7		6.87	207	5.7s
WEL	ePn	13	14	17		2.1	100	8.67	197	6.9
	e		15	43						
	eSn			48		0.7	100			
KAI	ePn	13	15	02		17.0		10.87	207	6.8
	eSn		16	41		0.8	100			
CHR	eSn	13	16	49		−2.6	99	11.34	201	7.0

AMPLITUDES: TUA 3.6 NPZ 0.3 WEL 4.5
KAI 0.6 CHR 1.3

PRO: 50/301

USCGS gives 32S 180. Listed in ISS additional readings.

50/ 297

NOV 19 $19^h52^m05^s.6$ 40°.42S 177°.74E 33 km M = 4.5
± 1.2 0.04 0.09 R S.E. of RES. 1.1

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
HNZ	Sn-Pn			04		−8.7		0.99	319	
TUA	ePn	19	52	31		−1.0	100	1.67	344	4.7
	eSn			53		1.2	99			
WEL	Pn	19	52	42		−0.1	100	2.41	248	4.8
	Sn		53	06		−3.5				
	eS*			20		0.3	100			
NPZ	ePn	19	52	55		3.1		3.13	294	4.1
	iSn		53	26		−0.8	100			
CHR	eSn	19	54	10		0.3	100	4.91	229	
	e		55	19						

AMPLITUDES: TUA 5.0 WEL 9.5 NPZ 0.6

PRO: 50/303

FELT: Waipawa (60) and Porangahau (64), MM IV.

50/ 298

NOV 25 $19^h32^m22^s.5$ 40°.58S 173°.04E 158 km M ~ 4.6
± 1.3 0.03 0.07 13 S.E. of RES. 1.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP	19	32	54		1.1	99	1.48	119	4.6
	iS		33	16		−0.1	100			
NPZ	iP	19	32	55		−0.2	100	1.71	28	4.1*
	iS		33	20		−0.3	100			
KAI	eP	19	33	02		−0.0	100	2.29	212	4.6*
	iS			33		0.6	100			
CHR	e	19	33	13				2.96	186	4.7*
	iS			46		−1.0	99			
TUA	e	19	33	56				3.64	62	3.8s

AMPLITUDES: WEL 9.0 NPZ 3.0 KAI 3.8
CHR 6.0 TUA 0.1

PRO: 50/304

50/ 299

NOV 26 $13^h27^m07^s.0$ 39°.65S 175°.84E 12 km M = 3.9
± 1.0 0.07 0.08 R S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	iPn	13	27	32		1.5	99	1.32	51	4.3
	iSn			47		−1.1	100			
NPZ	eSn	13	27	52		−0.1	100	1.48	293	3.2s
WEL	e?	13	27	27				1.83	206	3.4
	eSn		28	00		−0.2	100			
KAI	e	13	28	51				4.41	228	4.0s

AMPLITUDES: TUA 3.0 NPZ 0.3 WEL 0.6
KAI 0.1

No provisional solution.

50/ 300

NOV 26 $13^h49^m59^s.1$ 38°.75S 176°.24E 206 km M = 4.7
± 0.8 0.05 0.05 5 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	13	50	28		0.1	100	0.71	95	4.7
	iS			50		−0.3	100			
NPZ	iS	13	51	04		0.1	100	1.72	259	3.5*
WEL	iP	13	50	48		1.1	98	2.78	204	4.7
	S		51	24		0.1	100			
KAI	eP	13	51	17		−0.8	99	5.27	223	4.3*
	S		52	15		−3.9				
CHR	eP	13	51	21		0.1	100	5.51	209	4.2*
	S		52	24		−0.3	100			

AMPLITUDES: TUA 3.3 NPZ 0.7 WEL 4.0
KAI 0.8 CHR 1.0

PRO: 50/305

Listed in ISS additional readings.

50/ 301

NOV 27 $16^h59^m07^s.7$ 42°.86S 172°.84E 12 km M = 3.7
± 0.7 0.04 0.05 R S.E. of RES. 1.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
CHR	eS*	16	59	30		0.0	100	0.68	193	3.3
KAI	P*	16	59	29		1.2	100	1.11	287	4.1
	S*			42		−0.6	100			
WEL	ePn	16	59	41		−1.3	99	2.13	43	3.7
	eSn	17	00	09		0.7	100			

AMPLITUDES: CHR 1.3 KAI 2.3 WEL 0.9

No provisional solution.

50/ 302

NOV 30 $07^h20^m27^s.6$ 39°.34S 175°.92E 12 km M = 4.3
± 0.8 0.06 0.07 R S.E. of RES. 1.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	e?	07	20	35				1.09	61	3.6
	iS*		21	02		−0.0	100			
NPZ	iSn	07	21	13		0.9	100	1.47	280	
WEL	iPn	07	21	02		−0.3	100	2.13	204	4.3
	iS*			35		1.7	99			

KAI	eSn	07 22 27		−2.2	99	4.67	226	4.9
CHR	eSn	07 22 34		0.1	100	4.87	210	4.6s

AMPLITUDES: TUA 0.8 WEL 3.3 KAI 0.6
CHR 0.5

No provisional solution.

50/ 303

NOV 30 $18^h57^m18^s.0$ 40°.91S 172°.60E 12 km M ~ 3.9
± 3.7 0.19 0.15 R S.E. of RES. 2.0

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	18	57	46		−0.5	100	1.68	104	3.9
	iS*		58	11		0.8	100			
KAI	eS*	18	58	16		1.0	100	1.84	208	3.7s
CHR	eSn	18	58	29		−1.4	99	2.62	180	4.0s

AMPLITUDES: WEL 2.5 KAI 0.3 CHR 0.5

PRO: 50/306

50/ 304

DEC 01 $19^h16^m23^s.8$ 41°.31S 172°.64E 158 km M ~ 4.1
± 1.2 0.04 0.05 11 S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP	19	16	55		0.4	99	1.52	217	3.9*
	iS		17	18		−0.1	100			
WEL	P	19	16	55		−0.4	99	1.60	90	4.1
	S		17	20		0.2	100			
NPZ	S	19	17	38		−0.0	100	2.49	27	3.6*
TUA	eS	19	18	11		−7.5		4.27	56	4.0s

AMPLITUDES: KAI 0.9 WEL 2.4 NPZ 0.7
TUA 0.1

PRO: 50/307

50/ 305

DEC 04 $16^h54^m20^s.2$ 44°.92S 167°.96E 175 km M ~ 5.8
± 0.4 0.03 0.03 5 S.E. of RES. 0.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	eP	16	55	15		0.0	100	3.46	48	5.8
	S			57		−0.2	100			
CHR	eP	16	55	17		−0.1	100	3.63	69	5.4s
	eS		56	01		0.0	100			
WEL	eS	16	57	00		0.0	100	6.16	56	3.3s

AMPLITUDES: KAI 1.0 CHR 0.5 WEL 0.3

PRO: 50/308

FELT: Monowai (148), MM IV. S-P at MNW given as "very small".

50/ 306

DEC 10 $05^h39^m18^s.8$ 40°.18S 172°.72E 12 km M ~ 3.6
± 5.1 0.25 0.19 R S.E. of RES. 2.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	05	39	51		0.7	100	1.91	126	3.6
	iSn		40	13		−0.9	100			
KAI	eSn	05	40	28		−1.2	100	2.54	202	3.5s
CHR	eSn	05	40	50		1.4	100	3.35	181	4.0s

AMPLITUDES: WEL 1.0 KAI 0.1 CHR 0.3

PRO: 50/309

50/ 307

DEC 10 $13^h23^m06^s.2$ 28°.42S 179°.97E 300 km M ~ 7.4
± 0.8 0.11 0.31 R S.E. of RES. 2.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
SUV	iP	13	25	28		−1.1	100	10.32	352	
TUA	P	13	25	36		3.2	99	10.62	192	7.4
	S		27	27		−1.7	100			
NPZ	S-P		2	09		2.6	100	11.69	203	5.1*
	P		25	58		12.0				
	S		28	07		14.6				
WEL	P	13	26	09		0.8	100	13.52	197	7.2+
	S		28	30		−2.7	100			
COB	eP	13	26	18		4.6		13.96	203	5.9*
	eS		28	42		−0.2	100			
KAI	P	13	26	36		2.6	100	15.70	204	6.2*
	S		29	18		−1.2	100			
CHR	eP	13	26	43		4.2		16.20	199	6.4*
	S		29	29		−0.5	100			
API	iP	13	26	44		2.5	100	16.44	30	
	eS		29	32		−2.3	100			

AMPLITUDES: TUA 47 NPZ 6.0 WEL 70+
COB 18 KAI 24 CHR 60

PRO: 50/310

FELT: Mainly in eastern parts of both islands from the Bay of Plenty to Banks Peninsula. No intensities above MM IV reported. Listed in ISS, which adopts N.Z. provisional epicentre and gives data from 110 additional stations. The depth is confirmed by numerous reports of pP and ScS.

50/ 308

DEC 10 $15^h50^m10^s.1$ 38°.53S 175°.84E 167 km M = 4.8
± 1.9 0.10 0.13 17 S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	eP	15	50	35		−2.0	99	1.06	105	4.9
	iS			59		1.0	100			
NPZ	eP	15	50	41		−0.0	100	1.48	248	3.1s
	e			51						
	e		51	11						
WEL	eiP	15	50	53		−4.2		2.87	196	4.7
	iS		51	34		0.7	100			
COB	eS	15	51	47		−0.4	100	3.50	222	3.9*
KAI	eP	15	51	29		1.4	100	5.23	219	4.1s
	e		52	23						
CHR	eP	15	51	33		1.0	100	5.55	205	4.6*
	eS		52	34		−1.3	100			

AMPLITUDES: TUA 6.0 NPZ 0.3 WEL 4.5
COB 0.7 KAI 0.5 CHR 2.7

PRO: 50/311

Listed in ISS additional readings.

50/ 309

DEC 11 $23^h05^m07^s.8$ 40°.34S 173°.40E 181 km M ~ 4.3
± 2.1 0.05 0.10 17 S.E. of RES. 1.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	P	23	05	40		1.0	100	1.38	22	
	S		06	02		−1.0	100			
WEL	eP	23	05	43		3.7		1.40	133	4.3
	iS		06	04		0.6	100			
KAI	eP	23	05	58		5.3		2.65	214	4.0*
	eS		06	28		0.6	100			
CHR	eS	23	06	39		−1.2	99	3.24	190	4.4*
TUA	eS	23	06	41		−0.1	100	3.28	63	4.5s

AMPLITUDES: WEL 4.4 KAI 0.7 CHR 2.4
TUA 0.5

PRO: 50/312

DEC 13 $17^h50^m34^s.5$ 40°.57S 174°.97E 33 km 50/ 310 M ~ 3.8
± ND ND ND R S.E. of RES. ND

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	17	50	48		−0.0	100	0.73	192	3.8
	iSn			58		−0.0	100			
KAI	eSn	17	52	00		0.0	100	3.31	233	3.7s

AMPLITUDES: WEL 9.0 KAI 0.1

PRO: 50/313

FELT: Paraparaumu Beach (65) and Masterton (66), MM III.

DEC 14 $19^h32^m32^s.0$ 40°.12S 175°.39E 33 km 50/ 311 M ~ 3.5
± 0.5 0.01 0.04 R S.E. of RES. 0.4

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iPn	19	32	53		0.3	100	1.26	202	3.5
	Sn		33	08		−0.2	100			
NPZ	eSn	19	33	13		−0.1	100	1.47	316	3.8+
KAI	eS*	19	34	29		0.2	100	3.84	230	3.9s

AMPLITUDES: WEL 1.7 NPZ 1.5+ KAI 0.1

No provisional solution.

DEC 16 $09^h54^m30^s.3$ 40°.60S 175°.10E 72 km 50/ 312 M ~ 4.5
± 0.4 0.01 0.04 3 S.E. of RES. 0.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	iP	09	54	46		−0.1	100	0.73	200	4.5
	iS			58		0.0	100			
NPZ	iP	09	54	59		0.2	100	1.73	332	
	iS		55	20		−0.1	100			
KAI	e	09	55	32				3.37	234	4.0*
	eS		56	01		0.1	100			
	e			23						
CHR	e	09	55	37				3.46	211	4.0*
	eS		56	03		−0.1	100			

AMPLITUDES: WEL 40 KAI 0.7 CHR 1.0

PRO: 50/314

FELT: Western parts of Wellington province. Maximum reported intensity MM IV at Foxton (61).

DEC 17 $11^h40^m05^s.1$ 38°.86S 176°.50E 136 km 50/ 313 M ~ 4.6
± 2.6 0.14 0.10 18 S.E. of RES. 1.8

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
TUA	e	11	40	25				0.51	84	
	iP			25		−0.1	100			
	iS			40		−0.4	100			
NPZ	eP	11	40	38		−0.6	100	1.90	263	
	iS		41	05		1.0	100			
KAI	eP	11	41	27		3.3		5.33	225	~4.5*
	iS		42	22		−2.4	98			
CHR	eP	11	41	27		0.9	100	5.51	211	~4.6*
	iS		42	30		1.3	100			

AMPLITUDES: KAI 1.4 CHR 2.3

PRO: 50/315

FELT: Opotiki (35) and Wairoa (53), MM IV.

DEC 18 $06^h07^m47^s.6$ 40°.61S 173°.26E 12 km 50/ 314 M = 3.9
± 0.7 0.04 0.06 R S.E. of RES. 1.2

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	ePn	06	08	12		0.8	100	1.32	121	3.7
	Sn			28		−0.8	100			
NPZ	iSn	06	08	37		0.0	100	1.66	22	4.0
KAI	eSn	06	08	53		−0.8	100	2.37	215	3.9s
CHR	eSn	06	09	09		0.9	100	2.96	189	4.1s

AMPLITUDES: WEL 2.6 NPZ 1.5 KAI 0.3
CHR 0.5

PRO: 50/316

DEC 21 $10^h55^m16^s.4$ 40°.95S 172°.38E 12 km 50/ 315 M = 4.7
± 0.7 0.03 0.07 R S.E. of RES. 1.3

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	ePn	10	55	45		−0.5	100	1.73	204	4.9
	eSn		56	06		−1.4	100			
WEL	Pn	10	55	46		−1.0	100	1.84	101	4.8
	iSn		56	09		−0.9	100			
NPZ	ePn	10	55	54		0.8	100	2.29	35	4.3
	eSn		56	20		−0.9	100			
	eS*			28		1.2	100			
CHR	eP*	10	56	03		1.3	100	2.58	176	4.6
	eS*			37		1.4	100			

AMPLITUDES: KAI 5.5 WEL 16 NPZ 1.7
CHR 1.9

PRO: 50/327

FELT: Western Nelson and northern Westland (72, 74, 75, 79). Maximum reported intensity MM IV.

DEC 21 $11^h07^m03^s.4$ 40°.36S 176°.04E 12 km 50/ 316 M = 4.4
± 3.8 0.07 0.25 R S.E. of RES. 2.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	Pn	11	07	28		0.8	100	1.34	226	3.9

	iSg		51	2.3	100			
NPZ	eSn	11 08	02	1.4	100	1.99	310	4.0
	eSg		10	−0.6	100			
CHR	e?	11 07	55			4.07	218	
	ePg	08	25	−0.6	100			
KAI	e?	11 07	27			4.10	237	5.2
	eSn	08	48	−3.3	99			

AMPLITUDES: WEL 4.0 NPZ 1.1 KAI 1.8

PRO: 50/328

FELT: Western Nelson. Maximum reported intensity MM IV at Karamea (74).

DEC 23 $09^h39^m00^s.6$ 41°.88S 172°.75E 12 km 50/ 317 M = 4.9

± 0.3 0.02 0.03 R S.E. of RES. 0.7

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
KAI	iP*	09	39	22.5		0.4	100	1.19	237	5.0
	iS*			38		0.0	100			
WEL	iPn	09	39	29		0.7	99	1.62	69	4.7
	iSn			49		0.0	100			
CHR	ePn	09	39	29		0.3	100	1.66	183	5.0
	iSn			49		−0.8	99			
NPZ	eSn	09	40	21		−0.7	100	2.99	20	3.3s

AMPLITUDES: KAI 15 WEL 17 CHR 11 NPZ 0.1

PRO: 50/330

DEC 27 $03^h45^m47^s.9$ 41°.15S 176°.15E 12 km 50/ 318 M = 4.3

± 1.2 0.04 0.06 R S.E. of RES. 0.5

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
WEL	P*	03	46	07		−0.1	100	1.05	262	4.1
	iS*			21		−0.1	100			
CHR	eSn	03	47	22		−0.2	100	3.54	227	4.5
KAI	e	03	47	12				3.80	247	4.4s
	Sn			29		0.4	99			

AMPLITUDES: WEL 10 CHR 0.9 KAI 0.4

PRO: 50/331

DEC 29 $06^h08^m20^s.1$ 39°.96S 173°.63E 12 km 50/ 319 M = 4.5

± 0.7 0.04 0.09 R S.E. of RES. 1.6

STN	PHASE	H	M	S	DIR	RES	WT	DIST	AZ	MAG
NPZ	eP*	06	08	36		−1.6	99	0.95	21	
	eS*			52		1.6	100			
WEL	ePn	06	08	46		−1.2	100	1.58	147	4.3
	S*		09	10		0.7	100			
KAI	ePn	06	09	07		−0.4	100	3.06	212	4.7
	eSn			44		0.9	100			
CHR	ePn	06	09	20		4.6		3.64	192	4.1s

AMPLITUDES: WEL 6.0 KAI 1.0 CHR 0.3

PRO: 50/332

DISCUSSION

This Report assigns origins to about 100 earthquakes for which no previous solutions have been published, but omits some 70 others to which origins were assigned either in the Preliminary (P-series) Bulletins, or in the annual summaries published by Hayes. These rejected 'origins' are no more than the geographical coordinates of the sources of unconfirmed felt reports, and the greater number (though by no means all) are unlikely to represent real earthquakes. The list of unconfirmed reports includes the provisionally allocated reference numbers of the rejected earthquakes.

