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NEW ZEALAND SEISMOLOGICAL REPORT 1987

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DSIR Geology & Geophysics

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POSTAL SERVICE

All measurement and interpretation of records is carried out at the central station. Requests and communications should therefore be sent to:

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NEW ZEALAND

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Correspondents are asked to note that surface mails from Europe and the Americas are infrequent, and that articles not sent by airmail may take four or five months to reach us.

Published in 1991.

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INTRODUCTION

The form of this Report follows lines established in recent years, but the lists of shocks now contain only earthquakes of magnitude 3.5 or greater located within 10° of Wellington, and smaller earthquakes known to have been felt in New Zealand. Many other earthquakes have however been assigned serial numbers, so the serials of the shocks listed are often not consecutive.

Phase data are not published here, but are instead sent to the International Seismological Centre, and appear in their bulletins, which constitute the only medium now in use for routine reporting of arrival time observations made in New Zealand. The lists of origin coordinates and magnitudes include sufficient supplementary information for assessment of the quality of the data on which they are based.

Seismologists urgently requiring unpublished New Zealand data may apply to the Observatory. Historic data are also available but unless a two-way information exchange is involved it is the Observatory's practice to make a charge for recovery of this material. Definitive origins for local earthquakes are usually available within a few months of their occurrence.

OBITUARY

With deep regret we record the passing of Taala Luatua Vaitupu Ioane, who was superintendent of Apia Observatory from 1982 until his retirement in 1985. A fine mat given by Mrs Ioane now hangs as a memorial in the library of DSIR Geology and Geophysics in Kelburn.

NEW ZEALAND SEISMICITY IN 1987

Any account of the principal earthquakes in New Zealand in 1987 must begin with the Edgecumbe earthquake (87/666) of March 2. With a magnitude (M_L) of 6.3, it caused extensive damage in the towns of Edgecumbe, Te Teko and Kawerau in the Bay of Plenty, and was felt as far afield as Hamilton, Taupo, Napier and Gisborne. There were also isolated reports of its being felt at greater distances. Intensities reached MM 9 near the epicentre, making it the most severe earthquake in New Zealand since that at Inangahua in 1968. Apart from Inangahua, it was the most damaging earthquake since the 1942 Wairarapa shock which severely affected Masterton and Wellington. It should not be necessary to resort to statistical analysis to make the point that New Zealand has been let off rather lightly in the last 45 years.

Because of the generally tensional nature of ground deformation in the Bay of Plenty, the earthquake opened up a rift 1 metre wide and 7 km long, snaking across the Rangitaiki Plains. There was slumping of up to 2 metres on the downthrown side.

Strong motion instruments at the Matahina Dam, some 23 km from the epicentre but rather closer to the nearest point of the main rift, recorded a peak acceleration comparable with the design level for the dam. This is the first time such records have been obtained in New Zealand.

The earthquake was preceded by a series of foreshocks in two locations: at the coast near Thornton and northwest of there, near Matata. A long series of aftershocks followed: More than 200 were felt, and three (/671, /685, /910) reached M_L 5, which would be expected after a mainshock exceeding 6.0. One foreshock (/661) was of M_L 4.9. This occurred only seven minutes before the main shock and was largely responsible for the evacuation of buildings which collapsed or were severely damaged in the main shock. There were in fact no fatalities.

The month of March also brought the next most damaging earthquake of the year (/1459). It occurred in Pegasus Bay on March 8, and was of M_L 5.2. It was felt strongly in Christchurch, only 50 km away. There is a report of cracked pavement at Brighton. A number of houses in North Canterbury suffered chimney damage and had items knocked off shelves. The earthquake was felt as far away as Greymouth and Wellington.

On March 13 an earthquake of M_L 4.7 (/1554) occurred inland from Westport, and was felt from Greymouth to Wellington. And on March 22 a deep earthquake of M_L 6.1 (/1807) occurred 40 km east of Mayor Island. With a focal depth of 360 km, epicentral intensities were not high, but the shock was felt all the way south from the Bay of Plenty to Nelson and Marlborough.

A number of other earthquakes exceeded M_L 5.0 during the year: none was felt particularly strongly or caused significant damage. The earthquake off the southern Wairarapa Coast on August 8 (/3215) was of M_L 5.1. It was felt slightly in Palmerston North. On October 27 there was an earthquake of M_L 4.9 (/4185) off the Marlborough Coast, felt most strongly in Wellington.

The normal high seismicity to the northeast of the North Island continued with an earthquake of M_L 5.5 in the Bay of Plenty on June 26 (/2818), one of M_L 4.9 near the Gisborne coast on June 27 (/2830), one of M_L 5.2 on July 5, 100 km north of Te Kaha (/2920) and another of 5.1 off East Cape on August 8 (/3214). Only the second of these has been reported felt.

Deep earthquakes felt during 1987 include 87/3133 of M_L 4.0, just north of D'Urville Island and 75 km deep, which was felt in Wellington; 87/3551 of M_L 5.4 with its epicentre 50 km east of New Plymouth and over 200 km deep, but felt from Ohakune to Christchurch; 87/3774 of M_L 5.2 with its epicentre 100 km under the Marlborough Sounds and felt from Wellington to Banks Peninsula; 87/4312 of M_L 5.3, some 170 km below a point near Rotorua, and felt from Taupo to Wellington.

Smaller earthquakes can be felt strongly or even do damage in the immediate vicinity of the epicentre, if they are shallow. On March 11 a shock of M_L 4.4 (/1524) in the Bay of Plenty was felt at intensity MM6 in Waihi. Even the M_L 3.7 shock 87/3874 knocked goods off shelves at Wairakei. Many of the aftershocks of the Edgecumbe earthquake were also very shallow (< 10 km deep) and were strongly felt locally.

An unusual feature of 1987 was the lack of earthquakes of M_L 5 or greater in Fiordland. Apart from that and of course the Edgecumbe earthquake sequence, the activity followed the usual pattern of a broad band of shallow earthquakes and a more confined band of deeper earthquakes, stretching

across the country in a north-east to southwest direction, but with a large gap in the deep activity under the middle of the South Island.

There was no spectacular volcanic activity on New Zealand volcanoes in 1987, although, White Island had one of its larger explosive eruptions for a decade in January. Ngauruhoe was quiet through the year, and the most violent action seen on Ruapehu was the emergence of jets of muddy water to a height of over 10 m above the level of the crater lake.

Some of the faults that moved in the Edgecumbe earthquake were aligned nearly parallel to the Tarawera Volcanic Rift and it was feared, given the extensional nature of the main shock, that migration of aftershocks into the Rift might be accompanied by magmatic intrusion and possible eruptions. However no obviously volcano-related activity was observed.

Reference

DSIR Staff (1989)
The Edgecumbe Earthquake
N.Z. J. Geol. Geophys.
32: 1-190.

INSTRUMENTATION IN 1987

In 1987 the Seismological Observatory seismic data collection system was in transition from being mainly a network of seismographs recording analogue traces continuously on paper, to being one in which recognised "events" are recorded digitally on magnetic tape. However continuous recording by WWSSN and SRO seismographs for the registration and analysis of teleseisms and the use, at some sites, of pen-recorders for immediate inspection of freshly recorded events, continues. Some Wood-Anderson seismographs are also being retained as a calibration standard for local earthquake magnitudes. As re-equipment proceeds, some stations will be moved to seismically quieter sites, and some seismometers will be installed in boreholes.

Included in the new system are telemetered networks of several seismographs at spacings of only a few tens of kilometres. These networks have been established for research purposes or to monitor possible changes in seismicity resulting from human activity. Within each network, events are recorded digitally on magnetic tape at a central recording station.

Two types of event-recording system have been developed by the Observatory. The older system, SNARE (Seismic Network Automatic Recording Equipment) is a 16-channel system which relies on a combination of spectral analysis of seismometer outputs and coincidence detection to trigger recording by the whole network. EARSS (Automatic Equipment for the Recording of Seismograph Signals) was developed from SNARE as a single station system which can operate unattended for at least a week. Because it is a single station system it relies solely on a frequency-spectrum algorithm for event detection. An improvement on SNARE is the introduction of automatic magnification adjustment ("gain-ranging") to allow faithful recording of large-amplitude wave-forms. A 16-channel version of EARSS is under development and will eventually supersede SNARE.

Overseas stations under the scientific direction of the Observatory are not included in the current re-equipment programme, and neither are some instruments in New Zealand which are owned by organisations outside DSIR. In 1987, these cooperating organisations were: the Defence Scientific Establishment, the Universities of Auckland, Wellington and Otago, the Ministry of Works and the New Zealand Electricity Department.

CHANGES TO THE NETWORKS IN 1987

The most important change in 1987 was the installation and first use of the Hawke's Bay Net in March. A map showing the disposition of the nine-station network is included in a later section of this Report. One station of the new network, Whakatau (WHH) transmits data to both the Taupo and Hawke's Bay Net SNARE systems. The Taupo Net was also enlarged, primarily for the purpose of observing experiments in the management of geothermal wells used for power generation. Four new seismometers were installed close to Wairakei (WK1 ... WK4) and another three (OH1 ... OH3) close to Ohaaki. Another new station at Paeroa (PAT) was temporarily operated as part of the Taupo Net.

A significant change to the national network was the closing of the two component station at Cape Reinga (CRZ) at the end of July. This left the national network with no mainland station farther north than Great Barrier Island.

The station at KRP now operates 3 components following installation of an E-W oriented Wood-Anderson in August 1986. This displaced the E-W Benioff, which was re-aligned N-S and continues in use. All WWSSN stations (AFI, RAR, WEL & SBA) now record only the vertical component of short period ground motion, and all recorders are now equipped with pen-drives for recording on heat-sensitive paper. Apart from the arcuate shape of pen-recorded trace deflections, instrument characteristics are not normally changed by this modification, but the magnification of the long period instruments at Wellington was reset to 375 (from 750) when pen-drives were installed in December.

INDEX OF STATION CODES AND POSITIONS

The growth in numbers of seismograph stations in recent years has been so great that it is not always possible to find short mnemonic codes that are unique in the world. Nearly all the codes used below are recognised and used by the United States NEIS and by ISC, but some of those for stations in the telemetered networks may not be.

CODE	NAME	LATITUDE d m s				LONGITUDE d m s				ALT m
		SEISMIC RESEARCH OBSERVATORY								
SNZO	South Karori	41	18	37	S	174	42	17	E	-10
		STANDARD NETWORK								
AFI	Afiamalu	13	54	34	S	171	46	38	W	706
API	Apia	13	48	26	S	171	46	30	W	2
AUC	Auckland	36	51	36	S	174	46	41	E	79
BRZ	Borland Lodge	45	46	45	S	167	32	19	E	190
CAZ	Castlepoint	40	54	15	S	176	13	34	E	6
CBZ	Campbell Island	52	33	03	S	169	09	33	E	30
CIZ	Chatham Islands	43	57	18	S	176	33	56	W	45
CMZ	Cashmere	43	35	10	S	172	38	23	E	255
COB	Cobb River	41	05	16	S	172	44	02	E	213
CRZ	Cape Reinga	34	25	55	S	172	40	47	E	140

GNZ	Gisborne	38	38	39	S	178	01	21	E	30
HBZ	Hicks Bay	37	35	57	S	178	18	05	E	0
KAI	Kaimata	42	31	33	S	171	24	31	E	82
KKZ	Kaikoura	42	25	19	S	173	41	47	E	109
KRP	Karapiro	37	55	30	S	175	32	15	E	64
MNG	Mangahao	40	37	07	S	175	28	55	E	396
MSZ	Milford Sound	44	40	14	S	167	55	01	E	38
NDF	Nandi	17	45	25	S	177	27	00	E	30
NEZ	North Egmont	39	16	22	S	174	05	46	E	920
NUE	Niue	19	04	35	S	169	55	41	W	56
OBZ	Oban	46	54	18	S	168	06	55	E	26
OMZ	Oamaru	45	04	14	S	170	54	53	E	95
RAO	Raoul Island	29	15	06	S	177	55	06	W	110
RAR	Rarotonga	21	12	45	S	159	46	24	W	28
RGZ	Rangipo	39	09	19	S	175	50	02	E	667
RTY	Rotoiti	41	48	27	S	172	50	35	E	635
SBA	Scott Base	77	51	01	S	166	45	22	E	38
TMP	Tomahawk Gully	44	18	54	S	170	07	12	E	720
TRZ	Taradale	39	33	12	S	176	49	17	E	17
TUA	Tuai	38	48	29	S	177	09	02	E	274
WEL	Wellington	41	17	10	S	174	46	06	E	122
WIZ	White Island	37	31	42	S	177	11	21	E	40
WTZ	Whakatane	37	59	05	S	176	59	18	E	43

CLYDE NETWORK

CFC	Cairnmuir Flats	45	11	03	S	169	17	32	E	576
CMC	Cairnmuir Mts	45	08	57	S	169	16	30	E	1039
LRC	Leaning Rock	45	03	55	S	169	20	46	E	1533
LSC	Lilico Spur	45	06	59	S	169	22	09	E	759
MHZ	Mt Horn	45	03	44	S	169	16	46	E	1127
MSC	Moutere Station	45	05	35	S	169	24	42	E	701
SBC	Sonora Basin	45	05	32	S	169	18	40	E	801
TBC	Trig B	45	08	47	S	169	19	49	E	619

CONTRIBUTING STATIONS

CNZ	Chateau	39	12	00	S	175	32	51	E	1116
DNZ	Dunedin	45	51	59	S	170	30	54	E	15
DRZ	Dome Shelter	39	16	35	S	175	33	49	E	2600
GBZ	Great Barrier	36	13	04	S	175	28	52	E	70
MGZ	Maungaku	39	00	07	S	175	32	20	E	806
NGZ	Ngauruhoe	39	10	39	S	175	36	12	E	1400
TAZ	Tarawera	38	13	59	S	176	30	28	E	1027
UTU	Utuhina	38	10	39	S	176	11	32	E	410

HAWKES BAY NETWORK

MAH	Mahia	39	11	18	S	177	52	51	E	336
MOH	Mohaka	39	07	57	S	177	08	52	E	245
MRH	Marewa	39	29	57	S	176	53	18	E	4
PAH	Panekirikiri	38	51	33	S	177	03	15	E	563
TAH	Taraponui	39	08	09	S	176	44	25	E	1297
TEH	Te Atua	39	59	22	S	176	48	40	E	407
TTH	Taradale Trig	39	32	29	S	176	49	34	E	120
WAH	Wakarara	39	41	57	S	176	21	19	E	657
WHH	Whakatau	38	53	04	S	176	29	42	E	921

TAUPO NETWORK

HAT	Hinemaiaia	38	53	32	S	176	05	31	E	492
HIT	Hingarae	38	42	31	S	175	45	59	E	458
HUT	Huka	38	38	01	S	176	05	39	E	300
KET	Ketetahi	39	06	02	S	175	39	06	E	1208
OH1	Ohaaki 1	38	32	41	S	176	18	27	E	295
OH2	Ohaaki 2	38	30	42	S	176	18	10	E	300
OH3	Ohaaki 3	38	31	59	S	176	19	34	E	300
PAT	Paeroa	38	22	53	S	176	15	30	E	940
RAT	Rangitukua	38	52	07	S	175	46	16	E	649
TUT	Tuhingamata	38	42	42	S	175	59	28	E	614
WK1	Wairakei 1	38	38	42	S	176	04	51	E	343
WK2	Wairakei 2	38	37	23	S	176	02	52	E	456
WK3	Wairakei 3	38	36	18	S	176	02	42	E	457
WK4	Wairakei 4	38	37	00	S	176	05	28	E	380

WELLINGTON NETWORK

BHW	Baring Head	41	24	33	S	174	52	17	E	10
BLW	Big Hill	41	22	07	S	175	28	29	E	340
CAW	Cannon Point	41	06	32	S	175	04	04	E	330
CCW	Cape Campbell	41	45	03	S	174	13	01	E	216
KIW	Kapiti Island	40	51	50	S	174	54	42	E	320
MOW	Moikau	41	25	18	S	175	15	07	E	430
MRW	Makara Radio	41	13	57	S	174	42	18	E	235
MTW	Mount Morrison	41	09	34	S	175	30	07	E	282
QHW	Quartz Hill	41	15	07	S	174	41	26	E	190
TCW	Tory Channel	41	12	48	S	174	16	33	E	150
WDW	Wainui Dam	41	16	07	S	174	59	37	E	130
WEL	Wellington	41	17	10	S	174	46	06	E	122

INSTRUMENTATION AND LITHOLOGY

STANDARD NETWORK AND CONTRIBUTING STATIONS

Stations are listed in the alphabetical order of their abbreviations. Pendulum and galvanometer periods, To and Tg, are given in seconds. The damping when not listed, may be assumed to be critical. Magnifications listed are for the period of maximum response, except for World-Wide Standard Station instruments, where the magnifications are given at the conventional periods of 1.0 and 15 seconds. Response curves for Willmore II, Benioff, Wood-Anderson and Mark Products L-4C seismographs are shown at the end of this section. WWSS pen recorders mimic the response of galvanometers with the Tg shown.

	Instrument	Compt.	To	Tg	Damping	Magnification
AFI	AFIAMALU (World-Wide Standard Station until June).					
	Foundation: Basaltic lava flows.					
	Until June Benioff	ZNE	1.0	0.75		12 500 at 1.0s
	Press-Ewing	ZNE	15	100		750 at 15s
	From June					
	Streckeisen digital	ZNE	(analogue output simulates WWSS paper records)			
API	APIA					
	Foundation: Coral sand on Recent and Pleistocene basalt.					
	Johnson-Matheson (photo-cell amplifier with hot stylus recorder).					
		Z	1.2			Uncertain
AUC	AUCKLAND					
	Foundation: Volcanic beds on Tertiary sandstone and mudstone.					
	Mark Products L-4C (with Kinemetrics VR-1 pen-recorder).					
		Z	1.0			3 800 at 0.25s
BRZ	BORLAND LODGE					
	Foundation: Quaternary gravels.					
	Willmore II	Z	1.0	0.25		29 100 at 0.25s
	Wood-Anderson	X	0.80		crit.	2 800 at 0.80s
	The Wood-Anderson is oriented with the X component northeast.					
CAZ	CASTLEPOINT					
	Foundation: Quaternary mudstone.					
	Willmore II (with Kinemetrics VR-1 pen-recorder).					
		Z	1.0			Variable
	The magnification may be reduced when high seas are running.					
CBZ	CAMPBELL ISLAND					
	Foundation: Basalt.					
	Willmore II	Z	1.0	0.25		5 000 at 0.25s
CIZ	CHATHAM ISLANDS					
	Foundation: Clay over basalt.					
	Willmore II (with Kinemetrics VR-1 pen-recorder).					
		Z	1.0			4 440 at 0.20s
CMZ	CASHMERE					
	Foundation: Rhyolite.					
	Mark Products L-4C (Telemetered to Kinemetrics VR-1 pen-recorder).					
		Z	1.0			24 000 at 0.20s

	Instrument	Compt.	To	Tg	Damping	Magnification
CNZ	CHATEAU (Geophysical Survey)					
	Foundation: Volcanic ash and Lava.					
	Mark Products L-4C (Telemetered to Kinemetrics VR-1 pen-recorder).					
		Z	1.0			Variable
COB	COBB RIVER					
	Foundation: Schist.					
	Willmore II	Z	1.0	0.25		27 300 at 0.20s
CRZ	CAPE REINGA					
	Foundation: Cretaceous basic volcanics.					
	Willmore II	Z	1.0	0.25		9 350 at 0.25s
		N	1.0	0.25		10 200 at 0.20s
DNZ	DUNEDIN (University of Otago)					
	Foundation: Basaltic lava flow.					
	Willmore III with Kinemetrics pen-recorder.					
		Z	1.0			Variable
		N	1.0			Variable
		E	1.0			Variable
DRZ	DOME SHELTER (Geophysical Survey)					
	Foundation: Recent andesitic ash.					
	Mark Products L-4C (High and low magnifications, telemetered to Kinemetrics VR-1 pen-recorders).					
		Z	1.0			Variable
GBZ	GREAT BARRIER (Defence Scientific Establishment)					
	Foundation: Tertiary volcanics.					
	Mark Products L-4C (with Kinemetrics VR-1 pen-recorder)					
		Z	1.0			
GNZ	GISBORNE					
	Foundation: Alluvium on Tertiary mudstone.					
	Willmore II	Z	1.0	0.25		27 000 at 0.25s
		N	1.0	0.25		29 500 at 0.20s
HBZ	HICKS BAY					
	Foundation: Consolidated conglomerate.					
	Mark Products L-4C in borehole (with Kinemetrics VR-1 pen-recorder).					
		Z	1.0			50 700 at 0.10s
KAI	KAIMATA					
	Foundation: Moraine and river gravels over Tertiary mudstone and sandstone.					
	Wood-Anderson	X	0.80		crit.	2 800 at .80s
	This instrument is oriented with the X component northeast.					
KKZ	KAIKOURA					
	Foundation: Tertiary limestone and mudstone.					
	Willmore II	Z	1.0	0.25		12 000 at 0.25s
KRP	KARAPIRO					
	Foundation: Greywacke.					
	Benioff	Z	1.0	0.20		46 700 at 0.25s
		N	1.0	0.20		41 000 at 0.50s
	Wood-Anderson	E	0.8		crit.	2 800 at 0.80s

	Instrument	Compt.	To	Tg	Damping	Magnification
MGZ	MAUNGAKU (Ministry of Works)					
	Foundation: Quaternary andesite.					
	Mark Products L-4C (Telemetered to Kinemetrics VR-1 pen-recorder).					
		Z	1.0			Variable
MNG	MANGAHAO					
	Foundation: Greywacke					
	Willmore II	Z	1.0	0.25		52 000 at 0.33s
MSZ	MILFORD SOUND					
	Foundation: Gneiss.					
	Willmore II	Z	1.0	0.25		49 800 at 0.25s
NDF	NADI					
	Foundation: Recent clays.					
	Willmore II (photo-cell amplifier with hot stylus recorder).					
		Z	1.25			6 000 approx.
NEZ	NORTH EGMONT					
	Foundation: Volcanic ash.					
	Mark Products L-4C (with Kinemetrics VR-1 pen-recorder).					
		Z	1.0			25 100 at 0.10s
NGZ	NGAURUHOE (Geophysical Survey)					
	Foundation: Recent volcanic flows.					
	Mark Products L-4C (Telemetered to Kinemetrics VR-1 pen-recorder).					
		Z	1.0			Variable
NUE	NIUE					
	Foundation: Hard coral.					
	Willmore II (with Kinemetrics VR-1 pen-recorder).					
		Z	1.0			17 200 at 0.10s
OBZ	OBAN					
	Foundation: Weathered granite.					
	Mark Products L-4C (with Kinemetrics VR-1 pen-recorder).					
		Z	1.0			12 000 at 1.0s
OMZ	OAMARU					
	Foundation: Recent deposits overlying Tertiary limestone.					
	Willmore II	Z	1.0	0.20		11 500 at 0.20s
RAO	RAOUL ISLAND					
	Foundation: Volcanic rock.					
	Willmore II	Z	1.0	0.25		4 800 at 0.25s
RAR	RAROTONGA (World-Wide Standard Station)					
	Foundation: Basalt.					
	Benioff	ZNE	1.0	0.75		6 250 at 1.0s
	Press-Ewing	ZNE	15	100		375 at 15s
	From May EARSS digital even-recorder tuned to trigger on T-waves.					
RGZ	RANGIPO					
	Foundation: Volcanic rock.					
	Mark Products L-4C (with Kinemetrics VR-1 pen-recorder).					
		Z	1.0			8 000 at 1.0s

	Instrument	Compt.	To	Tg	Damping	Magnification
RTY	ROTOITI					
	Foundation: Glacial gravels.					
	Mark Products L-4C (with Kinemetrics VR-1 pen-recorder).					
		Z	1.0			Uncertain
SBA	SCOTT BASE (World-Wide Standard Station)					
	Foundation: Frozen basaltic debris resting on lava flows.					
	Benioff	ZNE	1.0	0.75		12 500-50 000 at 1.0s according to season
	Press-Ewing	ZNE	15	100		750 at 15s
TAZ	TARAWERA (Geological Survey)					
	Foundation: Rhyolite lava.					
	Mark Products L-4C (Telemetered to Kinemetrics VR-1 pen-recorder).					
		Z	1.0			Variable
TMP	TOMAHAWK GULLY					
	Foundation: Mesozoic Greywacke					
	Mark Products L-4C (Telemetered to Kinemetrics VR-1 pen-recorder.					
		Z	1.0			750 000 at 0.20s
		N	1.0			100 000 at 0.20s
TRZ	TARADALE					
	Foundation: Quaternary sands and silts, overlying Quaternary limestone.					
	Willmore II	Z	1.0	0.25		5 550 at 0.25s
TUA	TUAI					
	Foundation: Thick Tertiary sandstone and mudstone.					
	Willmore II	Z	1.0	0.25		7 080 at 0.25s
UTU	UTUHINA (Geological Survey)					
	Foundation: Ignimbrite.					
	Mark Products L-4C (Telemetered to Kinemetrics VR-1 pen-recorder).					
		Z	1.0			Variable
WEL	WELLINGTON (World-Wide Standard Station)					
	Foundation: Greywacke.					
	Benioff	Z	1.0	0.75		6 250 at 1.0s
	Press-Ewing	ZNE	15	100		750 at 15s
	Wood-Anderson	NE	0.80		crit.	1 400 at 0.8s
	Imamura	Z	1	5:1		2
		NE	4	5:1		2
	The Benioff vertical component operates both pen-and-ink and heated stylus recorders					
WIZ	WHITE ISLAND (Geological Survey/Victoria University)					
	Foundation: Recent andesite.					
	Mark Products L-4C (Telemetered to Kinemetrics VR-1 pen-recorder).					
		Z	1.0			Variable
WTZ	WHAKATANE					
	Foundation: Weathered Jurassic greywacke.					
	Willmore II	Z	1.0	0.20		24 000 at 0.20s

SEISMIC RESEARCH OBSERVATORY

This station is sponsored by the United States Geological Survey. A three-component seismometer sealed in a gas-filled capsule is located in a borehole 165 mm in diameter and about 100 m deep, at a quiet site several kilometres from the Observatory. The ground surface there is 88 m above, and the seismometer 10 m below, sea level. Both digital and analogue recordings are made from the three long-period and the vertical component short-period outputs. Paper analogue records are archived by the Observatory, but the digital tape records of detected events are held by the USGS. The recorder is at the observatory site in Kelburn, and the signals are transmitted to it by landline.

Code	Station	Component	Magnification
SNZO	South Karori	ZNE Z	5 000 at 25s 6 250 at 1.0s
The lithological foundation is Jurassic-Permian Greywacke.			