The origins now listed have been obtained by a uniform procedure that is substantially equivalent to the one currently in use. The small differences are attributable to the problems that arise from the smaller number and more restricted geographical spread of the stations then operating, and to their poorer instrumentation and timing. Not all the new positions are necessarily closer to the 'true' origins of the earthquakes, but gross errors have been corrected, and the use of an improved crustal model and a more uniform method of reduction should have produced a real gain in accuracy in the case of all well-recorded earthquakes lying within the perimeter of the recording network. When shocks lie far to the north or south of the country, the limited azimuthal spread of the recording stations produces a large uncertainty in the position of the epicentre along a roughly north-west to south-east line, particularly when no readings from Australian stations are available. It would in most cases be possible to obtain a solution within the known limits of the belts of seismicity by a selection of stations, or an arbitrary choice of depth, but it was thought preferable to leave the formal solutions untouched. This makes the inadequate solutions more readily identifiable. In many cases the shocks affected are large enough to have been assigned epicentres by such international agencies as the International Seismological Summary or the United States Coast and Geodetic Survey, using additional data from more distant stations. When this information is available it is included in the text.

The proportion of significantly altered solutions disclosed by differencing the old and new results appears from the following table:

AMOUNT OF CHANGE GREATER THAN	NUMBER OF EARTHQUAKES 1948	1949	1950	Total
0°.25 in Lat.	30	28	47	105
0°.25 in Long.	52	46	63	161
30km in Depth	26	23	45	94
0°.5 in Lat.	10	10	24	44
0°.5 in Long.	19	18	30	67
50km in Depth	15	17	33	65
1°.0 in Lat.	4	4	9	17
1°.0 in Long.	6	6	14	26
100km in Depth	4	5	4	13
Total shocks differenced	197	214	283	

Shocks originally classified as S (shallow) or N (normal) depth have been assumed to lie at the conventional depths of 12km or 33km now adopted.

It is uncertain how far the changes made arise from systematic errors in the older (or indeed in the present) results, but some regularities have been noticed. A group of shocks near COB, to which depths of 100km or more were formerly assigned, prove to be abnormally shallow. The new solutions, confirmed in many cases by the presence of identifiable crustal phases, suggest depths as shallow as 5km, or in some cases even zero. On the other hand, some shocks showing numerous crustal phases had been assigned sub-crustal depths. Not only was the thickness of the New Zealand crust then very uncertain, but several reputable European seismologists were suggesting that, whatever wave-theory might say, observation showed that waves ascending from foci below the crust could produce crustal phases. The consensus of New Zealand opinion was that deep solutions should not therefore be excluded on *a priori* grounds. Now that proper identification of the crustal phases is possible, no difficulty was experienced in finding shallow solutions.

The magnitude revisions include the small exercise of discretion already described, and follow the methods of Haines, which are summarised in current Reports. When ample data are available, the use of the new methods results in a greatly reduced scatter, and this

gives an increased confidence in the solutions that depend on only a few stations. The use of a sign ~ to indicate entries that have been modified or which depend on only a single station should make it possible for researchers to select those data best suited for their particular investigation. Most magnitudes published earlier were rounded off to the nearest quarter or even half magnitude, so that the present listing represents a substantial improvement. Seismologists will be aware that large uncertainties in the magnitudes assigned to shocks far to the north or south of the country inevitably remain. It is desirable to bring this to the attention of other readers.

FELT EARTHQUAKE REPORTS

Observers are unevenly distributed over the region in which an earthquake can be felt, and personal circumstances may prevent any one of them from feeling a shock that was felt by others. This affects both the study of distribution of intensity in a single earthquake, and the statistics of earthquakes felt in a given place. The method of summarising the data used here is intended to minimise these problems.

In the first section, the names of places from which reports were received are listed, together with the "localities" in which they lie. These standard localities are defined by dividing the land area of New Zealand into rectangles whose sides measure half a degree of latitude or longitude, as shown on the accompanying map. Each is assigned a number and a name, usually that of the principal centre of population within it. The intensities quoted are intended to be those of the Modified Mercalli scale, N.Z. version (Eiby, 1966). A ? indicates that no information beyond the fact that the shock was felt is available, or that the description is not precise enough to allow an intensity to be assigned.

Localities from which felt reports were received during the period are listed alphabetically in the second section, followed by the number of the shock in the list of origins, and the maximum intensity reported from within that locality.

Finally, reported shocks that were not recorded instrumentally are listed. The proportion of these events that represents real earthquakes is probably higher than in recent Reports. In most cases they were believed to be certain enough to justify listing the coordinates of the source of the report as an established origin. Other reports were quietly discarded. Some of these early "earthquakes" clearly arose from the incorrect matching of approximately-timed felt reports with other reports and the instrumental readings. Only those supported by instrumental data are now assigned serial numbers and listed as origins. The readings are sometimes insufficient to define an origin, but the origins adopted are consistent with the available readings and the felt effects.

Although the monthly "P-Bulletins" issued at the time list all except a few of the earthquakes reported felt, and give a rough indication of the felt area and the maximum intensity reported, no full list of the felt observations in this period seems to have been published. Hayes (1949, 1950, 1952) prepared isoseismal maps of some of the larger shocks, but they were printed on a very small scale and do not show the individual observations. Since felt intensities are among the most commonly misunderstood and misused of all seismological data, some account of the qualities and deficiencies of the data now presented (which are in a form as close as possible to that now used) is desirable.

In 1950, the reporting form supplied to observers differed greatly from the one used now. After asking the place, time, duration, and direction of the earthquake, it set out the Wood and Neumann (1931) version of the Mercalli scale, and asked that statements that applied should be underlined and those that did not be deleted. Many reporters contented themselves with ringing one of the marginal numbers. Obsolete forms dating from before 1942 and based on the Rossi-Forel scale, and even a few going back to the previous century appeared from time to time. Additional information was gleaned from press clippings. Press reports of this period are greatly superior to those of the present day in both accuracy and detail, but the supply of clippings to the Observatory was erratic. The agency responsible received only a limited number of copies of each paper, and Ministers had first claim upon information thought likely to concern or interest them. The remains were then scanned for items of use to their departments.

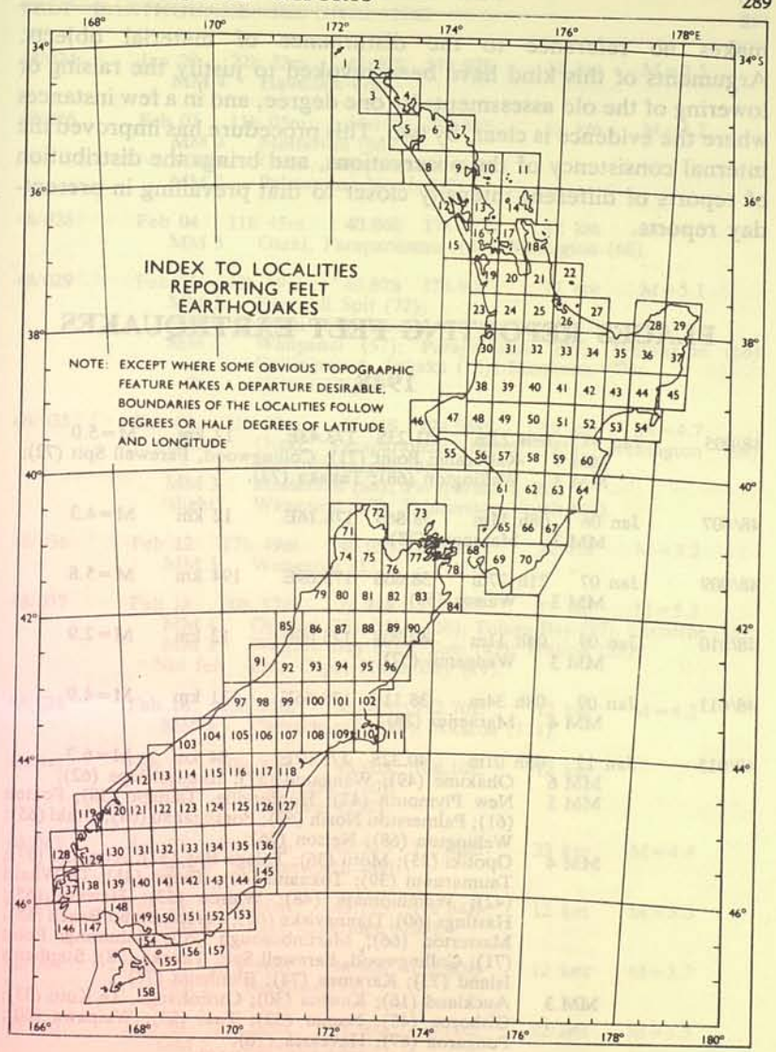
It is difficult to estimate the number of reporters, but it was probably about sixty or a hundred. A few were scientific amateurs, but most were postmasters or members of their staffs, lighthouse keepers, or other government officers stationed in remote places. Some shocks in mountainous and sparsely populated areas could have exceeded magnitude 5 without producing a felt report, but such cases would be exceptional.

The intensities given here differ in many cases from those previously published, which are considered unsatisfactory for several reasons, the most important being that the time of occurrence of the shock and the estimates of direction and duration do not seem to

STANDARD REPORTING LOCALITIES

1 Three Kings	41 Taupo	81 Glenhope	121 Glenorchy
2 Te Reinga	42 Te Whaiti	82 Wairau	122 Arrowtown
3 Ninety Mile Beach	43 Tuai	83 Awatere	123 Wanaka
4 Doubtless Bay	44 Whakapunaki	84 Cape Campbell	124 St Bathans
5 Kaitaia	45 Gisborne	85 Greymouth	125 Kurow
6 Kaikohe	46 Cape Egmont	86 Reefton	126 Duntroon
7 Bay of Islands	47 New Plymouth	87 Maruia	127 Waimate
8 Dargaville	48 Whangamomona	88 Hanmer	128 Secretary Is.
9 Whangarei	49 Ohakune	89 Clarence	129 Doubtful Sound
10 Bream Head	50 Chateau	90 Kaikoura	130 Te Anau
11 Moko Hinau	51 Kaweka	91 Hokitika	131 Livingstone Mts
12 Kaipara	52 Napier	92 Kumara	132 Kingston
13 Warkworth	53 Wairoa	93 Arthur's Pass	133 Alexandra
14 Barrier Islands	54 Mahia	94 Lake Sumner	134 Poolburn
15 Helensville	55 Hawera	95 Culverden	135 Ranfurly
16 Auckland	56 Waverley	96 Cheviot	136 Oamaru
17 Waiheke	57 Wanganui	97 Franz Josef	137 Resolution Is.
18 Coromandel	58 Taihape	98 Hari Hari	138 Pillans Pass
19 Pukekohe	59 Ruahine	99 Whitcombe Pass	139 Monowai
20 Mercer	60 Hastings	100 Lake Coleridge	140 Mossburn
21 Thames	61 Bulls	101 Oxford	141 Waikaia
22 Mayor Is.	62 Palmerston North	102 Rangiora	142 Roxburgh
23 Raglan	63 Dannevirke	103 Haast	143 Lawrence
24 Hamilton	64 Porangahau	104 Bruce Bay	144 Outram
25 Matamata	65 Otaki	105 Mount Cook	145 Dunedin
26 Tauranga	66 Masterton	106 Tekapo	146 Puysegur Point
27 Whakatane	67 Castlepoint	107 Mount Somers	147 Poteretere
28 Te Kaha	68 Wellington	108 Ashburton	148 Tuatapere
29 East Cape	69 Featherston	109 Rakaia	149 Invercargill
30 Kawhia	70 Martinborough	110 Christchurch	150 Gore
31 Te Kuiti	71 Mount Stevens	111 Akaroa	151 Clinton
32 Tokoroa	72 Takaka	112 Big Bay	152 Balclutha
33 Rotorua	73 D'Urville Is.	113 Jackson's Bay	153 Waihola
34 Murupara	74 Karamea	114 Makarora	154 Bluff
35 Opotiki	75 Motueka	115 Lake Ohau	155 Ruapuke
36 Motu	76 Nelson	116 Pukaki	156 Tahakopa
37 Tolaga Bay	77 Blenheim	117 Fairlie	157 Owaka
38 Mokau	78 Picton	118 Timaru	158 Stewart Is.
39 Taumarunui	79 Westport	119 George Sound	159 Chatham Islands
40 Tokaanu	80 Murchison	120 Milford	

have been adequately considered in the original assessment. As a result the proportion of intensities that were assigned MM I or MM II is much larger than would be the case in a set of current observations. It may reasonably be assumed that a shock of less than MM III would not have awakened people in the early morning hours, and that a shock that continued for ten seconds and had a clear direction of motion reached an intensity of at least MM IV. On the other hand, an observer's assessment of MM VI must be treated with caution if he



STANDARD REPORTING LOCALITIES

makes no reference to the disturbance of material objects. Arguments of this kind have been invoked to justify the raising or lowering of the old assessments by one degree, and in a few instances where the evidence is clear, by two. This procedure has improved the internal consistency of the observations, and brings the distribution of reports of different intensity closer to that prevailing in present-day reports.

PLACES REPORTING FELT EARTHQUAKES

1948

48/005 Jan 04 08h 22m 41.23S 173.43E 12 km M=5.0
MM 4 Kahurangi Point (71); Collingwood, Farewell Spit (72);
MM 3 Wellington (68); Takaka (72).

48/007 Jan 06 08h 11m 38.86S 178.16E 12 km M=4.3
MM 3 Maraenui (28).

48/009 Jan 07 21h 27m 38.66S 178.69E 194 km M=5.8
MM 3 Wairoa (53).

48/010 Jan 09 04h 11m 40.20S 175.00E 12 km M=2.9
MM 3 Wanganui (57).

48/011 Jan 09 08h 34m 38.11S 178.66E 131 km M=4.9
MM 4 Maraenui (28).

48/015 Jan 15 05h 01m 40.32S 175.07E 94 km M=6.3
MM 6 Ohakune (49); Wanganui (57); Bunnythorpe (62);
MM 5 New Plymouth (47); Hunterville, Taihape (58); Foxton (61); Palmerston North (62); Porangahau (64); Otaki (65); Wellington (68); Nelson (76);
MM 4 Opotiki (35); Motu (36); Tolaga Bay (37); Awakino (37); Taumarunui (39); Tokaanu (40); Taupo (41); Te Whaiti (42); Wainuiomata (48); Wairoa (53); Hawera (65); Hastings (60); Dannevirke (63); Paraparaumu Beach (65); Masterton (66); Martinborough (70); Kahurangi Point (71); Collingwood, Farewell Spit, Takaka (72); Stephen's Island (73); Karamea (74); Blenheim (77);
MM 3 Auckland (16); Kawhia (30); Otorohanga, Te Kuiti (31); Gisborne (45); Napier (52); Tuai (53); Waipawa (60); Pongaroa (67); Havelock (78);
MM 2 Hamilton (24); Christchurch (110);
Not felt Greymouth (85); Kaikoura (90); Timaru (118); Dunedin (145).
(For isoseismal map, see Garrick, 1949)

48/019 Jan 20 09h 44m 34.38S 776.28W 33 km M=6.3
MM 2 Wellington (68).

48/021 Jan 25 11h 42m 40.20S 175.00E 12 km M=3.3
MM 2 Wanganui (57).

48/024 Jan 27 22h 52m 41.50S 173.89E 12 km M=3.5
MM 4 Havelock (78).

48/026 Feb 01 11h 05m 41.11S 175.68E 12 km M=4.2
MM 4 Masterton (66);
MM 3 Otaki, Paraparaumu (65);
MM 2 Palmerston North (62).

48/028 Feb 04 11h 45m 40.86S 175.47E 12 km M=4.0
MM 3 Otaki, Paraparaumu (65); Wellington (68).

48/029 Feb 04 18h 59m 40.87S 173.90E 12 km M=5.1
MM 5 Farewell Spit (72);
MM 4 Otaki (65); Havelock (78);
MM 3 Wanganui (57); Paraparaumu (65); Wellington (68); Collingwood, Takaka (72); Blenheim (77);
? Nelson (76).

48/035 Feb 09 11h 13m 41.41S 174.96E 33 km M=4.7
MM 4 Otaki, Paraparaumu Beach (65); Wellington (68); Martinborough (70);
MM 3 Masterton (66); Paraparaumu (65);
'slight' Wanganui (57); Palmerston North (62).

48/036 Feb 12 17h 49m 40.05S 175.11E 12 km M=3.2
MM 3 Wanganui (57).

48/037 Feb 18 00h 17m 38.33S 177.73E 71 km M=5.2
MM 4 Opotiki (35); Motu (36); Tolaga Bay (37); Gisborne (45);
MM 3 Waipiro Bay (37); Tuai (43); Wairoa (53);
Not felt East Cape, Hicks Bay (29).

48/038 Feb 18 03h 57m 43.02S 172.70E 12 km M=4.2
MM 3 Christchurch (110); Akaroa (111).

48/041 Feb 27 00h 38m 45.90S 168.10E 12 km
MM 4 Nightcaps (140);
? Monowai (139).

48/042 Feb 27 09h 49m 42.24S 173.48E 33 km M=4.4
MM 4 Molesworth (89).

48/043 Feb 29 14h 10m 43.17S 171.84E 12 km M=3.3
MM 4 Lake Coleridge (100).

48/044 Mar 01 22h 56m 38.90S 176.00E 12 km M=3.7
MM 2 Reporoa (33).

48/045 Mar 01 23h 26m 38.90S 176.00E 12 km M=3.5
MM 2 Reporoa (33).

48/046 Mar 02 01h 13m 38.90S 176.00E 12 km M=4.2
MM 3 Reporoa (33).

48/047 Mar 02 04h 34m 38.90S 176.00E 12 km M=3.5
MM 2 Reporoa (33).

48/048 Mar 02 10h 12m 38.90S 176.00E 12 km M=4.6
MM 4 Reporoa (33).

48/049 Mar 02 11h 16m 39.36S 174.78E 33 km M=4.3
MM 4 Taumarunui (39); Tokaanu;
MM 3 New Plymouth (47); Ohakune (49); Wanganui (57); Hunterville (58).

48/050 Mar 03 09h 38m 39.89S 175.50E 33 km M=3.8
MM 3 Wanganui (57).

48/053 Mar 05 08h 43m 38.70S 178.20E 33 km M=3.8
MM 3 Tolaga Bay (37).

48/054 Mar 10 09h 20m 38.24S 175.69E 12 km M=4.7
MM 4 Tokaanu (40);
MM 3 Taumarunui (39).

48/056 Mar 19 14h 04m 40.17S 174.40E 33 km M=4.1
MM 4 Wanganui (57).

48/057 Mar 23 02h 44m 40.40S 176.40E 12 km M=3.8
MM 3 Porangahau (64).

48/058 Mar 24 13h 23m 40.25S 174.25E 12 km M=3.9
MM 4 Wanganui (57).

48/060 Apr 08 05h 56m 40.21S 174.68E 33 km M=3.9
MM 3 Wanganui (57).

48/061 Apr 18 09h 05m 41.03S 175.93E 12 km M=4.3
MM 3 Masterton (66);
MM 2 Bunnythorpe (62).

48/062 Apr 18 19h 33m 40.07S 176.04E 12 km M=4.1
MM 2 Bunnythorpe (62).

48/063 Apr 18 23h 39m 41.53S 172.34E 12 km M=4.5
MM 3 Takaka (72); Karamea (74); Tadmor (75).

48/066 Apr 25 19h 04m 41.76S 172.26E 12 km M=4.2
MM 3 Karamea (74); Tadmor (75);
MM 2 Westport (79).

48/070 May 22 18h 57m 42.47S 172.88E 12 km M=5.9
MM 6 Hanmer Springs (88);
MM 5 Kahurangi Point (71);
MM 4 Nelson (76); Westport (79); Culverden (95);
MM 3 Collingwood, Takaka (72); Tadmor (75); Murchison (80); Greymouth (85); Reefton (86); Kaikoura (90); Hokitika (91); Otira (93);
MM 2 Karamea (74).

48/071 May 22 19h 21m 42.50S 173.00E 12 km M=6.4
MM 7 Hanmer Springs (88);
MM 5 Murchison (80); Hokitika (91);
MM 4 Wellington (68); Kahurangi Point (71); Collingwood (72); Karamea (74); Tadmor (75); Nelson (76); Blenheim (77); Westport (79); Greymouth (85); Reefton (86); Otira (93); Culverden (95); Cheviot (96); Lake Coleridge (100); Christchurch (110); Akaroa, Akaroa Lighthouse (111);

MM 3 Havelock North (60); Paraparaumu (65); Takaka (72); Havelock (78); Westport (79); Reefton (86); Kaikoura (90).
(For isoseismal map, see Eiby, 1953)

48/072 May 22 19h 29m 42.50S 172.90E 12 km M=4.6
Supposed felt reports of this event from Westport (79) and Reefton (86), timed 19h 30m, almost certainly refer to earthquake 48/71.

48/073 May 22 19h 36m 42.84S 173.05E 12 km M=6.2
MM 5 Murchison (80); Cheviot (96);
MM 4 Blenheim (77); Westport (79); Hokitika (91); Culverden (95); Christchurch (110);
MM 3 Hawera (55); Paraparaumu (65); Wellington (68); Collingwood, Takaka (72); Tadmor (75); Nelson (76); Greymouth (85); Reefton (86); Otira (93); Akaroa (111);
MM 2 Havelock (78).

48/074 May 22 19h 53m 42.67S 173.02E 12 km M=5.7
MM 4 Culverden (95);
MM 3 Paraparaumu (65); Takaka (72); Tadmor (75); Nelson (76); Reefton (86); Kaikoura (99); Hokitika (91); Christchurch (110); Akaroa (111);
MM 2 Karamea (74); Havelock (74); Greymouth (85); Otira (93).

48/075 May 22 20h 01m 42.55S 173.01E 12 km M=5.7
MM 4 Westport (79); Culverden (95); Christchurch (110);
MM 3 Paraparaumu (65); Collingwood, Takaka (72); Karamea (74); Tadmor (75); Nelson (76); Greymouth, Reefton (86); Kaikoura (90); Hokitika (91); Otira (93); Akaroa Lighthouse (111);
MM 2 Havelock (78).

48/076 May 22 21h 21m 42.49S 172.86E 12 km M=5.8
MM 5 Otira (93);
MM 4 Tadmor (75); Westport (79); Culverden (95); Christchurch (110);
MM 3 Paraparaumu (65); Karamea (74); Murchison (80); Greymouth (85); Reefton (86); Kaikoura (90); Hokitika (91);
MM 2 Nelson (76).

48/084 May 25 17h 24m 37.42S 177.74E 33 km M=5.6
MM 5 Maraenui (28); Opotiki (35);
MM 4 Tuai (43); Wairoa (53);
MM 3 Tolaga Bay (37).

48/085 May 26 01h 24m 42.48S 172.91E 12 km M=4.7
MM 4 Hanmer Springs (88).

48/087 May 28 20h 18m 39.00S 178.40E 12 km M=4.8
MM 4 Wairoa (53).

48/089 May 30 20h 13m 41.40S 174.40E 12 km M=4.3
MM 3 Wellington (68);
MM 2 Paraparaumu (65).

48/090 Jun 01 08h 04m 41.00S 175.54E 12 km M=4.4
MM 3 Paraparaumu (65); Wellington (68).

48/095 Jun 07 18h 05m 37.34S 176.94E 198 km M=5.0
MM 3 Maraenui (28).

48/101 Jun 16 12h 00m 39.00S 174.10E 12 km
MM 3 New Plymouth (47).

48/104 Jun 19 06h 18m 43.37S 169.02E 12 km M=5.7
MM 6 Bruce Bay (104);
MM 4 Greymouth (85); Hokitika (91); Lake Coleridge (100); Queenstown (132);
MM 3 Fairlie (117); Cromwell (133); Gore (150).

48/105 Jun 19 06h 56m 43.40S 169.10E 12 km M=5.2
MM 3 Greymouth (85);
MM 2 Gore (150).

48/106 Jun 19 07h 05m 43.67S 169.59E 12 km M=5.7
MM 6 Bruce Bay (104);
MM 5 Queenstown (132);
MM 4 Greymouth (85); Hokitika (91); Oamaru (132); Cromwell (133); Roxburgh (142); Gore (150).
(For isoseismal map, see Hayes, 1949)

48/107 Jun 19 08h 14m 42.96S 169.41E 12 km M=4.6
MM 3 Hokitika (91).

48/109 Jun 21 20h 05m 41.45S 174.68E 12 km M=4.3
MM 4 Brooklyn, Upper Hutt, Wellington, Wellington Heads (68);
MM 3 Paraparaumu, Paraparaumu Beach (65).

48/110 Jun 22 21h 31m 40.89S 175.26E 12 km M=4.2
MM 4 Otaki, Paraparaumu Beach (65);
MM 3 Paraparaumu (65).

48/111 Jun 29 09h 13m 43.29S 171.75E 12 km M=4.3
MM 3 Lake Coleridge (100).

48/112 Jun 30 19h 26m 38.68S 178.66E 12 km M=4.4
MM 4 Tolaga Bay (37).

48/116 Jul 04 14h 13m 40.33S 175.57E 12 km M=4.5
MM 4 Wanganui (57);
MM 3 Wellington (68).

48/118 Jul 11 19h 24m 38.60S 178.90E 12 km M=3.3
MM 3 Tolaga Bay (37).

48/119 Jul 12 00h 24m 42.07S 172.61E 12 km M=4.3
MM 4 Hanmer Springs (88);
MM 3 Molesworth (89).

48/120 Jul 12 07h 46m 45.49S 168.60E 12 km M=5.1
MM 5 Monowai (139);
MM 4 Queenstown (132); Lumsden, Nightcaps (140); Dunedin (145); Puysegur Point (146); Centre Island (148);

Invercargill (149); Gore (150); Awarua Radio (154);
MM 3 Cromwell (133);
MM 2 Roxburgh (142);
'slight' Puysegur Point (146);
Not felt Haast (103); Jackson's Bay (113); Milford Sound (120).

48/123 Jul 14 03h 19m 45.34S 167.37E 12 km M=4.9
MM 4 Queenstown (132); Cromwell (133); Monowai (139);
MM 3 Invercargill (149);
MM 2 Roxburgh (142); Gore (150).

48/124 Jul 14 10h 48m 46.02S 167.89E 12 km M=5.5
MM 5 Monowai (139);
MM 4 Queenstown (132); Cromwell (133); Lumsden, Nightcaps (140); Invercargill Airport (149); Gore (150); Awarua Radio (154);
MM 3 Roxburgh (142); Puysegur Point (146); Invercargill (149).

48/126 Jul 16 16h 34m 38.97S 175.12E 12 km M=4.2
MM 3 Taumarunui (39).

48/128 Jul 18 08h 23m 45.00S 167.50E 12 km M=4.3
MM 4 Queenstown (132);
MM 3 Awarua Radio (154).

48/129 Jul 23 09h 19m 45.48S 167.25E 12 km M=5.1
MM 5 Monowai (139);
MM 3 Queenstown (132); Gore (150); Awarua Radio (154);
MM 2 Cromwell (133).

48/130 Jul 24 19h 13m 41.60S 173.80E 12 km M=3.5
MM 4 Blenheim (77).

48/131 Jul 26 14h 20m 38.81S 178.58E 12 km M=3.9
MM 4 Tolaga Bay (37).

48/132 Jul 29 05h 09m 39.75S 174.01E 206 km M=5.3
MM 3 Wanganui (57).

48/133 Jul 29 18h 59m 42.68S 173.17E 12 km M=3.8
MM 3 Hanmer Springs (88).

48/143 Aug 16 13h 50m 39.11S 177.96E 12 km M=5.0
MM 4 Opotiki (35); Tolaga Bay (37); Te Whaiti (42); Gisborne (45); Wairoa (53);
MM 3 Tuai (43); Portland Island (54); Havelock North (60).

48/145 Aug 19 11h 44m 38.80S 178.40E 12 km M=4.6
MM 3 Gisborne (45).

48/146 Aug 19 12h 25m 38.80S 178.40E 12 km M=3.9
MM 3 Gisborne (45).

48/147 Aug 20 08h 14m 40.41S 175.78E 12 km M=4.9
MM 4 Wanganui (57); Bunnythorpe, Pahiatua (62); Dannevirke (63);
MM 3 Hunterville (58); Paraparaumu Beach (65); Wellington (68).

48/150 Aug 21 15h 37m 39.25S 177.03E 33 km M=4.2
MM 3 Hastings (60).

48/153 Aug 29 04h 58m 41.03S 174.10E 12 km M=4.6
MM 4 Wellington (68).

48/158 Aug 31 23h 07m 31.25S 177.02E 33 km M=6.7
MM 2 Wellington (68).

48/164 Sep 06 00h 34m 43.40S 171.42E 12 km M=4.2
MM 4 Lake Coleridge (100).

48/165 Sep 06 00h 38m 38.02S 177.58E 116 km M=5.7
MM 5 Opotiki (35);
MM 4 Whakatane (27); Tolaga Bay (37); Tuai (43);
MM 3 Motu (36); Te Whaiti (42);
MM 2 Wellington (68);
Not felt Tauranga (26).

48/166 Sep 07 21h 47m 41.03S 174.83E 12 km M=4.0
MM 3 Wellington (68).

48/167 Sep 09 16h 29m 39.93S 175.81E 12 km M=4.2
MM 4 Wanganui (57).

48/168 Sep 10 03h 39m 40.00S 175.00E 12 km M=3.8
MM 3 Wanganui (57).

48/170 Sep 11 17h 16m 40.12S 174.96E 33 km M=4.3
MM 5 Wanganui (57).

48/178 Sep 29 18h 02m 41.00S 174.00E 12 km M=3.7
MM 2 Tawa Flat (68).

48/181 Oct 05 03h 58m 41.39S 174.03E 12 km M=4.4
MM 3 Wellington (68).

48/184 Oct 09 19h 11m 45.19S 168.24E 12 km M=4.8
MM 3 Dunedin (145);
? Monowai (139).

48/187 Oct 12 17h 52m 40.32S 174.42E 12 km M=4.1
MM 3 Wanganui (57).

48/188 Oct 13 18h 16m 38.00S 177.00E 12 km M=3.7
? Whakatane (27).

48/189 Oct 13 19h 34m 38.00S 177.00E 12 km M=4.1
'strong' Edgecumbe (27);
? Whakatane (27).

48/190 Oct 16 17h 46m 40.41S 174.19E 33 km M=4.7
MM 4 Wanganui (57);
MM 3 Foxton (61); Otaki (65);
MM 2 Paraparaumu (65).

48/193 Oct 29 03h 27m 42.54S 172.94E 12 km M=4.5
MM 4 Hanmer Springs (88).

48/194 Oct 29 22h 05m 39.80S 175.32E 12 km M=3.9
MM 3 Wanganui (57).

48/195 Oct 31 02h 03m 40.47S 175.09E 33 km M=3.5
MM 3 Paraparaumu Beach (65).

48/196 Oct 31 10h 22m 42.20S 173.15E 12 km M=3.5
MM 4 Hanmer Springs (88).

48/197 Nov 01 11h 32m 39.32S 175.50E 12 km M=3.8
MM 3 Wanganui (57).

48/200 Nov 04 02h 21m 43.29S 171.55E 12 km M=3.6
MM 3 Lake Coleridge (100).

48/203 Nov 11 04h 37m 42.50S 173.00E 12 km M=3.3
MM 3 Hanmer Springs (88).

48/204 Nov 11 15h 37m 40.71S 173.04E 12 km M=4.2
MM 4 Collingwood (72).

48/207 Nov 17 21h 54m 40.03S 175.35E 12 km M=4.3
MM 3 Wanganui (57).

48/210 Nov 25 19h 42m 40.08S 175.31E 33 km M=3.8
MM 3 Wanganui (57).

48/214 Dec 07 08h 19m 39.50S 179.52E 12 km M=5.7
MM 3 Motu (36); Te Whaiti (42); Wellington (68);
MM 2 Tolaga Bay (37).

48/219 Dec 13 09h 31m 40.82S 172.85E 5 km M=4.0
MM 3 Kahurangi Point (71); Collingwood, Takaka (72).

48/220 Dec 13 10h 59m 40.80S 172.53E 12 km M=4.6
MM 2 Karori (68).

48/221 Dec 17 10h 36m 41.30S 172.50E 12 km M=4.0
'sharp' Motueka (75).

48/225 Dec 21 03h 01m 38.84S 177.17E 68 km M=4.7
MM 3 Motu (36); Te Whaiti (42).

48/227 Dec 28 00h 49m 40.89S 174.76E 83 km M=5.3
MM 4 Awakino (38); New Plymouth (47); Waverley (56); Wanganui (57); Taihape (58); Foxton (61); Bunnythorpe (62); Paraparaumu, Paraparaumu Beach (65); Masterton (66); Wellington (68); Martinborough (70);
MM 3 Taumarunui (39); Waiouru (50); Hawera (55); Palmerston North (62); Takaka (72); Nelson (76).
? Farewell Spit (72).

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49/004 Jan 12 05h 58m 39.80S 176.99E 12 km M=4.1
? Havelock North (60).

49/005 Jan 15 04h 42m 39.19S 174.87E 201 km M=5.8
MM 3 Taihape (58); Paekakariki (65); Wellington (68);
? Havelock North (60).

49/007 Jan 20 00h 02m 38.76S 175.94E 137 km M=5.4
? Havelock North (60).

49/014 Jan 26 16h 13m 40.10S 175.00E 12 km M=4.0
MM 4 Wanganui (57).

49/017 Jan 29 21h 12m 40.81S 172.23E 12 km M=4.6
MM 5 Kahurangi Point (71);
MM 3 Karamea (74).

49/018 Jan 30 23h 22m 41.16S 172.40E 12 km M=4.1
MM 5 Kahurangi Point (71);
MM 3 Karamea (74).