CLYDE NETWORK

A network of seismometers has been installed near Clyde to collect data on the prevailing level of microseismicity in the area of the dam now being constructed on the Clutha River. The network was operated in 1987 by New Zealand Electricity, (now succeeded by Electricity Corporation of New Zealand) and is used to monitor any changes in local seismicity associated with the use of the lake for the generation of electricity. The system records all detected seismic events in digital form, on magnetic tape. Tapes are interpreted and retained at the Observatory where they are available for other seismological use. Clyde network stations are linked by radio telemetry to a multi-channel SNARE (Seismic Network Automatic Recording Equipment), which both detects and records seismic events, at Clyde. The seismometers are Mark Products L-4C instruments with a natural period of one second and the lithological foundation at all stations is Schist. Recorded waveforms can be displayed on a monitor screen at any required scale.

Code	Station	Component
CFC	Cairnmuir Flats	Z
CMC	Cairnmuir Mountains	Z
CYZ	Clyde (renamed Trig B)	Z
LRC	Leaning Rock	Z
LSC	Lilico Spur	Z
MHZ	Mount Horn	Z
MSC	Moutere Station	Z
SBS	Sonora Basin	Z
TBC	Trig B (formerly Clyde)	Z

HAWKES BAY NETWORK

The Hawke's Bay network has been installed to monitor seismicity in an area which has not only some potential for hydro-electric power generation, but also a history of severe earthquakes. Station codes are not internationally recognised. Marewa produces high- and low-gain records from a three-component seismometer. The network records on a SNARE System in Napier.

Code	Station	Component(s)	Foundation
MAH	Mahia	Z	Mudstone
MOH	Mohaka	Z	Dune Sand
MRH	Marewa	ZNE (High gain) ZNE (Low gain)	Alluvium "
PAH	Parekirikiri	Z	Pumice Tuff
TAH	Taraponui	Z	Limestone
TEH	Te Atua	Z	Limestone
TTH	Taradale Trig	Z	Calcareous mudstone
WAH	Wakarara	Z	Greywacke
WHH	Whakatau	Z	Ignimbrite

TAUPO NETWORK

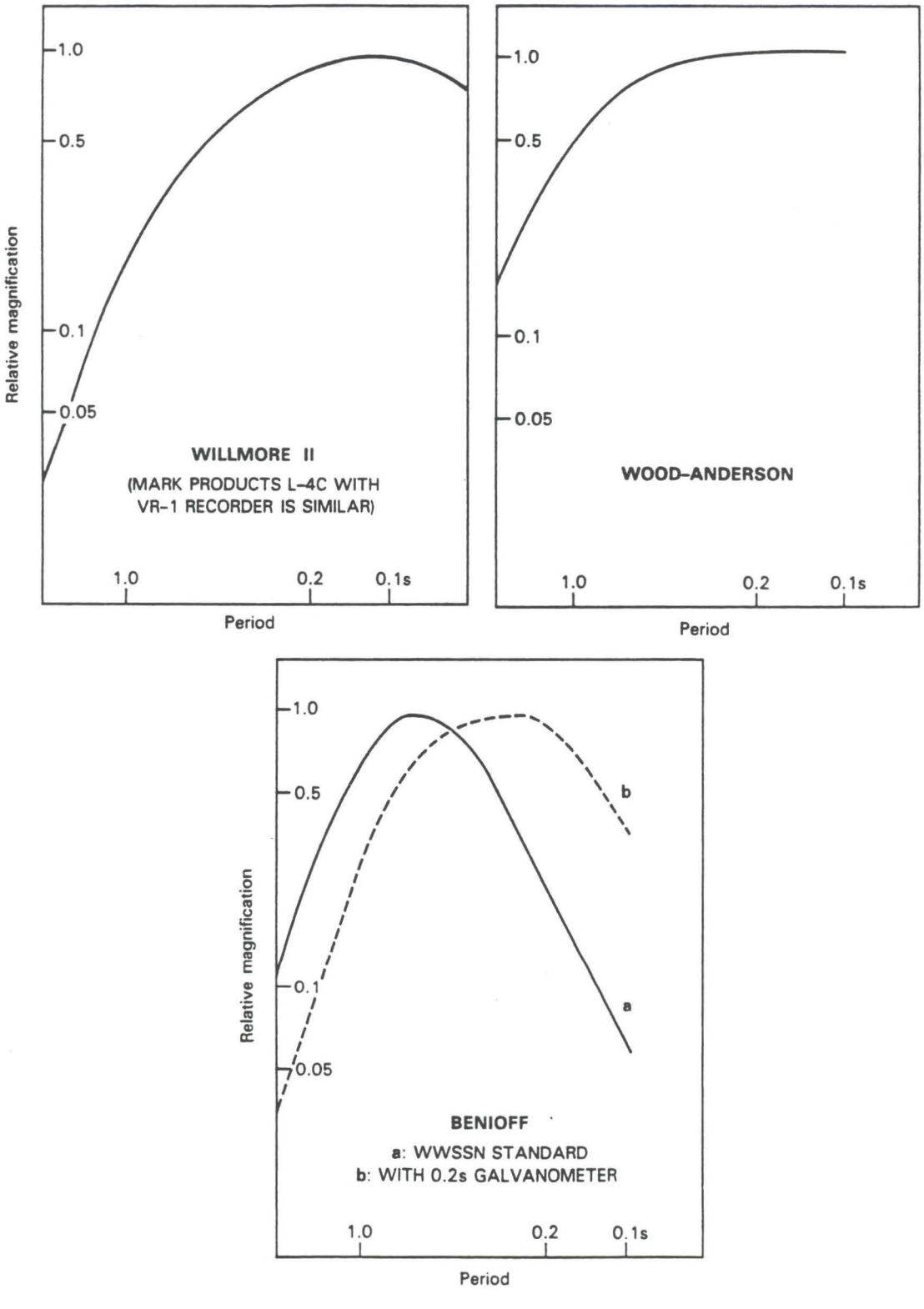
This network is intended to monitor volcanic and geothermal activity in the Taupo Volcanic Region. Although relatively quiet in historic times, (the 1886 Tarawera eruption notwithstanding), the geological record shows that the Region has been the scene of larger-scale activity at a number of times in the more distant past. The network records on a SNARE system at Wairakei. Station codes are not internationally recognised.

Code	Station	Component	Foundation
HAT	Hinemaiaia	Z	Ignimbrite
HIT	Hingarae	Z	Ignimbrite
HUT	Huka	Z	Pumice breccia
KET	Ketatahi	Z	Andesite
OH1	Ohaaki 1	Z	Pumice
OH2	Ohaaki 2	Z	Pumice
OH3	Ohaaki 3	Z	Pumice
PAT	Paeroa	Z	Ignimbite
RAT	Rangitukua	Z	Rhyolite
TUT	Tuhingamata	Z	Rhyolite
WK1	Wairakei 1	Z	Pumice
WK2	Wairakei 1	Z	Pumice
WK3	Wairakei 1	Z	Pumice
WK4	Wakrakei	Z	Pumice

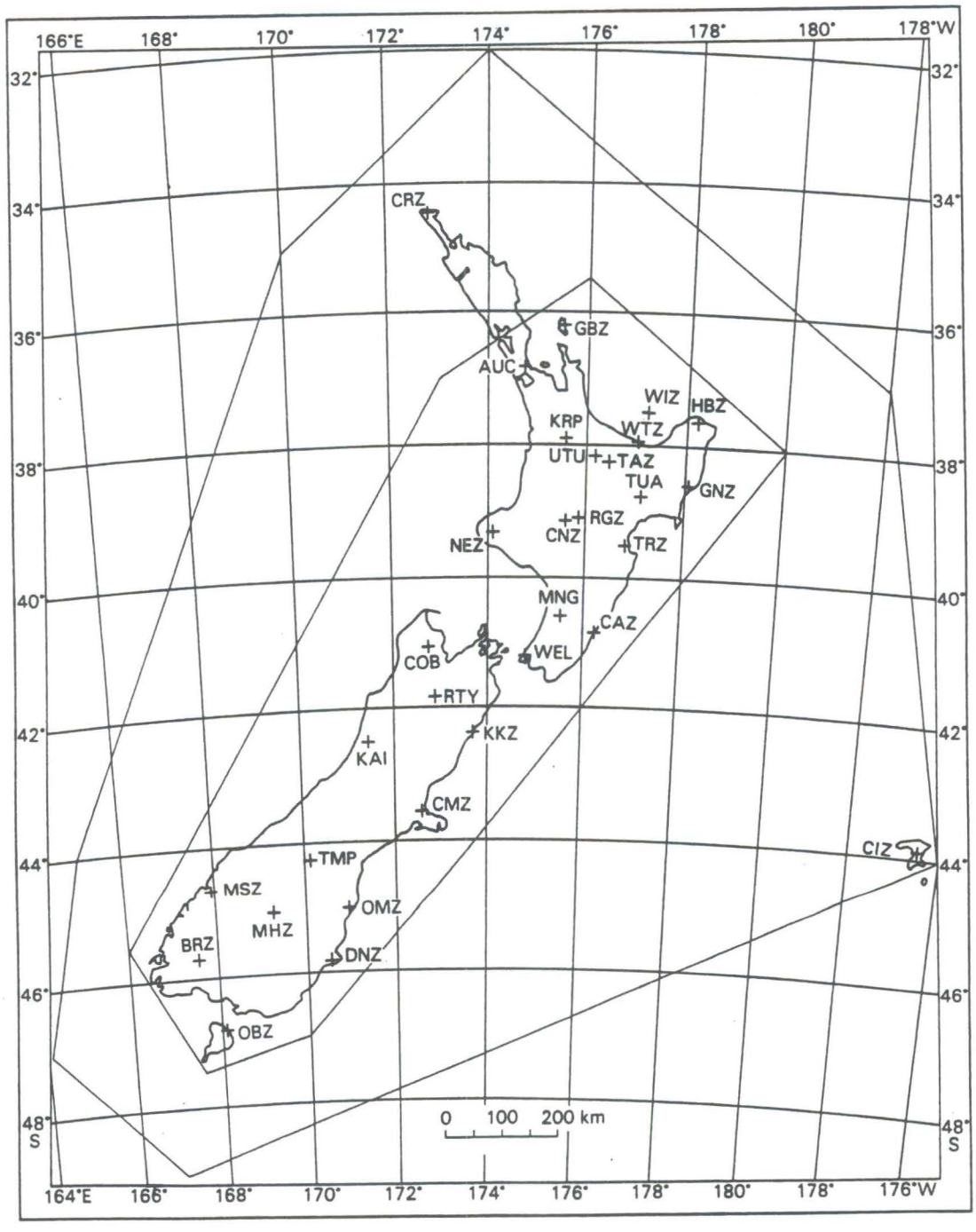
WELLINGTON NETWORK

The stations of the Wellington network are linked by radio or land-line to a common SNARE event-detecting and recording system at the Observatory at Kelburn. The seismometers are Mark Products L-4C instruments with a period of 1.0 second. SNARE records are made on magnetic tape and may be displayed on a monitor screen at any required magnification. The lithological foundation at all stations is Jurassic-Permian Greywacke, except at CCW which is on Miocene sandstone.

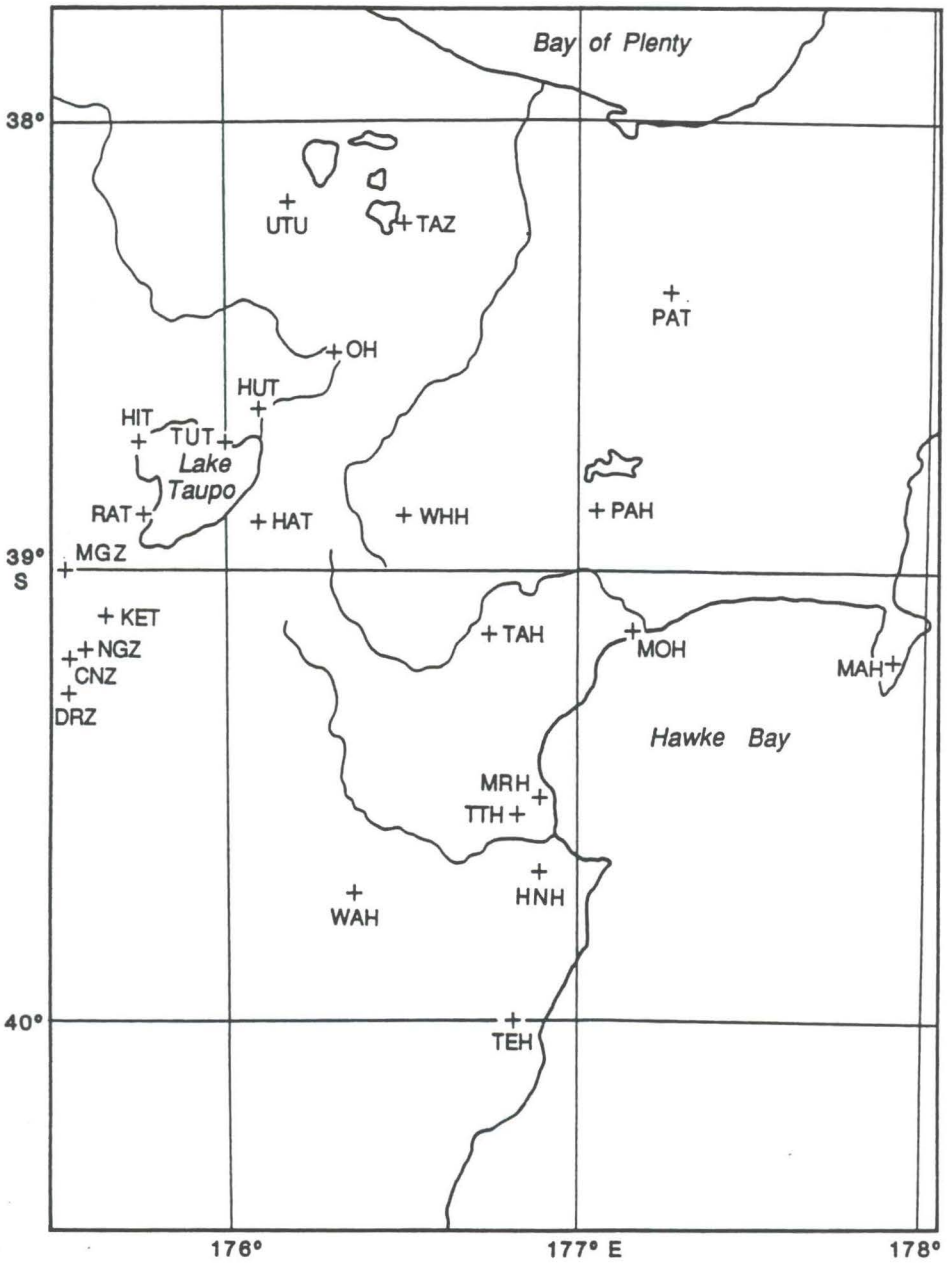
Code	Station	Component(s)
BHW	Baring Head	Z
BLW	Big Hill	Z
CAW	Cannon Point	Z
CCW	Cape Campbell	Z
KIW	Kapiti Island	Z
MQW	Moikau	Z
MRW	Makara Radio	Z
MTW	Mount Morrison	Z
QHW	Quartz Hill	ZNE
TCW	Tory Channel	Z
WDW	Wainui Dam	Z
WEL	Wellington	N



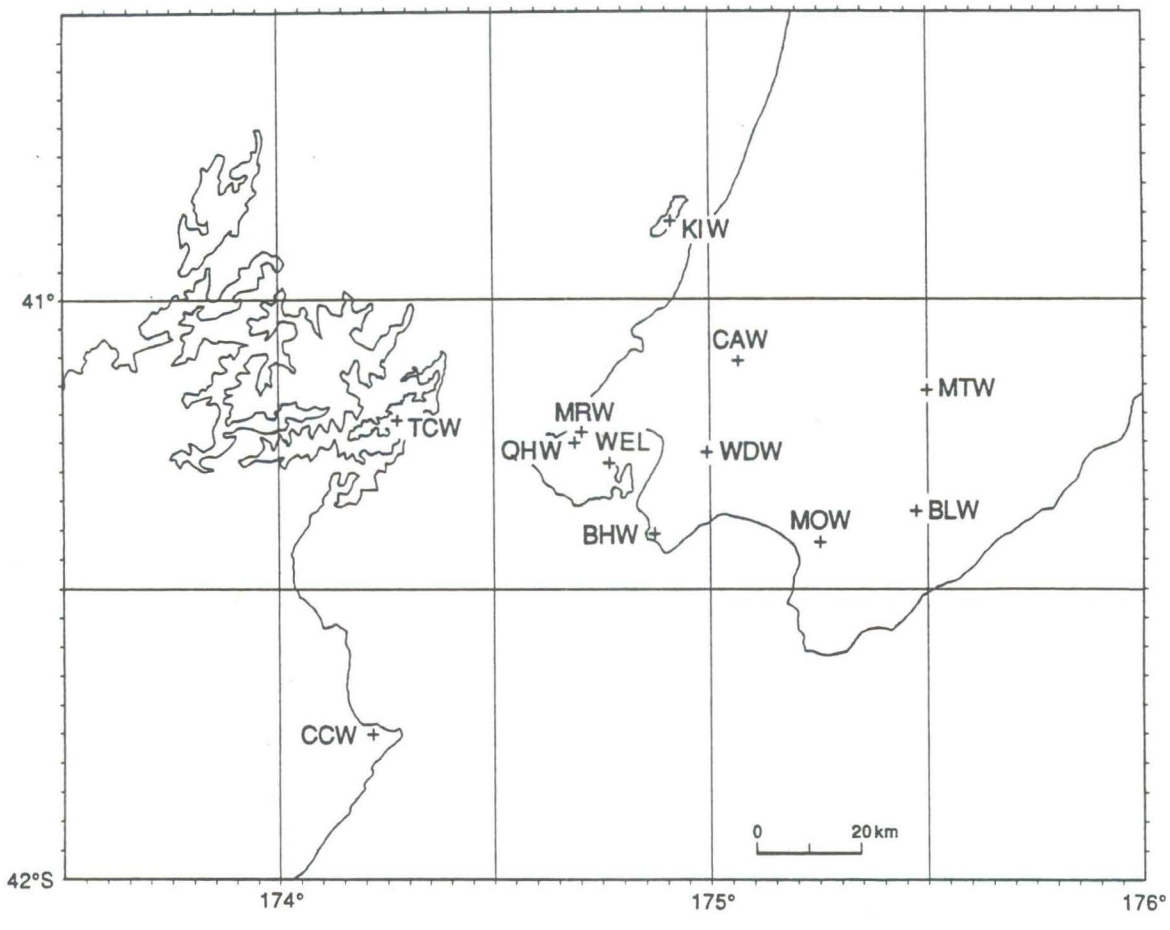
PERIOD RESPONSE CURVES
Short Period Seismographs



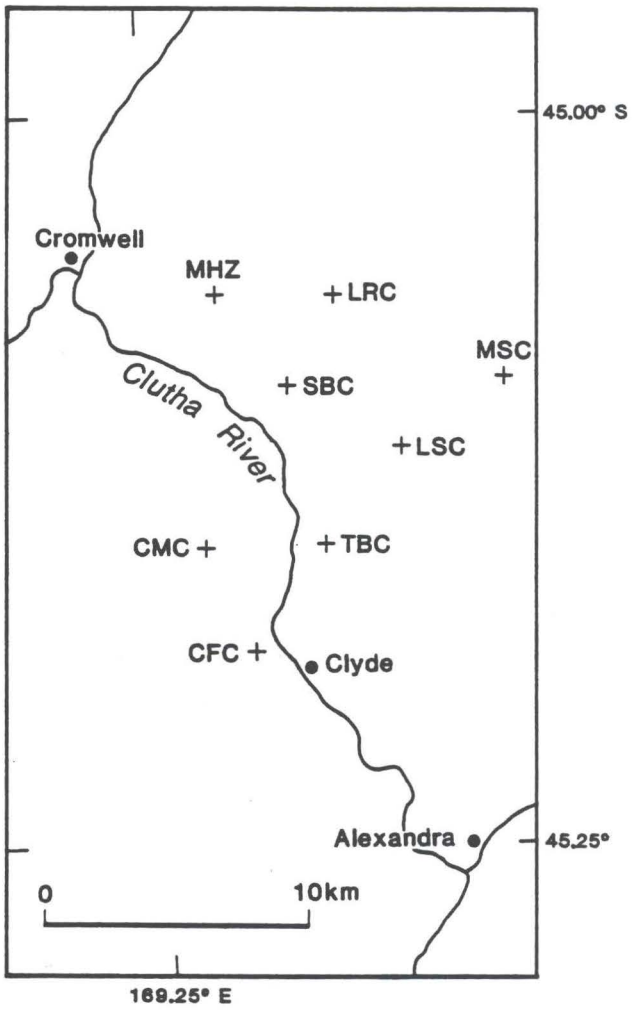
Stations of the National Seismograph Network. Some stations that are too closely spaced to show on this scale are shown instead on the map of the Taupo and Hawke's Bay networks. The inner and outer polygons define areas where accuracy of epicentre locations is considered reliable, less reliable and inadequate.



Stations of the Taupo and Hawkes Bay Networks. Other stations lying within the boundaries of this map are also shown.



The Wellington Network includes stations on both sides of Cook Strait.



The Clyde Network monitors seismic activity around the Clyde Dam.

TIMING ARRANGEMENTS

Unless stated otherwise, times in this Report are given in Universal Time (U.T. or, more strictly, U.T.C., defined in a later section). For most seismological and civil purposes this may be regarded as the Mean Solar Time of the Greenwich meridian.

On paper seismograms made by the national network, minute marks, derived from quartz crystal clocks of high stability, appear on records as abrupt trace deflections of about two seconds duration. Radio time signals also operate the trace deflector so that the relationship between the locally generated minute marks and Universal Time can be established. In most cases the radio signals are those of the New Zealand Time Service, transmitted hourly through the stations of Radio New Zealand, but in areas where local reception is bad, the Australian station VNG was used (until that service ended in October). It is estimated that the total error in time-signal recording resulting from signal transmission and delay in operation of the trace deflector should never exceed 30 milliseconds.

SNARE and EARSS instruments are also equipped with high stability clocks and radio receivers tuned to pick up Time Service signals. A software routine establishes a clock drift rate and applies a correcting signal calculated to bring the clock smoothly into synchronism with the time signals (which are usually received hourly). The difference between internally kept time and Time Service times is recorded and a correction applied by CUSP interactive display software to the phase onset times chosen by analysts. Corrected arrival times are expressed to a precision of one hundredth of a second, usually with an accuracy of a few hundredths, but errors of almost a tenth of a second have occasionally been detected.

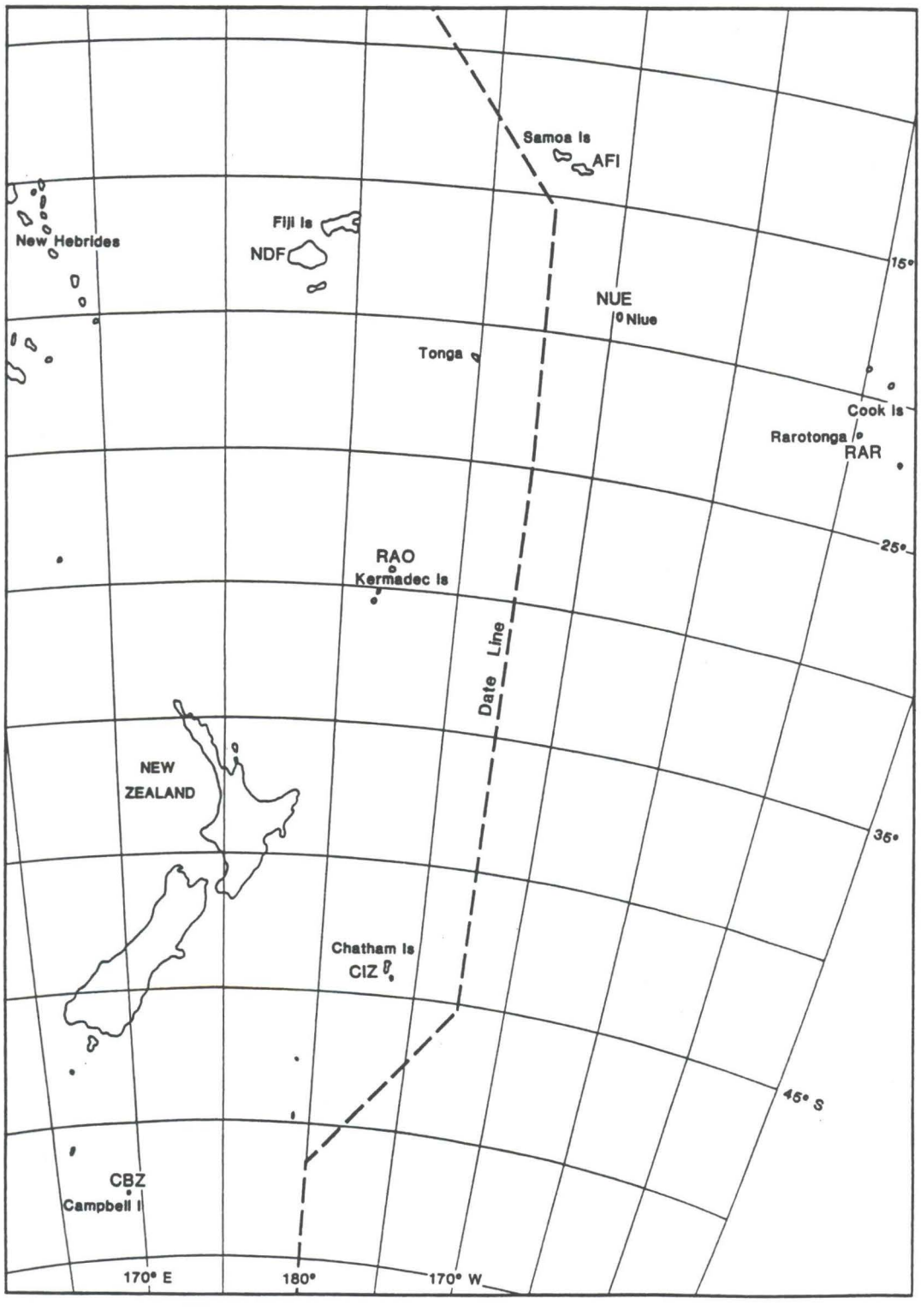
Stations of the World-Wide Standard Seismograph Network have the timing arrangements usual at such stations. At other stations beyond New Zealand, time signals originating from the national Time Service or from VNG are used.

It is sometimes desirable to know the local civil time at which an earthquake occurred. The times now used for civil purposes in New Zealand (except the Chatham Islands) are New Zealand Standard Time, and New Zealand Daylight Time, which are defined in the Time Act, 1974. New Zealand Standard Time is 12 hours, and New Zealand Daylight Time 13 hours, ahead of U.T. The period of Daylight Time is specified by Order in Council, as provided by the Act, and in 1987 Daylight Time was in effect until 02h NZST on March 1st, and from 02h NZST on October 25th until the end of the year.

The time observed in the Chatham Islands is 45 minutes in advance of that currently in use in New Zealand. New Zealand Standard Time is observed at Scott Base, in Fiji and on Raoul and Campbell Islands. Times kept elsewhere in the South Pacific are set by the governments of the respective countries. Those used in places which sometimes report earthquakes to the Observatory are listed below.

Western Samoa	11h 00m behind U.T.
Niue	11h 00m behind U.T.
Rarotonga	10h 00m behind U.T.
Tonga	13h 00m ahead of U.T.
Norfolk Island	11h 30m ahead of U.T.
French Polynesia	10h 00m behind U.T.

Note that Western Samoan, Niue, Rarotonga and French Polynesia are on the opposite side of the International Date Line from New Zealand.



Pacific Island Stations

ORIGIN INFORMATION

CONTENT

This section contains origin times, epicentres, focal depths, and magnitudes of earthquakes in the New Zealand region that the Observatory has located from instrumental data, together with indicators of the quality of the data used.

In the areas within the inner and outer polygons outlined on the map on page 25, the Observatory attempts to determine origins for all shallow earthquakes of M_L 3.7 or more, and all shocks of M_L 4.0 or more, respectively. (Origins are regarded as shallow if their depth is less than 60 km.) Origins are also calculated for smaller or more distant earthquakes reported to have been felt in New Zealand. Weak shocks felt during earthquake swarms do not automatically get this individual attention, but an origin is found for at least one shock in any sequence giving rise to felt reports.

DETERMINATION OF ORIGINS

Earthquake origins are determined using P & S phases or first-arriving crustal P & S phases. Four different velocity/depth structures are used to calculate travel-times of rays passing through and immediately beneath the crust in different parts of the country (see table below). Beneath the "Moho" defined by these models, velocities are smoothly merged with those of the Jeffreys-Bullen Tables (British Association for the Advancement of Science, 1958). The Standard velocity model is used to calculate crustal velocities beneath all regions except those defined in the following table.

MODEL	UPPER DEPTH BOUNDARY (km)	Vp (km/s)	Vs (km/s)	CORNERS OF REGION Lat.	Long.
				(in clockwise order)	
New Zealand Standard	0.0	5.5	3.3		
	12.0	6.5	3.7		
	33.0	8.1	4.6		
Wellington	0.0	4.40	2.54	41.0 S	178.0 E
	0.4	5.63	3.16	43.5 S	175.0 E
	5.0	5.77	3.49	42.0 S	173.0 E
	15.0	6.39	3.50	39.7 S	175.7 E
	25.0	6.79	3.92		
	35.0	8.07	4.80		
	45.0	8.77	4.86		
Taupo	0.0	3.00	1.70	35.6 S	180.0 E
	2.0	5.30	3.00	38.0 S	177.5 E
	5.0	6.00	3.50	39.7 S	175.7 E
	15.0	7.40	4.30	39.0 S	175.0 E
	33.0	7.78	4.39	37.0 S	176.0 E
	65.0	7.94	4.51	34.6 S	178.5 E
	96.4	8.08	4.52		
Clyde	0.0	4.4	2.6	45.5 S	172.0 E
	0.5	6.0	3.3	49.0 S	167.0 E
	12.0	6.5	3.7	44.5S	168.0 E
	33.0	8.1	4.6	44.0 S	169.0E

Seismograms are displayed on high-resolution graphics monitor screens under the control of CUSP (Caltech-USGS Seismic Processor) interactive software, for an analyst to select phase onset times by positioning a cursor on the trace. The analyst also selects the amplitude maximum to be used in magnitude calculations. Whenever possible, locations are based exclusively on times of first-arriving P and S phases.

Weights are initially assigned to phase arrival times by analysts according to the precision of the measurement. The weight of readings is further modified by the location program, which, after each iteration, weights the residuals used to adjust the trial origin. The procedure (see Jeffreys, H., 1939: Probability Theory, Cambridge University Press) greatly reduces the weight given to phases with residuals greater than three standard errors.

In general, all four coordinates of the earthquake origin are calculated (origin time, latitude, longitude, and focal depth). In some cases, however, the focal depth is not allowed to vary, but restricted to some chosen depth. This is most commonly done for crustal earthquakes. Unless there is a station within 25 km of a shock in the upper crust, or within 50 km of a shock in the lower crust, a nominal depth of either 12 or 33 km is usually assigned, according to the crustal phases present and the goodness of fit of the resulting solution. Less often, the depth is restricted to a smaller value, particular when the strengths of locally reported felt intensities indicate an uncommonly shallow focus. The letter R printed after the depth in the lists which follow indicates a restriction for any of the foregoing reasons. There are also times when data not suitable for input to the location program (e.g. overseas PKP readings), indicate the depth of focus; in such cases the depth is similarly fixed and the restriction shown by following the depth by the letter G (to indicate intervention by a Geophysicist). When convergence of the location program fails for lack of enough data, both epicentre and depth are fixed at values consistent with the available information, and computation limited to finding a compatible origin time. Such doubly-restricted origins have the letters RR printed after the depth.

In routine origin determinations, sufficient of the stations nearest to the epicentre are read to ensure that there will be enough data for a satisfactory solution. When enough near observations are available, arrival times recorded at stations more distant from the epicentre are excluded from the calculations. Observatory analysts are free to completely reject data which they think to be unreliable, or to assign a low initial weight to it in the location program's procedure for minimising mean residuals. (See later details of how the weights are used).

In using the results in this section, it is essential to keep in mind that the positions of earthquakes with epicentres outside the network of seismograph stations can be very uncertain, even though the mean residual is small. With the aim of helping the reader to assess the reliability of the results presented here, the positional relationships between an epicentre, and the stations which recorded the data used to find it, are given after the calculated origin coordinates. Similarly, the number of magnitude estimates contributing to the mean value, and an indication of their scatter, are also shown.

The solutions presented here are in all cases based upon uniform procedures applied to laterally homogeneous models. Because well-established local models have been used to calculate the origins of shocks within the Wellington and Clyde Networks, systematic errors in these areas should be smaller than in other parts of the country.

The extensive development of CUSP software necessary to adapt it for use in New Zealand was undertaken by Dr T Webb and Dr E Smith.

MAGNITUDES

The magnitudes assigned to local earthquakes are intended to be the values of M_L as originally defined by C.F. Richter (Bull. Seism. Soc. Am. 25: 1-32, 1935), but his procedure for performing the magnitude calculation at other than the standard distance of 100 km has been modified, so as to take account of the observed characteristics of energy propagation in New Zealand, including the effect of focal depth. (For deteails, see Haines, A.J.: A local magnitude scale for New Zealand earthquakes, Bull. Seism. Soc. Am. 71: 275-94.)

ANALOGUE RECORDS

Magnitude estimates made from analogue seismograms are based on the largest amplitudes in the P and S groups, recorded by Willmore vertical and Wood-Anderson seismographs. (The distribution of these may be found in the earlier section on instrumentation.) At Wellington, where two-component Wood-Anderson instruments are installed, the root-mean-square amplitude is used. An amplitude-distance relationship of the form

$$A = A_0 R^{-N} \exp(-\alpha R)$$

where A is a trace amplitude recorded at an epicentral distance R, A_0 is a calibration function, N is a geometric spreading factor and α is an inelastic attenuation coefficient, has been found appropriate for all parts of the country.

For all New Zealand crustal earthquakes N is 2 and α generally takes a value close to 0. With these values, the relationship describes head-wave propagation with no attenuation. In the Central Volcanic Region, however, (see Map, page 30), α takes values of 0.8 deg^{-1} for P waves and 1.05 deg^{-1} for S waves. Adjustments are therefore made according to the distance travelled in the volcanic region.

For deep earthquakes in the Main Seismic Region the same parameters as for crustal earthquakes apply (N = 2, a = 0), provided that (i) R now measures the slant distance from the focus to the base of the crust, and (ii) stations to the west of the volcanic region or south of the Main Seismic Region are not used, because the structure there necessitates different spreading and attenuation terms.

Magnitude corrections for the two classes of focal depth, for P and S phases recorded on Willmore and Wood-Anderson instruments.

Station		Willmore P		Willmore S		Wood-Anderson	
		≤ 33 km	> 33 km	≤ 33 km	> 33 km	≤ 33 km	> 33 km
AUC							
BRZ	Fiordland only		0.05		-0.20		0.05
	All shallow	0.15		-0.10		0.15	
CMZ		0.05		-0.15			
COB		0.15		-0.40			
CRZ		0.25		0.20			
GBZ							
GNZ		0.00	0.00	-0.20	-0.20		
HBZ							
KAI							0.30
KKZ		0.25	0.25	0.05	0.05		
KRP		-0.25		-0.30			
MNG		-0.35	-0.40	-0.45	-0.50		
MSZ	Fiordland only		-0.35		-0.60		
	All shallow	-0.25		-0.50			
NEZ							
OBZ		0.00		-0.40			
OMZ		0.15		-0.15			
RGZ							
RTY							
TMP							
TRZ		0.30	0.45	0.15	0.10		
TUA		0.40	0.40	0.35	0.40		
WEL						0.30	0.30
WTZ		-0.10	0.05	0.05	0.00		

For deep earthquakes in Fiordland the same amplitude-distance relationship is used, with (i) N given the value 1 (body wave propagation), (ii) α increasing with focal depth, and (iii) stations in the Main Seismic Region (apart from COB) not used, because of variations of the coefficients N and α. Milford Sound (MSZ) and Borland Lodge (BRZ) should ideally be excluded for the same reason, but as they are sometimes the only stations from which any estimate of magnitude can be made, they are used when necessary, with $N = 2$ and $\alpha = 0$.

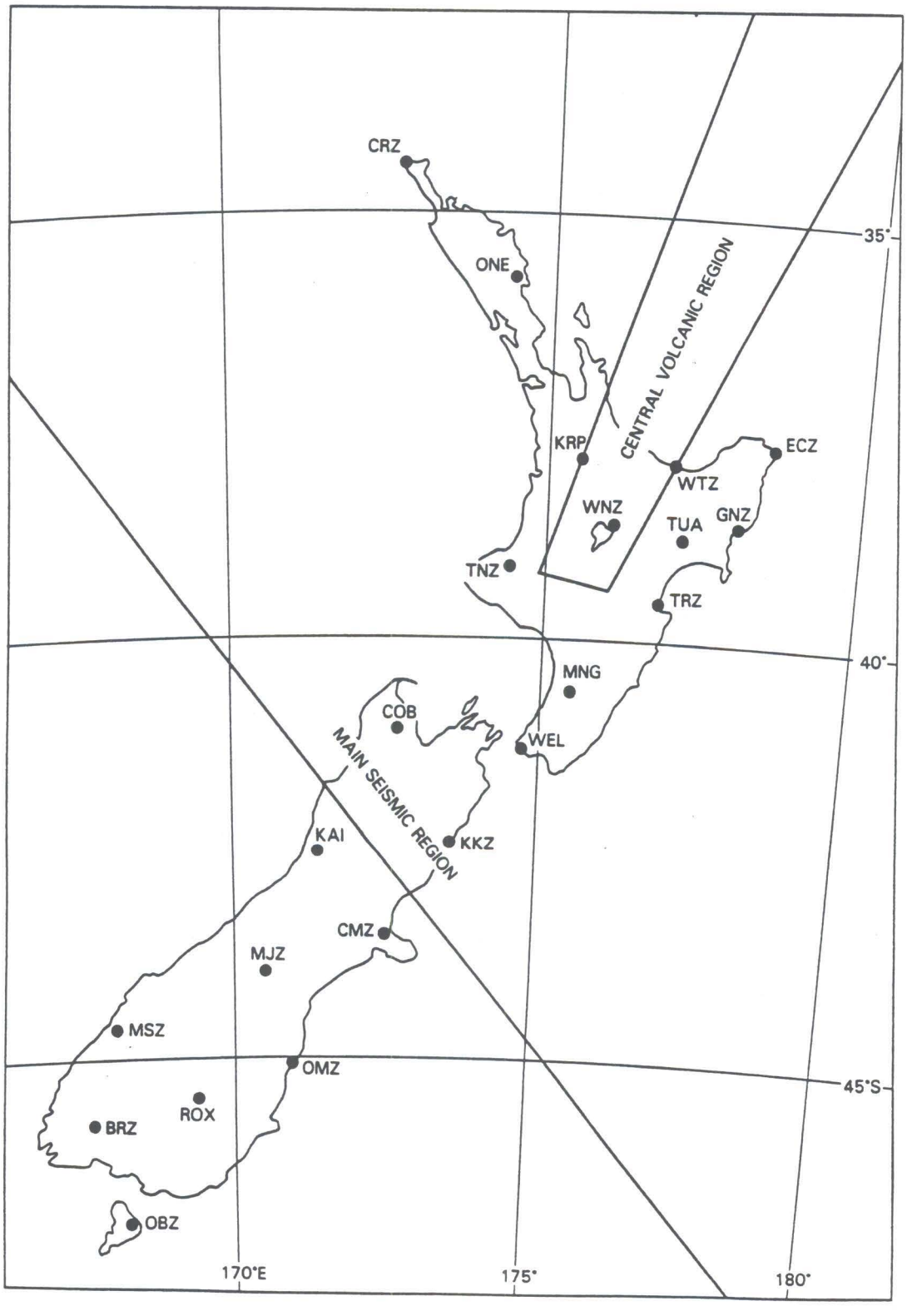
Corrections are applied to allow for differences in site effects, frequency responses and magnifications of the instruments. Their determination is empirical, and made in such a manner as to give the most consistent estimates of magnitude from the different stations, and their absolute level is adjusted to give a standard Wood-Anderson instrument at Wellington a zero correction, a procedure that can be justified on *a priori* grounds and provides a smooth connection with New Zealand magnitudes published before 1977. Station corrections (Table 1) are added to the individual estimates of magnitude, which are then averaged. The trace amplitudes on which magnitude calculations are based are no longer published, but the number of measurements and the number of stations contributing to the average magnitude are listed (e.g. "5M/4stn" appearing in a data summary indicates that 5 amplitude measurements of records from 4 stations were used to compute an average). When amplitude measurements from other stations are available, the BRZ and MSZ estimates are only given half weight in the calculation of the average magnitude.

DIGITAL RECORDS

Magnitudes are calculated using both the maximum recorded amplitude and the duration of the signal. The formulae are empirical, developed originally by R. Robinson for use in the Wellington area and adapted to suit other areas. Both amplitude and duration scales have been adjusted to agree with Wood-Anderson determinations for a selection of shocks. The Wellington area formulae have been tested over a number of years, but those used in other areas may require some modification in the light of experience. The formulae are listed below: T_i is the duration in seconds at station i, A_i is the amplitude (in millimetres) on the viewing screen, R_i is the slant distance from the focus (in kilometres), and C_i and Ki are station corrections for determinations made from durations and amplitudes respectively. All of the individual estimates are averaged to give the final values which appear in the list of origins.

$$M_T = -0.8 + 2.30 \log_{10} T_i + C_i$$

$$M_A = \log_{10} A_i - 1.71 + 1.56 \log_{10} R_i + K_i$$



Stations and regions used in Standard Magnitude determinations.

DATA FROM THE NATIONAL NETWORK

LAYOUT

The first entry for each earthquake is the reference number, used throughout the Report. The second line gives the origin coordinates and the magnitude and the third line shows, beneath each of the coordinates in line two, its standard error. Where depth has been restricted, the letter R or G in place of the standard error indicates the fact. The fourth line starts with Rsd, the standard deviation of residuals, an indication of how well the adopted origin reconciles the available data with the earth models used by the location program. Formally,

$$Rsd = \left[\sum_{i=1}^{n} \{(w_i r_i / 100)^2 / (n-m)\} \right]^{1/2}$$

where r_i is the ith residual, w_i its weight, n the number of readings and m the number of parameters determined (4 for unrestricted depth, 3 when depth is restricted.) When the number of readings used and the number of parameters are the same, the standard errors and Rsd are not defined. This is shown by the letters ND. The remainder of the fourth line and most of the fifth line present information indicating to the reader the degree of constraint on the adopted origin. Xph/Ystn shows that X phases from Y stations were used in the determination of the origin. (All phases given non-zero weight are counted but stations which failed to provide such a phase are not). Dmin is the distance from the epicentre to the nearest of these Y stations and Az. gap is the greatest angular gap in their distribution about the epicentre.

Corr. is the correlation coefficient of the errors in latitude and longitude. It may be used to construct an epicentral confidence region. (See Flinn, E.A., 1965, "Confidence regions and error determinations for seismic event locations". Rev. Geophys. 3: 156-185.) pM/Qstn shows that p magnitude estimates from phases recorded at Q stations contributed to the average value shown on line two. Msd is the standard deviation of the magnitude estimates.

The numbers of upward and downward first motions recorded are indicated at the end of line five.

Additional information may be appended to the above. This usually consists of a short summary of the places where a shock has been felt and the intensities there, but may include other comments. Further details of reports received by the Observatory concerning the effects of earthquakes and the intensities assessed from these observations appear in later sections of this Report.

The telemetered networks all detect earthquakes of very small magnitude in their respective regions. These are all located and the data are held in the Observatory's archives. The following list, however, contains only those events which were of magnitude 3.5 or greater, or were reported felt. Smaller events have been excluded, as have events located more than 10° from Wellington.

87/2
JAN 01 1353 05.5s 37.22S 176.67E 321km M=4.2
1.2 0.12 0.10 10
Rsd 0.6s 9ph/9stn Dmin 89km Az.gap 235°
Corr. -0.179 16M/14stn Msd 0.2

87/4
JAN 01 1827 37.6s 38.60S 178.87E 33km M=3.9
1.4 0.04 0.16 R
Rsd 0.6s 8ph/7stn Dmin 74km Az.gap 248°
Corr. -0.422 17M/15stn Msd 0.2 1↑

87/5
JAN 02 0006 51.9s 40.29S 176.64E 86km M=4.0
1.2 0.02 0.07 14
Rsd 0.3s 12ph/11stn Dmin 77km Az.gap 174°
Corr. -0.676 14M/14stn Msd 0.2 2↑ 3↓

87/7
JAN 02 0942 56.5s 35.03S 179.38E 350km M=4.3
1.1 0.08 0.17 13
Rsd 0.3s 10ph/10stn Dmin 301km Az.gap 330°
Corr. -0.085 14M/14stn Msd 0.1

87/12
JAN 02 1915 10.6s 42.55S 171.24E 12km M=3.1
0.4 0.08 0.05 R
Rsd 0.3s 6ph/5stn Dmin 14km Az.gap 193°
Corr. -0.891 4M/4stn Msd 0.3
Felt Paroa (92) MM IV.

87/14
JAN 03 0027 36.4s 38.72S 175.09E 244km M=3.9
1.0 0.04 0.05 9
Rsd 0.3s 14ph/13stn Dmin 65km Az.gap 167°
Corr. -0.287 13M/13stn Msd 0.3 3↑ 1↓

87/17
JAN 03 1040 22.4s 35.95S 178.72E 212km M=4.1
2.1 0.11 0.18 20
Rsd 0.6s 9ph/9stn Dmin 187km Az.gap 320°
Corr. 0.147 12M/12stn Msd 0.3

87/19
JAN 03 1826 28.8s 38.33S 175.84E 187km M=3.8
1.7 0.09 0.10 15
Rsd 0.8s 10ph/10stn Dmin 53km Az.gap 131°
Corr. -0.262 10M/10stn Msd 0.1

87/22
JAN 04 1110 17.2s 39.19S 173.62E 0km M=4.0
0.4 0.02 0.04 R
Rsd 0.3s 12ph/11stn Dmin 43km Az.gap 212°
Corr. -0.684 20M/17stn Msd 0.2 1↓
Felt Warea (46) MM IV and New Plymouth (47).

87/23
JAN 04 1204 50.1s 43.47S 171.07E 12km M=2.9
0.4 0.04 0.11 R
Rsd 0.7s 12ph/9stn Dmin 109km Az.gap 156°
Corr. -0.699 10M/10stn Msd 0.3
Felt Erewhon Station (107) MM 4.

87/24
JAN 04 1426 29.2s 39.20S 173.65E 0km M=3.0
0.4 0.03 0.03 R
Rsd 0.3s 12ph/11stn Dmin 40km Az.gap 210°
Corr. -0.243 7M/7stn Msd 0.1 1↓
Felt Warea (46) MM IV.

87/31
JAN 05 0413 47.0s 39.22S 175.47E 85km M=3.7
0.3 0.01 0.04 2
Rsd 0.2s 13ph/11stn Dmin 7km Az.gap 95°
Corr. -0.551 15M/13stn Msd 0.2 3↑ 1↓

87/35
JAN 05 0652 30.1s 37.94S 176.43E 140km M=4.0
0.5 0.03 0.02 4
Rsd 0.3s 9ph/8stn Dmin 34km Az.gap 167°
Corr. -0.073 15M/15stn Msd 0.2 1↑ 2↓

87/36
JAN 05 1151 23.2s 37.10S 176.54E 446km M=4.2
1.0 0.10 0.10 8
Rsd 0.4s 9ph/7stn Dmin 106km Az.gap 279°
Corr. -0.036 14M/14stn Msd 0.3

87/54
JAN 07 0242 33.2s 45.19S 166.91E 12km M=3.6
1.2 0.03 0.12 R
Rsd 0.7s 8ph/5stn Dmin 82km Az.gap 264°
Corr. -0.204 12M/11stn Msd 0.3 1↑

87/62
JAN 08 0614 27.5s 35.65S 178.64E 250km M=4.5
0.2 0.01 0.02 3
Rsd 0.1s 11ph/11stn Dmin 218km Az.gap 321°
Corr. -0.108 15M/15stn Msd 0.1 1↑

87/89
JAN 11 0113 33.2s 39.09S 174.95E 239km M=5.0
0.7 0.03 0.06 6
Rsd 0.3s 21ph/16stn Dmin 52km Az.gap 114°
Corr. -0.496 11M/9stn Msd 0.3 11↑ 8↓

87/92
JAN 11 1516 55.2s 45.14S 167.39E 12km M=4.2
0.7 0.03 0.07 R
Rsd 0.6s 9ph/9stn Dmin 67km Az.gap 235°
Corr. -0.385 17M/17stn Msd 0.3 1↑ 6↓
Felt Te Anau Downs (130) MM IV.

87/95
JAN 12 0359 35.1s 42.28S 174.46E 12km M=4.2
0.4 0.03 0.02 R
Rsd 0.3s 12ph/12stn Dmin 62km Az.gap 220°
Corr. -0.539 23M/22stn Msd 0.5 4↑1↓

87/96
JAN 12 0402 44.8s 42.29S 174.45E 12km M=3.6
0.5 0.04 0.03 R
Rsd 0.4s 9ph/9stn Dmin 63km Az.gap 222°
Corr. -0.539 19M/19stn Msd 0.3

87/97
JAN 12 0405 50.3s 42.25S 174.43E 12km M=3.6
0.5 0.03 0.03 R
Rsd 0.4s 9ph/9stn Dmin 58km Az.gap 215°
Corr. -0.500 16M/16stn Msd 0.3 4↑1↓

87/98
JAN 12 0407 02.1s 42.27S 174.44E 12km M=3.7
0.5 0.03 0.03 R
Rsd 0.3s 10ph/9stn Dmin 61km Az.gap 218°
Corr. -0.570 13M/13stn Msd 0.2

87/99
JAN 12 0409 59.2s 42.27S 174.45E 12km M=3.9
0.6 0.05 0.04 R
Rsd 0.4s 10ph/10stn Dmin 61km Az.gap 219°
Corr. -0.559 17M/17stn Msd 0.3 1↑
Felt Kelburn (68) MM II.

87/100
JAN 12 0413 00.3s 42.29S 174.42E 12km M=3.9
0.6 0.04 0.04 R
Rsd 0.4s 10ph/10stn Dmin 61km Az.gap 220°
Corr. -0.629 17M/17stn Msd 0.3 6↑4↓

87/101
JAN 12 0427 26.3s 42.24S 174.44E 12km M=3.7
0.7 0.07 0.04 R
Rsd 0.4s 9ph/9stn Dmin 64km Az.gap 214°
Corr. -0.828 14M/14stn Msd 0.4

87/102
JAN 12 0427 46.8s 42.37S 174.50E 12km M=4.0
0.6 0.05 0.03 R
Rsd 0.3s 8ph/8stn Dmin 67km Az.gap 233°
Corr. -0.785 16M/16stn Msd 0.3

87/103
JAN 12 0428 31.3s 42.30S 174.45E 12km M=3.7
0.8 0.05 0.03 R
Rsd 0.3s 11ph/10stn Dmin 64km Az.gap 223°
Corr. -0.404 11M/11stn Msd 0.4
In the coda of the preceding shock. Interpretation doubtful.

87/109
JAN 12 1131 23.9s 41.39S 172.64E 193km M=4.1
1.1 0.07 0.06 10
Rsd 0.5s 9ph/9stn Dmin 34km Az.gap 155°
Corr. -0.379 14M/14stn Msd 0.2 7↑3↓

87/113
JAN 13 0202 49.0s 41.79S 174.48E 36km M=3.6
0.2 0.01 0.02 3
Rsd 0.1s 13ph/12stn Dmin 22km Az.gap 220°
Corr. 0.445 6M/6stn Msd 0.2 2↑6↓

87/116
JAN 13 0617 34.3s 37.24S 177.37E 12km M=3.7
0.8 0.05 0.05 R
Rsd 0.5s 12ph/10stn Dmin 36km Az.gap 173°
Corr. -0.213 11M/10stn Msd 0.3 1↓

87/123
JAN 14 1018 58.3s 44.81S 168.47E 12km M=3.4
0.1 0.03 0.02 R
Rsd 0.2s 7ph/7stn Dmin 46km Az.gap 162°
Corr. 0.855 7M/7stn Msd 0.2 1↓
Felt Earnslaw Station (121) MM IV.

87/125
JAN 14 1200 04.3s 45.13S 167.49E 109km M=3.6
0.7 0.14 0.07 13
Rsd 0.3s 8ph/8stn Dmin 61km Az.gap 284°
Corr. 0.781 7M/7stn Msd 0.2 1↑

87/128
JAN 14 1612 13.4s 38.19S 176.21E 5km M=1.8
2.7 1.00 0.45 R
Rsd 0.9s 4ph/4stn Dmin 2km Az.gap 195°
Corr. 0.980 1M/1stn Msd N.D.
Felt Tihiotonga (33) MM IV.

87/130
JAN 14 2142 24.0s 42.27S 174.44E 34km M=4.0
1.1 0.10 0.08 14
Rsd 0.6s 10ph/10stn Dmin 60km Az.gap 218°
Corr. -0.047 11M/11stn Msd 0.2 6↑3↓

87/132
JAN 14 2220 42.1s 40.66S 172.24E 0km M=3.0
1.1 0.04 0.10 R
Rsd 0.5s 7ph/6stn Dmin 63km Az.gap 292°
Corr. 0.048 6M/6stn Msd 0.2 1↓
Felt Paturau (71) MM V.