49/019 Jan 31 15h 37m 40.37S 174.39E 12 km M=4.3
MM 3 Paraparaumu Beach (65).

49/020 Feb 02 18h 01m 42.21S 172.79E 12 km M=3.7
MM 3 Hanmer (88).

49/021 Feb 03 19h 21m 42.85S 173.01E 12 km M=4.5
MM 3 Hanmer (88).

49/023 Feb 06 18h 19m 36.70S 178.19E 12 km M=4.9
MM 3 Opotiki (35);
? Waihi (21); Whakatane (27).

49/024 Feb 06 18h 29m 37.55S 177.96E 33 km M=4.5
MM 3 Opotiki (35);
? Waihi (21); Whakatane (27).

49/025 Feb 06 18h 42m 37.48S 177.89E 12 km M=4.5
MM 2 Opotiki (35);
? Waihi (21); Whakatane (27).

49/026 Feb 06 18h 44m 37.30S 178.22E 33 km M=4.7
MM 3 Opotiki (35);
? Waihi (21); Whakatane (27).

49/029 Feb 09 11h 32m 40.00S 175.00E 12 km M=4.1
MM 4 Wanganui (57).

49/030 Feb 09 17h 30m 39.68S 174.35E 199 km M=6.4
MM 5 Hawera (55); Wanganui (57); Taihape (58); Blenheim (77); Murchison (80); Greymouth (85);
MM 4 Taumarunui (39); New Plymouth (47); Whangamomona (48); Ohakune (49); Wairoa (53); Portland Lighthouse (54); Hunterville (58); Havelock North (60); Foxton (61); Bunnythorpe (62); Dannevirke (63); Porangahau (64); Otaki, Paraparaumu (65); Masterton (66); Wellington (68); Martinborough (70); Collingwood, Takaka (72); Nelson (76); Havelock (78); Westport (79); Greymouth (85); Reefton (86); Hanmer Springs (88); Kaikoura (90); Akaroa Lighthouse (111);
MM 3 Tolaga Bay (37); Tadmor (75); Culverden (95); Lake

Coleridge (100); Rakaia (109); Christchurch (110); Akaroa, Akaroa Lighthouse (111);
'sharp' Ohakea (61); French Pass (73);
'slight' The Brothers (78).
(For isoseismal map, see Hayes, 1950.)

49/031 Feb 13 09h 32m 38.90S 175.20E 12 km M=3.6
MM 2 Taumarunui (32).

49/032 Feb 13 18h 24m 34.25S 179.74E 33 km M=6.7
MM 4 Opotiki (35); Tolaga Bay (37);
MM 3 Wairoa (53);
MM 1 Wellington (68);
'slight' Te Whaiti (42).

49/033 Feb 14 16h 28m 37.30S 175.70E 12 km M=4.4
MM 3 Paeroa (21).

49/034 Feb 16 20h 53m 40.64S 176.17E 33 km M=3.9
MM 3 Dannevirke (63).

49/037 Feb 21 17h 56m 40.07S 175.71E 12 km M=4.4
MM 3 Wanganui (57); Taihape (58); Dannevirke (63).

49/038 Feb 21 18h 06m 40.09S 175.69E 12 km M=4.2
MM 3 Dannevirke (63).

49/041 Feb 27 10h 43m 40.55S 177.77E 12 km M=4.3
'slight' Carterton (70).

49/043 Mar 05 00h 25m 38.89S 175.25E 12 km M=3.6
MM 3 Taumarunui (39).

49/045 Mar 06 11h 22m 38.70S 176.10E 12 km M=3.2
'slight' Taupo (41).

49/046 Mar 06 16h 45m 38.70S 176.10E 12 km M=3.0
'slight' Taupo (41).

49/047 Mar 07 20h 17m 40.48S 176.58E 12 km M=4.2
MM 3 Dannevirke (63); Porangahau (64).

49/050 Mar 16 03h 13m 38.92S 177.68E 12 km M=3.8
MM 3 Wairoa (53).

49/053 Mar 21 23h 05m 43.27S 173.50E 33 km M=4.3
MM 2 Christchurch (110).

49/059 Apr 05 15h 50m 42.08S 175.09E 12 km M=4.7
MM 3 Blenheim (77).

49/063 Apr 14 18h 58m 41.30S 174.04E 12 km M=4.7
MM 3 Karori (68); Takaka (72); Blenheim (77).

49/068 May 03 06h 25m 40.85S 174.37E 12 km M=4.8
MM 4 Wellington (68);
MM 3 Otaki, Paraparaumu, Paraparaumu Beach (65).

49/070 May 03 17h 07m 42.50S 172.98E 12 km M=4.4
MM 4 Hanmer (88); Culverden (95); Waiau (96).

49/074 May 08 18h 16m 38.46S 177.14E 33 km M=4.1
MM 3 Opotiki (35).

49/089 May 27 08h 54m 45.57S 167.14E 33 km M=5.9
MM 6 Gore (150);
MM 5 Queenstown (132); Cromwell (133); Invercargill (149);
MM 4 Milford Sound (120); Wanaka (123); Middlemarch (135); Oamaru (136); Nightcaps (140); Roxburgh (142); Lawrence (143); Dunedin, Roslyn (145); Puysegur Point (146); Centre Island, Tuatapere (148); Invercargill (149); Balclutha, Nugget Point (152); Waipapa Point (154); Dog Island (155);
MM 3 Lumsden (140);
'sharp' Awarua Radio (154);
'slight' Timaru (118); Puysegur Point (146).

49/091 May 29 18h 12m 39.64S 174.36E 200 km M=5.5
MM 5 Wanganui (57);
MM 4 Taihape (58); Foxton (61); Karori (68);
MM 3 Hawera (55); Dannevirke (63); Otaki, Paraparaumu, Paraparaumu Beach (65); Nelson (76);
? Christchurch (110).

49/094 Jun 03 10h 04m 37.75S 175.00E 12 km M=2.7
MM 3 Raglan (23).

49/099 Jun 12 09h 27m 42.35S 173.09E 12 km M=4.2
MM 3 Kahurangi Point (71).

49/101 Jun 15 16h 18m 43.17S 172.46E 12 km M=4.6
MM 4 Christchurch (110); Akaroa, Akaroa Lighthouse (111);
MM 3 Timaru (118).

49/106 Jun 22 00h 40m 40.00S 174.69E 33 km M=5.2
MM 4 Hawera (55); Waverley (56); Wanganui (57);
MM 3 New Plymouth (47); Collingwood (72);
MM 2 Wellington (68).

49/111 Jun 28 14h 43m 40.17S 175.58E 12 km M=4.3
MM 3 Taihape (58).

49/113 Jul 01 16h 21m 39.08S 176.16E 33 km M=5.1
MM 2 Wairoa (53).

49/117 Jul 04 06h 09m 40.85S 174.38E 12 km M=4.5
MM 4 Masterton (66);
MM 3 Otaki, Paraparaumu (65); Karori (68).

49/126 Jul 18 23h 07m 40.54S 172.88E 12 km M=3.3
? Murchison (80).

49/132 Jul 21 15h 10m 40.10S 173.73E 159 km M=5.2
MM 3 Blenheim (77);
MM 2 Wellington (68).

49/143 Aug 06 13h 19m 44.94S 168.15E 12 km M=4.9
MM 4 Queenstown (132);
MM 3 Cromwell (133).

49/144 Aug 06 22h 31m 45.25S 168.46E 12 km M=4.5
MM 2 Queenstown (132).

49/147 Aug 08 21h 26m 39.43S 174.62E 12 km M=4.4
MM 3 New Plymouth (47).

49/152 Aug 18 01h 53m 40.93S 172.65E 5 km M=3.5
MM 4 Kahurangi Point (71).

49/154 Aug 25 09h 22m 36.41S 178.44E 258 km M=5.5
MM 3 Tolaga Bay (37).

49/160 Aug 31 21h 29m 41.32S 172.24E 5 km M=4.8
MM 4 Kahurangi Point (71);
MM 3 Cobb River (72).

49/168 Sep 10 20h 50m 38.34S 176.71E 165 km M=5.4
MM 2 Opotiki (35); Tolaga Bay (37).

49/169 Sep 11 20h 23m 38.44S 176.20E 148 km M=5.5
MM 2 Opotiki (35).

49/172 Sep 14 09h 40m 41.10S 172.70E 12 km M=3.4
MM 2 Takaka (40).

49/173 Sep 14 22h 29m 38.60S 176.08E 12 km M=4.1
MM 3 Taupo (41).

49/174 Sep 14 22h 35m 38.83S 176.13E 33 km M=4.2
MM 1 Taupo (41).

49/177 Sep 16 00h 25m 40.08S 177.03E 12 km M=4.6
MM 3 Dannevirke (63).

49/179 Sep 16 05h 45m 39.25S 173.41E 12 km M=5.2
MM 4 New Plymouth (47);
MM 2 Takaka (72).

49/184 Sep 26 02h 14m 38.61S 173.55E 33 km M=4.4
MM 5 New Plymouth (47).

49/185 Sep 27 17h 13m 42.19S 172.93E 12 km M=5.4
MM 5 Karamea (74); Murchison (80); Cheviot (96);
MM 4 Collingwood (72); Blenheim (77); Westport (79); Reefton (86); Hanmer Springs (88); Culverden (95);
MM 3 Nelson (76); Greymouth (85); Kaikoura (90); Hokitika (91); Otira (93).
(For isoseismal map, see Hayes, 1950.)

49/203 Oct 03 11h 42m 41.26S 174.24E 12 km M=4.4
MM 4 Karori (68);
MM 3 Blenheim (77);
MM 2 Paraparaumu (65).

49/205 Oct 08 06h 49m 40.00S 175.10E 12 km M=3.4
MM 3 Wanganui (57).

49/206 Oct 10 16h 52m 40.95S 172.75E 12 km M=4.1
MM 4 Takaka (72);
MM 2 Nelson (76).

49/208 Oct 11 19h 23m 41.30S 175.87E 12 km M=4.2
MM 2 Paraparaumu (65).

49/211 Oct 16 00h 32m 41.58S 172.35E 12 km M=4.0
MM 4 Karamea (74).

49/213 Oct 19 18h 42m 44.92S 167.80E 12 km M=4.6
MM 4 Lumsden (140);
? Monowai (139).

49/216 Oct 26 07h 39m 37.60S 176.20E 12 km M=4.1
MM 4 Tauranga (26);
? Te Puke (26).

49/217 Oct 26 09h 01m 37.60S 176.20E 12 km M=4.3
MM 4 Tauranga, Te Puke (26);
'slight' Paeroa (21).

49/219 Oct 29 06h 59m 43.32S 173.04E 33 km M=4.1
MM 3 Christchurch (110).

49/225 Nov 08 15h 12m 40.61S 176.22E 12 km M=4.3
MM 4 Foxton (61); Bunnythorpe (62); Dannevirke (63);
MM 3 Palmerston North (3).

49/228 Nov 09 22h 23m 44.97S 168.14E 12 km M=4.4
MM 4 Monowai (139).

49/230 Nov 15 04h 22m 40.87S 174.36E 12 km M=3.8
MM 2 Wellington (68).

49/237 Nov 22 00h 51m 29.30S 782.00W 190 km M=7.0
MM 3 Tolaga Bay (37); Wellington (68).

49/238 Nov 23 11h 58m 40.20S 176.15E 12 km M=3.7
MM 4 Dannevirke (58).

49/244 Dec 01 17h 07m 40.98S 174.36E 12 km M=3.6
MM 4 Karori (68).

49/249 Dec 07 18h 37m 38.55S 176.07E 169 km M=4.7
MM 3 Opotiki (35).

49/254 Dec 18 05h 39m 35.12S 179.97E 300 km M=6.7
MM 4 Tolaga Bay (37); Te Whaiti (42); Wairoa (53);
MM 3 Opotiki (35); Porangahau (64);
MM 1 Wellington (68).

49/255 Dec 18 09h 35m 39.46S 176.01E 12 km M=5.7
MM 5 Taihape (58);
MM 4 Opotiki (35); Taumarunui (39); Taupo (41); Wairoa (53); Bunnythorpe (62); Dannevirke (63); Otaki (65);
MM 3 Tolaga Bay (37); Dannevirke (63); Porangahau (64); Paraparaumu Beach (65);
'heavy' Waiouru (50).

49/260 Dec 22 13h 12m 41.36S 172.32E 12 km M=5.4
MM 5 Cobb River (72); Karamea (74); Murchison (80);
MM 4 Tadmor (75); Westport (79); Greymouth (85); Reefton (86);
MM 3 Wellington (68); Nelson (76); Blenheim (77).

1950

50/003 Jan 07 14h 21m 41.14S 174.56E 33 km M=5.6
MM 6 Plimmerton (68);
MM 5 Paraparaumu (65); Karori, Paremata, Wainuiomata (68); Martinborough (70); Havelock (77); Collingwood (72);
MM 4 Whangamomona (48); Taihape (58); Bunnythorpe (62); Dannevirke (63); Otaki (65); Masterton (66); Tadmor (75); Nelson (76); Blenheim (77); Westport (79);
MM 3 Takaka (72).
(For isoseismal map, see Hayes, 1952a.)

50/008 Jan 07 21h 36m 40.72S 174.86E 33 km M=3.6
MM 3 Paremata (68).

50/009 Jan 08 02h 33m 41.11S 174.33E 12 km M=3.4
MM 2 Paraparaumu (65).

50/011 Jan 09 08h 40m 38.29S 177.64E 110 km M=5.4
MM 4 Whakatane (27); Opotiki (35); Motu (36); Tolaga Bay (37); Motu (36);
MM 3 Wairoa (53).

50/015 Jan 12 20h 48m 41.06S 174.36E 6 km M=5.7
MM 4 Wanganui (56); Foxton (61); Otaki, Paraparaumu, Paraparaumu Beach (65); Masterton (66); Wellington (68); Blenheim, Havelock (77); Collingwood (72);
MM 3 Taihape (58); Bunnythorpe (62); Dannevirke (63); Martinborough (70);
MM 2 Takaka (72).
(For isoseismal map, see Hayes, 1952a)

50/016 Jan 12 20h 49m 41.15S 174.61E 33 km M=5.6
MM 5 Wellington (68);
MM 4 Wanganui (56); Dannevirke (63); Otaki, Paraparaumu (65); Masterton (66); Collingwood (72); Blenheim, Havelock (77);
MM 3 Taihape (58); Foxton (61); Palmerston North (62); Tadmor (75); Nelson (76);
? Takaka (72).

50/017 Jan 12 20h 59m 41.13S 174.52E 33 km M=4.6
MM 4 Paraparaumu Beach (65);
MM 2 Wellington (68).

50/018 Jan 12 21h 29m 39.21S 177.63E 33 km M=4.0
MM 3 Gisborne (45).

50/020 Jan 13 05h 30m 40.91S 174.46E 12 km M=4.3
MM 3 Karori (68).

50/022 Jan 13 07h 52m 41.04S 174.53E 33 km M=3.9
MM 1 Karori (68).

50/023 Jan 13 10h 13m 39.15S 174.96E 226 km M=5.6
MM 3 Palmerston North (62); Dannevirke (63); Otaki (65); Havelock (77);
MM 2 Karori (68).

50/025 Jan 15 02h 04m 40.82S 174.43E 12 km M=4.1
MM 3 Paremata (68);
MM 1 Paraparaumu Beach (65).

50/026 Jan 15 02h 09m 41.03S 174.34E 12 km M=3.3
MM 1 Paremata (68).

50/028 Jan 16 11h 38m 37.68S 177.33E 33 km M=4.2
MM 3 Whakatane (27).

50/029 Jan 16 18h 43m 40.87S 174.60E 12 km M=3.6
MM 2 Paraparaumu Beach (65);
MM 1 Karori (68).

50/030 Jan 17 04h 15m 38.87S 175.82E 142 km M=5.0
MM 3 Dannevirke (63).

50/031 Jan 19 19h 10m 40.95S 174.12E 12 km M=4.2
MM 3 Lower Hutt (68).

50/032 Jan 19 20h 27m 37.94S 177.11E 33 km M=4.1
MM 4 Opotiki (35).

50/033 Jan 21 02h 13m 41.03S 174.30E 12 km M=5.1
MM 4 Otaki, Paraparaumu, Paraparaumu Beach (65); Wellington (68);
MM 3 Takaka (72).

50/036 Jan 23 10h 20m 41.00S 174.75E 12 km M=3.6
MM 2 Paraparaumu, Paraparaumu Beach (65).

50/037 Jan 23 16h 24m 40.96S 172.72E 0 km M=4.1
MM 2 Takaka (72).

50/038 Jan 24 00h 33m 41.09S 175.84E 33 km M=4.4
? Paraparaumu (65).

50/039 Jan 25 07h 45m 39.03S 177.28E 81 km M=4.3
MM 4 Eskdale (52).

50/043 Jan 31 19h 21m 39.55S 177.10E 33 km M=4.6
MM 3 Havelock North (60);
? Waipukurau (60).

50/045 Feb 01 10h 03m 41.52S 174.90E 12 km M=3.6
MM 2 Wellington (68).

50/046 Feb 01 10h 17m 41.17S 175.23E 12 km M=3.6
? Wellington (68).

50/047 Feb 01 12h 54m 41.49S 175.15E 12 km M=3.7
? Wellington (68).