87/133
JAN 15 0244 57.5s 39.01S 175.30E 228km M=4.1
0.9 0.03 0.06 8
Rsd 0.2s 10ph/10stn Dmin 30km Az.gap 188°
Corr. -0.320 9M/9stn Msd 0.3 3↑2↓

87/139
JAN 15 2154 22.2s 44.80S 167.67E 12km M=3.7
1.1 0.05 0.08 R
Rsd 0.7s 10ph/10stn Dmin 25km Az.gap 241°
Corr. -0.664 6M/6stn Msd 0.2

87/140
JAN 15 2201 23.1s 42.73S 170.90E 12km M=3.7
0.5 0.04 0.10 R
Rsd 0.3s 7ph/7stn Dmin 47km Az.gap 200°
Corr. -0.941 7M/7stn Msd 0.2 1↓
Felt Arthurs Pass (93) MM V.

87/145
JAN 16 0347 40.8s 31.18S 179.10W 317km M=4.7
1.5 0.25 0.22 137
Rsd 0.4s 7ph/7stn Dmin 751km Az.gap 345°
Corr. -0.008 8M/8stn Msd 0.3

87/147
JAN 16 0702 17.6s 45.35S 167.31E 78km M=4.0
0.6 0.03 0.04 11
Rsd 0.3s 10ph/10stn Dmin 89km Az.gap 233°
Corr. -0.328 9M/9stn Msd 0.2 1↓

87/150
JAN 16 0929 20.3s 45.89S 169.94E 12km M=3.6
0.3 0.02 0.03 R
Rsd 0.4s 12ph/11stn Dmin 45km Az.gap 145°
Corr. -0.291 9M/9stn Msd 0.3 1↑5↓
Felt Dunedin (145) MM V.

87/157
JAN 16 2143 51.5s 35.32S 176.21W 33km M=5.1
3.0 0.34 0.29 R
Rsd 1.0s 10ph/10stn Dmin 553km Az.gap 340°
Corr. -0.578 12M/12stn Msd 0.2

87/160
JAN 17 0251 00.5s 36.96S 177.84E 5km M=4.2
0.3 0.02 0.02 R
Rsd 0.2s 9ph/8stn Dmin 82km Az.gap 219°
Corr. 0.777 15M/15stn Msd 0.3 3↑2↓

87/161
JAN 17 0335 49.1s 38.19S 177.79E 78km M=3.8
0.4 0.01 0.01 4
Rsd 0.1s 6ph/6stn Dmin 54km Az.gap 128°
Corr. 0.426 3M/3stn Msd 0.1 2↑1↓

87/167
JAN 18 1303 57.1s 40.48S 173.54E 126km M=4.5
0.4 0.01 0.02 5
Rsd 0.2s 13ph/12stn Dmin 96km Az.gap 155°
Corr. -0.217 10M/10stn Msd 0.2 5↑9↓

87/175
JAN 19 1224 09.9s 40.45S 174.53E 92km M=3.8
0.3 0.01 0.01 3
Rsd 0.2s 17ph/15stn Dmin 56km Az.gap 149°
Corr. -0.236 9M/9stn Msd 0.1 7↑4↓
Felt Himatangi Beach (61) MM III.

87/176
JAN 19 1331 47.1s 32.96S 178.79W 482km M=4.9
1.8 0.73 0.80 90
Rsd 0.4s 10ph/8stn Dmin 579km Az.gap 349°
Corr. -0.926 17M/15stn Msd 0.3

87/178
JAN 19 1841 23.5s 37.47S 177.14E 33km M=3.8
0.3 0.03 0.02 R
Rsd 0.3s 5ph/4stn Dmin 104km Az.gap 208°
Corr. -0.258 11M/11stn Msd 0.4 1↑1↓

87/182
JAN 20 0725 02.7s 37.90S 179.54E 33km M=3.7
2.6 0.12 0.24 R
Rsd 1.4s 10ph/10stn Dmin 114km Az.gap 297°
Corr. 0.124 10M/10stn Msd 0.2 1↑

87/186
JAN 20 1517 10.7s 32.48S 178.71E 449km M=4.9
0.6 0.07 0.15 13
Rsd 0.1s 9ph/9stn Dmin 569km Az.gap 343°
Corr. -0.396 12M/12stn Msd 0.3

87/193
JAN 20 1918 04.5s 37.88S 179.97E 33km M=3.5
1.9 0.10 0.16 R
Rsd 0.7s 9ph/8stn Dmin 151km Az.gap 304°
Corr. 0.621 7M/7stn Msd 0.2 1↓

87/194
JAN 20 2307 27.3s 39.61S 174.24E 229km M=4.2
0.7 0.03 0.06 7
Rsd 0.3s 11ph/10stn Dmin 40km Az.gap 123°
Corr. -0.124 12M/12stn Msd 0.2 1↑2↓

87/202
JAN 21 1316 49.2s 38.00S 176.19E 193km M=4.2
1.3 0.07 0.06 12
Rsd 0.7s 10ph/9stn Dmin 58km Az.gap 159°
Corr. -0.330 13M/13stn Msd 0.3 3↑1↓

87/203
JAN 21 1412 53.6s 38.48S 176.00E 167km M=4.2
1.0 0.05 0.07 9
Rsd 0.4s 8ph/7stn Dmin 74km Az.gap 98°
Corr. -0.453 12M/12stn Msd 0.3 5↑1↓

87/204
JAN 21 1519 56.9s 31.70S 177.92W 33km M=4.4
1.0 0.12 0.25 R
Rsd 0.2s 6ph/5stn Dmin 740km Az.gap 353°
Corr. -0.840 11M/11stn Msd 0.3
The USGS solution is 32.02 S, 178.91 W, 33R.

87/209
JAN 22 1322 54.6s 38.65S 175.80E 167km M=4.0
1.1 0.07 0.08 12
Rsd 0.5s 11ph/10stn Dmin 61km Az.gap 219°
Corr. -0.785 10M/10stn Msd 0.3 2↑1↓

87/210
JAN 22 1602 05.0s 41.55S 173.00E 143km M=4.0
0.8 0.04 0.03 7
Rsd 0.3s 13ph/12stn Dmin 31km Az.gap 131°
Corr. -0.041 9M/9stn Msd 0.2 2↑7↓

87/214
JAN 23 0934 41.5s 37.34S 177.59E 106km M=3.7
1.3 0.08 0.05 13
Rsd 0.6s 8ph/6stn Dmin 69km Az.gap 224°
Corr. 0.036 4M/4stn Msd 0.1 1↑2↓

87/217
JAN 23 1525 20.2s 37.28S 177.58E 79km M=4.9
0.4 0.02 0.02 6
Rsd 0.2s 12ph/12stn Dmin 45km Az.gap 178°
Corr. 0.091 11M/11stn Msd 0.2 6↑3↓

87/218
JAN 23 1534 27.0s 38.19S 176.08E 212km M=4.8
0.7 0.05 0.05 5
Rsd 0.4s 14ph/12stn Dmin 38km Az.gap 111°
Corr. -0.441 11M/11stn Msd 0.2 7↑4↓

87/220
JAN 23 2327 11.2s 38.64S 175.96E 160km M=4.1
0.8 0.03 0.06 7
Rsd 0.4s 11ph/9stn Dmin 58km Az.gap 125°
Corr. -0.439 9M/9stn Msd 0.4 5↑2↓

87/224
JAN 24 1244 44.2s 31.84S 179.33W 356km M=5.4
0.9 0.06 0.10 22
Rsd 0.2s 11ph/8stn Dmin 674km Az.gap 334°
Corr. 0.535 13M/13stn Msd 0.3 1↓
The USGS solution is 32.20S, 179.29 W, 475? Km.

87/225
JAN 24 1740 50.4s 38.30S 175.99E 168km M=4.1
1.0 0.07 0.08 9
Rsd 0.6s 8ph/8stn Dmin 57km Az.gap 129°
Corr. -0.652 8M/8stn Msd 0.2 4↑1↓

87/226
JAN 25 0219 17.3s 37.12S 176.59E 311km M=4.4
1.0 0.10 0.09 10
Rsd 0.5s 12ph/10stn Dmin 103km Az.gap 244°
Corr. -0.412 10M/10stn Msd 0.2 1↑

87/252
JAN 27 2029 52.1s 39.00S 175.71E 13km M=3.3
0.2 0.01 0.01 1
Rsd 0.1s 7ph/7stn Dmin 12km Az.gap 240°
Corr. 0.598 3M/3stn Msd 0.1 1↓
Felt Tokaanu (40) MM IV.

87/253
JAN 28 0000 32.9s 38.96S 175.73E 12km M=3.6
0.1 0.01 0.01 R
Rsd 0.2s 11ph/11stn Dmin 10km Az.gap 139°
Corr. -0.091 13M/13stn Msd 0.2 3↑2↓
Felt Tokaanu (40) MM IV. This event was the largest in a swarm of at least 15.

87/254
JAN 28 0049 16.0s 38.57S 175.46E 280km M=5.0
1.5 0.05 0.10 11
Rsd 0.3s 16ph/16stn Dmin 42km Az.gap 166°
Corr. -0.504 10M/10stn Msd 0.2 6↑7↓

87/256
JAN 28 0358 37.7s 39.61S 174.57E 128km M=4.0
0.5 0.02 0.03 5
Rsd 0.3s 14ph/12stn Dmin 56km Az.gap 100°
Corr. -0.156 10M/10stn Msd 0.2 6↑5↓

87/275
JAN 29 2019 34.7s 40.97S 173.13E 126km M=4.0
0.6 0.03 0.03 5
Rsd 0.3s 12ph/12stn Dmin 36km Az.gap 159°
Corr. -0.484 9M/7stn Msd 0.3 9↑4↓

87/280
JAN 30 1112 21.2s 37.99S 176.92E 93km M=4.9
0.3 0.02 0.01 4
Rsd 0.2s 13ph/13stn Dmin 6km Az.gap 58°
Corr. -0.244 12M/12stn Msd 0.2 4↑3↓

87/281
JAN 30 1801 54.7s 41.08S 175.48E 28km M=3.8
0.1 0.01 0.01 1
Rsd 0.2s 20ph/19stn Dmin 9km Az.gap 94°
Corr. -0.299 8M/8stn Msd 0.3 6↑6↓
Felt Wellington (68) MM IV.

87/283
JAN 30 2123 04.8s 38.15S 175.59E 216km M=4.3
1.1 0.07 0.11 10
Rsd 0.6s 10ph/10stn Dmin 114km Az.gap 245°
Corr. -0.758 13M/13stn Msd 0.2 1↑

87/286
JAN 31 0205 21.0s 37.75S 176.66E 145km M=4.0
1.6 0.09 0.08 16
Rsd 0.7s 6ph/5stn Dmin 38km Az.gap 234°
Corr. -0.426 13M/13stn Msd 0.2 2↑1↓

87/294
JAN 31 1423 07.6s 34.96S 178.67E 33km M=4.0
0.8 0.04 0.08 R
Rsd 0.3s 6ph/6stn Dmin 295km Az.gap 272°
Corr. 0.867 9M/9stn Msd 0.2

87/295
JAN 31 1452 07.9s 37.15S 178.50E 33km M=3.5
1.7 0.08 0.15 R
Rsd 0.6s 5ph/5stn Dmin 53km Az.gap 319°
Corr. 0.494 6M/6stn Msd 0.2 1↑

87/308
FEB 01 2350 21.7s 44.94S 167.65E 62km M=3.6
0.6 0.02 0.03 6
Rsd 0.3s 9ph/8stn Dmin 37km Az.gap 210°
Corr. -0.566 9M/8stn Msd 0.1 1↑ 7↓

87/311
FEB 02 0830 08.4s 36.77S 177.43E 288km M=4.2
1.6 0.10 0.16 15
Rsd 0.3s 9ph/9stn Dmin 121km Az.gap 290°
Corr. -0.723 12M/12stn Msd 0.3 1↓

87/312
FEB 02 0938 16.1s 38.53S 175.72E 160km M=4.7
0.2 0.01 0.02 2
Rsd 0.1s 13ph/11stn Dmin 31km Az.gap 107°
Corr. -0.135 9M/9stn Msd 0.3 3↑ 5↓

87/318
FEB 03 0026 57.9s 33.33S 178.40W 33km M=5.0
1.0 0.05 0.09 R
Rsd 0.3s 10ph/9stn Dmin 560km Az.gap 309°
Corr. 0.354 16M/16stn Msd 0.3
T-phases were observed at HBZ and WIZ.

87/320
FEB 03 1723 28.9s 40.06S 176.80E 55km M=3.7
0.4 0.01 0.04 7
Rsd 0.2s 11ph/11stn Dmin 57km Az.gap 188°
Corr. -0.492 12M/12stn Msd 0.2 3↑ 1↓

87/325
FEB 04 0952 05.8s 38.71S 175.99E 5km
0.0 R R R
Rsd 0.0s 1ph/1stn Dmin 0km Az.gap 360°
Corr. 0.000 0M/0stn Msd 0.0
Felt Taupo (41) MM IV. At least 12 other events in this sequence were observed at TUTZ between 0930 and 1456 hours.

87/326
FEB 04 1140 53.0s 45.08S 167.51E 120km M=3.6
0.6 0.03 0.05 5
Rsd 0.4s 11ph/8stn Dmin 56km Az.gap 218°
Corr. -0.555 8M/8stn Msd 0.2 1↑

87/330
FEB 04 1606 40.2s 34.27S 179.32W 33km M=5.4
1.5 0.08 0.11 R
Rsd 0.3s 11ph/11stn Dmin 427km Az.gap 299°
Corr. 0.563 25M/24stn Msd 0.3 3↑ 6↓
The USGS solution is 34.975 S 179.870 W 62 km.

87/331
FEB 04 1730 29.6s 39.29S 175.21E 132km M=4.3
0.5 0.02 0.02 5
Rsd 0.2s 15ph/15stn Dmin 44km Az.gap 100°
Corr. -0.226 16M/14stn Msd 0.3 9↑ 4↓

87/340
FEB 05 2339 13.0s 37.30S 177.76E 103km M=5.0
0.3 0.02 0.02 4
Rsd 0.2s 13ph/13stn Dmin 57km Az.gap 185°
Corr. 0.073 13M/13stn Msd 0.2 4↑ 6↓

87/341
FEB 06 0032 58.1s 38.09S 176.35E 155km M=4.2
0.2 0.03 0.03 R
Rsd 0.3s 10ph/9stn Dmin 21km Az.gap 149°
Corr. -0.211 15M/13stn Msd 0.3 6↑ 3↓

87/347
FEB 06 1227 31.0s 37.08S 177.53E 143km M=4.1
0.5 0.03 0.02 3
Rsd 0.2s 8ph/8stn Dmin 58km Az.gap 249°
Corr. 0.163 13M/13stn Msd 0.2 3↑ 2↓

87/349
FEB 07 0008 10.5s 39.12S 175.00E 221km M=3.8
0.8 0.03 0.10 7
Rsd 0.3s 8ph/8stn Dmin 48km Az.gap 262°
Corr. -0.551 10M/10stn Msd 0.3 3↑ 3↓

87/351
FEB 07 0035 05.0s 37.21S 176.91E 212km M=4.7
0.7 0.05 0.05 5
Rsd 0.3s 11ph/10stn Dmin 86km Az.gap 234°
Corr. -0.244 14M/14stn Msd 0.2 2↑ 2↓

87/352
FEB 07 0255 58.7s 44.06S 168.97E 5km M=2.5
1.9 0.09 0.12 R
Rsd 0.7s 5ph/5stn Dmin 97km Az.gap 299°
Corr. -0.727 5M/5stn Msd 0.3
Felt Oamaru (136) MM IV. Magnitude not above 3.0.

87/358
FEB 08 0221 39.5s 36.30S 178.36E 268km M=4.3
2.3 0.12 0.14 16
Rsd 0.5s 8ph/6stn Dmin 144km Az.gap 309°
Corr. 0.287 10M/10stn Msd 0.3 2↑ 1↓

87/359
FEB 08 0240 28.5s 41.38S 174.63E 17km M=3.8
0.1 0.01 0.01 4
Rsd 0.2s 23ph/20stn Dmin 15km Az.gap 114°
Corr. -0.289 6M/6stn Msd 0.3 4↑ 8↓
Felt Wellington (68) MM V.

87/365
FEB 08 0621 33.6s 42.97S 172.44E 16km M=4.0
0.3 0.01 0.02 4
Rsd 0.3s 12ph/12stn Dmin 70km Az.gap 107°
Corr. -0.140 21M/21stn Msd 0.3 2↑ 1↓

87/370
FEB 08 1542 45.0s 38.83S 175.74E 5km M=3.4
0.3 0.02 0.03 R
Rsd 0.4s 9ph/9stn Dmin 37km Az.gap 99°
Corr. -0.256 5M/5stn Msd 0.2
Felt Omori (40) MM IV. This event was the largest in a swarm of at least ten events between 1542 and 2023.

87/375
FEB 09 0256 07.8s 38.17S 176.59E 186km M=4.1
2.2 0.08 0.08 18
Rsd 0.6s 9ph/9stn Dmin 10km Az.gap 134°
Corr. -0.112 12M/12stn Msd 0.4 3↑3↓

87/386
FEB 10 1335 46.6s 45.05S 167.34E 68km M=3.6
0.5 0.02 0.05 5
Rsd 0.3s 10ph/10stn Dmin 62km Az.gap 238°
Corr. -0.508 7M/7stn Msd 0.1 1↑6↓

87/401
FEB 12 1250 10.6s 37.26S 177.75E 12km M=3.6
0.6 0.06 0.02 R
Rsd 0.2s 6ph/6stn Dmin 57km Az.gap 248°
Corr. 0.617 3M/3stn Msd 0.3

87/402
FEB 12 2025 47.6s 37.36S 177.50E 105km M=3.7
1.2 0.05 0.05 13
Rsd 0.4s 7ph/7stn Dmin 76km Az.gap 249°
Corr. -0.044 3M/3stn Msd 0.2 1↑1↓

87/403
FEB 12 2243 14.4s 35.46S 179.44E 33km M=3.7
1.1 0.07 0.18 R
Rsd 0.4s 6ph/6stn Dmin 258km Az.gap 340°
Corr. -0.354 3M/3stn Msd 0.1

87/410
FEB 13 1642 47.8s 38.73S 177.43E 40km M=3.5
0.3 0.02 0.03 10
Rsd 0.5s 9ph/9stn Dmin 25km Az.gap 130°
Corr. -0.074 4M/4stn Msd 0.3 1↓

87/411
FEB 13 1700 32.3s 42.43S 172.91E 58km M=3.6
0.4 0.02 0.04 7
Rsd 0.4s 12ph/10stn Dmin 65km Az.gap 128°
Corr. -0.153 10M/10stn Msd 0.1 1↑

87/412
FEB 13 1756 19.3s 38.11S 177.07E 63km M=3.6
0.2 0.02 0.01 3
Rsd 0.3s 14ph/14stn Dmin 16km Az.gap 96°
Corr. 0.005 11M/11stn Msd 0.1 2↑2↓

87/415
FEB 13 2326 01.2s 41.55S 174.44E 18km M=3.6
0.1 0.01 0.01 1
Rsd 0.2s 21ph/17stn Dmin 29km Az.gap 134°
Corr. -0.436 8M/8stn Msd 0.3 3↑13↓
Felt Island Bay (68).

87/420
FEB 15 0756 52.4s 40.89S 174.03E 78km M=3.8
0.5 0.03 0.02 5
Rsd 0.3s 18ph/15stn Dmin 42km Az.gap 138°
Corr. -0.307 8M/8stn Msd 0.1 1↑3↓

87/423
FEB 16 0151 40.3s 37.82S 176.34E 320km M=4.0
0.6 0.08 0.11 8
Rsd 0.2s 10ph/9stn Dmin 168km Az.gap 237°
Corr. -0.891 10M/10stn Msd 0.2 1↑

87/424
FEB 16 0713 33.9s 41.81S 174.51E 28km M=4.3
0.1 0.01 0.01 2
Rsd 0.2s 19ph/17stn Dmin 25km Az.gap 158°
Corr. -0.629 7M/7stn Msd 0.3 9↑10↓
Felt on both sides of Cook Strait, maximum intensity MM V at Wellington (68) and Blenheim (77).

87/432
FEB 17 0927 58.4s 46.75S 165.83E 33km M=4.6
0.6 0.03 0.06 R
Rsd 0.3s 8ph/8stn Dmin 170km Az.gap 299°
Corr. 0.377 15M/14stn Msd 0.4 1↑4↓
Felt Puysegur Point (146) MM IV.

87/433
FEB 17 1055 34.9s 46.86S 165.64E 33km M=4.4
0.8 0.04 0.08 R
Rsd 0.4s 7ph/7stn Dmin 189km Az.gap 305°
Corr. 0.322 9M/8stn Msd 0.2 1↑

87/438
FEB 18 1352 17.8s 40.27S 174.41E 86km M=3.8
0.7 0.02 0.03 11
Rsd 0.4s 15ph/12stn Dmin 79km Az.gap 109°
Corr. -0.420 11M/11stn Msd 0.1 4↑4↓

87/447
FEB 19 2124 23.1s 41.81S 174.47E 36km M=3.5
0.2 0.02 0.02 3
Rsd 0.2s 12ph/11stn Dmin 22km Az.gap 228°
Corr. 0.381 7M/7stn Msd 0.2 2↑7↓

87/455
FEB 21 0006 41.6s 36.07S 178.23E 171km M=4.7
0.7 0.03 0.03 6
Rsd 0.2s 7ph/7stn Dmin 170km Az.gap 273°
Corr. 0.641 14M/14stn Msd 0.2

87/457
FEB 21 0957 10.4s 38.32S 176.03E 166km M=4.2
0.7 0.03 0.04 5
Rsd 0.3s 13ph/10stn Dmin 49km Az.gap 111°
Corr. 0.138 13M/13stn Msd 0.3 3↑2↓

87/463
FEB 21 1920 53.9s 37.75S 176.50E 5km M=3.5
0.5 0.05 0.02 R
Rsd 0.6s 9ph/8stn Dmin 50km Az.gap 187°
Corr. -0.297 3M/3stn Msd 0.0
Felt Te Puke (26) MM IV.

87/466
FEB 22 0538 28.1s 38.35S 176.11E 137km M=3.9
1.0 0.04 0.04 9
Rsd 0.4s 12ph/9stn Dmin 37km Az.gap 110°
Corr. -0.180 14M/14stn Msd 0.2 3↑4↓

87/467
FEB 22 0744 34.2s 42.69S 171.80E 12km M=3.5
0.2 0.01 0.02 R
Rsd 0.3s 12ph/9stn Dmin 37km Az.gap 84°
Corr. -0.083 14M/14stn Msd 0.2

87/468
FEB 22 1330 59.2s 37.71S 176.53E 5km M=4.0
0.2 0.02 0.02 R
Rsd 0.3s 11ph/8stn Dmin 51km Az.gap 101°
Corr. -0.307 3M/3stn Msd 0.1 1↓
Felt Te Puke (26) MM IV, Pukehina (27) MM III.

87/472
FEB 22 1811 26.7s 37.51S 176.54E 5km M=3.0
1.1 0.08 0.02 R
Rsd 0.3s 6ph/5stn Dmin 66km Az.gap 252°
Corr. 0.231 3M/3stn Msd 0.1
Felt Te Puke (26) MM IV.

87/474
FEB 22 2351 44.8s 38.20S 176.24E 169km M=4.4
0.8 0.04 0.03 7
Rsd 0.3s 10ph/9stn Dmin 24km Az.gap 134°
Corr. -0.188 13M/13stn Msd 0.1 1↑3↓

87/475
FEB 23 0516 24.0s 46.61S 166.82E 12km M=4.3
0.7 0.02 0.07 R
Rsd 0.3s 9ph/8stn Dmin 104km Az.gap 273°
Corr. 0.400 8M/8stn Msd 0.2 1↑1↓

87/476
FEB 23 0838 47.2s 37.24S 176.86E 257km M=4.0
0.9 0.06 0.10 9
Rsd 0.3s 7ph/7stn Dmin 83km Az.gap 261°
Corr. -0.508 13M/13stn Msd 0.1

87/477
FEB 23 1409 56.6s 36.82S 178.30E 12km M=3.8
1.2 0.07 0.07 R
Rsd 0.6s 13ph/11stn Dmin 86km Az.gap 297°
Corr. 0.361 13M/13stn Msd 0.1

87/483
FEB 23 1834 58.0s 37.75S 176.51E 5km M=3.2
0.4 0.04 0.02 R
Rsd 0.7s 8ph/7stn Dmin 50km Az.gap 171°
Corr. -0.103 3M/3stn Msd 0.2
Felt Te Puke (26) MM IV.

87/490
FEB 24 0323 47.2s 37.71S 176.53E 5km M=3.4
0.3 0.03 0.02 R
Rsd 0.5s 11ph/7stn Dmin 50km Az.gap 101°
Corr. -0.097 3M/3stn Msd 0.1
Felt Te Puke (26) MM IV.

87/493
FEB 24 1343 25.5s 38.29S 173.34E 348km M=3.7
1.7 0.61 0.21 64
Rsd 0.2s 9ph/9stn Dmin 316km Az.gap 344°
Corr. 0.367 6M/6stn Msd 0.1 1↑2↓

87/500
FEB 25 1254 40.9s 37.73S 176.52E 5km M=3.2
0.3 0.03 0.01 R
Rsd 0.3s 10ph/7stn Dmin 49km Az.gap 114°
Corr. 0.156 3M/3stn Msd 0.1
Felt Pukehina (27) MM III.

87/502
FEB 25 1911 25.4s 37.72S 176.53E 5km M=4.4
0.2 0.02 0.02 R
Rsd 0.3s 11ph/9stn Dmin 50km Az.gap 101°
Corr. -0.214 2M/2stn Msd 0.4 1↓
Felt Papamoa, Te Puke (26), Pukehina (27) MM IV; Ruatuna Road (35) MM III; Te Ranga (26).

87/504
FEB 25 1916 30.3s 37.74S 176.52E 5km M=3.6
0.3 0.02 0.02 R
Rsd 0.5s 11ph/6stn Dmin 49km Az.gap 114°
Corr. 0.002 3M/3stn Msd 0.1 1↓
Felt Papamoa, Te Puke (26), Pukehina (27) MM IV; Piakoiti Road (25) MM III.

87/508
FEB 25 2031 11.0s 37.69S 176.55E 5km M=2.7
0.6 0.06 0.02 R
Rsd 0.3s 5ph/4stn Dmin 50km Az.gap 236°
Corr. 0.590 2M/2stn Msd 0.1 1↓
Felt Pukehina (27) MM IV and Maketu (26).

87/512
FEB 25 2114 10.2s 37.72S 176.55E 5km M=2.5
0.2 0.02 0.01 R
Rsd 0.2s 6ph/4stn Dmin 48km Az.gap 175°
Corr. 0.094 3M/3stn Msd 0.2
Felt Pukehina (27) MM III.

87/513
FEB 25 2148 23.7s 37.70S 176.53E 5km M=3.1
0.3 0.03 0.01 R
Rsd 0.4s 8ph/6stn Dmin 51km Az.gap 178°
Corr. 0.066 3M/3stn Msd 0.1
Felt Pukehina (27) MM III.