50/051 Feb 03 16h 06m 40.81S 174.43E 7 km M=5.5
MM 4 Foxton (61); Palmerston North (62); Otaki, Paraparaumu, Paraparaumu Beach (65); Wellington (68);
MM 3 Dannevirke (63); Masterton (66); Takaka (72); Nelson (76); Blenheim (77).

50/055 Feb 04 18h 52m 41.15S 174.29E 11 km M=3.6
MM 2 Karori (68).

50/056 Feb 05 01h 23m 49.08S 164.18E 33 km M=6.6
MM 6? 'Minor damage' reported. Halfmoon Bay (158);
MM 4 Centre Island, Tuatapere (148); Invercargill (149); Awarua (154);
MM 3 Cromwell (133); Nightcaps (140); Nugget Point (152).

50/057 Feb 06 09h 22m 41.39S 174.30E 12 km M=3.8
MM 2 Wellington (68).

50/058 Feb 06 10h 40m 42.74S 172.90E 5 km M=4.9
MM 5 Cheviot (96);
MM 4 Kaikoura (90); Culverden, Hanmer Springs (95); Christchurch (110);
? Wigram (110);
'severe' Scargill (95).

50/068 Feb 14 15h 17m 40.92S 174.48E 12 km M=3.6
MM 2 Wellington (68).

50/075 Feb 17 20h 23m 40.91S 175.74E 7 km M=4.2
MM 3 Masterton (66).

50/079 Feb 20 10h 44m 37.67S 177.38E 289 km M=5.5
MM 3 Napier (52).

50/084 Feb 25 09h 32m 39.01S 178.48E 11 km M=4.8
MM 3 Motu (36); Tolaga Bay (37); Wairoa (53).

50/086 Feb 28 18h 58m 38.88S 176.70E 30 km M=5.7
MM 5 Opotiki (35); Taupo (40); Te Whaiti (42); Gisborne (45); Wairoa (53);
MM 4 Whakatane (27); Ohakune (49); Wairoa (53); Wanganui (56); Havelock North (60); Tophouse (81);
MM 3 Rotorua (33); Taumarunui (39); Napier (52); Taihape (58); Waipawa (60); Dannevirke (63); Porangahau (64);
MM 2 Bunnythorpe (62); Collingwood (72);
MM 1 Tokaanu (40); Palmerston North (62);
Not Felt Te Kuiti (31); New Plymouth (47); Pongaroa (67).
(For isoseismal map, see Hayes, 1952)

50/090 Mar 03 23h 02m 39.88S 177.24E 5 km M=4.8
MM 3 Napier (52).

50/096 Mar 12 16h 44m 39.05S 176.64E 33 km M=4.9
MM 5 Te Whaiti (42); Wairoa (53);
MM 4 Te Teko (34); Opotiki (35);
MM 3 Thames (21); Wairoa (53).

50/097 Mar 13 09h 38m 40.55S 174.04E 33 km M=5.7
MM 4 Kauroa, Raglan (23); Taumarunui (39); New Plymouth (47); Whangamomona (48); Ohakune (49); Tarawera (52); Hawera (55); Wanganui (57); Hunterville, Taihape (58); Foxton (61); Bunnythorpe (62); Dannevirke (63); Porangahau (64); Levin, Paraparaumu (65); Eketahuna (66); Pongaroa (67); Wellington (68); Martinborough (70); Kahurangi Point (71); Collingwood, Takaka (72); Tadmor (75); Nelson (76); Blenheim (77); Havelock (78); Tophouse (81); Hillersden (92).
MM 3 Awakino (38); Taumarunui (39); New Plymouth (47); Wairoa (53); Waipawa (60); Palmerston North (62); Masterton (66); Westport (79); Hanmer Springs (88); Kaikoura (90); Cheviot (96); Christchurch (110); Akaroa (111); Lumsden (140);
Not Felt Napier (52); Culverden (95).

50/098 Mar 13 16h 10m 38.75S 176.75E 12 km M=2.8
MM 4 Te Whaiti (42).

50/099 Mar 13 18h 10m 38.29S 178.00E 33 km M=5.3
MM 6 Whakatane (27);
MM 5 Opotiki (35); Te Whaiti (42);
MM 4 Te Teko (34); Motu (36); Tolaga Bay (37);
MM 3 Tauranga (26); Wairoa (53)

50/100 Mar 13 19h 11m 38.05S 177.03E 12 km M=4.1
MM 4 Opotiki (35);
MM 3 Te Teko (34).

50/102 Mar 14 00h 43m 37.75S 177.25E 12 km M=3.9
MM 5 Whakatane (27).

50/103 Mar 14 11h 26m 37.75S 176.52E 12 km M=4.3
MM 5 Whakatane (27).

50/104 Mar 15 19h 43m 40.99S 174.40E 12 km M=3.9
MM 3 Paraparaumu (65);
MM 2 Karori (68).

50/109 Mar 18 05h 38m 41.52S 173.90E 12 km M=5.4
MM 4 Blenheim (77); Havelock (78);
MM 3 Otaki, Paraparaumu Beach (65); Karori (68); Collingwood (72); Nelson (72).

50/111 Mar 19 10h 01m 40.83S 173.00E 12 km M=4.2
MM 4 Kahurangi Point (71);
MM 3 Collingwood, Takaka (72).

50/112 Mar 20 15h 28m 38.00S 179.00E 12 km M=4.4
MM 3 Tolaga Bay (37);
The identification of this report with the instrumental readings is open to question.

50/113 Mar 21 14h 49m 38.75S 178.50E 12 km M=3.8
MM 4 Tolaga Bay (37).

50/114 Mar 23 18h 15m 37.75S 177.00E 12 km M=3.5
MM 4 Whakatane (27).

50/117 Mar 26 16h 13m 37.75S 177.25E 12 km M=3.2
MM 5 Whakatane (27).

50/119 Mar 26 20h 29m 37.75S 177.00E 12 km M=3.8
MM 5 Whakatane (27).

50/120 Mar 27 01h 24m 37.75S 177.25E 12 km M=4.1
MM 4 Whakatane (27);
MM 3 Opotiki (35).

50/122 Mar 28 00h 37m 39.36S 177.51E 12 km M=5.2
MM 4 Napier (52); Wairoa (53).

50/124 Mar 28 02h 37m 38.94S 177.83E 5 km M=4.3
MM 3 Wairoa (53).

50/126 Mar 28 08h 41m 39.25S 177.81E 33 km M=5.2
MM 5 Tarawera (52);
MM 4 Wairoa (53);
MM 3 Taupo (41); Napier (52).

50/127 Mar 28 11h 04m 39.13S 176.96E 12 km M=3.7
MM 3 Napier (52).

50/133 Apr 01 19h 52m 40.53S 175.91E 102 km M=3.7
MM 3 Dannevirke (63);
MM 1 Waipawa (60).

50/141 Apr 07 13h 59m 39.83S 176.94E 97 km M=4.8
MM 5 Napier, Tarawera (52); Havelock North (60);
MM 4 Wairoa (53); Dannevirke (63);
MM 3 Tokaanu (40); Taihape (58); Waipawa (60);
MM 1 Opotiki (35).

50/154 Apr 30 11h 58m 41.10S 172.63E 5 km M=4.4
MM 4 Karamea (74); Tadmor (75);
MM 2 Takaka (72).

50/157 May 08 20h 20m 38.95S 176.91E 33 km M=3.8
MM 4 Te Whaiti (42).

50/158 May 09 03h 55m 38.70S 175.87E 12 km M=4.7
MM 4 Rotorua (33);
MM 3 Taupo, Te Rangiita (41);
? Tokaanu (40).

50/161 May 09 15h 39m 38.71S 178.49E 12 km M=4.0
MM 3 Tolaga Bay (37).

50/163 May 18 01h 31m 41.11S 175.79E 33 km M=3.9
MM 4 Eketahuna (60).

50/167 May 25 22h 52m 41.16S 172.44E 12 km M=4.5
MM 3 Collingwood, Takaka (72).

50/169 May 30 20h 10m 37.79S 178.02E 12 km M=5.5
MM 3 Motu (36).

50/173 Jun 11 07h 55m 41.00S 172.50E 12 km M=3.5
MM 3 Tadmor (75).

50/174 Jun 14 00h 51m 41.16S 174.46E 77 km M=4.8
MM 4 Wellington (68); Blenheim (77);
MM 3 Paraparaumu (65).

50/175 Jun 14 05h 16m 40.75S 174.50E 12 km M=2.4
MM 4 Wanganui (57).
The identification of this report with the instrumental readings is open to question.

50/176 Jun 15 06h 39m 43.60S 172.70E 12 km
MM 2 Christchurch (110).

50/178 Jun 16 20h 53m 41.27S 173.19E 90 km M=4.9
MM 4 Tadmor (75);
MM 3 Nelson (76); Blenheim (77); Westport (79); Murchison (80); Greymouth (85); Reefton (86); Hanmer Springs (88); Cheviot (96); Christchurch (110).

50/179 Jun 17 15h 56m 38.92S 175.25E 185 km M=5.9
MM 5 Eketahuna (66);
MM 4 Opotiki (35); Taumarunui (39); Te Whaiti (42); Ohakune (49); Tarawera (52); Wairoa (53); Wanganui (57); Hunterville, Taihape (58); Bunnythorpe. Palmerston North (62); Dannevirke (63); Porangahau (64); Cone Hut, Levin (65); Karori (68); Martinborough (70); Collingwood (72); Tadmor (75); Nelson (76); Christchurch (110);
MM 3 Whakatane (27); Tokaanu (40); Gisborne (45); Napier (52); Waipawa (60); Pongaroa (67); Blenehim (77); Cheviot (96).

50/181 Jun 23 11h 25m 40.88S 172.19E 12 km M=4.3
MM 3 Takaka (72); Tadmor (75).

50/182 Jun 23 19h 31m 41.16S 172.27E 12 km M=4.0
MM 3 Tadmor (75).

50/186 Jun 29 05h 53m 37.75S 177.00E 12 km M=4.1
MM 5 Whakatane (27).

50/192 Jul 03 12h 36m 40.63S 173.88E 12 km M=4.1
MM 3 Paraparaumu Beach (65).

50/196 Jul 06 19h 26m 38.20S 177.05E 12 km M=4.0
MM 3 Motu (36).

50/200 Jul 15 06h 50m 41.02S 174.48E 12 km M=3.7
? Wellington (68).

50/202 Jul 17 03h 02m 39.81S 176.97E 12 km M=4.5
MM 4 Havelock North (60);
MM 3 Napier (52).

50/204 Jul 18 12h 31m 40.66S 175.32E 5 km M=4.1
MM 3 Foxton (61).

50/205 Jul 21 04h 46m 39.73S 174.19E 207 km M=5.6
MM 3 Foxton (61); Dannevirke (63); Karori (68); Nelson (76); Crhistchurch (110).

50/208 Jul 22 12h 19m 39.05S 176.58E 12 km M=3.7
MM 3 Napier (52).

50/210 Jul 24 21h 04m 39.49S 174.63E 161 km M=4.4
MM 2 Wellington (68).

50/212 Jul 28 05h 17m 39.59S 175.70E 12 km M=5.3
MM 4 Ohakune (49); Wanganui (57); Taihape, Hunterville (58); Bunnythorpe, Palmerston North (62);
MM 3 Taumarunui (39); Dannevirke (63);
MM 2 Waipawa (60); Wellington (68).

50/213 Jul 28 12h 41m 39.87S 175.01E 12 km M=4.4
MM 4 Taihape (58).

50/216 Aug 02 10h 05m 37.59S 175.65E 12 km M=3.7
MM 3 Te Aroha.

50/218 Aug 05 09h 17m 49.05S 164.06E 33 km M=6.5
MM 4 Awarua Radio (154); Halfmoon Bay (158);
MM 3 Tuatapere (148); Waipapa Point (154).

50/219 Aug 06 00h 53m 39.04S 177.60E 12 km M=4.0
MM 3 Wairoa (53).

50/220 Aug 09 22h 44m 39.37S 177.18E 12 km M=3.8
MM 2 Napier (52).

50/221 Aug 10 18h 12m 38.00S 177.75E 12 km M=3.9
MM 3 Opotiki (35).

50/224 Aug 11 07h 16m 39.12S 177.81E 5 km M=4.2
MM 4 Motu (36); Tolaga Bay (37); Gisborne (37).

50/227 Aug 15 08h 46m 39.74S 174.59E 33 km M=4.4
MM 4 Pipiriki (49); Wanganui (57);
MM 3 Stratford (47); Hawera (55).

50/231 Aug 28 10h 09m 38.54S 176.03E 12 km M=3.4
MM 4 Tokaanu (40).

50/232 Aug 28 10h 19m 38.54S 176.35E 163 km M=3.9
MM 4 Tokaanu (40).

50/233 Aug 30 07h 40m 44.20S 166.93E 169 km M=6.3
MM 3 Cromwell (133).

50/234 Aug 31 22h 49m 38.30S 178.28E 84 km M=4.8
MM 3 Opotiki (35); Motu (36).

50/235 Sep 01 00h 18m 39.05S 175.42E 168 km M=5.8
MM 4 Wairoa (53); Dannevirke (61);
MM 3 Waioru (50); Napier (52); Foxton (61); Paraparaumu (65); Eketahuna (66);
MM 2 Ohakea (61); Wellington (68); Nelson (76).

50/236 Sep 01 19h 13m 41.20S 175.68E 27 km M=4.4
MM 3 Paraparaumu (65); Masterton (66);
MM 2 Wellington (68).

50/240 Sep 05 15h 34m 40.22S 174.86E 33 km M=3.9
MM 3 Wanganui (57).

50/244 Sep 12 01h 57m 38.85S 177.09E 33 km M=5.1
MM 4 Whakatane (27).

50/247 Sep 15 01h 54m 38.25S 177.50E 12 km M=3.9
MM 3 Motu (36).

50/248 Sep 17 16h 48m 40.86S 177.70E 12 km M=4.5
MM 5 Napier (52);
MM 4 Waipawa (60);
? Hastings (60).

50/249 Sep 17 17h 40m 40.13S 177.19E 12 km M=4.4
MM 4 Napier (50); Waipawa (60);
? Hastings (60).

50/252 Sep 21 08h 41m 40.85S 172.89E 0 km M=4.2
MM 4 Collingwood, Farewell Spit, Takaka (72).

50/253 Sep 22 20h 28m 38.22S 177.77E 107 km M=4.1
MM 3 Opotiki (35).

50/256 Sep 27 19h 55m 32.50S 179.00E 33 km M=5.8
MM 4 Rotorua (33); Te Teko (34).
Felt reports probably refer to a small independent event. See instrumental data.

50/257 Sep 30 00h 02m 41.55S 174.01E 33 km M=4.6
MM 3 Foxton (61); Bunnythorpe, Palmerston North (62); Otaki, Paraparaumu (65); Masterton (66); Lower Hutt, Karori (68);
MM 2 Dannevirke (66).

50/260 Oct 09 16h 37m 38.00S 176.00E 33 km M=3.9
MM 5 Te Teko (34).

50/261 Oct 09 20h 25m 38.00S 176.00E 33 km M=3.8
MM 3 Te Teko (34).

50/262 Oct 10 10h 22m 38.24S 177.13E 12 km M=3.6
MM 5 Whakatane (27).

50/263 Oct 10 18h 42m 45.02S 166.98E 33 km M=5.8
MM 5 Milford Sound (120); Centre Island (148); Invercargill (149); Awarua Radio (154);
MM 4 Haast (103); Big Bay (112); Martin's Bay (120); Queenstown (132); Cromwell (133); Nightcaps (140); Dunedin (145); Puysegur Point (146); Tuatapere (148); Invercargill, Invercargill Airport (149); Gore (150);
MM 3 Wanaka (123); Middlemarch (135); Lumsden (140); Roxburgh (142); Lawrence (143); Dunedin, Mosgiel (145); Balclutha (152); Waipapa Point (154);
'slight' Puysegur Point (146).

50/266 Oct 15 13h 46m 40.25S 174.00E 12 km M=3.7
MM 3 Foxton (61).

50/277 Oct 28 05h 08m 38.25S 178.25E 12 km M=4.3
MM 4 Tolaga Bay (37).

50/283 Nov 04 08h 42m 40.42S 177.06E 33 km M=4.5
MM 4 Dannevirke (63); Porangahau (64);
MM 3 Pongaroa (67).

50/294 Nov 12 13h 43m 38.00S 177.00E 33 km M=3.8
MM 4 Whakatane (27).

50/295 Nov 13 10h 21m 41.20S 174.72E 33 km M=4.9
MM 4 Wanganui (57); Foxton (61); Bunnythorpe (62); Otaki, Paraparaumu Beach (65); Masterton (66); Wellington (68); Martinborough (70); Collingwood (72);
MM 3 Hunterville (58); Palmerston North (62); Dannevirke (63); Paraparaumu (65).

50/297 Nov 19 19h 52m 40.42S 177.74E 33 km M=4.5
MM 4 Porangahau (64);
MM 3 Waipawa (63).

50/305 Dec 04 16h 54m 44.92S 167.96E 175 km M=5.8
MM 4 Monowai (148).

50/307 Dec 10 13h 23m 28.42S 179.97E 300 km M=7.4
MM 4 Opotiki (35); Tolaga Bay (37); Gisborne (45); Wairoa (53); Dannevirke (63); Paraparaumu Beach (65); Nelson (76); Akaroa Lighthouse (111);
MM 3 Napier (52); Wairoa (53); Masterton (66); Karori (68); Blenheim (77);
MM 1 Christchurch (110).

50/310 Dec 13 17h 50m 40.57S 174.97E 33 km M=3.8
MM 3 Paraparaumu Beach (65); Masterton (66).

50/312 Dec 16 09h 54m 40.60S 175.10E 72 km M=4.5
MM 4 Foxton (61);
MM 3 Bunnythorpe (62); Otaki, Paraparaumu (65);
MM 2 Wellington (68).

50/313 Dec 17 11h 40m 38.86S 176.50E 136 km M=4.6
MM 4 Opotiki (35); Wairoa (53).

50/315 Dec 21 10h 55m 40.95S 172.38E 12 km M=4.7
MM 5 Karamea (74);
MM 4 Takaka (72); Tadmor (75); Westport (79);
MM 3 Kahurangi Point (71); Farewell Spit (72).

50/316 Dec 21 11h 07m 40.36S 176.04E 12 km M=4.4
MM 4 Karamea (74);
MM 3 Farewell Spit, Takaka (72);
? Kahurangi Point (71).

EARTHQUAKES FELT IN STANDARD LOCALITIES

Localities within which earthquakes were felt are listed in alphabetical order, each preceded by its number on the reference map. The figure following the name of the locality is the number of the epicentre followed by the maximum intensity (in brackets) reported within the district covered by the locality name. An asterisk (*) indicates that the particular intensity was not evaluated from the standard questionnaire. The instrumental magnitude may be found from the epicentre list, and places that actually reported the shock from the table of 'Places Reporting Felt Earthquakes'.

1948

111 Akaroa 38 (3), 71 (4), 73 (3), 74 (3), 75 (3).
133 Alexandra 104 (3), 106 (4), 120 (3), 123 (4), 124 (4), 129 (2).
93 Arthur's Pass 70 (3), 71 (4), 73 (3), 74 (2), 75 (3), 76 (5).
16 Auckland 15 (3).
77 Blenheim 15 (4), 29 (3), 71 (4), 73 (4), 130 (4).
154 Bluff 120 (4), 124 (4), 128 (3), 129 (3).
104 Bruce Bay 104 (6), 106 (6).
61 Bulls 15 (5), 190 (3), 227 (4).
67 Castlepoint 15 (3).
50 Chateau 227 (3).
96 Cheviot 71 (4), 73 (5).
110 Christchurch 15 (2), 38 (3), 71 (4), 73 (4), 75 (4).
89 Clarence 42 (4), 119 (3).
95 Culverden 70 (4), 71 (4), 73 (4), 74 (4), 75 (4), 76 (4).
63 Dannevirke 15 (4), 147 (4).
145 Dunedin 15 (2), 120 (4), 184 (3).
73 D'Urville Island 15 (4).
117 Fairlie 104 (3).
45 Gisborne 15 (3), 37 (4), 143 (4), 145 (3), 146 (3).
150 Gore 104 (3), 105 (2), 106 (4), 120 (4), 123 (2), 124 (4), 129 (3).
85 Greymouth 70 (3), 71 (4), 73 (3), 74 (2), 104 (4), 105 (3), 106 (4).
24 Hamilton 15 (2).

88 Hanmer 70 (6), 71 (7), 85 (4), 119 (4), 133 (3), 193 (4), 196 (4), 203 (3).
60 Hastings 15 (4), 71 (3), 143 (3), 150 (3).
55 Hawera 73 (3), 227 (3).
91 Hokitika 70 (3), 71 (5), 73 (4), 74 (3), 75 (3), 76 (3), 104 (4), 106 (4), 107 (3).
149 Invercargill 123 (3), 124 (4).
90 Kaikoura 70 (3), 71 (3), 75 (3), 76 (3).
74 Karamea 15 (4), 63 (3), 66 (3), 70 (2), 71 (4), 74 (2), 75 (3), 76 (3).
30 Kawhia 15 (3).
132 Kingston 104 (4), 106 (5), 120 (4), 123 (4), 124 (4), 128 (4), 129 (3).
100 Lake Coleridge 43 (4), 71 (4), 104 (4), 111 (3), 164 (4), 200 (3).
54 Mahia 143 (3).
70 Martinborough 15 (4), 35 (4), 227 (4).
66 Masterton 15 (4), 26 (4), 35 (3), 61 (3), 227 (4).
38 Mokau 227 (4).
139 Monowai 41 (?), 120 (5), 123 (4), 124 (5), 129 (5), 184 (?).
140 Mossburn 41 (4), 120 (4).
36 Motu 15 (4), 37 (4), 165 (3), 214 (3), 225 (3).
75 Motueka 63 (3), 66 (3), 70 (3), 71 (4), 73 (3), 74 (3), 75 (3), 76 (4), 221(5*).
71 Mount Stevens 5 (4), 15 (4), 70 (5), 71 (4), 219 (3).
80 Murchison 70 (3), 71 (5), 73 (5), 76 (3).
52 Napier 15 (3).
76 Nelson 15 (5), 29 (?), 70 (4), 71 (4), 73 (3), 74 (3), 75 (3), 76 (2), 227 (3).
47 New Plymouth 15 (5), 49 (3), 101 (3), 227 (4).
49 Ohakune 15 (6), 49 (3).
35 Opotiki 15 (4), 37 (4), 84 (5), 143 (4), 165 (5).
65 Otaki 15 (5), 26 (3), 28 (3), 29 (4), 35 (4), 71 (3), 73 (3), 74 (3), 75 (3), 76 (3), 89 (2), 90 (3), 109 (3), 110 (4), 147 (3), 190 (3), 195 (3), 227 (4).
62 Palmerston North 15 (6), 26 (2), 35(3*), 61 (2), 62 (2), 147 (4), 227 (3).
78 Picton 15 (3), 24 (4), 29 (4), 71 (3), 73 (2), 75 (2).
64 Porangahau 15 (5), 57 (3).
146 Puysegur Point 120 (4), 124 (3).
86 Reefton 70 (3), 71 (4), 73 (3), 74 (3), 75 (3), 76 (3).
33 Rotorua 44 (2), 45 (2), 46 (3), 47 (2), 48 (4).
142 Roxburgh 106 (4), 120 (2), 123 (2), 124 (3).

58 Taihape	15 (5),	49 (3),	147 (3),	227 (4).	
72 Takaka	5 (4),	15 (4),	29 (5),	63 (3),	70 (3),
	71 (4),	73 (3),	74 (3),	75 (3),	204 (4),
	219 (3),	227 (3).			
39 Taumarunui	15 (4),	49 (4),	54 (3),	126 (3),	227 (3).
41 Taupo	15 (4).				
28 Te Kaha	7 (3),	11 (4),	84 (5),	95 (3).	
31 Te Kuiti	15 (3).				
42 Te Whaiti	15 (4),	143 (4),	165 (3),	214 (3),	225 (3).
40 Tokaanu	15 (4),	54 (4).			
37 Tolaga Bay	15 (4),	37 (4),	53 (3),	84 (3),	112 (4),
	118 (3),	131 (4),	143 (4),	165 (4),	214 (2).
43 Tuai	37 (3),	84 (4),	143 (3),	165 (4).	
148 Tuatapere	120 (4).				
53 Wairoa	9 (3),	15 (4),	37 (3),	84 (4),	87 (4),
	143 (4).				
57 Wanganui	10 (3),	15 (6),	21 (2),	29 (3),	35(3*),
	36 (3),	49 (3),	50 (3),	56 (4),	58 (4),
	60 (3),	116 (4),	132 (3),	147 (4),	167 (4),
	168 (3),	170 (5),	187 (3),	190 (4),	194 (3),
	197 (3),	207 (3),	210 (3),	227 (4).	
56 Waverley	227 (4).				
68 Wellington	5 (3),	15 (5),	19 (2),	28 (3),	29 (3),
	35 (4),	71 (4),	73 (3),	89 (3),	90 (3),
	109 (4),	116 (3),	147 (3),	153 (4),	158 (2),
	165 (2),	166 (3),	178 (2),	181 (3),	214 (3),
	220 (2),	227 (4).			
79 Westport	66 (2),	70 (4),	71 (4),	73 (4),	75 (4),
	76 (4).				
27 Whakatane	165 (4),	188 (?),	189(5*).		
48 Whangamomona	15 (4).				
99 Whitcombe Pass	74 (3).				

1949

111 Akaroa	30 (4),	101 (4).			
133 Alexandra	89 (5),	143 (3).			
93 Arthur's Pass	185 (3).				
77 Blenheim	30 (5),	59 (3),	63 (3),	132 (3),	185 (4),
	203 (3),	260 (3).			
154 Bluff	89 (4).				
61 Bulls	30 (4),	91 (4),	225 (4).		
50 Chateau	255(5*).				
96 Cheviot	70 (4),	185 (5).			
110 Christchurch	30 (3),	53 (2),	91 (?),	101 (4),	219 (3).
95 Culverden	30 (3),	70 (4),	185 (4).		

63 Dannevirke	30 (4),	34 (3),	37 (3),	38 (3),	47 (3),
	91 (3),	177 (3),	225 (4),	255 (4).	
145 Dunedin	89 (4).				
73 D'Urville Island	30(5*).				
150 Gore	89 (6).				
85 Greymouth	30 (5),	185 (3),	260 (4).		
88 Hanmer	20 (3),	21 (3),	30 (4),	70 (4),	185 (4).
60 Hastings	4 (?),	5 (?),	7 (?),	30 (4).	
55 Hawera	30 (5),	91 (3),	106 (4).		
91 Hokitika	185 (3).				
149 Invercargill	89 (5).				
90 Kaikoura	30 (4),	185 (3).			
74 Karamea	17 (3),	18 (3),	185 (5),	211 (4),	260 (5).
132 Kingston	89 (5),	143 (4),	144 (2).		
100 Lake Coleridge	30 (3).				
143 Lawrence	89 (4).				
54 Mahia	30 (4).				
70 Martinborough	30 (4),	41(3*).			
66 Masterton	30 (4),	117 (4).			
120 Milford	89 (4).				
139 Monowai	213 (?),	228 (4).			
140 Mossburn	89 (4),	213 (4).			
75 Motueka	30 (3),	260 (4).			
71 Mount Stevens	17 (5),	18 (5),	99 (3),	152 (4),	160 (4).
80 Murchison	30 (5),	126 (?),	185 (5),	260 (5).	
76 Nelson	30 (4),	91 (3),	185 (3),	206 (2),	260 (3).
47 New Plymouth	30 (4),	106 (3),	147 (3),	179 (4),	184 (5).
3 Ninety Mile Beach	225 (3).				
136 Oamaru	89 (4).				
49 Ohakune	30 (4).				
35 Opotiki	23 (3),	24 (3),	25 (2),	26 (3),	32 (4),
	74 (3),	168 (2),	169 (2),	249 (3),	254 (3),
	255 (4).				
65 Otaki	5 (3),	19 (3),	30 (4),	68 (3),	91 (3),
	117 (3),	203 (2),	208 (2),	255 (4).	
62 Palmerston North	30 (4),	225 (4),	255 (4).		
78 Picton	30 (4).				
64 Porangahau	30 (4),	47 (3),	254 (3),	255 (3).	
146 Puysegur Point	89 (4).				
23 Raglan	94 (3).				
109 Rakaia	30 (3).				
135 Ranfurly	89 (4).				
86 Reefton	30 (4),	185 (4),	260 (4).		
142 Roxburgh	89 (4).				
155 Ruapuke	89 (4).				
58 Taihape	5 (3),	30 (5),	37 (3),	91 (4),	111 (3),
	238 (4),	255 (5).			

72 Takaka	30 (4),	63 (3),	106 (3),	160 (3),	179 (2),
	185 (4),	206 (4),	260 (5).		
39 Taumarunui	30 (4),	43 (3),	255 (4).		
41 Taupo	45(3*),	46(3*),	173 (3),	174 (1),	255 (4).
26 Tauranga	216 (4),	217 (4).			
42 Te Whaiti	32(3*),	254 (4).			
21 Thames	23 (?),	24 (?),	25 (?),	26 (?),	33 (3),
	217(3*).				
118 Timaru	89(3*),	101 (3).			
40 Tokaanu	172 (2).				
32 Tokoroa	31 (2).				
37 Tolaga Bay	30 (3),	32 (4),	154 (3),	168 (2),	237 (3),
	254 (4),	255 (3).			
148 Tuatapere	89 (4).				
53 Wairoa	30 (4),	32 (3),	50 (3),	113 (2),	254 (4),
	255 (4).				
123 Wanaka	89 (4).				
57 Wanganui	14 (4),	29 (4),	30 (5),	37 (3),	91 (5),
	106 (4),	205 (3).			
56 Waverley	106 (4).				
68 Wellington	5 (3),	32 (1),	63 (3),	68 (4),	91 (4),
	106 (2),	117 (3),	132 (2),	203 (4),	230 (2),
	237 (3),	244 (4),	254 (1),	260 (3).	
79 Westport	30 (4),	185 (4),	260 (4).		
27 Whakatane	23 (?),	24 (?),	25 (?),	26 (?).	
48 Whangamomona	30 (4).				

1950

111 Akaroa	97 (3),	307 (4).			
133 Alexandra	56 (3),	233 (3),	263 (4).		
152 Balclutha	56 (3),	263 (3).			
112 Big Bay	263 (4).				
77 Blenheim	3 (5),	15 (4),	16 (4),	23 (3),	51 (3),
	97 (4),	109 (4),	174 (4),	178 (3),	179 (3),
	307 (3).				
154 Bluff	56 (4),	218 (4),	263 (5).		
61 Bulls	15 (4),	16 (3),	51 (4),	97 (4),	204 (3),
	205 (3),	235 (4),	257 (3),	266 (3),	295 (4),
	312 (4).				
67 Castlepoint	97 (4),	179 (3),	283 (3).		
50 Chateau	235 (3),	249 (4).			
96 Cheviot	58 (5),	97 (3),	178 (3),	179 (3).	
110 Christchurch	58 (4),	97 (3),	176 (2),	178 (3),	179 (4),
	205 (3),	307 (1).			
95 Culverden	58 (4).				

63 Dannevirke	3 (4),	15 (3),	16 (4),	23 (3),	30 (3),
	51 (3),	86 (3),	97 (4),	133 (3),	141 (4),
	179 (4),	205 (3),	212 (3),	283 (4),	295 (3),
	297 (3),	307 (4).			
145 Dunedin	263 (4).				
45 Gisborne	18 (3),	86 (5),	179 (3),	307 (4).	
81 Glenhope	86 (4),	97 (4).			
150 Gore	263 (4).				
85 Greymouth	178 (3).				
103 Haast	263 (4).				
88 Hanmer	97 (3),	178 (3).			
60 Hastings	43 (3),	86 (4),	97 (3),	133 (1),	141 (5),
	163 (4),	179 (3),	202 (4),	212 (2),	248 (4),
	249 (4).				
55 Hawera	97 (4),	227 (3).			
149 Invercargill	56 (4),	263 (4).			
90 Kaikoura	58 (4),	97 (3).			
74 Karamea	154 (4),	315 (5),	316 (4).		
132 Kingston	263 (4).				
92 Kumara	97 (4).				
143 Lawrence	263 (3).				
70 Martinborough	3 (5),	15 (3),	97 (4),	179 (4),	295 (4).
66 Masterton	3 (4),	15 (4),	16 (4),	51 (3),	75 (3),
	97 (4),	179 (5),	235 (3),	236 (3),	257 (3),
	295 (4),	307 (3),	310 (3).		
120 Milford	263 (5).				
38 Mokau	97 (3).				
140 Mossburn	56 (3),	97 (3),	263 (4).		
36 Motu	11 (4),	84 (3),	99 (4),	169 (3),	196 (3),
	224 (4),	234 (3),	247 (3).		
75 Motueka	3 (4),	16 (3),	97 (4),	154 (4),	173 (3),
	178 (4),	179 (4),	181 (3),	182 (3),	315 (4).
71 Mount Stevens	97 (4),	111 (4),	315 (3),	316 (?).	
80 Murchison	178 (3).				
34 Murupara	96 (4),	99 (4),	100 (3),	256 (4),	260 (5),
	261 (3).				
52 Napier	39 (4),	79 (3),	86 (3),	90 (3),	97 (4),
	122 (4),	126 (5),	127 (3),	141 (5),	179 (4),
	202 (3),	208 (3),	220 (2),	235 (3),	248 (5),
	307 (3).				
76 Nelson	3 (4),	16 (3),	51 (3),	97 (4),	178 (3),
	179 (4),	205 (3),	235 (2),	307 (4).	
47 New Plymouth	97 (4),	227 (3).			
49 Ohakune	86 (4),	97 (4),	179 (4),	212 (4),	227 (4).
35 Opotiki	11 (4),	32 (4),	86 (5),	96 (4),	99 (5),
	100 (4),	120 (3),	141 (1),	179 (4),	221 (3),
	234 (3),	253 (3),	307 (4),	313 (4).	