87/517
FEB 25 2335 24.0s 37.70S 176.52E 5km M=3.4
0.3 0.03 0.02 R
Rsd 0.5s 9ph/6stn Dmin 52km Az.gap 178°
Corr. -0.348 3M/3stn Msd 0.2 1↓
Felt Pukehina (27) MM III and Maketu (26).

87/520
FEB 26 0036 52.8s 37.60S 176.57E 5km M=2.8
0.4 0.03 0.01 R
Rsd 0.1s 6ph/6stn Dmin 55km Az.gap 245°
Corr. 0.396 3M/3stn Msd 0.2
Felt Pukehina (27) MM IV. Interpretation doubtful.

87/521
FEB 26 0152 24.4s 37.75S 176.55E 5km M=2.9
0.3 0.03 0.02 R
Rsd 0.5s 7ph/5stn Dmin 47km Az.gap 170°
Corr. -0.024 3M/3stn Msd 0.1
Felt Maketu (26).

87/522
FEB 26 0246 45.7s 37.71S 176.53E 5km M=3.3
0.3 0.04 0.02 R
Rsd 0.6s 9ph/7stn Dmin 51km Az.gap 177°
Corr. -0.365 3M/3stn Msd 0.1 1↓
Felt Pukehina (27) MM IV and Maketu (26).

87/524
FEB 26 0551 28.8s 37.71S 176.54E 5km M=3.1
0.3 0.03 0.02 R
Rsd 0.5s 8ph/5stn Dmin 50km Az.gap 176°
Corr. -0.153 3M/3stn Msd 0.1 1↓
Felt Pukehina (27) MM IV.

87/528
FEB 26 1617 11.7s 44.96S 167.09E 12km M=3.7
0.4 0.01 0.04 R
Rsd 0.2s 12ph/11stn Dmin 73km Az.gap 264°
Corr. -0.773 9M/8stn Msd 0.1 5↑ 2↓

87/529
FEB 26 1624 02.9s 37.69S 176.54E 5km M=3.8
0.3 0.03 0.02 R
Rsd 0.6s 10ph/8stn Dmin 52km Az.gap 103°
Corr. -0.104 3M/3stn Msd 0.2 1↓
Felt Pukehina (27) MM IV.

87/531
FEB 26 1911 07.7s 37.90S 176.87E 5km M=2.4
0.9 0.07 0.03 R
Rsd 0.5s 6ph/5stn Dmin 14km Az.gap 222°
Corr. 0.617 2M/2stn Msd 0.1
Felt Pukehina (27) MM V.

87/532
FEB 26 1926 15.1s 37.72S 176.51E 5km M=3.4
0.3 0.03 0.02 R
Rsd 0.5s 9ph/7stn Dmin 51km Az.gap 176°
Corr. -0.342 3M/3stn Msd 0.2
Felt Pukehina (27) MM IV.

87/535
FEB 27 0058 41.4s 37.69S 176.51E 5km M=4.1
0.3 0.03 0.02 R
Rsd 0.5s 10ph/7stn Dmin 61km Az.gap 104°
Corr. -0.040 2M/2stn Msd 0.1 1↑ 2↓
Felt Pukehina (27) MM V.

87/536
FEB 27 0102 49.4s 37.89S 176.84E 5km M=4.1
0.3 0.02 0.02 R
Rsd 0.6s 9ph/7stn Dmin 48km Az.gap 88°
Corr. 0.098 2M/2stn Msd 0.1 1↑ 2↓
Felt Kopeopeo, Pukehina (27), Ohope Beach, Ruatuna Road (35) MM IV.

87/538
FEB 27 0106 25.4s 37.68S 176.53E 5km M=2.9
0.2 0.02 0.01 R
Rsd 0.2s 6ph/6stn Dmin 61km Az.gap 181°
Corr. -0.192 2M/2stn Msd 0.3
Felt Waihi (21) MM V and Pukehina (27) MM IV.

87/541
FEB 27 0737 18.6s 37.93S 176.84E 5km M=3.5
0.2 0.02 0.01 R
Rsd 0.4s 8ph/7stn Dmin 45km Az.gap 124°
Corr. -0.241 2M/2stn Msd 0.2 1↓
Felt Whakatane (27) MM IV.

87/544
FEB 27 1000 17.4s 37.58S 177.65E 103km M=3.8
0.9 0.04 0.04 8
Rsd 0.5s 12ph/11stn Dmin 41km Az.gap 176°
Corr. 0.175 9M/9stn Msd 0.1 1↑ 1↓

87/547
FEB 27 1126 42.8s 37.90S 176.85E 5km M=4.2
0.1 0.01 0.01 R
Rsd 0.3s 11ph/7stn Dmin 48km Az.gap 90°
Corr. -0.324 1M/1stn Msd N.D. 1↑ 1↓
Felt Whakatane (27), Ruatuna Road (35) MM IV.

87/551
FEB 27 1140 00.4s 37.89S 176.87E 5km M=4.0
0.2 0.02 0.01 R
Rsd 0.4s 11ph/8stn Dmin 49km Az.gap 90°
Corr. -0.149 1M/1stn Msd N.D. 1↑ 1↓

87/554
FEB 27 1237 50.4s 40.32S 173.74E 181km M=3.6
0.3 0.03 0.03 3
Rsd 0.1s 14ph/12stn Dmin 109km Az.gap 315°
Corr. -0.188 9M/9stn Msd 0.3 4↑ 3↓

87/559
FEB 27 2216 07.6s 37.08S 177.25E 105km M=3.7
0.8 0.03 0.03 11
Rsd 0.3s 6ph/5stn Dmin 110km Az.gap 244°
Corr. 0.185 1M/1stn Msd N.D.

87/561
FEB 27 2234 54.5s 37.72S 176.53E 5km M=3.7
0.3 0.02 0.01 R
Rsd 0.4s 11ph/6stn Dmin 51km Az.gap 116°
Corr. 0.003 2M/2stn Msd 0.2
Felt Pukehina (27) MM III.

87/564
FEB 27 2314 07.3s 39.65S 174.10E 206km M=4.1
1.0 0.04 0.05 9
Rsd 0.4s 8ph/8stn Dmin 134km Az.gap 213°
Corr. -0.480 8M/8stn Msd 0.1 5↑ 2↓

87/567
FEB 28 0234 14.1s 39.86S 175.00E 12km M=3.6
0.2 0.01 0.04 R
Rsd 0.2s 12ph/10stn Dmin 87km Az.gap 111°
Corr. -0.766 11M/11stn Msd 0.3 1↑ 1↓

87/574
FEB 28 0821 58.1s 37.53S 176.34E 311km M=4.2
1.3 0.07 0.10 11
Rsd 0.4s 9ph/9stn Dmin 83km Az.gap 215°
Corr. -0.141 11M/11stn Msd 0.3

87/582
FEB 28 1609 41.2s 37.68S 176.53E 5km M=4.0
0.2 0.02 0.02 R
Rsd 0.4s 13ph/9stn Dmin 53km Az.gap 104°
Corr. -0.332 3M/3stn Msd 0.3 1↓
Felt Pukehina (27) MM V.

87/583
FEB 28 1626 49.5s 37.73S 176.52E 5km M=3.4
0.3 0.03 0.01 R
Rsd 0.3s 10ph/7stn Dmin 50km Az.gap 114°
Corr. 0.187 3M/3stn Msd 0.2 1↓
Felt Pukehina (27) MM V.

87/586
FEB 28 1752 42.2s 37.82S 176.14E 227km M=3.6
1.4 0.07 0.10 14
Rsd 0.6s 7ph/7stn Dmin 54km Az.gap 185°
Corr. -0.338 9M/9stn Msd 0.2

87/589
FEB 28 1813 02.5s 37.71S 176.52E 5km M=4.0
0.2 0.02 0.02 R
Rsd 0.4s 13ph/8stn Dmin 51km Az.gap 101°
Corr. -0.250 3M/3stn Msd 0.2 1↓
Felt Pukehina (27) MM V.

87/596
FEB 28 1906 35.1s 41.34S 172.43E 1km M=3.9
0.6 0.02 0.05 R
Rsd 0.6s 13ph/13stn Dmin 38km Az.gap 180°
Corr. -0.414 16M/16stn Msd 0.2 4↑ 1↓
Felt Paturau (71) MM V.

87/600
FEB 28 2002 55.3s 37.67S 176.53E 5km M=3.0
0.4 0.03 0.01 R
Rsd 0.2s 7ph/6stn Dmin 53km Az.gap 238°
Corr. 0.473 3M/3stn Msd 0.2 1↓
Felt Waihi (21). The first of 14 quakes felt at Waihi (21) between February 28 20h 00m and March 1 06h 50m.

87/602
FEB 28 2137 29.4s 37.72S 176.52E 5km M=3.7
0.3 0.03 0.02 R
Rsd 0.4s 9ph/5stn Dmin 50km Az.gap 114°
Corr. 0.281 3M/3stn Msd 0.2 1↓
Felt Waihi (21) MM VI, Pukehina (27) MM IV.

87/607
FEB 28 2248 04.5s 37.64S 176.51E 5km M=3.3
0.1 R R R
Rsd 0.3s 6ph/4stn Dmin 57km Az.gap 242°
Corr. 0.000 3M/3stn Msd 0.3
Felt Whakatane (27) MM V.

87/611
MAR 01 0102 05.8s 37.94S 176.86E 5km M=2.8
0.8 0.14 0.04 R
Rsd 0.3s 5ph/4stn Dmin 13km Az.gap 205°
Corr. 0.918 2M/2stn Msd 0.2
Felt McLeans Road (27) MM IV.

87/612
MAR 01 0118 41.9s 37.77S 176.49E 5km M=3.7
0.2 0.02 0.02 R
Rsd 0.4s 9ph/7stn Dmin 50km Az.gap 132°
Corr. 0.352 3M/3stn Msd 0.4 1↓
Felt Pukehina (27) MM IV.

87/619
MAR 01 0310 45.1s 37.90S 176.89E 5km M=3.4
0.4 0.04 0.02 R
Rsd 0.6s 7ph/7stn Dmin 13km Az.gap 167°
Corr. -0.105 1M/1stn Msd N.D. 1↓
Felt Ruatuna Road (35) MM III.

87/624
MAR 01 0624 28.7s 37.70S 176.53E 5km M=3.7
0.2 0.02 0.01 R
Rsd 0.3s 6ph/6stn Dmin 51km Az.gap 116°
Corr. 0.005 1M/1stn Msd 0.0 1↓
Felt Papamoa (26) MM IV.

87/625

MAR 01 0626 40.2s 37.69S 176.53E 5km M=3.2
0.6 0.06 0.02 R
Rsd 0.4s 6ph/6stn Dmin 52km Az.gap 194°
Corr. -0.001 2M/2stn Msd 0.1 1↓
Felt Pukehina (27) MM V.

87/631

MAR 01 0746 52.9s 37.70S 176.50E 5km M=4.1
0.2 0.02 0.02 R
Rsd 0.3s 10ph/7stn Dmin 54km Az.gap 116°
Corr. -0.106 7M/7stn Msd 0.1 1↓
Felt Maketu (26), Pukehina (27) MM V. Timing uncertainty greater than usual at HITZ.

87/637

MAR 01 0910 49.9s 41.36S 173.17E 94km M=4.2
1.1 0.04 0.06 10
Rsd 0.5s 9ph/9stn Dmin 47km Az.gap 119°
Corr. -0.040 5M/5stn Msd 0.2 3↑6↓
Felt Fighting Bay (78) MM IV.

87/638

MAR 01 0923 15.3s 37.71S 176.51E 5km M=2.7
0.2 0.02 0.01 R
Rsd 0.1s 6ph/6stn Dmin 52km Az.gap 232°
Corr. 0.445 2M/2stn Msd 0.2
Felt Pukehina (27) MM IV.

87/640

MAR 01 0925 19.3s 37.70S 176.52E 5km M=3.0
0.5 0.04 0.02 R
Rsd 0.3s 7ph/7stn Dmin 52km Az.gap 234°
Corr. 0.377 2M/2stn Msd 0.0 1↓
Felt Pukehina (27) MM IV.

87/641

MAR 01 0931 20.7s 37.65S 176.53E 5km M=2.5
0.7 0.05 0.02 R
Rsd 0.4s 5ph/5stn Dmin 54km Az.gap 242°
Corr. 0.434 2M/2stn Msd 0.1
Felt Pukehina (27) MM IV.

87/648

MAR 01 1306 35.6s 35.58S 177.07E 12km M=4.1
1.7 0.11 0.04 R
Rsd 0.5s 5ph/4stn Dmin 160km Az.gap 271°
Corr. 0.543 2M/2stn Msd 0.0

87/656

MAR 01 2013 38.6s 37.73S 176.50E 5km M=3.6
0.4 0.03 0.02 R
Rsd 0.5s 8ph/7stn Dmin 52km Az.gap 114°
Corr. 0.164 1M/1stn Msd 0.0 1↓
Felt Pukehina (27) MM IV.

87/661

MAR 02 0135 36.1s 37.89S 176.84E 0km M=4.9
0.5 0.02 0.02 2
Rsd 0.3s 10ph/9stn Dmin 17km Az.gap 70°
Corr. -0.113 6M/6stn Msd 0.2 2↑5↓
No TUA record until 02h10m.

87/665

MAR 02 0141 29.8s 37.92S 176.82E 5km M=4.4
0.2 0.01 0.02 R
Rsd 0.4s 8ph/8stn Dmin 54km Az.gap 70°
Corr. 0.018 3M/2stn Msd 0.1
Felt Welcome Bay Road (26) MM VI.

87/666

MAR 02 0142 35.0s 37.89S 176.80E 10km M=6.1
0.1 0.02 0.01 R
Rsd 0.2s 13ph/13stn Dmin 53km Az.gap 117°
Corr. -0.414 3M/3stn Msd 0.4 4↑1↓
Felt throughout the North Island, maximum intensity MM IX near Edgecumbe, MM VII or VIII at Kawerau and Whakatane.

87/667

MAR 02 0145 39.7s 37.90S 176.75E 5km M=4.4
0.4 R R R
Rsd 0.6s 2ph/2stn Dmin 107km Az.gap 283°
Corr. 0.000 1M/1stn Msd 0.0
Felt McCracken Road (27) MM V.

87/668

MAR 02 0147 20.2s 38.00S 176.70E 5km M=4.0
0.3 R R R
Rsd 0.5s 3ph/3stn Dmin 68km Az.gap 150°
Corr. 0.000 1M/1stn Msd N.D.

87/669

MAR 02 0149 08.0s 37.87S 176.99E 5km M=4.5
0.5 0.05 0.06 R
Rsd 0.9s 4ph/4stn Dmin 42km Az.gap 125°
Corr. -0.527 3M/2stn Msd 0.1
Felt Whakatane (27) MM V.

87/670

MAR 02 0150 44.7s 38.00S 176.70E 5km M=3.9
0.6 R R R
Rsd 1.1s 3ph/3stn Dmin 100km Az.gap 219°
Corr. 0.000 1M/1stn Msd N.D.

87/671

MAR 02 0150 57.8s 37.91S 176.73E 11km M=5.6
0.1 0.01 0.01 R
Rsd 0.2s 5ph/5stn Dmin 58km Az.gap 114°
Corr. -0.243 5M/4stn Msd 0.2
Felt Edgecumbe and Whakatane (27) MM VI.

87/673

MAR 02 0154 33.0s 37.90S 176.75E 5km M=3.8
0.2 R R R
Rsd 0.3s 2ph/2stn Dmin 57km Az.gap 225°
Corr. 0.000 1M/1stn Msd 0.0
Felt Waimana (35) MM VI.

87/674

MAR 02 0155 44.1s 37.90S 176.80E 5km M=3.4
0.6 R R R
Rsd 0.9s 2ph/2stn Dmin 54km Az.gap 228°
Corr. 0.000 1M/1stn Msd 0.0
Felt Ngakuru MM V.

87/675

MAR 02 0157 16.6s 38.00S 176.70E 5km M=3.1
0.3 R R R
Rsd 0.5s 3ph/2stn Dmin 68km Az.gap 234°
Corr. 0.000 1M/1stn Msd 0.0
Felt Ruatuna Road (35).

87/677

MAR 02 0159 47.0s 38.00S 176.75E 5km M=3.2
0.4 R R R
Rsd 0.6s 3ph/3stn Dmin 65km Az.gap 151°
Corr. 0.000 2M/1stn Msd 0.0
Felt Kairoa Station (43) MM V.

87/678

MAR 02 0201 41.8s 37.88S 176.74E 5km M=3.4
0.5 0.03 0.04 R
Rsd 0.7s 6ph/4stn Dmin 56km Az.gap 77°
Corr. 0.130 2M/1stn Msd 0.1 1↓
Felt Tuhoe Potiki Marae (43) MM V.

87/680

MAR 02 0202 45.2s 38.10S 176.67E 5km M=4.4
0.2 0.02 0.02 R
Rsd 0.4s 8ph/8stn Dmin 78km Az.gap 121°
Corr. -0.211 6M/6stn Msd 0.2
Felt Ohope (35) MM V.

87/681

MAR 02 0203 27.0s 37.95S 176.80E 5km M=4.6
0.5 R R R
Rsd 0.8s 3ph/3stn Dmin 58km Az.gap 158°
Corr. 0.000 3M/2stn Msd 0.2
Felt Ruatuna Road (35).

87/682

MAR 02 0204 15.7s 38.10S 176.70E 5km M=4.6
0.4 R R R
Rsd 0.7s 3ph/3stn Dmin 77km Az.gap 158°
Corr. 0.000 3M/2stn Msd 0.3
Felt Ruatuna Road (35).

87/684

MAR 02 0207 24.6s 38.15S 176.63E 5km M=4.7
0.1 0.01 0.01 R
Rsd 0.2s 11ph/11stn Dmin 71km Az.gap 128°
Corr. -0.121 8M/7stn Msd 0.3 1↓
Felt Ruatuna Road (35).

87/685

MAR 02 0207 49.8s 38.10S 176.65E 5km M=5.0
0.2 R R R
Rsd 0.2s 2ph/2stn Dmin 341km Az.gap 351°
Corr. 0.000 3M/2stn Msd 0.3
Felt Welcome Bay Road (26) and Pukehina (27) MM IV.

87/687

MAR 02 0210 45.4s 37.90S 176.75E 5km M=3.2
0.6 R R R
Rsd 0.8s 2ph/2stn Dmin 57km Az.gap 225°
Corr. 0.000 1M/1stn Msd 0.0
Felt Te Puke (26) and Rotorua (33) MM IV.

87/689

MAR 02 0212 07.3s 37.90S 176.77E 5km M=4.1
0.4 0.03 0.05 R
Rsd 0.6s 9ph/9stn Dmin 56km Az.gap 120°
Corr. 0.396 6M/6stn Msd 0.2 1↓
Felt Te Puke (26) MM IV.

87/690

MAR 02 0213 43.5s 38.05S 176.84E 5km M=3.7
0.3 0.02 0.04 R
Rsd 0.5s 4ph/4stn Dmin 66km Az.gap 134°
Corr. -0.083 1M/1stn Msd 0.0
Felt Ruatuna Road (35).

87/692

MAR 02 0215 30.8s 38.07S 176.78E 5km M=3.2
0.3 0.02 0.04 R
Rsd 0.4s 4ph/4stn Dmin 70km Az.gap 128°
Corr. -0.189 1M/1stn Msd 0.0
Felt Reporoa (33) and Ormond (44) MM IV.

87/693

MAR 02 0216 18.3s 38.04S 176.67E 5km M=4.3
0.2 0.01 0.02 R
Rsd 0.3s 8ph/6stn Dmin 73km Az.gap 117°
Corr. -0.148 8M/7stn Msd 0.2
Felt Ruatuna Road (35).

87/694

MAR 02 0217 59.0s 38.00S 176.71E 5km M=4.0
0.3 0.02 0.03 R
Rsd 0.5s 5ph/5stn Dmin 67km Az.gap 84°
Corr. 0.081 1M/1stn Msd N.D.

87/696

MAR 02 0218 50.6s 38.00S 176.85E 5km M=4.0
0.4 R R R
Rsd 0.8s 4ph/4stn Dmin 60km Az.gap 167°
Corr. 0.000 1M/1stn Msd N.D.
Interpretation very doubtful.

87/697

MAR 02 0220 22.0s 38.00S 176.80E 5km M=2.9
0.5 R R R
Rsd 0.9s 3ph/3stn Dmin 63km Az.gap 162°
Corr. 0.000 1M/1stn Msd 0.0
Felt Ruatuna Road (35).

87/700

MAR 02 0223 32.7s 37.89S 176.91E 5km M=3.8
0.3 0.03 0.04 R
Rsd 0.6s 7ph/7stn Dmin 48km Az.gap 70°
Corr. 0.367 2M/2stn Msd 0.3
Felt Ruatuna Road (35).

87/701

MAR 02 0224 21.0s 37.95S 176.85E 5km M=3.0
0.3 R R R
Rsd 0.6s 3ph/3stn Dmin 56km Az.gap 197°
Corr. 0.000 1M/1stn Msd 0.0
Felt Ruatuna Road (35).

87/702

MAR 02 0224 46.8s 37.84S 176.88E 5km M=3.8
0.2 R R R
Rsd 0.3s 4ph/4stn Dmin 44km Az.gap 133°
Corr. 0.000 1M/1stn Msd 0.0
Felt Ruatuna Road (35).

87/703

MAR 02 0226 05.5s 37.90S 176.90E 5km M=3.3
0.4 R R R
Rsd 0.7s 3ph/3stn Dmin 49km Az.gap 166°
Corr. 0.000 1M/1stn Msd 0.0
Felt Ruatuna Road (35).

87/704

MAR 02 0227 25.6s 37.91S 176.88E 5km M=3.0
0.0 0.00 0.00 R
Rsd 0.0s 4ph/4stn Dmin 51km Az.gap 123°
Corr. -0.078 1M/1stn Msd 0.0
Felt Ruatuna Road (35).

87/706

MAR 02 0229 38.9s 38.01S 176.76E 5km M=3.5
0.2 0.01 0.03 R
Rsd 0.4s 6ph/5stn Dmin 66km Az.gap 124°
Corr. -0.219 1M/1stn Msd N.D.

87/707

MAR 02 0230 25.4s 37.77S 177.09E 5km M=4.1
0.5 0.02 0.06 R
Rsd 0.3s 8ph/8stn Dmin 29km Az.gap 159°
Corr. 0.762 8M/7stn Msd 0.2
Felt Reporoa (33) MM IV.

87/709

MAR 02 0232 44.8s 38.10S 176.70E 5km M=3.3
0.4 R R R
Rsd 0.6s 3ph/3stn Dmin 77km Az.gap 158°
Corr. 0.000 1M/1stn Msd 0.0
Felt Ruatuna Road (35).

87/710

MAR 02 0233 16.0s 38.00S 176.70E 5km M=3.4
0.4 R R R
Rsd 0.7s 3ph/3stn Dmin 68km Az.gap 150°
Corr. 0.000 1M/1stn Msd 0.0
Felt Ruatuna Road (35).

87/711

MAR 02 0234 06.1s 37.96S 176.80E 5km M=3.2
0.2 0.01 0.03 R
Rsd 0.2s 4ph/3stn Dmin 59km Az.gap 127°
Corr. -0.281 1M/1stn Msd 0.0
Felt Ruatuna Road (35).

87/714

MAR 02 0237 14.6s 37.89S 176.72E 5km M=3.6
0.1 0.01 0.01 R
Rsd 0.1s 5ph/5stn Dmin 57km Az.gap 139°
Corr. -0.404 3M/2stn Msd 0.1

87/716

MAR 02 0240 48.3s 38.06S 176.76E 5km M=3.7
0.2 0.01 0.03 R
Rsd 0.2s 7ph/7stn Dmin 70km Az.gap 125°
Corr. 0.475 6M/6stn Msd 0.1
Felt Ruatuna Road (35).

87/717

MAR 02 0242 36.9s 37.94S 176.74E 5km M=4.4
0.4 0.03 0.07 R
Rsd 0.9s 6ph/5stn Dmin 61km Az.gap 119°
Corr. -0.154 9M/7stn Msd 0.1 1↑
Felt Ruatuna Road (35).

87/718

MAR 02 0243 23.3s 38.00S 176.80E 5km M=4.3
0.0 R R R
Rsd 0.0s 1ph/1stn Dmin 357km Az.gap 360°
Corr. 0.000 6M/6stn Msd 0.1

87/720

MAR 02 0246 35.9s 38.11S 176.70E 5km M=4.2
0.1 0.01 0.02 R
Rsd 0.2s 6ph/6stn Dmin 77km Az.gap 120°
Corr. -0.027 10M/8stn Msd 0.1
Felt Opotiki (35) MM V.

87/723

MAR 02 0250 22.3s 37.92S 176.76E 5km M=4.3
0.3 0.02 0.03 R
Rsd 0.6s 7ph/7stn Dmin 58km Az.gap 85°
Corr. -0.352 3M/2stn Msd 0.2 1↑ 1↓
Felt Opotiki (35) MM IV.

87/726
MAR 02 0255 15.9s 37.99S 176.71E 5km M=3.3
0.3 0.02 0.03 R
Rsd 0.5s 5ph/5stn Dmin 66km Az.gap 127°
Corr. 0.106 1M/1stn Msd N.D.
Felt Ruatuna Rd (35).

87/728
MAR 02 0258 03.9s 37.89S 176.97E 5km M=3.2
0.1 0.01 0.01 R
Rsd 0.2s 5ph/5stn Dmin 44km Az.gap 118°
Corr. 0.230 2M/2stn Msd 0.1
Felt Ruatuna Road (35).

87/733
MAR 02 0306 00.3s 38.11S 176.71E 5km M=3.8
0.1 0.01 0.02 R
Rsd 0.3s 8ph/7stn Dmin 77km Az.gap 61°
Corr. 0.157 1M/1stn Msd N.D.

87/738
MAR 02 0309 26.5s 38.11S 176.72E 5km M=3.9
0.3 0.02 0.03 R
Rsd 0.6s 7ph/7stn Dmin 77km Az.gap 112°
Corr. -0.143 8M/8stn Msd 0.5

87/739
MAR 02 0309 28.2s 38.10S 176.70E 5km M=4.5
0.1 0.01 0.01 R
Rsd 0.3s 7ph/5stn Dmin 77km Az.gap 114°
Corr. -0.224 4M/3stn Msd 0.2

87/740
MAR 02 0310 04.7s 38.06S 176.65E 5km M=3.8
0.5 0.03 0.06 R
Rsd 0.6s 4ph/4stn Dmin 75km Az.gap 150°
Corr. 0.078 1M/1stn Msd N.D.
In the coda of preceding shock.

87/741
MAR 02 0311 17.6s 37.93S 177.05E 5km M=4.1
0.5 0.04 0.12 R
Rsd 0.9s 4ph/4stn Dmin 46km Az.gap 159°
Corr. -0.402 1M/1stn Msd N.D.
Felt Ruatuna Rd (35).