65 Otaki	3 (5),	9 (2),	15 (4),	16 (4),	17 (4),
	23 (3),	25 (1),	29 (2),	33 (4),	36 (2),
	38 (?),	51 (4),	97 (4),	104 (3),	109 (3),
	174 (3),	179 (4),	192 (3),	235 (3),	236 (3),
	257 (3),	295 (4),	307 (4),	310 (3),	312 (3).
62 Palmerston North	3 (4),	15 (3),	16 (3),	23 (3),	51 (4),
	86 (2),	97 (4),	179 (4),	212 (4),	257 (3),
	295 (4),	312 (3).			
78 Picton	97 (4),	109 (4).			
64 Porangahau	86 (3),	97 (4),	179 (4),	283 (4),	297 (4).
146 Puysegur Point	263 (4).				
23 Raglan	97 (4).				
135 Ranfurly	263 (3).				
86 Reefton	178 (3).				
33 Rotorua	86 (3),	158 (4),	256 (4).		
142 Roxburgh	263 (3).				
158 Stewart Is.	56(6*),	218 (4).			
58 Taihape	3 (4),	15 (3),	16 (3),	86 (3),	97 (4),
	141 (3),	179 (4),	212 (4),	213 (4),	295 (3).
72 Takaka	3 (5),	15 (4),	16 (4),	33 (3),	37 (2),
	51 (3),	86 (2),	97 (4),	109 (3),	111 (3),
	154 (2),	167 (3),	179 (4),	181 (3),	252 (4),
	295 (4),	315 (4),	316 (3).		
39 Taumarunui	86 (3),	97 (4),	179 (4),	212 (3).	
41 Taupo	126 (3),	158 (3).			
26 Tauranga	99 (3).				
42 Te Whaiti	86 (5),	96 (5),	98 (4),	99 (5),	157 (4),
	179 (4).				
21 Thames	96 (3).				
40 Tokaanu	86 (5),	141 (3),	158 (?),	179 (3),	231 (4),
	232 (4).				
37 Tolaga Bay	11 (4),	84 (3),	99 (4),	112 (3),	113 (4),
	161 (3),	224 (4),	277 (4),	307 (4).	
148 Tuatapere	56 (4),	218 (3),	263 (5),	305 (4).	
53 Wairoa	11 (3),	84 (3),	86 (5),	96 (5),	97 (3),
	99 (3),	122 (4),	124 (3),	126 (4),	141 (4),
	179 (4),	219 (3),	235 (4),	307 (4),	313 (4).
123 Wanaka	263 (3).				
57 Wanganui	97 (4),	175 (4),	179 (4),	212 (4),	227 (4),
	240 (3),	295 (4).			
56 Waverley	15 (4),	16 (4),	86 (4).		
68 Wellington	3 (6),	8 (3),	15 (4),	16 (5),	17 (2),
	20 (3),	22 (1),	23 (2),	25 (3),	26 (1),
	29 (1),	31 (3),	33 (4),	45 (2),	46 (?),
	47 (?),	51 (4),	55 (2),	57 (2),	68 (2),
	97 (4),	104 (2),	109 (3),	174 (4),	179 (4),
	200 (?),	205 (3),	210 (2),	212 (2),	235 (2),
	236 (2),	257 (3),	295 (4),	307 (3),	312 (2).

79 Westport	3 (4),	97 (3),	178 (3),	315 (4).	
27 Whakatane	11 (4),	28 (3),	86 (4),	99 (6),	102 (5),
	103 (5),	114 (4),	117 (5),	119 (5),	120 (4),
	179 (3),	186 (5),	244 (4),	262 (5),	294 (4).
48 Whangamomona	3 (4),	97 (4).			

UNCONFIRMED REPORTS

The following shocks assigned epicentres by Hayes (1949, 1950, 1952), and appearing in Provisional Bulletins P-191 to P-226 were not recorded instrumentally, and are not included in the origin lists in this Report. Lack of instrumental confirmation does not necessarily imply that no real earthquake occurred.

PRO: 48/11 Jan. 13 13h 27m. Felt Queenstown (132), MM III.

PRO: 48/12 Jan. 13 13h 32m. Felt Queenstown (132), MM IV.

PRO: 48/20 Jan. 25 15h 30m. Felt Red Hill and Glink's Gully (12), MM III.

PRO: 48/29 Feb. 5 05h 31m. Felt Wanganui (57), MM II, according to a press report.

NOTE: The event of Feb. 17 09h 49m listed in Bulletin E-111 and in the International Seismological Summaries for both 1947 and 1948 correctly belongs to the year 1947.

PRO: 48/47 Mar. 2 19h 45m. Felt Reporoa (33). Unconfirmed press report.

PRO: 48/53 Mar. 10 17h 31m. Felt Masterton (66), MM III.

PRO: 48/55 Mar. 15 09h 25m. Felt Wanganui (57), MM III.

PRO: 48/59 Mar. 24 15h 50m. Felt Portland Island (54), MM III

NOTE: The events of Mar. 25 20h 32m and Mar. 27 18h listed in Bulletin E-111 and in the International Seismological Summary correctly belong to 1947 and not to 1948.

PRO: 48/66 Apr. 22 18h 19m. Felt Lake Coleridge (100), MM II.

PRO: 48/78 May 22 22h 55m. Felt Invercargill (149), MM II.

PRO: 48/99 Jun. 14 11h 08m. Felt Reefton (86), MM III.

PRO: 48/124 Jul. 14 14h 20m. Felt Lumsden (140) and Gore (150).

PRO: 48/132 Jul. 29 07h 22m. Felt Invercargill (149), MM III.

PRO: 48/149 Aug. 28 07h 15m. Felt Lake Coleridge (100), MM II.

PRO: 48/172 Sep. 17 08h 34m. Felt Wanganui (57), MM III.

PRO: 48/176 Oct. 5 08h 47m. Felt Kahurangi Point (71), MM IV.

PRO: 48/187 Oct. 28 15h 42m. Felt Murchison (80), MM III.

PRO: 49/14	Jan. 29	20h 21m.	Felt Lake Coleridge (100), MM III.
PRO: 49/31, 32	Feb. 14	09h, 10h.	Felt Paeroa (21).
PRO: 49/34, 35	Feb. 16	09h, 12h.	Felt Paeroa (21).
PRO: 49/54	Mar. 17	12h 15m.	Felt Ruawai (12), MM III.
PRO: 49/57	Mar. 23	11h 30m.	Felt Ruawai (12), MM III.
PRO: 49/94	Jun. 11	20h 26m.	Felt Raglan (23), MM III.
PRO: 49/135	Aug. 8	06h 27m.	Felt Port Fitzroy (14).
PRO: 49/184	Oct. 3	17h 58m.	Felt Monowai (140).
PRO: 50/51	Feb. 2	05h 11m.	Felt Wairoa (53), MM III.
PRO: 50/58	Feb. 5	04h	Felt Whakatane (27), MM IV. Unconfirmed press report. Said to be followed by several smaller shocks during the afternoon.
PRO: 50/72	Feb. 14	22h 01m.	Felt Cromwell (133) MM IV, and Bannockburn (133).
PRO: 50/74	Feb. 15	16h 43m.	Felt Cromwell (133), MM IV.
PRO: 50/88	Feb. 24	08h 42m.	Felt Cromwell (133), MM IV.
PRO: 50/112	Mar. 17	13h 57m.	Felt Tolaga Bay (37), MM IV.
PRO: 50/115	Mar. 19	06h 48m.	This is a spurious event arising from a mis-timed Nelson (76) felt report which should refer to the earthquake at 5h 38m on Mar. 18. There are seismic movements on the WEL records at the time indicated, but the shock could not have been felt in Nelson. There are insufficient data to determine an epicentre.
PRO: 50/140	Apr. 1	22h 35m	Felt Rotorua (33), MM III.
PRO: 50/148	Apr. 9	13h 30m.	Felt Waipiro Bay (37), MM II.
PRO: 50/149	Apr. 10	15h 25m.	Felt Tauranga (26), MM III.
PRO: 50/154	Apr. 17	15h 40m.	Felt Waipiro Bay (37), MM III.
PRO: 50/156	Apr. 21	00h 45m.	Felt Te Teko (34), MM II.
PRO: 50/162	Apr. 30	13h 05m.	Felt Collingwood (72), MM III. Report probably refers to PRO: 50/161.
PRO: 50/163	May 1	08h 35m.	Felt Waiouru (50).
PRO: 50/179	May 31	15h 56m.	Felt Waipukurau (60), MM IV.
PRO: 50/180	Jun. 1	15h 58m.	Felt Waipukurau (60), MM IV. Possibly a single report reaching the Observatory through two different channels. Neither report can be confirmed instrumentally.
PRO: 50/197	Jul. 1	14h 44m.	Felt Opotiki (35), MM IV.
PRO: 50/199	Jul. 3	06h.	Felt Lumsden (140), MM I.
PRO: 50/200	Jul. 3	06h 45m.	Felt Putaruru (32), MM IV, and Arapuni (32), MM III.
PRO: 50/211	Jul. 16	13h 05m.	Felt Wairoa (53), MM III.
PRO: 50/212	Jul. 16	14h 24m.	Felt Porangahau (64), MM III.
PRO: 50/213	Jul. 16	20h 53m.	Felt Karamea (74), MM I.
PRO: 50/217	Jul. 19	04h 54m.	Felt Rotorua (33), MM II.
PRO: 50/225	Jul. 28	07h 44m.	Felt Ohakune (49), MM III.
PRO: 50/239	Aug. 13	15h 42m.	Felt Wairoa (53), MM III.
PRO: 50/241	Aug. 15	10h 38m.	Felt Rotorua (33), MM IV.

PRO: 50/246	Aug. 31	14h 20m.	Felt Nelson (76), MM III.
PRO: 50/266	Sep. 22	05h 41m.	Felt Wairoa (53), MM III.
PRO: 50/269	Sep. 27	18h 00m.	Felt Te Teko (34), MM III.
PRO: 50/274	Oct. 9	18h 35m.	Felt Te Teko (34), MM III.
PRO: 50/291	Nov. 6	12h 15m.	Felt Opotiki (35), MM III.
PRO: 50/296	Nov. 11	08h 30m.	Felt Whakatane (27), MM IV.
PRO: 50/302	Nov. 19	19h 01m.	Felt Takaka (72), MM III.
PRO: 50/317 to 50/326 inclusive.	Dec. 19.		A series of tremors reported felt at Rotorua (33). The times given are 12h 12m, 15m, 36m, 40m, 43m, and 52m, all MM II; 13h 00m, MM III; 13h 11m, MM II; 14h 53m, MM IV; and 15h 10m, MM II.
PRO: 50/329	Dec. 21	22h 38m.	Felt Milford Sound (120), MM IV.

The following additional shocks reported to the Observatory were neither assigned provisional origins nor confirmed by instrumental recordings:

1948	Jul. 31	03h 52m	Wellington (68)	MM II
	Sep. 6	01h 08m	Lake Coleridge (100)	MM II
	Dec. 20	05h 53m	Christchurch (110)	MM II
1949	Feb. 4	17h 30m	Te Whaiti (42) Probably a mis-dated report of shock 49/30.	'slight'
	Mar. 6	08h 45m	Taupo (41)	'slight'
	6	22h 10m	Taupo (41)	'slight'
1950	Jan. 12	14h 13m	Wanganui (56)	MM IV
	13	09h 10m	Havelock (77)	MM III
	31	11h 30m	Paraparaumu Beach (65)	MM I
	Mar. 21	14h 40m	Thames (21) Reported to have been preceded by "numerous slight tremors" from 12h onwards.	MM IV
	Apr. 1	23h 35m	Rotorua (33)	MM III
	Oct. 9	12h 20m	Te Teko (34)	MM III
	Nov. 22	14h 45m	Clyde (133)	MM III
	23	11h 20m	Paraparaumu (65)	MM III
	Dec. 21	22h 38m	Milford (120)	MM IV

FELT REPORTS FROM OUTSIDE NEW ZEALAND

The Observatory sometimes receives reports of earthquakes felt on islands of the south-west Pacific, mainly from observers at weather stations. The following information is presented in the form in which it was received. It should be noted that assessments of 'force' or intensity are those made by the observers, and have not been assigned by the Observatory. The word 'force' is used incorrectly in the reports from Raoul Island and other meteorological stations. The figures given may be regarded as rough indications of relative intensity on some arbitrary scale.

Raoul Island

			Duration	Direction	'Force'
1948	Feb. 12	06h 53m	40s	SE - NW	3
		Slow rising, increasing to two sharp jolts, then gradually subsiding			
	Mar. 8	10h 20m	10s	N	2
		Two slight sways			
	Apr. 6	11h 15m	40s	N	3
		Sudden jolt, then rocking motion gradually subsiding			
	Apr. 15	07h 23m	15s	NW	2
		Two slight sways			
	Jul. 18	10h 14m	45s	NW	3
		Two sudden jolts, each followed by rocking motion			
	Jul. 20	16h 50m	8s	?	3
		Sudden jolt, then rocking motion			
	Sep. 8	15h 12m	30s	NW - SE	3
		Fairly steady rocking motion			
	Sep. 12	06h 45m	5s	?	2
		One slight tremor			
	Sep. 25	03h 07m	2s	NW - SE	1
		Very slight rocking			
	Oct. 2	14h 23m	5s	W - E	1
		Slight rocking			
	Oct. 12	23h 40m	4s	W - E	1
		Slight rocking			
	Oct. 20	16h 32m	4s	W - E	4
		Sharp jolt followed by rocking			
	Oct. 23	18h 25m	2s	W - E	2
		Slight tremor			
	Oct. 24	20h	2s	N - S	1
		Slight jolt			

1948	Nov. 14	12h 40m	2s	?	1
		Slight tremor			
	Nov. 15	17h 20m	25s	NW - SE	4
		Rocking motion followed by sharp jolt, then gradually subsiding			
	Dec. 13	22h 15m	5s	?	1
		Slight tremor			
	Dec. 29	02h 33½m	3s	?	1
		Slight tremor			
1949	Jan. 4	11h 49m	7s	NW - SE	4
		Sharp jolt subsiding			
	Jan. 4	13h 11m	3s	NW - SE	2
		Slight tremor			
	Jan. 17	12h 12m	10s	NW - SE	3
		Rocking motion gradually subsiding			
	Jan. 24	09h 18m	2s	NE - SW	2
		Slight rocking motion			
	Feb. 3	11h 15m	1s	?	1
		Slight tremor			
	Feb. 3	17h 43m	1s	?	1
		Slight tremor			
	Feb. 6	13h 47m	7s	W - E	2
		Sharp jolt subsiding			
	Feb. 13	19h 25m	25s	W - E	2
		Slight rocking followed by series of slight jolts			
	Mar. 2	19h 51m	4s	NW - SE	4
		Two sharp jolts			
	Apr. 15	11h 46m	2s	?	2
		Slight tremor			
	May 23	04h 19m	40s	NW - SE	4
		Fairly heavy rocking			
	Jun. 13	21h	3s	SW - NE	3
		Slight rocking motion			
	Jun. 25	04h 24m	2s	?	3
		Slight tremor			
	Jul. 26	15h 12m	30s	NW- SE	5
		Rocking, then increasing to force 5. All hands awakened			
	Jul. 26	15h 16m	4s	NW - SE	3
		Slight rocking motion			
	Aug. 6	10h 40m			
		Slight			
	Aug. 28	13h 40m	3s	?	2
		Slight rocking motion preceded by rumble			
	Sep. 1	20h 47½m	3s	?	3
	Sep. 20	11h 55m		E - W	4
		Rising to 4, then subsiding			
	Nov. 22	12h 45m	2m	NW - SE	up to 4
		Rising to 4. Prolonged, then gradually subsides			
	Nov. 26	15h 17m	12s	?	3
		Gentle rocking			
1950	Jan. 24	02h 55m	2-3s	?	3
		Slight rocking			

1950	Jan. 25	07h 50m	2s	?	2
		Slight rocking			
	Jan. 30	13h 25m	3s	?	3
		Jolting			
	Feb. 21	01h 57m	5s	?	2
		Slight vibrating			
	Apr. 5	10h 11m	30s	?	3 - 4
		Jolting. Large and small wave			
	Jun 7	10h 29m			
		Another jolt			
	Jun. 7	11h 15m	8s	?	3
		Swaying			
	Jun. 13	09h 40m	3s	E - W	3
		Sharp jolt			
	Jul. 21	07h 20m	30s	E - W	4
		Jolting			
	Aug. 22	16h 25m	30s	-	3
		Swaying			
	Sep. 7	07h 47m	3s	-	1
		Slight jolt			
	Sep. 7	15m 27s	?	-	2
	Sep. 25	15h 35m	12s	SW - NE	4
		Sharp jolt, then slowly subsides			
	Oct. 4	07h 07m	48s	-	3
		Swaying			
	Oct. 5	16h 57m	20s	NE - SW	4
		Sharp jolt then slight - Pause then slight jolt			
	Nov. 26	06h 09m	30s		5
		Sharp jolt then slight - Pause then slight jolt			
	Dec. 9	13h 25m	2m 50s		4 - 5
		Swaying then heavy sway			
	Dec. 13	19h 05m	?	-	1
		Slight swaying			
	Dec. 14	01h 57m	1m	-	2
		Slight swaying - increased - lessened			

Nukualofa, Tonga

1948	Sep. 8	15h 10m	Approximately 2 minutes duration, strength 4 to 5, direction east to west. Broken crockery and chips off stone buildings. Felt slightly at Vavau and Haapai, but not at Nuiatoputapu.
	Sep. 8	16h	Approximately one minute duration, strength 2.
	Sep. 8	16h 30m	30s duration, strength 1 to 2. Numerous slight tremors continued for a few hours.
	Sep. 8	18h to 19h	Three short slight tremors.
	Sep. 10	13h to 18h	Series of tremors.
	Dec. 7	13h 53m	MM IV.
1949	Jan. 24	09h 16m	Moderate earthquake for 1½ minutes.
	Jan. 24	21h 35m	MM IV - V. Duration 20s, direction SE - NW.

1949	Jul 6	10h 42m	MM IV Duration 15s. Direction E - W Buildings heard to creak.
	Jul 9	22h 21m	MM II. Duration 3s, direction E - W. Building disturbances heard.
	Aug. 6	00h 36m	Duration 70s. Direction rotary. Building disturbances heard. MM V.
	Aug. 8	13h 12m	Reported felt at Vavau. Slight, 10s.
	Aug. 8	17h 04m	Reported felt at Vavau. Slight, 10s.
	Aug. 24	06h 27m	Commenced with a sharp jolt and eased off. Motor-cars, trees, and poles seen to sway. Pendulum clock stopped. Dishes windows and doors disturbed. People awakened. MM V.
	Nov. 27	08h 40m	MM II. Very short.
1950	Jan. 8	20h 44m	MM IV. Direction E - W. Duration 35s. Building disturbances.
	Jul. 12	11h 52m	MM III. Duration 30s. Building disturbances. Also felt Haapai. Ground noises.
	Dec. 5	11h 57m	Force 3. 20 seconds east to west.
	Dec 10	13h 27m	MM IV. Several initial jolts, then continued shakes at MM III gradually decreasing. Duration 30 to 40 secs.
	Dec. 14	01h 57m	Force 6. 80 seconds NE to SW. Ground noises preceding shock.

Niue

1948	Sep. 8	15h 15m	Prolonged moderate earthquake. No damage.
1949	Aug. 6	00h 36m	No details given.
1950	Dec. 14	01h 56m	Slight tremors.

Rarotonga

1948	Sep. 8		Tsunami reported.

PRINCIPAL EARTHQUAKES
1948 - 50

During the period covered by this Report, no shallow earthquakes in the New Zealand region reached magnitude seven, but several smaller shocks resulted in localised damage. The most serious of these were the events in the Hanmer-Waiau district in 1948 May. The largest shock, on May 23 (Origin 48/71), had a magnitude of 6.4, and was accompanied by a foreshock and numerous aftershocks, several of which had magnitudes closer to that of the main shock than is usual. Minor activity continued for some months. An account of these events, including an isoseismal map and an associated study of crustal structure, has been published by Eiby (1953). The shock was felt over an area that included the northern half of the South Island and extended across Cook Strait to Wellington; but damage was confined to the settlements of Hanmer and Waiau and to the countryside between. Chimneys fell, and other minor structural damage occurred, indicating a maximum intensity of about MM VIII.

The Waiau earthquakes seem to have been preceded by a period of abnormal (but not unparallelled) quiet over the whole country, with no shocks well enough recorded to yield an epicentre between April 25 and May 19, and little close activity since February 27, when there was a shock of magnitude 4.4 (Origin 48/42) about half a degree to the north-east.

The foreshock, of magnitude 5.9 (Origin 48/70), occurred only 24 minutes before the main event; and within the next two hours there was an aftershock of magnitude 6.2, two of magnitude 5.7, and one of magnitude 5.8 (Origins 48/73, 74, 75 and 76). No comparable grouping of large shallow earthquakes in New Zealand can be recalled. The remainder of the sequence has the normal pattern of aftershocks for a large shallow earthquake. The initial grouping should perhaps be regarded as a composite 'main event' rather than as the first member of a foreshock-mainshock-aftershock sequence, the distinction resting upon the short time-period involved, and on the distribution of magnitudes within the group.

The year 1950 began with a period of vigorous activity in Cook Strait, many shocks being felt in Wellington city and in coastal places to the north. The largest of these events, on January 7, 12, and 13 (Origins 50/3, 15, and 23) had magnitudes of 5.6, 5.7, and 5.6 respectively. The two latter shocks resulted in some minor damage, but it was insufficient to justify assigning an intensity above MM VI. The outbreak is described in more detail by Hayes (1952a), who gives isoseismal maps and a map of the provisional epicentres.

Minor damage at Halfmoon Bay, in Stewart Island, was reported as a consequence of the earthquake on 1950 February 5 (Origin 50/56, magnitude 6.6), with an epicentre about 150 km to the south-west of New Zealand, on the Macquarie Ridge between the Puysegur Trench and the Solander Trough. Epicentres in this region are generally of low reliability because of the poor spread of recording stations in azimuth. In the present instance, the good fit of the impulsive P reading at Riverview and the relationship of the epicentre to the bathymetry justify greater than normal confidence in the solution. In spite of the report of damage, it is not likely that the intensity reached in Stewart Island exceeded MM VI. Hayes (1952) has published an isoseismal map.

Other potentially damaging shocks were for the most part centred off the coast or in sparsely populated parts of the country. Some of them were, however, widely felt. The more important shallow events include those on 1948 June 19 (Origin 48/106, magnitude 5.7), which affected southern Westland and parts of Otago; 1948 July 12 (Origin 48/120, magnitude 5.1), placed with some uncertainty in western Otago; 1949 May 27 (Origin 49/89, magnitude 5.9) in Fiordland, felt throughout south Canterbury, Otago, and Southland; and 1949 September 27 (Origin 49/185, magnitude 5.4) in the headwaters of the Awatere and Wairau Rivers, felt throughout the northern parts of the South Island and followed by persistent aftershocks that perhaps continued into 1950. The Cook Strait shocks mark a return of activity to the north after a period of relative quiet in the region. On February 28 a shock of magnitude 5.7 centred midway between Lakes Taupo and Waikaremoana (Origin 50/86) was felt over the greater part of the North Island, and is reported to have caused some damage at Te Whaiti. Hayes (1952) gives an isoseismal map.

As usual the deep-focus earthquakes attracted widespread attention without causing damage. The more important of these include the shock on 1948 January 15 (Origin 48/15, magnitude 6.3), centred in the South Taranaki Bight, at a depth of 94 km. This shock is of seismological importance because the stations at Auckland, Tuai, and Wellington recorded waves reflected from the Earth's core (the phase ScS) at much smaller distances from the epicentre than is usual. This is the subject of a special study published by Garrick (1949). The shock was felt over the whole of the North Island south of Auckland, and in some northern parts of the South Island.

The shock on 1949 June 27 (Origin 49/110, magnitude 5.3), at a depth of 340 km beneath the Bay of Plenty, close to White Island, was at that time the second deepest known New Zealand earthquake, its only rival being a shock in the same region in 1942. The depth is well established, but other shocks at comparable depths have now been observed, and much deeper ones are known to occur beneath Taranaki. This earthquake was not reported felt.

A shock on 1950 June 17 (Origin 50/179, magnitude 5.9) was felt in eastern parts of both islands from the Bay of Plenty to Banks Peninsula, but not at places in the west. Its focal depth was 185 km, and its epicentre close to Taumarunui, where the felt intensity was MM IV. This displacement of the felt region and its extension along the axis of the country is usual in deep focus shocks, and is even more strikingly shown in the earthquake of 1950 December 10 (Origin 50/307, magnitude 7.4). The felt area of this large event, with a focal depth of 300 km and centred to the north of the Kermadec Islands, extended southwards to Akaroa, at a distance of some 1,800 km. This is among the greatest distances on record, though it has been exceeded.

The shallow shock of magnitude 5.3 on 1950 March 13 (Origin 50/99), which has been assigned an epicentre about 40 km due north of Gisborne, was reported to have caused "unusual sea disturbances along the Bay of Plenty coast" according to the annual report of the Department. Considering the moderate size of the shock and the reasonably well-controlled epicentre on land, the probability that these disturbances were due to a tsunami related to this earthquake does not seem high.

Reports of small felt earthquakes coming from parts of the country where shocks are infrequent remain difficult to confirm even with today's greatly improved recording network, and it should not be too hastily concluded that such events are not seismic. However, the spread of the less well located epicentres appearing on the maps in this Report is somewhat greater than that on the maps prepared at the present time. It is reasonable to attribute much of this spread to deficiencies in the recording network, particularly when the epicentres lie outside its perimeter. This is clearly the case with shocks to the north-east of the country and in the far south, and the number of shocks placed on the oceanic side of the Hikurangi Trench is probably too high, the true positions of perhaps half of them lying closer to the coast. The status of shocks on the northern flank of the Chatham Rise is less certain. Activity in this region is adequately confirmed, but tends to be intermittent in character. The instrumental records seem adequate to confirm that the origins of the events of 1949 April 14 and May 27 (Origins 49/64 and 49/88) were close to the positions assigned.

The reports that earthquakes were felt near Kaipara Harbour on 1948 January 25 cannot be confirmed. Instrumental records of small shocks in the district have since been obtained, but there are also instances of erosional landslides being reported as earthquakes.

A shock of magnitude 5.2 on 1949 September 16 (Origin 49/179) which was centred to the west of Cape Egmont and felt in both islands may be reckoned among the more significant events in a region that undergoes long periods of quiescence, but it cannot be considered unusual. In 1950 it was thought to be so.

The most important volcanic event during the period was a significant eruption of Ngauruhoe in 1949 February and March, when both ash and lava were ejected. Eruptions of steam from Ruapehu were reported to have taken place on 1948 May 1 and 1950 June 26.

PUBLICATIONS BY STAFF MEMBERS

During the period 1948 - 50, the following papers by members of the Dominion (Seismological) Observatory staff were published:

S-84 JONES, W.M., 1948: New Zealand Microseisms associated with the Storm of 14th - 16th February, 1947.
N.Z. J. Sci. Tech. 29B: 142-52.
Microseisms associated with the storm of 14th - 16th February, 1947, have been studied from the seismograph records at several New Zealand stations. Measurements were made of average trace-amplitudes, and of the periods of dominant wave-trains. Maximum amplitudes at Auckland, Wellington, and Christchurch were reached when the storm-centre was at sea, some 440 km to the east of Wellington. The dominant periods ranged from 4 to 7 sec., except at New Plymouth (2 to 4 sec.), and tended to be greatest at the times of maximum amplitudes. Some associations of the microseismic activity with the strength and gust-frequency of southerly wind at Wellington are discussed.

S-85 HAYES, R.C., 1948: Earthquakes in New Zealand, during the Year 1946.
N.Z. J. Sci. Tech. 29B: 90-3.

S-86 JONES, W.M., 1948: Notes on Azimuths, Distances and Equidistant Azimuthal Projections in the South Pacific.
N.Z. J. Sci. Tech. 29B: 325-30.
Tables are now available giving geographical distances, in degrees and minutes, from observatories at Auckland, Wellington, Christchurch, Riverview, Brisbane, Suva, and Apia, to points at 1° intervals over the zone 0°-70°S., 160°E.-170°W. A table has also been compiled giving distances from the same observatories to points at 5° intervals over the zone 0°-70°S., 150°E.-155°W. This table enables the construction of equidistant azimuthal projections that will show with fair accuracy the azimuths and distances from the observatories to any point in the zone. For other stations within about 100 miles from any of the observatories, simple corrections can be applied to the distances and azimuths tabulated, without much loss of accuracy.

S-87 JONES, W.M., 1948: Further Table of Geographical Distances from Wellington, Brisbane, Suva, Riverview, Apia, Christchurch, Auckland (Museum). Range: 36°S. to 70°S. Lat 160°E. to 170°W. Long.
Govt. Printer, Wellington. 32pp.

S-88 JONES, W.M.,1948: Table of Azimuths and Distances from Wellington, Brisbane, Suva, Riverview, Apia, Christchurch, Auckland (Museum) to points at 5° intervals of latitude and longitude over the range 0° to 70° S. Lat., 150°E. to 155°W. Long.
Govt. Printer, Wellington. 13pp.

S-89 JONES, W.M., 1949: Geomagnetic Latitudes and Regional Anomalies in New Zealand and the South Pacific.
N.Z. J. Sci. Tech. 30B: 118-23.
For an axis-pole at 78.5°S., 111°E., parallels of geomagnetic south latitude are shown at 1° intervals for New Zealand, and at 5° intervals for the region 0°-75°S., 150°E.-155°W. Regional anomalies in New Zealand, in respect of the theoretical field from the centred dipole, for inclination and horizontal force, are illustrated by a comparison of this field with the actual distribution observed by Farr.

S-90 HAYES, R.C., 1949: Earthquakes in New Zealand during the Year 1947.
N.Z. J. Sci. Tech. 30B: 102-5.

S-91 HAYES, R.C., 1949: Earthquakes in New Zealand during the Year 1948.
N.Z. J. Sci. Tech. 31B: (1)37-40.

S-92 HAYES, R.C., 1949: Earthquake Origins in New Zealand during the Year 1949.
N.Z. J. Sci. Tech. 31B: (4)43-5.

S-93 was not published until 1952.

S-94 GARRICK, R.A., 1949: Observations of ScS near an Earthquake Epicentre.
N.Z. J. Sci. Tech. 31B: (2)16-23.
This paper records observations of ScS at three stations for the earthquake of 1948 January 15d 05h 01m 44s U.T. (at epicentral distances of 0°.92, 2°.25 and 3°.45) a range that, so far as is known, is barren of observational material for this phase.

S-95 HAYES, R.C., 1950: Wave Periods in New Zealand Local Earthquakes.
N.Z. Engineering 5: 896-8.
The combined results are given, from the records of six New Zealand seismograph stations, of wave measurements in local earthquakes. The numerical distribution of periods and their variation with epicentral distance and earthquake magnitude are shown graphically. Attention is drawn to the importance of focal depth in considering the ground periods in earthquake waves.

T-18 EIBY, G.A., 1948: Time Service Equipment at the Dominion Observatory.
N.Z. J. Sci. Tech. 29B: 296-308.
A general description of the equipment and its use, emphasising a new electric wiring and relay system, together with a brief history of the time service, and a project for its extension.

R-33 [HAYES, R.C.]: Dominion Observatory. Seismology.
Extract from the Annual Report of the Department of Scientific and Industrial Research, 1948. 1 page, cyclostyled.

R-34 HAYES, R.C.: Seismological Observatory. Extract from the Annual Report of the Department of Scientific and Industrial Research, 1949. *Govt. Printer, Wellington.* 2 pp.

R-35 HAYES, R.C.: Seismological Observatory. Extract from the Annual Report of the Department of Scientific and Industrial Research, 1950. *Govt. Printer, Wellington.* 3 pp.

——— HAYES, R.C., 1949: Wave Periods in New Zealand Earthquakes.
1. Period measurements at Kelburn, Wellington
2. Periods at Christchurch
3. Periods at New Plymouth
4. Periods at Tuai, Hawke's Bay
5. Periods at Arnold Power Station
6. Periods at Cobb River Power Station.

Seis. Obs. Tech. Papers 1 - 6. Cyclostyled.

NOTE: The quarterly Seismological Reports (E-Bulletins) and monthly cyclostyled Provisional Bulletins (P-Bulletins) issued during this period carry no dates of publication.

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GARRICK, R.A., 1949: Observations of ScS near an Earthquake Epicentre. *N.Z. J. Sci. Tech. 31B* : (2)15-23.

HAYES, R.C., 1949: Earthquakes in New Zealand during the Year 1948. *N.Z. J. Sci. Tech. 31B* : (1)37-40.

HAYES, R.C., 1949: Earthquake Origins in New Zealand during the year 1949. *N.Z. J. Sci. Tech. 31B* : (4)43-5.

HAYES, R.C., 1952: Earthquake Origins in New Zealand during the Year 1950. *N.Z. J. Sci. Tech. 33B* : 306-8.

HAYES, R.C., 1952a: The Cook Strait Earthquakes: 1950 Jan. - Feb. *N.Z. J. Sci. Tech. 33B* : 309-18.

SMITH, W.D., 1976: A Computer File of New Zealand Earthquakes. *Bull. N.Z. Natl. Soc. Eq. Engng. 9* : 136-7. Also appears in *N.Z. J. Geol. Geophys. 19* : 393-4.

WADATI, K., & MASUDA, K., 1933: On the Travel-Times of Earthquake Waves. *Geophys. Mag. 7* :

ERRATA

The event of Feb. 17 09h 49m listed in Bulletin E-111 of this series, and also in the International Seismological Summaries for both 1947 and 1948 correctly belongs to the year 1947.

Both Bulletin E-111 of this series and the International Seismological Summary list earthquakes on 1948 Mar. 25 at 20h 32m and on 1948 Mar. 27 at 18h 25m. These events correctly belong to the year 1947.

ACKNOWLEDGEMENTS

I wish to record my indebtedness to Dr W.D. Smith, present Superintendent of the Seismological Observatory, Wellington, and to all members of his staff. They have afforded me practically unlimited access to facilities, instruction and help with the use of the computer, and valuable discussions about the scope and presentation of this project. To them I extend my warmest thanks.

G.A. EIBY

LIST OF MAPS

(in pocket inside back cover)

1. Epicentres of Normal Focus Earthquakes, 1948.
2. Epicentres of Normal Focus Earthquakes, 1949.
3. Epicentres of Normal Focus Earthquakes, 1950.
4. Epicentres of Deep Focus Earthquakes, 1948 - 50.

P.D. HASSELBERG, GOVERNMENT PRINTER, WELLINGTON, NEW ZEALAND—1982