87/742
MAR 02 0313 02.4s 37.90S 176.98E 5km M=3.2
0.0 0.00 0.00 R
Rsd 0.1s 4ph/3stn Dmin 46km Az.gap 137°
Corr. 0.115 1M/1stn Msd N.D.
Felt Ruatuna Rd (35).

87/744
MAR 02 0313 36.9s 38.09S 176.72E 5km M=4.0
0.2 0.01 0.02 R
Rsd 0.3s 7ph/6stn Dmin 75km Az.gap 88°
Corr. 0.149 1M/1stn Msd N.D.

87/745
MAR 02 0315 22.8s 38.01S 176.72E 5km M=4.3
0.2 0.01 0.02 R
Rsd 0.5s 9ph/8stn Dmin 68km Az.gap 67°
Corr. 0.031 7M/7stn Msd 0.2
Felt Ruatuna Rd (35).

87/746
MAR 02 0316 34.8s 38.00S 176.85E 5km M=3.3
0.4 R R R
Rsd 0.7s 3ph/3stn Dmin 60km Az.gap 167°
Corr. 0.000 2M/1stn Msd 0.0
Felt Ruatuna Rd (35).

87/747
MAR 02 0316 51.6s 38.05S 176.70E 5km M=3.7
0.4 R R R
Rsd 0.7s 3ph/3stn Dmin 72km Az.gap 154°
Corr. 0.000 1M/1stn Msd N.D.
Felt Ruatuna Rd (35).

87/748
MAR 02 0319 09.6s 38.60S 175.89E 189km M=3.7
0.4 0.02 0.14 3
Rsd 0.1s 12ph/12stn Dmin 72km Az.gap 341°
Corr. -0.563 6M/6stn Msd 0.2

87/751
MAR 02 0320 46.3s 38.07S 176.74E 5km M=3.7
0.1 0.01 0.01 R
Rsd 0.2s 6ph/6stn Dmin 72km Az.gap 116°
Corr. 0.052 2M/2stn Msd 0.0
Felt Ruatuna Rd (35).

87/756
MAR 02 032736.9s 38.04S 176.73E 5km M=4.5
0.2 0.02 0.02 R
Rsd 0.4s 10ph/10stn Dmin 24km Az.gap 65°
Corr. -0.229 10M/8stn Msd 0.2 1↑
Felt Ruatuna Road (35).

87/757
MAR 02 032829.5s 38.05S 176.75E 5km M=4.6
0.3 R R R
Rsd 0.6s 4ph/4stn Dmin 70km Az.gap 159°
Corr. 0.000 10M/8stn Msd 0.1
Felt Ruatuna Rd (35).

87/758
MAR 02 033013.5s 38.04S 176.69E 5km M=4.3
0.2 0.02 0.02 R
Rsd 0.4s 5ph/4stn Dmin 72km Az.gap 120°
Corr. -0.197 1M/1stn Msd N.D. 1↑
Felt Ruatuna Rd (35).

87/766
MAR 02 034010.1s 38.03S 176.79E 5km M=3.3
0.2 0.01 0.01 R
Rsd 0.2s 8ph/8stn Dmin 18km Az.gap 116°
Corr. -0.367 3M/2stn Msd 0.0
Felt Ruatuna Road (35).

87/768
MAR 02 0341 39.9s 38.03S 176.70E 5km M=3.1
0.2 0.02 0.02 R
Rsd 0.4s 7ph/7stn Dmin 28km Az.gap 122°
Corr. -0.270 3M/3stn Msd 0.1
Felt Ruatuna Rd (35).

87/769
MAR 02 0342 23.6s 38.00S 176.80E 5km M=3.0
0.3 R R R
Rsd 0.5s 3ph/2stn Dmin 102km Az.gap 210°
Corr. 0.000 2M/2stn Msd 0.1
Felt Ruatuna Rd (35).

87/771
MAR 02 0346 30.9s 38.05S 176.71E 5km M=3.7
0.2 0.01 0.01 R
Rsd 0.2s 10ph/10stn Dmin 25km Az.gap 65°
Corr. -0.350 2M/2stn Msd 0.0
Felt Ruatuna Rd (35).

87/772
MAR 02 0347 27.3s 37.90S 176.95E 5km M=3.3
0.3 R R R
Rsd 0.4s 3ph/2stn Dmin 46km Az.gap 173°
Corr. 0.000 1M/1stn Msd N.D.
Felt Ruatuna Rd (35). In the coda of preceding shock.

87/773
MAR 02 0348 23.7s 37.91S 176.85E 5km M=3.3
0.2 0.02 0.02 R
Rsd 0.4s 6ph/4stn Dmin 52km Az.gap 126°
Corr. -0.083 3M/2stn Msd 0.1
Felt Ruatuna Rd (35).

87/776
MAR 02 0352 08.3s 37.96S 176.77E 5km M=3.3
0.3 0.02 0.03 R
Rsd 0.5s 8ph/8stn Dmin 38km Az.gap 125°
Corr. -0.244 3M/2stn Msd 0.0
Felt Ruatuna Rd (35).

87/778
MAR 02 0356 33.3s 38.05S 176.75E 5km M=3.0
0.3 0.03 0.02 R
Rsd 0.6s 9ph/9stn Dmin 22km Az.gap 117°
Corr. -0.496 3M/3stn Msd 0.3
Felt Ruatuna Rd (35).

87/779
MAR 02 0359 11.4s 37.98S 176.92E 5km M=3.3
0.5 0.06 0.04 R
Rsd 0.9s 6ph/6stn Dmin 6km Az.gap 159°
Corr. -0.443 2M/2stn Msd 0.0
Felt Ruatuna Rd (35).

87/781
MAR 02 0402 03.4s 38.04S 176.77E 5km M=3.3
0.2 0.02 0.02 R
Rsd 0.5s 9ph/9stn Dmin 20km Az.gap 117°
Corr. -0.293 3M/2stn Msd 0.1
Felt Ruatuna Rd (35).

87/787
MAR 02 0408 21.6s 37.88S 176.79E 5km M=3.2
1.2 0.11 0.07 R
Rsd 0.8s 4ph/3stn Dmin 108km Az.gap 222°
Corr. 0.699 3M/3stn Msd 0.0
Felt Ruatuna Rd (35).

87/789
MAR 02 0414 40.2s 37.88S 176.84E 5km M=3.3
0.3 0.02 0.03 R
Rsd 0.5s 9ph/9stn Dmin 18km Az.gap 111°
Corr. 0.295 3M/2stn Msd 0.2
Felt Ruatuna Rd (35).

87/791
MAR 02 0417 22.0s 38.01S 176.77E 5km M=3.2
0.2 0.02 0.02 R
Rsd 0.4s 6ph/5stn Dmin 34km Az.gap 157°
Corr. -0.203 2M/2stn Msd 0.1
Felt Ruatuna Rd (35).

87/795
MAR 02 0421 28.9s 38.02S 176.73E 5km M=3.1
0.2 0.02 0.02 R
Rsd 0.4s 7ph/6stn Dmin 23km Az.gap 157°
Corr. -0.355 2M/2stn Msd 0.1
Felt Ruatuna Rd (35).

87/796
MAR 02 0425 56.2s 37.86S 176.90E 5km M=2.9
0.8 0.06 0.05 R
Rsd 0.6s 5ph/5stn Dmin 16km Az.gap 171°
Corr. 0.052 2M/2stn Msd 0.0
Felt Ruatuna Road (35).

87/797
MAR 02 0426 15.7s 38.09S 176.76E 5km M=2.9
0.6 0.06 0.04 R
Rsd 0.7s 4ph/4stn Dmin 27km Az.gap 150°
Corr. 0.109 2M/2stn Msd 0.3
Felt Ruatuna Road (35). Interpretation doubtful.

87/800
MAR 02 0430 38.7s 38.05S 176.76E 5km M=3.3
0.1 0.01 0.01 R
Rsd 0.2s 7ph/6stn Dmin 30km Az.gap 153°
Corr. -0.221 2M/1stn Msd 0.1
Felt Ruatuna Rd (35).

87/802
MAR 02 0432 46.4s 38.05S 176.75E 5km M=3.4
0.1 0.01 0.01 R
Rsd 0.2s 8ph/8stn Dmin 30km Az.gap 117°
Corr. -0.299 3M/3stn Msd 0.1
Felt Ruatuna Road (35).

87/804
MAR 02 0436 24.7s 38.02S 176.76E 5km M=3.2
0.4 0.03 0.03 R
Rsd 0.5s 7ph/6stn Dmin 20km Az.gap 156°
Corr. -0.570 2M/2stn Msd 0.0
Felt Ruatuna Rd (35).

87/805
MAR 02 0437 27.7s 37.99S 176.79E 5km M=3.0
0.2 0.02 0.01 R
Rsd 0.2s 5ph/5stn Dmin 96km Az.gap 159°
Corr. 0.065 3M/3stn Msd 0.2
Felt Ruatuna Rd (35). Amongst a number of small events.

87/806
MAR 02 0439 20.1s 37.98S 176.90E 6km M=3.0
0.5 0.04 0.03 7
Rsd 0.5s 7ph/6stn Dmin 8km Az.gap 160°
Corr. -0.117 3M/3stn Msd 0.1
Felt Ruatuna Rd (35).

87/809
MAR 02 0444 39.0s 38.19S 176.69E 5km M=2.9
0.1 0.01 0.01 R
Rsd 0.2s 6ph/5stn Dmin 17km Az.gap 140°
Corr. -0.206 3M/3stn Msd 0.1
Felt Ruatuna Road (35). Small event precedes this one.

87/810
MAR 02 0445 17.0s 38.02S 176.91E 5km M=3.2
0.5 0.03 0.03 R
Rsd 0.5s 5ph/4stn Dmin 43km Az.gap 156°
Corr. -0.389 3M/3stn Msd 0.1
Felt Ruatuna Rd (35).

87/816
MAR 02 0454 57.4s 38.05S 176.78E 5km M=3.6
0.2 0.02 0.02 R
Rsd 0.5s 10ph/9stn Dmin 20km Az.gap 62°
Corr. -0.367 3M/2stn Msd 0.2 1↑

87/820
MAR 02 0500 35.7s 37.96S 176.81E 5km M=3.1
0.3 0.03 0.02 R
Rsd 0.3s 6ph/6stn Dmin 41km Az.gap 163°
Corr. 0.111 2M/2stn Msd 0.0
Felt Reporoa (33) and Ruatahuna (42), MM IV.

87/821
MAR 02 0510 56.9s 38.09S 176.73E 5km M=4.2
0.1 0.01 0.01 R
Rsd 0.3s 11ph/10stn Dmin 25km Az.gap 62°
Corr. -0.239 11M/9stn Msd 0.1 2↑1↓

87/822
MAR 02 0513 12.9s 38.02S 176.77E 5km M=4.4
0.1 0.01 0.01 R
Rsd 0.3s 11ph/10stn Dmin 19km Az.gap 64°
Corr. -0.208 10M/8stn Msd 0.2 1↑
Felt Ruatuna Rd (35).

87/824
MAR 02 0519 12.7s 37.86S 176.95E 5km M=4.1
0.2 0.02 0.02 R
Rsd 0.4s 9ph/7stn Dmin 43km Az.gap 66°
Corr. -0.361 9M/8stn Msd 0.2 2↑1↓

87/830
MAR 02 0532 17.3s 37.94S 176.81E 2km M=3.6
0.4 0.02 0.02 1
Rsd 0.3s 8ph/8stn Dmin 16km Az.gap 164°
Corr. -0.211 3M/2stn Msd 0.1

87/835
MAR 02 0538 40.9s 37.99S 176.91E 5km M=3.8
0.2 0.02 0.02 R
Rsd 0.4s 9ph/8stn Dmin 45km Az.gap 104°
Corr. 0.117 3M/2stn Msd 0.1

87/841
MAR 02 0548 21.0s 38.07S 176.73E 5km M=2.9
0.3 0.02 0.02 R
Rsd 0.4s 7ph/7stn Dmin 25km Az.gap 148°
Corr. -0.523 3M/3stn Msd 0.1
Felt Ruatuna Road (35).

87/850
MAR 02 0601 25.3s 37.93S 176.83E 2km M=3.5
0.2 0.01 0.02 R
Rsd 0.3s 10ph/9stn Dmin 15km Az.gap 125°
Corr. -0.414 3M/2stn Msd 0.2

87/864
MAR 02 0619 44.7s 37.95S 176.83E 5km M=3.0
0.2 0.02 0.01 R
Rsd 0.3s 6ph/5stn Dmin 14km Az.gap 163°
Corr. 0.020 3M/3stn Msd 0.1
Felt Rotorua (33) MM III.

87/867
MAR 02 0625 01.6s 37.98S 176.80E 5km M=3.5
0.1 0.01 0.01 R
Rsd 0.3s 8ph/8stn Dmin 16km Az.gap 121°
Corr. -0.078 3M/2stn Msd 0.1

87/868
MAR 02 0626 22.4s 37.90S 176.78E 32km M=3.6
0.4 0.04 0.04 6
Rsd 0.5s 10ph/10stn Dmin 21km Az.gap 74°
Corr. -0.535 2M/2stn Msd 0.3

87/870
MAR 02 0632 48.4s 37.63S 177.03E 1km M=3.8
0.4 0.02 0.03 2
Rsd 0.6s 8ph/6stn Dmin 19km Az.gap 93°
Corr. 0.013 3M/2stn Msd 0.4 1↑

87/872
MAR 02 0641 38.5s 38.17S 176.63E 0km M=4.4
0.5 0.02 0.03 2
Rsd 0.4s 11ph/11stn Dmin 13km Az.gap 61°
Corr. -0.420 10M/8stn Msd 0.2 2↑1↓

87/873
MAR 02 0644 30.1s 38.13S 176.68E 9km M=4.6
0.1 0.01 0.01 2
Rsd 0.1s 10ph/10stn Dmin 19km Az.gap 61°
Corr. -0.363 11M/9stn Msd 0.2 3↑ 1↓
Felt Powells Rd (34) MM VII and Wairapukao (42) MM IV.

87/874
MAR 02 0645 12.3s 37.98S 176.76E 5km M=3.9
0.1 0.01 0.01 R
Rsd 0.1s 4ph/4stn Dmin 20km Az.gap 180°
Corr. -0.395 1M/1stn Msd 0.0
Felt Te Puke and Welcome Bay (26) MM III. Badly obscured by preceding shock.

87/875
MAR 02 0646 05.8s 37.95S 176.80E 5km M=3.5
0.5 0.05 0.04 R
Rsd 0.5s 4ph/4stn Dmin 98km Az.gap 163°
Corr. -0.563 1M/1stn Msd 0.0
Felt Welcome Bay Road (26) MM IV. In the coda of the preceding shock.

87/877
MAR 02 0648 01.6s 37.89S 176.83E 5km M=4.7
0.1 0.01 0.01 R
Rsd 0.4s 9ph/8stn Dmin 51km Az.gap 71°
Corr. 0.026 4M/3stn Msd 0.2 1↓
Felt Te Puke and Welcome Bay (26) MM III.

87/879
MAR 02 0652 58.7s 38.13S 176.72E 5km M=3.7
0.3 0.01 0.02 4
Rsd 0.4s 9ph/8stn Dmin 21km Az.gap 83°
Corr. -0.091 9M/8stn Msd 0.1 1↑ 2↓

87/881
MAR 02 0656 34.4s 38.14S 176.71E 5km M=4.8
0.2 0.02 0.02 R
Rsd 0.4s 9ph/9stn Dmin 30km Az.gap 59°
Corr. -0.352 8M/8stn Msd 0.2 4↑ 1↓
Felt from Welcome Bay Rd (26) to Station Rd (60) max MM IV.

87/882
MAR 02 0658 39.5s 38.10S 176.65E 5km M=2.9
0.2 R R R
Rsd 0.4s 3ph/3stn Dmin 88km Az.gap 230°
Corr. 0.000 2M/2stn Msd 0.2
Felt Ormond (44) MM IV, Te Puke (26) and Wairakei (41).

87/883
MAR 02 0700 10.2s 38.12S 176.67E 5km M=4.5
0.1 0.01 0.01 R
Rsd 0.3s 10ph/9stn Dmin 32km Az.gap 62°
Corr. -0.082 3M/2stn Msd 0.1

87/884
MAR 02 0701 05.3s 38.09S 176.75E 5km M=4.3
0.2 0.02 0.02 R
Rsd 0.4s 6ph/6stn Dmin 27km Az.gap 113°
Corr. -0.268 2M/2stn Msd 0.0

87/894
MAR 02 0714 50.5s 38.03S 176.68E 5km M=3.2
0.3 0.02 0.02 R
Rsd 0.4s 7ph/7stn Dmin 27km Az.gap 155°
Corr. -0.523 2M/2stn Msd 0.0
Felt Kairoa Sta (43) MM IV.

87/901
MAR 02 0727 42.0s 38.02S 176.71E 2km M=3.8
0.3 0.01 0.02 1
Rsd 0.2s 10ph/9stn Dmin 24km Az.gap 75°
Corr. -0.432 1M/1stn Msd N.D.
Felt Ruatuna Rd (35).

87/902
MAR 02 0729 12.0s 38.06S 176.68E 5km M=2.9
0.4 0.03 0.03 R
Rsd 0.4s 5ph/5stn Dmin 24km Az.gap 153°
Corr. -0.229 2M/2stn Msd 0.1
Felt Reporoa (33) MM IV.

87/906
MAR 02 0740 02.2s 38.10S 176.72E 5km M=3.3
0.1 0.01 0.01 R
Rsd 0.2s 8ph/8stn Dmin 24km Az.gap 142°
Corr. -0.367 4M/3stn Msd 0.1
Felt Tuai (43) MM IV.

87/909
MAR 02 0750 28.1s 37.91S 176.92E 5km M=3.2
0.2 R R R
Rsd 0.5s 7ph/7stn Dmin 10km Az.gap 120°
Corr. 0.000 3M/3stn Msd 0.1
Felt Tuai (43) MM IV.

87/910
MAR 02 0755 08.2s 37.88S 176.84E 1km M=5.0
0.6 0.02 0.03 2
Rsd 0.3s 10ph/10stn Dmin 17km Az.gap 72°
Corr. -0.539 7M/7stn Msd 0.2 3↑ 3↓
Felt MM IV from Waihi Beach (21) to Ormond (44).

87/913
MAR 02 0759 34.4s 37.91S 176.84E 5km M=3.6
0.3 0.02 0.03 R
Rsd 0.5s 7ph/5stn Dmin 47km Az.gap 127°
Corr. -0.219 3M/2stn Msd 0.2
Felt Rotorua (33) and Wairoa (53) MM IV. I phases on WIZ are probably P and S of a small local.

87/914
MAR 02 0802 56.1s 38.00S 176.78E 5km M=3.1
0.2 0.01 0.01 R
Rsd 0.3s 8ph/7stn Dmin 18km Az.gap 158°
Corr. -0.180 3M/3stn Msd 0.2
Felt Welcome Bay Rd (26) MM IV.

87/931
MAR 02 0843 51.5s 38.11S 176.66E 4km M=3.7
0.2 0.01 0.01 3
Rsd 0.2s 10ph/9stn Dmin 19km Az.gap 91°
Corr. -0.418 8M/8stn Msd 0.1 2↑ 2↓

87/933
MAR 02 0900 58.3s 38.10S 176.70E 9km M=3.5
0.7 0.04 0.06 12
Rsd 0.5s 7ph/7stn Dmin 23km Az.gap 143°
Corr. 0.684 3M/2stn Msd 0.0 1↑ 1↓
Felt Reporoa (33) MM IV. TAZ timing uncertain.

87/936
MAR 02 0911 11.0s 38.07S 176.72E 5km M=3.0
0.3 0.02 0.02 R
Rsd 0.4s 7ph/6stn Dmin 25km Az.gap 149°
Corr. -0.516 3M/3stn Msd 0.1
Felt Taupo (41) MM V.

87/943
MAR 02 0931 16.2s 38.12S 176.69E 1km M=4.2
0.5 0.02 0.03 2
Rsd 0.3s 12ph/11stn Dmin 20km Az.gap 61°
Corr. -0.730 11M/9stn Msd 0.2 3↑ 1↓
Felt Ruatuna Rd (35).

87/944
MAR 02 0934 11.4s 37.88S 176.86E 5km M=3.6
0.2 0.02 0.02 R
Rsd 0.4s 8ph/7stn Dmin 16km Az.gap 71°
Corr. -0.053 4M/3stn Msd 0.2
TAZ timing uncertain.

87/945
MAR 02 0934 27.0s 38.14S 176.71E 5km M=4.1
0.2 0.02 0.02 R
Rsd 0.4s 10ph/9stn Dmin 21km Az.gap 60°
Corr. -0.283 12M/9stn Msd 0.2
Felt Welcome Bay (26) MM IV. TAZ timing uncertain.

87/952
MAR 02 1031 11.4s 38.00S 176.75E 2km M=3.8
0.4 0.02 0.03 5
Rsd 0.4s 10ph/9stn Dmin 21km Az.gap 67°
Corr. -0.475 9M/8stn Msd 0.1 1↑
Felt Ruatuna Rd (35) MM IV.

87/954
MAR 02 1033 34.5s 37.98S 176.75E 6km M=3.9
0.2 0.02 0.02 3
Rsd 0.3s 10ph/8stn Dmin 21km Az.gap 67°
Corr. -0.188 8M/8stn Msd 0.1

87/967
MAR 02 1117 30.9s 38.00S 176.79E 5km M=3.5
0.4 0.04 0.03 R
Rsd 0.7s 9ph/9stn Dmin 18km Az.gap 158°
Corr. -0.465 4M/3stn Msd 0.1

87/981
MAR 02 1232 01.1s 38.02S 176.73E 4km M=3.7
0.3 0.02 0.02 4
Rsd 0.4s 9ph/8stn Dmin 23km Az.gap 101°
Corr. -0.133 4M/3stn Msd 0.2

87/989
MAR 02 1322 18.4s 38.08S 176.70E 2km M=3.6
0.2 0.01 0.01 3
Rsd 0.2s 8ph/8stn Dmin 23km Az.gap 148°
Corr. -0.365 3M/2stn Msd 0.2 1↑

87/994
MAR 02 1341 15.3s 38.00S 176.74E 2km M=3.6
0.3 0.01 0.02 1
Rsd 0.2s 10ph/9stn Dmin 22km Az.gap 103°
Corr. -0.555 10M/9stn Msd 0.2

87/999
MAR 02 1429 39.3s 37.95S 176.81E 5km M=2.7
0.4 0.04 0.02 R
Rsd 0.5s 7ph/7stn Dmin 16km Az.gap 163°
Corr. -0.161 3M/3stn Msd 0.1
Felt Ruatuna Road (35) MM IV.

87/1006
MAR 02 1517 30.8s 38.12S 176.69E 6km M=3.9
0.3 0.01 0.02 5
Rsd 0.3s 12ph/11stn Dmin 21km Az.gap 61°
Corr. -0.215 9M/8stn Msd 0.1 1↑

87/1009
MAR 02 1534 13.7s 38.11S 176.65E 5km M=3.5
0.2 0.02 0.02 R
Rsd 0.3s 7ph/6stn Dmin 18km Az.gap 143°
Corr. -0.479 3M/3stn Msd 0.3 1↑

87/1026
MAR 02 1706 14.9s 38.14S 176.63E 0km M=3.9
0.6 0.02 0.03 2
Rsd 0.4s 11ph/10stn Dmin 15km Az.gap 62°
Corr. -0.516 12M/9stn Msd 0.1 3↑ 1↓

87/1028
MAR 02 1714 46.7s 37.85S 176.82E 25km M=4.1
0.6 0.05 0.05 14
Rsd 0.8s 10ph/8stn Dmin 21km Az.gap 77°
Corr. -0.535 3M/2stn Msd 0.2 1↑ 1↓
Felt Ruatuna Rd (35) MM IV.

87/1034
MAR 02 1738 26.0s 38.16S 176.65E 1km M=3.6
0.7 0.02 0.04 3
Rsd 0.5s 11ph/9stn Dmin 15km Az.gap 61°
Corr. -0.328 4M/3stn Msd 0.4 2↑ 1↓

87/1035
MAR 02 1740 59.2s 38.07S 176.72E 5km M=3.6
0.2 0.01 0.01 3
Rsd 0.2s 10ph/9stn Dmin 25km Az.gap 98°
Corr. -0.387 10M/9stn Msd 0.1 1↑

87/1039
MAR 02 1814 27.1s 37.87S 176.95E 5km M=3.5
0.5 0.01 0.03 5
Rsd 0.4s 10ph/9stn Dmin 13km Az.gap 122°
Corr. -0.393 3M/3stn Msd 0.3

87/1040
MAR 02 1815 05.1s 37.92S 176.98E 5km M=3.6
0.3 0.02 0.03 R
Rsd 0.5s 6ph/6stn Dmin 47km Az.gap 113°
Corr. -0.293 2M/2stn Msd 0.2
In the coda of the preceding shock: interpretation uncertain.

87/1044
MAR 02 1850 49.0s 37.90S 176.88E 5km M=3.6
0.2 0.02 0.02 R
Rsd 0.4s 10ph/9stn Dmin 14km Az.gap 126°
Corr. -0.264 4M/3stn Msd 0.1
Felt Ruatuna Rd (35) MM IV.

87/1045
MAR 02 1900 36.0s 41.25S 172.83E 192km M=3.7
0.1 0.03 0.02 2
Rsd 0.1s 19ph/13stn Dmin 62km Az.gap 208°
Corr. -0.863 10M/8stn Msd 0.2 2↑ 2↓

87/1049
MAR 02 1947 53.9s 38.07S 176.55E 5km M=3.6
0.2 0.01 0.01 R
Rsd 0.4s 9ph/9stn Dmin 19km Az.gap 97°
Corr. -0.109 3M/3stn Msd 0.3 1↓

87/1064
MAR 02 2137 36.0s 37.77S 176.97E 5km M=3.0
0.4 0.02 0.04 R
Rsd 0.5s 6ph/5stn Dmin 23km Az.gap 133°
Corr. -0.293 2M/2stn Msd 0.2
Felt Ruatuna Rd (35).

87/1066
MAR 02 2151 37.2s 37.66S 177.09E 5km M=3.2
0.4 0.03 0.03 R
Rsd 0.4s 8ph/6stn Dmin 17km Az.gap 134°
Corr. -0.617 2M/2stn Msd 0.0
Felt Okere Falls (33) MM III.

87/1069
MAR 02 2156 23.2s 37.76S 176.93E 5km M=4.0
0.6 0.02 0.04 5
Rsd 0.5s 11ph/10stn Dmin 25km Az.gap 86°
Corr. -0.688 3M/2stn Msd 0.2 1↑

87/1071
MAR 02 2203 48.5s 38.05S 176.53E 5km M=3.5
0.2 0.02 0.02 R
Rsd 0.3s 9ph/9stn Dmin 20km Az.gap 98°
Corr. -0.361 4M/3stn Msd 0.4 1↓
Felt Mourea (33) MM IV.

87/1072
MAR 02 2204 11.8s 38.12S 176.74E 6km M=3.6
0.2 0.01 0.02 4
Rsd 0.3s 7ph/7stn Dmin 24km Az.gap 135°
Corr. -0.189 4M/3stn Msd 0.1
In the coda of the preceding shock.

87/1075
MAR 02 2209 51.5s 38.11S 176.68E 5km M=3.5
0.1 0.01 0.01 2
Rsd 0.2s 7ph/6stn Dmin 20km Az.gap 142°
Corr. -0.153 4M/3stn Msd 0.3 1↑ 1↓

87/1079
MAR 02 2232 28.6s 38.03S 176.79E 5km M=3.1
0.2 0.01 0.01 R
Rsd 0.3s 7ph/6stn Dmin 18km Az.gap 155°
Corr. -0.221 3M/3stn Msd 0.2
Felt Ruatuna Rd (35).

87/1097
MAR 03 0036 37.8s 37.79S 177.03E 5km M=3.7
0.2 0.01 0.03 R
Rsd 0.4s 11ph/10stn Dmin 22km Az.gap 65°
Corr. -0.617 4M/3stn Msd 0.2
Felt Ruatuna Rd (35).

87/1098
MAR 03 0047 57.8s 38.03S 176.72E 2km M=3.5
0.4 0.02 0.02 2
Rsd 0.3s 10ph/9stn Dmin 24km Az.gap 66°
Corr. -0.273 3M/2stn Msd 0.2 1↑

87/1099
MAR 03 0057 31.9s 38.04S 176.70E 21km M=4.2
0.5 0.04 0.04 25
Rsd 0.9s 11ph/11stn Dmin 26km Az.gap 66°
Corr. -0.348 3M/2stn Msd 0.2 1↑
Felt Opape (35) MM V.

87/1106
MAR 03 0114 44.7s 38.06S 176.47E 5km M=3.6
0.3 0.02 0.02 R
Rsd 0.4s 8ph/8stn Dmin 46km Az.gap 97°
Corr. -0.168 3M/2stn Msd 0.2
TAZ trace lost.

87/1107
MAR 03 0115 41.4s 38.04S 176.76E 5km M=4.0
0.2 0.01 0.01 R
Rsd 0.3s 10ph/8stn Dmin 21km Az.gap 64°
Corr. -0.152 3M/2stn Msd 0.1
Felt Rotorua (33) MM IV. Small shock near WIZ precedes on WIZ and HBZ.

87/1108
MAR 03 0117 02.8s 37.87S 177.05E 5km M=3.2
0.4 0.02 0.04 R
Rsd 0.6s 6ph/6stn Dmin 14km Az.gap 111°
Corr. -0.322 2M/2stn Msd 0.3
Felt Ruatuna Rd (35).

87/1118
MAR 03 0239 18.4s 37.65S 177.05E 5km M=3.6
0.2 0.01 0.02 R
Rsd 0.4s 9ph/8stn Dmin 19km Az.gap 84°
Corr. -0.301 3M/3stn Msd 0.1

87/1125
MAR 03 0449 53.3s 37.72S 177.00E 5km M=3.7
0.4 0.02 0.04 R
Rsd 0.5s 12ph/12stn Dmin 27km Az.gap 78°
Corr. -0.539 4M/3stn Msd 0.1 1↓
Felt Ruatuna Rd (35).

87/1127
MAR 03 0513 47.2s 37.62S 177.07E 5km M=4.1
0.3 0.03 0.02 R
Rsd 0.5s 11ph/9stn Dmin 14km Az.gap 90°
Corr. -0.238 3M/2stn Msd 0.2
Felt Ruatuna Rd (35).

87/1128
MAR 03 0515 25.5s 37.63S 177.02E 5km M=3.6
0.3 R R R
Rsd 0.7s 6ph/6stn Dmin 19km Az.gap 158°
Corr. 0.000 2M/2stn Msd 0.4
Felt Ruatuna Rd (35). In the coda of the preceding shock: interpretation doubtful.

87/1129
MAR 03 0517 03.3s 37.60S 177.08E 5km M=4.1
0.4 0.03 0.03 R
Rsd 0.5s 10ph/8stn Dmin 12km Az.gap 94°
Corr. -0.165 3M/2stn Msd 0.3 1↑
Felt Ruatuna Rd (35).

87/1130
MAR 03 0517 58.5s 37.60S 177.00E 5km M=2.9
0.3 R R R
Rsd 0.6s 4ph/3stn Dmin 83km Az.gap 196°
Corr. 0.000 1M/1stn Msd N.D.
Felt Ruatuna Rd (35). In the coda of preceding shock.

87/1132
MAR 03 0519 30.8s 37.85S 176.92E 5km M=3.4
0.3 0.02 0.02 R
Rsd 0.3s 8ph/8stn Dmin 16km Az.gap 171°
Corr. -0.523 3M/3stn Msd 0.1
Felt Ruatuna Rd (35).

87/1133
MAR 03 0521 07.8s 37.62S 176.97E 5km M=3.9
0.4 0.02 0.03 R
Rsd 0.3s 10ph/9stn Dmin 22km Az.gap 103°
Corr. -0.645 3M/2stn Msd 0.3
Felt Ruatuna Rd (35).

87/1137
MAR 03 0529 13.7s 37.59S 177.03E 5km M=3.4
1.2 0.05 0.09 R
Rsd 0.8s 7ph/7stn Dmin 16km Az.gap 225°
Corr. -0.805 2M/2stn Msd 0.1
Felt Ruatuna Rd (35).

87/1141
MAR 03 0554 10.6s 37.67S 177.07E 5km M=3.6
0.2 0.02 0.03 R
Rsd 0.4s 10ph/9stn Dmin 19km Az.gap 77°
Corr. -0.244 4M/3stn Msd 0.1
Felt Ruatuna Rd (35).

87/1143
MAR 03 0554 41.4s 37.62S 177.01E 5km M=4.0
0.2 R R R
Rsd 0.6s 6ph/6stn Dmin 19km Az.gap 99°
Corr. 0.000 3M/3stn Msd 0.3
TAZ and WHH obscured by preceding shock.

87/1146
MAR 03 0601 15.2s 37.65S 177.00E 5km M=3.5
0.6 0.03 0.05 R
Rsd 0.7s 10ph/8stn Dmin 22km Az.gap 91°
Corr. -0.422 3M/3stn Msd 0.1

87/1155
MAR 03 0708 04.9s 37.64S 177.05E 5km M=3.5
0.2 0.01 0.02 R
Rsd 0.3s 10ph/9stn Dmin 17km Az.gap 85°
Corr. -0.311 3M/3stn Msd 0.2 1↓

87/1196
MAR 03 1214 29.4s 38.09S 176.72E 5km M=4.2
0.5 0.02 0.02 5
Rsd 0.4s 7ph/7stn Dmin 24km Az.gap 143°
Corr. -0.187 8M/6stn Msd 0.2 6↑ 2↓
Felt Ruatuna Road (35).

87/1204
MAR 03 1316 18.1s 32.62S 178.42W 460km M=4.9
1.1 0.29 0.20 70
Rsd 0.3s 9ph/8stn Dmin 629km Az.gap 344°
Corr. -0.277 10M/10stn Msd 0.4

87/1211
MAR 03 1430 30.8s 37.81S 176.93E 5km M=3.6
0.5 0.04 0.03 R
Rsd 0.4s 9ph/7stn Dmin 20km Az.gap 230°
Corr. 0.684 3M/3stn Msd 0.1 1↑

87/1215
MAR 03 1448 20.9s 38.14S 176.66E 2km M=3.7
0.6 0.02 0.03 2
Rsd 0.4s 7ph/7stn Dmin 16km Az.gap 136°
Corr. -0.531 4M/4stn Msd 0.2 2↑ 2↓

87/1218
MAR 03 1534 08.7s 37.90S 176.90E 5km M=3.5
0.3 0.03 0.02 R
Rsd 0.5s 8ph/7stn Dmin 12km Az.gap 167°
Corr. 0.019 3M/3stn Msd 0.1 1↑

87/1262
MAR 03 2020 53.3s 38.13S 176.68E 2km M=3.5
0.6 0.02 0.02 2
Rsd 0.3s 7ph/7stn Dmin 19km Az.gap 137°
Corr. -0.555 5M/5stn Msd 0.0
Mag about 3 aftershock in WTZ coda: Pg onset at 20 2128.6.

87/1264
MAR 03 2113 58.5s 37.99S 176.79E 5km M=3.0
0.4 0.03 0.02 R
Rsd 0.5s 6ph/6stn Dmin 18km Az.gap 175°
Corr. -0.124 2M/2stn Msd 0.0
Felt Te Teko (34) MM V.

87/1274
MAR 03 2343 45.0s 38.05S 176.73E 5km M=3.9
0.2 0.02 0.02 R
Rsd 0.4s 7ph/7stn Dmin 24km Az.gap 157°
Corr. -0.014 4M/4stn Msd 0.1 2↑1↓
Felt Te Teko (34) MM V.

87/1295
MAR 04 0409 18.5s 38.04S 176.73E 5km M=3.3
0.3 0.02 0.02 R
Rsd 0.5s 9ph/7stn Dmin 24km Az.gap 160°
Corr. 0.119 4M/4stn Msd 0.1
Felt Ruatuna Road (35).

87/1297
MAR 04 0435 34.9s 37.92S 176.86E 5km M=2.8
0.5 R R R
Rsd 1.0s 4ph/4stn Dmin 13km Az.gap 214°
Corr. 0.000 2M/2stn Msd 0.2
Felt Waihi (21) MM IV.

87/1298
MAR 04 0454 01.4s 38.08S 176.68E 8km M=2.8
0.2 0.02 0.02 3
Rsd 0.3s 6ph/5stn Dmin 23km Az.gap 150°
Corr. -0.228 3M/3stn Msd 0.2 1↑
Felt Waihi (21) MM IV.

87/1301
MAR 04 0546 36.9s 37.92S 176.89E 5km M=3.0
0.5 0.04 0.02 R
Rsd 0.4s 6ph/5stn Dmin 11km Az.gap 220°
Corr. 0.590 2M/2stn Msd 0.1
Felt Waihi (21) MM IV.

87/1304
MAR 04 0705 58.5s 37.88S 176.88E 5km M=2.7
1.2 0.09 0.06 R
Rsd 0.9s 6ph/5stn Dmin 16km Az.gap 224°
Corr. 0.676 2M/2stn Msd 0.0
Felt Waihi (21) MM V.

87/1306
MAR 04 0838 38.0s 37.60S 176.55E 5km M=3.8
0.9 0.07 0.03 R
Rsd 0.4s 7ph/7stn Dmin 58km Az.gap 244°
Corr. 0.563 4M/3stn Msd 0.2 1↑2↓
Felt Waihi (21) MM VI, Pukehina (27) MM IV.

87/1310
MAR 04 0945 38.8s 37.80S 176.71E 5km M=3.0
0.8 0.07 0.04 R
Rsd 0.6s 7ph/6stn Dmin 31km Az.gap 228°
Corr. 0.551 4M/4stn Msd 0.3
Felt Waihi (21) MM IV.

87/1313
MAR 04 1234 57.5s 37.87S 176.93E 5km M=3.7
0.4 0.03 0.02 R
Rsd 0.3s 8ph/8stn Dmin 14km Az.gap 225°
Corr. 0.691 3M/3stn Msd 0.1 1↑

87/1336
MAR 04 1907 49.7s 37.87S 176.95E 5km M=3.4
0.3 0.02 0.02 R
Rsd 0.2s 7ph/7stn Dmin 14km Az.gap 213°
Corr. -0.703 3M/3stn Msd 0.0
Felt Ruatuna Road (35).

87/1337
MAR 04 1924 00.9s 34.00S 178.61W 5km M=4.6
1.7 0.07 0.17 R
Rsd 0.5s 8ph/7stn Dmin 488km Az.gap 325°
Corr. 0.250 4M/4stn Msd 0.3

87/1347
MAR 05 0314 36.2s 38.11S 176.72E 5km M=3.2
0.3 0.02 0.02 R
Rsd 0.5s 7ph/7stn Dmin 23km Az.gap 139°
Corr. -0.175 9M/9stn Msd 0.3 1↑1↓
Felt Ruatuna Road (35).

87/1350
MAR 05 0546 20.8s 37.91S 176.77E 2km M=3.0
0.4 0.02 0.02 5
Rsd 0.3s 6ph/5stn Dmin 21km Az.gap 167°
Corr. -0.471 2M/2stn Msd 0.2 1↓
Felt Awaiti Road South (27) MM IV.

87/1352
MAR 05 0605 32.0s 33.76S 179.21W 12km M=4.9
0.7 0.05 0.07 R
Rsd 0.3s 7ph/5stn Dmin 482km Az.gap 340°
Corr. -0.475 3M/3stn Msd 0.5

87/1357
MAR 05 0830 52.1s 38.07S 176.74E 5km M=3.1
0.2 0.02 0.02 R
Rsd 0.3s 8ph/7stn Dmin 24km Az.gap 149°
Corr. 0.381 7M/7stn Msd 0.1
Felt Awaiti Road South (27) MM IV.

87/1358
MAR 05 0835 55.2s 38.10S 176.73E 5km M=3.5
0.3 0.02 0.02 R
Rsd 0.6s 11ph/10stn Dmin 24km Az.gap 141°
Corr. 0.021 9M/9stn Msd 0.2 1↑
Felt Awaiti Road South (27) and Minginui Forest (42) MM IV.

87/1359
MAR 05 0842 17.3s 38.03S 176.73E 5km M=3.0
0.3 0.03 0.02 R
Rsd 0.5s 7ph/6stn Dmin 23km Az.gap 162°
Corr. -0.116 6M/6stn Msd 0.1 1↓
Felt Awaiti Road South (27) MM IV.

87/1378
MAR 06 0138 09.3s 37.76S 176.88E 2km M=3.5
1.0 0.04 0.06 4
Rsd 0.7s 8ph/7stn Dmin 27km Az.gap 146°
Corr. -0.260 5M/5stn Msd 0.2

87/1388
MAR 06 1016 04.5s 32.05S 178.91W 455km M=5.9
0.4 0.03 0.07 10
Rsd 0.1s 11ph/11stn Dmin 666km Az.gap 333°
Corr. 0.531 13M/13stn Msd 0.2 1↓

87/1398
MAR 06 1541 13.6s 37.90S 176.84E 5km M=3.8
0.1 0.01 0.01 R
Rsd 0.2s 12ph/12stn Dmin 16km Az.gap 129°
Corr. -0.159 19M/19stn Msd 0.3 1↑2↓
Felt Papamoa (26), Awaiti Road South, Simond Road (27) MM V, Ruatuna Road (35) MM IV.

87/1413
MAR 07 0629 51.1s 38.21S 176.60E 6km M=3.4
0.2 0.01 0.02 R
Rsd 0.4s 10ph/10stn Dmin 8km Az.gap 106°
Corr. -0.045 19M/18stn Msd 0.2 2↑3↓
Felt Waimangu Valley (33) MM IV.

87/1414
MAR 07 0757 07.8s 33.78S 179.33W 209km M=5.8
9.9 0.56 0.62 38
Rsd 0.1s 10ph/10stn Dmin 474km Az.gap 290°
Corr. 0.988 9M/9stn Msd 0.3 1↑
HBZ T 0802 40

87/1418
MAR 07 1153 00.2s 39.69S 174.33E 206km M=4.1
0.5 0.02 0.05 4
Rsd 0.3s 15ph/14stn Dmin 50km Az.gap 115°
Corr. -0.034 13M/11stn Msd 0.2 7↑4↓

87/1419
MAR 07 1200 46.3s 36.78S 177.13E 270km M=4.3
1.4 0.12 0.08 10
Rsd 0.4s 11ph/11stn Dmin 134km Az.gap 263°
Corr. -0.117 13M/13stn Msd 0.2 1↑1↓

87/1433
MAR 07 2119 07.9s 37.22S 177.62E 177km M=3.6
1.8 0.12 0.11 12
Rsd 0.8s 6ph/6stn Dmin 74km Az.gap 239°
Corr. 0.285 2M/2stn Msd 0.0

87/1438
MAR 08 0119 39.2s 38.00S 176.80E 9km M=3.3
0.3 0.02 0.02 R
Rsd 0.5s 9ph/9stn Dmin 17km Az.gap 169°
Corr. 0.148 10M/10stn Msd 0.1 2↑1↓
Felt Ruatuna Road (35) MM III.

87/1442
MAR 08 0307 44.9s 38.02S 176.76E 2km M=3.5
0.6 0.02 0.02 2
Rsd 0.4s 11ph/11stn Dmin 20km Az.gap 119°
Corr. -0.559 10M/10stn Msd 0.2 2↑1↓

87/1443
MAR 08 0457 10.4s 37.82S 177.00E 5km M=3.6
0.2 0.02 0.02 R
Rsd 0.4s 10ph/10stn Dmin 18km Az.gap 122°
Corr. -0.225 12M/11stn Msd 0.2 1↓
Felt Ruatuna Road (35) MM III.

87/1446
MAR 08 0922 55.1s 37.72S 176.29E 226km M=5.1
0.6 0.04 0.04 5
Rsd 0.3s 15ph/15stn Dmin 61km Az.gap 186°
Corr. 0.224 12M/10stn Msd 0.2 14↑8↓

87/1455
MAR 08 1645 38.3s 38.31S 177.69E 65km M=3.7
0.3 0.01 0.02 3
Rsd 0.2s 14ph/11stn Dmin 48km Az.gap 107°
Corr. 0.240 12M/12stn Msd 0.2 3↑7↓

87/1458
MAR 08 1811 11.7s 37.90S 176.88E 5km M=3.6
0.3 0.01 0.02 3
Rsd 0.2s 10ph/10stn Dmin 14km Az.gap 126°
Corr. -0.083 10M/10stn Msd 0.2 1↑3↓
Felt Waihi (21) MM VI, Opotiki and Ruatuna Road (35) MM IV.

87/1459
MAR 08 1917 59.0s 43.22S 173.20E 30km M=5.2
0.1 0.01 0.02 R
Rsd 0.2s 12ph/12stn Dmin 61km Az.gap 180°
Corr. -0.684 15M/15stn Msd 0.3 9↑7↓
Felt in the northern half of the South Island and at Wellington. Max intensity MM VII at Kaiapoi (102) and New Brighton (110).

87/1470
MAR 08 2344 54.3s 38.19S 176.58E 5km M=2.5
0.3 0.02 0.02 R
Rsd 0.3s 5ph/4stn Dmin 8km Az.gap 184°
Corr. 0.441 5M/5stn Msd 0.3
Felt at Fantail seismograph (34) MM IV.

87/1483
MAR 09 0811 16.5s 38.05S 176.91E 5km M=2.7
0.3 0.03 0.03 R
Rsd 0.6s 4ph/4stn Dmin 41km Az.gap 115°
Corr. -0.019 2M/2stn Msd 0.1
Felt Edgecumbe (27) MM V.

87/1485
MAR 09 0830 19.7s 37.94S 177.04E 127km M=3.7
0.3 0.01 0.01 3
Rsd 0.2s 13ph/12stn Dmin 47km Az.gap 106°
Corr. 0.030 12M/12stn Msd 0.2 1↓

87/1496
MAR 09 2114 55.6s 34.53S 177.85W 300km M=4.7
0.6 0.06 0.10 8
Rsd 0.2s 7ph/4stn Dmin 486km Az.gap 342°
Corr. -0.648 3M/3stn Msd 0.3

87/1497
MAR 09 2154 49.3s 45.14S 167.43E 114km M=3.5
0.3 0.01 0.02 2
Rsd 0.2s 9ph/9stn Dmin 65km Az.gap 224°
Corr. -0.471 10M/10stn Msd 0.2 3↑ 1↓

87/1511
MAR 10 1814 57.7s 32.08S 177.71W 329km M=5.0
0.3 0.08 0.15 13
Rsd 0.1s 9ph/7stn Dmin 713km Az.gap 349°
Corr. -0.973 12M/10stn Msd 0.2

87/1517
MAR 11 0250 47.6s 33.44S 179.93W 99km M=5.6
2.7 0.15 0.23 124
Rsd 1.1s 13ph/13stn Dmin 488km Az.gap 325°
Corr. 0.063 11M/11stn Msd 0.2 1↑

87/1523
MAR 11 1115 04.4s 35.50S 178.80E 219km M=4.4
1.6 0.23 0.20 29
Rsd 0.7s 8ph/8stn Dmin 238km Az.gap 325°
Corr. -0.141 12M/12stn Msd 0.2 1↑

87/1524
MAR 11 1431 30.0s 37.84S 176.98E 0km M=4.4
0.6 0.02 0.03 2
Rsd 0.3s 10ph/10stn Dmin 16km Az.gap 123°
Corr. -0.543 25M/23stn Msd 0.2 8↑ 4↓
Felt from Waihi (21) to Opotiki (35). Maximum intensity MM VI at Waihi.

87/1528
MAR 11 1440 11.5s 37.86S 177.01E 5km M=3.4
0.2 0.02 0.03 R
Rsd 0.5s 7ph/6stn Dmin 14km Az.gap 117°
Corr. -0.086 10M/10stn Msd 0.2 1↑ 1↓
Felt Ohope and Ruatuna Road (35) MM III.

87/1532
MAR 11 2056 57.4s 38.08S 176.67E 2km M=3.7
0.3 0.01 0.02 3
Rsd 0.3s 11ph/11stn Dmin 22km Az.gap 148°
Corr. 0.005 12M/12stn Msd 0.2 2↑ 4↓
Felt Waikowhewhe (34) MM V, also felt at Kawerau (34).

87/1533
MAR 11 2253 40.2s 37.94S 176.77E 3km M=3.4
0.3 0.02 0.01 3
Rsd 0.3s 8ph/7stn Dmin 20km Az.gap 195°
Corr. -0.061 8M/8stn Msd 0.2 1↑
Felt Awaiti Road South (27) MM V.

87/1535
MAR 12 0150 42.1s 31.59S 178.12W 443km M=5.2
1.2 0.20 0.25 59
Rsd 0.4s 13ph/12stn Dmin 743km Az.gap 345°
Corr. -0.473 13M/12stn Msd 0.2

87/1547
MAR 12 1619 04.0s 37.91S 176.94E 0km M=3.4
0.6 0.02 0.04 3
Rsd 0.4s 14ph/12stn Dmin 10km Az.gap 119°
Corr. -0.318 8M/8stn Msd 0.2 1↑ 1↓
Felt at Ohope and Ruatuna Road (35) MM IV.

87/1554
MAR 13 0204 44.3s 41.57S 171.97E 5km M=4.7
0.5 0.03 0.05 R
Rsd 0.2s 19ph/15stn Dmin 77km Az.gap 188°
Corr. -0.824 23M/23stn Msd 0.3 4↑ 6↓
Felt in south of North Island (68) and nothern half of South Island. Max intensity MM V at Arapito (74).

87/1562
MAR 13 1205 53.7s 38.15S 176.19E 5km M=1.9
0.3 R R R
Rsd 0.5s 4ph/4stn Dmin 29km Az.gap 328°
Corr. 0.000 1M/1stn Msd N.D.
Felt at Rotorua (33) MM V, Tihiotonga (33) MM IV.

87/1565
MAR 13 1621 39.8s 37.74S 177.08E 12km M=3.7
0.2 0.01 0.02 R
Rsd 0.4s 17ph/16stn Dmin 25km Az.gap 123°
Corr. -0.221 10M/10stn Msd 0.2 1↑ 3↓
Felt at Ohope and Ruatuna Road (35) MM IV.

87/1571
MAR 13 2353 36.3s 34.19S 179.82E 12km M=4.5
0.4 0.02 0.04 R
Rsd 0.1s 14ph/12stn Dmin 402km Az.gap 336°
Corr. -0.348 9M/9stn Msd 0.3 1↓

87/1579
MAR 14 0838 14.1s 37.85S 176.84E 4km M=3.8
0.3 0.01 0.01 3
Rsd 0.2s 14ph/14stn Dmin 20km Az.gap 75°
Corr. -0.414 10M/10stn Msd 0.2 3↑ 2↓
Felt at Whakatane (27) and Ohope (35) MM V. Other locations in (27) and (35) MM IV, Maketu (26) MM III.

87/1585
MAR 14 1227 19.3s 37.92S 176.80E 5km M=3.5
0.2 0.02 0.02 R
Rsd 0.4s 12ph/12stn Dmin 18km Az.gap 129°
Corr. 0.029 9M/9stn Msd 0.2 2↑ 1↓
Felt at Whakatane (27) MM V and at Titoki Road (27) MM IV.

87/1586
MAR 14 1343 29.9s 37.95S 176.92E 5km M=2.6
0.2 0.02 0.01 R
Rsd 0.4s 8ph/7stn Dmin 7km Az.gap 116°
Corr. 0.130 4M/4stn Msd 0.2
Felt at Whakatane (27) MM V.

87/1587
MAR 14 1346 27.2s 37.99S 177.00E 5km M=2.4
0.7 0.06 0.06 R
Rsd 0.9s 7ph/4stn Dmin 1km Az.gap 171°
Corr. -0.179 3M/3stn Msd 0.2
Felt at Whakatane (27) MM V.

87/1588
MAR 14 1358 19.6s 36.63S 177.58E 210km M=3.8
0.7 0.05 0.06 7
Rsd 0.4s 9ph/9stn Dmin 125km Az.gap 278°
Corr. -0.079 3M/3stn Msd 0.2

87/1592
MAR 15 0017 34.9s 41.64S 172.27E 2km M=3.6
0.3 0.02 0.02 R
Rsd 0.3s 20ph/19stn Dmin 51km Az.gap 175°
Corr. -0.563 13M/11stn Msd 0.2

87/1595
MAR 15 0834 09.3s 37.19S 177.42E 171km M=3.8
0.7 0.04 0.03 6
Rsd 0.3s 12ph/11stn Dmin 90km Az.gap 238°
Corr. -0.018 6M/6stn Msd 0.3 1↑

87/1602
MAR 15 2140 31.4s 37.29S 177.61E 278km M=4.0
0.8 0.08 0.12 8
Rsd 0.3s 13ph/12stn Dmin 71km Az.gap 259°
Corr. -0.691 9M/9stn Msd 0.2

87/1603
MAR 15 2144 04.2s 33.17S 179.26W 268km M=5.1
0.6 0.11 0.09 23
Rsd 0.2s 12ph/12stn Dmin 539km Az.gap 341°
Corr. -0.516 14M/13stn Msd 0.2

87/1605
MAR 15 2213 44.9s 37.62S 176.19E 212km M=3.7
0.3 0.03 0.02 2
Rsd 0.1s 15ph/14stn Dmin 67km Az.gap 210°
Corr. 0.237 9M/9stn Msd 0.1

87/1608
MAR 16 0307 39.6s 38.23S 175.94E 169km M=4.5
0.4 0.02 0.03 3
Rsd 0.3s 20ph/16stn Dmin 49km Az.gap 118°
Corr. 0.120 15M/13stn Msd 0.2 9↑ 6↓

87/1610
MAR 16 0447 23.4s 38.17S 175.95E 220km M=4.2
0.9 0.06 0.08 7
Rsd 0.5s 15ph/13stn Dmin 45km Az.gap 127°
Corr. 0.161 14M/14stn Msd 0.2 5↑ 3↓

87/1616
MAR 16 1735 11.6s 39.05S 175.63E 181km M=3.9
0.3 0.06 0.02 12
Rsd 0.1s 16ph/14stn Dmin 211km Az.gap 338°
Corr. 0.332 7M/7stn Msd 0.2 6↑ 2↓

87/1638
MAR 17 1107 41.5s 38.87S 175.86E 5km M=3.9
0.1 0.01 0.01 R
Rsd 0.4s 21ph/20stn Dmin 8km Az.gap 64°
Corr. -0.357 22M/21stn Msd 0.3 1↑
Felt Lake Taupo area (40), (41) MM IV and Taumarunui (39). Preceded by a small event and followed by several small events.

87/1639
MAR 17 1108 59.3s 38.84S 175.88E 5km M=3.4
0.2 0.01 0.02 R
Rsd 0.6s 19ph/17stn Dmin 10km Az.gap 74°
Corr. -0.143 12M/11stn Msd 0.3 4↑ 1↓
Felt Taumarunui (39), Omori (40), Taupo (41) MM IV.

87/1667
MAR 17 1217 55.6s 38.84S 175.85E 2km M=3.5
0.1 0.01 0.01 R
Rsd 0.4s 20ph/16stn Dmin 8km Az.gap 81°
Corr. -0.436 20M/19stn Msd 0.3 2↑ 2↓
Felt at Acacia Bay (41) MM V.

87/1681
MAR 17 1258 33.8s 38.08S 176.67E 33km M=3.9
0.6 0.05 0.05 14
Rsd 1.2s 13ph/11stn Dmin 22km Az.gap 64°
Corr. -0.275 9M/8stn Msd 0.2 2↑ 1↓
Felt at Waihi (21) MM VI.

87/1738
MAR 18 0617 44.8s 44.95S 167.69E 121km M=3.8
0.3 0.02 0.02 2
Rsd 0.1s 19ph/18stn Dmin 36km Az.gap 203°
Corr. 0.527 11M/11stn Msd 0.1 1↑ 6↓

87/1741
MAR 18 1258 37.5s 38.42S 176.54E 39km M=3.7
1.5 0.09 0.09 8
Rsd 0.3s 7ph/7stn Dmin 45km Az.gap 299°
Corr. 0.805 1M/1stn Msd N.D. 1↓

87/1743
MAR 18 1337 36.7s 33.98S 179.97E 356km M=5.1
1.2 0.13 0.12 30
Rsd 0.5s 14ph/12stn Dmin 429km Az.gap 321°
Corr. 0.012 15M/14stn Msd 0.3

87/1753
MAR 18 2002 14.9s 40.50S 173.57E 165km M=4.2
0.3 0.03 0.02 3
Rsd 0.1s 19ph/15stn Dmin 99km Az.gap 245°
Corr. -0.013 8M/8stn Msd 0.1 5↑ 4↓

87/1757
MAR 18 2250 47.7s 37.99S 176.06E 182km M=4.3
0.5 0.03 0.03 4
Rsd 0.3s 19ph/15stn Dmin 47km Az.gap 160°
Corr. 0.002 13M/13stn Msd 0.2 1↑

87/1778
MAR 20 0250 37.5s 39.69S 174.33E 194km M=3.8
0.4 0.01 0.03 4
Rsd 0.2s 30ph/24stn Dmin 50km Az.gap 115°
Corr. -0.410 14M/12stn Msd 0.3 3↑ 6↓

87/1787
MAR 20 1812 50.5s 37.74S 176.33E 285km M=3.9
0.8 0.08 0.12 7
Rsd 0.1s 15ph/13stn Dmin 204km Az.gap 324°
Corr. -0.879 8M/8stn Msd 0.2

87/1789
MAR 20 2312 07.4s 37.32S 176.78E 187km M=5.1
0.4 0.02 0.02 4
Rsd 0.2s 25ph/23stn Dmin 76km Az.gap 147°
Corr. 0.208 15M/13stn Msd 0.2 1↑

87/1796
MAR 21 0720 22.1s 45.04S 167.43E 87km M=3.8
0.1 0.01 0.01 1
Rsd 0.1s 24ph/23stn Dmin 56km Az.gap 229°
Corr. -0.352 12M/11stn Msd 0.1 1↓

87/1807
MAR 22 1212 35.8s 37.17S 176.75E 359km M=6.1
0.5 0.04 0.05 4
Rsd 0.2s 24ph/23stn Dmin 55km Az.gap 157°
Corr. -0.088 6M/5stn Msd 0.1 23↑ 15↓
Felt widely in the North Island and north of the South Island from Waihi (21) to Greymouth (92). Max MM VI at Waihi.

87/1813
MAR 22 2255 29.7s 33.81S 179.85E 33km M=4.7
1.4 0.10 0.14 R
Rsd 0.5s 18ph/18stn Dmin 444km Az.gap 323°
Corr. -0.361 22M/19stn Msd 0.3
T phases on HBZ at 22 59 50 and WIZ at 23 00 20.

87/1814
MAR 23 0003 58.6s 33.71S 179.68E 33km M=4.2
2.0 0.09 0.25 R
Rsd 0.5s 8ph/8stn Dmin 449km Az.gap 337°
Corr. 0.081 4M/4stn Msd 0.5

87/1823
MAR 23 1733 36.0s 36.80S 177.15E 277km M=4.2
0.7 0.07 0.06 6
Rsd 0.5s 18ph/17stn Dmin 132km Az.gap 263°
Corr. -0.125 14M/13stn Msd 0.2

87/1824
MAR 23 2255 52.4s 39.02S 179.12E 24km M=3.6
0.6 0.02 0.06 7
Rsd 0.3s 12ph/11stn Dmin 104km Az.gap 255°
Corr. -0.625 14M/14stn Msd 0.2

87/1825
MAR 23 2338 46.4s 37.97S 176.93E 3km M=3.0
0.7 0.03 0.05 11
Rsd 0.5s 7ph/7stn Dmin 6km Az.gap 160°
Corr. 0.022 3M/3stn Msd 0.1
Felt at Ohope (35).

87/1827
MAR 24 0116 27.6s 40.54S 173.94E 110km M=3.7
0.2 0.02 0.02 2
Rsd 0.1s 12ph/10stn Dmin 80km Az.gap 315°
Corr. -0.106 7M/7stn Msd 0.2 6↑ 3↓

87/1832
MAR 24 0946 33.1s 36.06S 178.23E 203km M=4.0
0.4 0.03 0.05 4
Rsd 0.2s 8ph/7stn Dmin 171km Az.gap 331°
Corr. -0.297 4M/4stn Msd 0.1

87/1835
MAR 24 1201 30.9s 38.50S 175.87E 153km M=4.2
0.4 0.02 0.02 3
Rsd 0.3s 33ph/23stn Dmin 25km Az.gap 95°
Corr. 0.114 18M/17stn Msd 0.3 7↑ 4↓

87/1838
MAR 24 1346 14.8s 33.51S 178.32W 33km M=4.6
0.6 0.04 0.05 R
Rsd 0.2s 14ph/14stn Dmin 547km Az.gap 329°
Corr. -0.102 18M/18stn Msd 0.4
T phases on HBZ.

87/1845
MAR 24 1911 30.4s 33.13S 177.26W 33km M=4.6
0.7 0.06 0.10 R
Rsd 0.3s 9ph/9stn Dmin 639km Az.gap 344°
Corr. -0.707 7M/7stn Msd 0.3

87/1846
MAR 24 2231 57.1s 43.84S 169.23E 33km M=3.7
0.3 0.02 0.11 R
Rsd 0.1s 12ph/11stn Dmin 136km Az.gap 355°
Corr. 0.026 8M/8stn Msd 0.2 1↑

87/1849
MAR 25 1136 43.6s 36.68S 179.09W 33km M=4.0
0.9 0.08 0.06 R
Rsd 0.3s 8ph/8stn Dmin 253km Az.gap 334°
Corr. -0.218 5M/5stn Msd 0.2

87/1861
MAR 26 1035 43.7s 37.76S 176.85E 0km M=3.8
0.4 0.01 0.02 1
Rsd 0.3s 25ph/22stn Dmin 28km Az.gap 86°
Corr. -0.357 16M/15stn Msd 0.2 1↑

87/1865
MAR 26 1910 49.9s 41.24S 174.46E 16km M=2.6
0.1 0.01 0.01 2
Rsd 0.3s 21ph/14stn Dmin 16km Az.gap 158°
Corr. 0.289 7M/7stn Msd 0.2 4↑ 1↓
Felt Fighting Bay (78) MM III.

87/1867
MAR 26 2052 07.1s 34.30S 179.66E 237km M=5.0
0.3 0.03 0.04 9
Rsd 0.1s 20ph/16stn Dmin 386km Az.gap 316°
Corr. 0.664 20M/19stn Msd 0.2

87/1883
MAR 27 1143 05.0s 37.69S 176.55E 145km M=3.8
0.6 0.03 0.02 6
Rsd 0.2s 17ph/15stn Dmin 93km Az.gap 193°
Corr. -0.040 15M/15stn Msd 0.2

87/1890
MAR 27 1907 20.3s 38.19S 176.03E 173km M=4.6
0.4 0.02 0.03 3
Rsd 0.3s 35ph/27stn Dmin 53km Az.gap 128°
Corr. 0.271 16M/16stn Msd 0.3 12↑ 2↓

87/1894
MAR 27 2342 49.2s 40.91S 173.79E 81km M=3.9
0.3 0.02 0.01 4
Rsd 0.2s 22ph/18stn Dmin 53km Az.gap 111°
Corr. -0.287 14M/11stn Msd 0.2 6↑ 4↓

87/1916
MAR 28 2210 46.8s 38.02S 175.94E 180km M=4.0
1.5 0.09 0.09 12
Rsd 0.3s 12ph/11stn Dmin 77km Az.gap 293°
Corr. 0.355 11M/11stn Msd 0.2 1↑ 1↓

87/1918
MAR 29 0543 25.4s 37.86S 176.85E 23km M=3.5
0.4 0.03 0.03 17
Rsd 0.6s 14ph/12stn Dmin 18km Az.gap 133°
Corr. 0.130 8M/8stn Msd 0.2 1↓
Felt at Ohope (35) MM IV.

87/1919
MAR 29 0841 30.7s 37.95S 176.89E 7km M=3.5
0.5 0.02 0.03 6
Rsd 0.6s 14ph/13stn Dmin 9km Az.gap 118°
Corr. -0.291 9M/9stn Msd 0.3 1↑
Felt at Ohope (35) MM IV.

87/1921
MAR 29 1432 15.5s 40.45S 173.41E 161km M=3.9
0.4 0.01 0.02 4
Rsd 0.1s 22ph/19stn Dmin 91km Az.gap 165°
Corr. 0.271 14M/13stn Msd 0.3 5↑ 3↓

87/1925
MAR 29 2054 00.4s 37.40S 176.48E 233km M=4.5
0.5 0.04 0.04 4
Rsd 0.2s 23ph/22stn Dmin 79km Az.gap 223°
Corr. 0.040 15M/15stn Msd 0.2 1↑

87/1936
MAR 31 0043 14.6s 37.80S 176.89E 5km M=3.4
0.2 0.02 0.02 R
Rsd 0.4s 8ph/7stn Dmin 22km Az.gap 138°
Corr. -0.206 4M/4stn Msd 0.2 1↑
Felt Ruatuna Road (35).

87/1941
MAR 31 2010 24.5s 40.49S 174.62E 88km M=3.9
0.3 0.01 0.02 5
Rsd 0.3s 27ph/25stn Dmin 48km Az.gap 94°
Corr. -0.175 13M/12stn Msd 0.2 7↑ 2↓

87/1942
MAR 31 2020 11.8s 34.12S 179.97W 5km M=4.7
0.5 0.04 0.05 R
Rsd 0.2s 10ph/10stn Dmin 416km Az.gap 336°
Corr. -0.428 5M/5stn Msd 0.4

87/1947
APR 01 1119 32.4s 38.30S 177.15E 48km M=3.6
0.2 0.01 0.01 3
Rsd 0.3s 23ph/19stn Dmin 38km Az.gap 64°
Corr. -0.080 9M/9stn Msd 0.3 1↑

87/1954
APR 02 0323 59.8s 38.37S 175.59E 165km M=3.8
0.5 0.04 0.09 7
Rsd 0.3s 16ph/15stn Dmin 97km Az.gap 274°
Corr. -0.311 10M/10stn Msd 0.3 1↑ 1↓

87/1956
APR 02 0806 12.2s 38.35S 175.87E 182km M=4.5
0.5 0.03 0.04 4
Rsd 0.3s 26ph/19stn Dmin 41km Az.gap 114°
Corr. 0.359 19M/18stn Msd 0.3 10↑ 7↓

87/1960
APR 02 1957 08.3s 37.94S 176.07E 184km M=4.3
1.3 0.06 0.09 10
Rsd 0.5s 18ph/17stn Dmin 47km Az.gap 168°
Corr. -0.101 16M/15stn Msd 0.2 2↑ 3↓

87/1968
APR 03 0607 03.9s 38.93S 174.97E 212km M=4.4
0.4 0.03 0.03 3
Rsd 0.3s 33ph/27stn Dmin 58km Az.gap 141°
Corr. 0.000 18M/18stn Msd 0.3 1↑ 5↓

87/1976
APR 04 0457 36.2s 37.08S 177.34E 5km M=3.6
0.5 0.03 0.02 R
Rsd 0.3s 10ph/10stn Dmin 103km Az.gap 245°
Corr. 0.043 7M/7stn Msd 0.3

87/1978
APR 04 1247 42.2s 45.27S 167.03E 33km M=3.7
0.1 0.05 0.02 R
Rsd 0.0s 11ph/11stn Dmin 177km Az.gap 355°
Corr. -0.582 8M/8stn Msd 0.2 1↓

87/1983
APR 04 2151 12.3s 40.05S 176.58E 45km M=3.6
0.6 0.04 0.03 5
Rsd 0.3s 12ph/11stn Dmin 21km Az.gap 252°
Corr. -0.239 4M/4stn Msd 0.1 2↑ 1↓

87/1986
APR 04 2344 19.9s 40.09S 176.67E 53km M=3.9
0.1 0.01 0.02 3
Rsd 0.2s 40ph/34stn Dmin 16km Az.gap 168°
Corr. -0.586 19M/18stn Msd 0.2 10↑ 8↓

87/1991
APR 05 1745 00.2s 37.10S 177.26E 200km M=4.2
0.5 0.02 0.02 5
Rsd 0.2s 14ph/14stn Dmin 101km Az.gap 180°
Corr. 0.277 14M/14stn Msd 0.2 1↑ 2↓

87/1992
APR 05 1853 18.0s 37.90S 177.50E 118km M=3.7
1.9 0.07 0.16 16
Rsd 0.2s 8ph/8stn Dmin 140km Az.gap 318°
Corr. 0.463 9M/9stn Msd 0.3

87/1996
APR 05 2326 47.3s 39.34S 174.72E 17km M=3.8
0.1 0.01 0.01 1
Rsd 0.2s 22ph/21stn Dmin 54km Az.gap 107°
Corr. -0.316 15M/13stn Msd 0.3 1↑

87/2010
APR 06 1735 33.0s 33.89S 177.39E 619km M=5.3
1.4 0.27 0.62 40
Rsd 0.3s 11ph/10stn Dmin 550km Az.gap 337°
Corr. 0.477 13M/13stn Msd 0.2 1↑

87/2012
APR 06 2310 24.8s 38.10S 176.27E 168km M=4.3
0.4 0.02 0.02 3
Rsd 0.3s 28ph/22stn Dmin 26km Az.gap 147°
Corr. 0.059 21M/19stn Msd 0.3

87/2019
APR 07 1407 00.0s 38.34S 175.87E 170km M=4.2
0.4 0.02 0.03 3
Rsd 0.3s 29ph/23stn Dmin 42km Az.gap 101°
Corr. 0.178 18M/18stn Msd 0.3 4↑ 6↓

87/2026
APR 08 0311 20.0s 37.94S 176.98E 5km M=3.3
0.2 0.01 0.02 R
Rsd 0.4s 15ph/15stn Dmin 5km Az.gap 112°
Corr. -0.127 9M/9stn Msd 0.2
Felt Waihi (21) and Ohope (35) MM V, Ruatuna Road (35) MM IV.

87/2027
APR 08 0315 31.9s 37.76S 177.00E 12km M=2.8
1.0 0.07 0.04 R
Rsd 0.9s 8ph/7stn Dmin 24km Az.gap 179°
Corr. 0.196 4M/4stn Msd 0.2
Felt Ohope (35) MM IV.

87/2028
APR 08 0321 34.9s 37.75S 177.00E 5km M=2.6
1.4 0.09 0.10 R
Rsd 0.9s 5ph/5stn Dmin 26km Az.gap 224°
Corr. -0.824 2M/2stn Msd 0.1
Felt Ohope (35) MM IV.

87/2029
APR 08 0325 12.8s 37.88S 176.91E 0km M=3.9
0.4 0.01 0.03 2
Rsd 0.4s 27ph/22stn Dmin 14km Az.gap 68°
Corr. -0.320 16M/16stn Msd 0.2 1↓
Felt Waihi (21) and Ohope (35) MM V, Ruatuna Road (35) MM IV.

87/2030
APR 08 0327 28.9s 37.93S 176.96E 5km M=2.9
1.3 0.08 0.10 22
Rsd 0.8s 6ph/6stn Dmin 6km Az.gap 163°
Corr. 0.036 4M/4stn Msd 0.2
Felt Ohope (35) MM IV.

87/2038
APR 08 1703 30.9s 34.84S 178.00W 33km M=4.7
0.4 0.04 0.05 R
Rsd 0.1s 11ph/10stn Dmin 452km Az.gap 339°
Corr. -0.727 14M/14stn Msd 0.2

87/2039
APR 08 1922 25.3s 41.54S 172.97E 96km M=4.1
0.3 0.03 0.02 3
Rsd 0.2s 20ph/18stn Dmin 31km Az.gap 109°
Corr. -0.719 12M/10stn Msd 0.3 2↑ 6↓

87/2040
APR 08 1924 58.6s 36.61S 175.35E 129km M=4.8
1.9 0.29 0.14 83
Rsd 0.9s 19ph/19stn Dmin 207km Az.gap 266°
Corr. -0.363 19M/17stn Msd 0.4 1↑

87/2047
APR 09 0508 42.0s 33.27S 177.50W 33km M=4.7
0.9 0.10 0.16 R
Rsd 0.2s 10ph/9stn Dmin 613km Az.gap 344°
Corr. -0.766 4M/4stn Msd 0.2

87/2054
APR 10 0035 08.5s 39.51S 177.86E 26km M=3.5
0.4 0.02 0.02 3
Rsd 0.2s 15ph/12stn Dmin 74km Az.gap 252°
Corr. -0.543 9M/9stn Msd 0.3 1↑

87/2056
APR 10 0340 54.6s 38.99S 173.95E 12km M=3.7
0.3 0.02 0.03 R
Rsd 0.2s 16ph/14stn Dmin 34km Az.gap 206°
Corr. 0.072 12M/12stn Msd 0.2
Felt New Plymouth (47) MM V and Pukeiti (46) MM IV.

87/2074
APR 10 1834 20.5s 45.04S 167.52E 123km M=3.7
0.2 0.01 0.02 2
Rsd 0.1s 20ph/20stn Dmin 52km Az.gap 219°
Corr. -0.357 12M/11stn Msd 0.2 7↑ 1↓

87/2080
APR 11 1434 27.6s 37.23S 179.84W 12km M=3.5
0.8 0.05 0.05 R
Rsd 0.2s 5ph/5stn Dmin 169km Az.gap 327°
Corr. 0.266 2M/2stn Msd 0.1

87/2081
APR 11 1646 37.4s 37.26S 176.80E 207km M=4.3
1.3 0.08 0.07 10
Rsd 0.4s 14ph/13stn Dmin 83km Az.gap 230°
Corr. 0.028 12M/12stn Msd 0.2

87/2083
APR 11 2340 06.6s 34.99S 179.91W 12km M=4.2
1.1 0.07 0.11 R
Rsd 0.3s 7ph/7stn Dmin 331km Az.gap 334°
Corr. -0.096 6M/6stn Msd 0.4

87/2095
APR 12 2356 55.0s 45.42S 167.19E 59km M=3.8
0.1 0.08 0.04 24
Rsd 0.0s 15ph/14stn Dmin 101km Az.gap 293°
Corr. 0.973 7M/7stn Msd 0.2 1↓

87/2098
APR 13 0329 49.0s 33.27S 178.44W 164km M=4.8
1.7 0.10 0.18 48
Rsd 0.5s 11ph/11stn Dmin 564km Az.gap 329°
Corr. 0.002 10M/10stn Msd 0.2

87/2099
APR 13 0355 40.4s 38.11S 176.76E 12km M=2.4
0.0 0.00 0.00 R
Rsd 0.0s 4ph/4stn Dmin 25km Az.gap 184°
Corr. -0.754 2M/2stn Msd 0.0
Felt Kawerau Tasman Mill (34) MM V.

87/2110
APR 14 0012 12.3s 35.12S 178.73W 12km M=4.4
0.3 0.03 0.04 R
Rsd 0.1s 12ph/12stn Dmin 383km Az.gap 338°
Corr. -0.773 15M/15stn Msd 0.2

87/2116
APR 15 0018 56.5s 38.72S 175.61E 193km M=4.0
1.3 0.04 0.07 10
Rsd 0.1s 20ph/18stn Dmin 13km Az.gap 213°
Corr. -0.770 10M/10stn Msd 0.2 2↑ 3↓

87/2120
APR 15 0557 00.3s 37.67S 177.70E 81km M=4.2
0.3 0.01 0.01 3
Rsd 0.1s 18ph/16stn Dmin 48km Az.gap 153°
Corr. 0.273 11M/11stn Msd 0.2 3↑ 4↓

87/2130
APR 17 0016 56.7s 32.50S 179.11E 457km M=4.7
0.5 0.11 0.46 15
Rsd 0.1s 11ph/11stn Dmin 570km Az.gap 344°
Corr. -0.684 15M/15stn Msd 0.3

87/2136
APR 17 1320 27.2s 44.91S 167.57E 99km M=3.9
0.2 0.02 0.02 2
Rsd 0.1s 16ph/16stn Dmin 38km Az.gap 238°
Corr. 0.391 6M/6stn Msd 0.3 1↑ 8↓

87/2139
APR 17 1456 47.5s 37.69S 174.68W 12km M=4.6
2.0 0.42 0.12 R
Rsd 0.5s 5ph/5stn Dmin 620km Az.gap 347°
Corr. 0.050 4M/4stn Msd 0.3

87/2147
APR 18 0436 58.4s 37.51S 179.01E 28km M=3.7
0.8 0.05 0.04 3
Rsd 0.2s 7ph/7stn Dmin 64km Az.gap 314°
Corr. 0.672 3M/3stn Msd 0.1 1↑

87/2154
APR 19 0352 42.5s 37.45S 176.82E 282km M=4.0
1.1 0.15 0.27 15
Rsd 0.3s 6ph/6stn Dmin 132km Az.gap 289°
Corr. -0.824 3M/3stn Msd 0.1

87/2155
APR 19 0416 27.2s 39.06S 177.55E 108km M=3.9
0.9 0.05 0.08 8
Rsd 0.5s 8ph/8stn Dmin 45km Az.gap 188°
Corr. -0.247 2M/2stn Msd 0.1 1↑

87/2173
APR 20 1311 50.6s 38.06S 177.73E 102km M=3.7
0.6 0.02 0.03 6
Rsd 0.2s 12ph/11stn Dmin 70km Az.gap 131°
Corr. -0.225 2M/2stn Msd 0.0

87/2181
APR 21 1019 29.3s 36.29S 179.79E 33km M=4.2
3.6 0.24 0.21 R
Rsd 0.7s 8ph/8stn Dmin 197km Az.gap 327°
Corr. 0.566 4M/4stn Msd 0.4

87/2188
APR 21 2359 12.0s 37.53S 176.61E 186km M=4.1
0.7 0.04 0.03 6
Rsd 0.2s 13ph/12stn Dmin 105km Az.gap 209°
Corr. 0.093 17M/17stn Msd 0.2 1↑

87/2192
APR 22 0400 36.4s 37.50S 177.02E 5km M=3.5
0.7 0.06 0.03 R
Rsd 0.5s 10ph/10stn Dmin 16km Az.gap 206°
Corr. -0.373 5M/5stn Msd 0.2

87/2195
APR 22 0623 19.1s 38.40S 176.02E 150km M=3.5
1.8 0.07 0.11 14
Rsd 0.4s 11ph/11stn Dmin 35km Az.gap 275°
Corr. -0.254 12M/12stn Msd 0.2 2↑ 1↓

87/2201
APR 23 0722 53.1s 38.26S 176.09E 151km M=4.2
0.4 0.02 0.03 3
Rsd 0.3s 22ph/17stn Dmin 36km Az.gap 121°
Corr. 0.001 11M/10stn Msd 0.2 3↑ 3↓

87/2202
APR 23 0825 31.5s 40.45S 175.51E 56km M=3.6
0.3 0.01 0.03 10
Rsd 0.3s 20ph/15stn Dmin 68km Az.gap 165°
Corr. -0.656 10M/7stn Msd 0.1 1↑ 2↓

87/2203
APR 23 2136 21.3s 37.40S 178.56E 75km M=3.9
0.6 0.05 0.04 3
Rsd 0.3s 9ph/9stn Dmin 32km Az.gap 321°
Corr. -0.014 2M/2stn Msd 0.2

87/2206
APR 24 0647 38.8s 37.74S 176.97E 144km M=4.5
0.4 0.02 0.02 3
Rsd 0.2s 30ph/23stn Dmin 27km Az.gap 183°
Corr. 0.279 18M/17stn Msd 0.3 5↑ 8↓

87/2213
APR 25 1408 12.7s 47.85S 165.04E 12km M=4.0
1.2 0.07 0.13 R
Rsd 0.5s 12ph/11stn Dmin 255km Az.gap 326°
Corr. -0.027 11M/11stn Msd 0.2 1↓

87/2219
APR 26 1836 58.5s 41.56S 172.89E 115km M=4.1
0.5 0.03 0.03 4
Rsd 0.3s 20ph/14stn Dmin 27km Az.gap 118°
Corr. -0.406 8M/6stn Msd 0.3 2↑ 3↓

87/2222
APR 27 0422 43.6s 41.39S 172.52E 12km M=3.6
0.5 0.02 0.04 R
Rsd 0.3s 15ph/15stn Dmin 38km Az.gap 172°
Corr. -0.578 13M/11stn Msd 0.2 1↑ 2↓

87/2224
APR 27 0820 03.4s 41.35S 172.51E 5km M=3.2
0.9 0.03 0.10 R
Rsd 0.6s 11ph/10stn Dmin 34km Az.gap 180°
Corr. -0.451 7M/7stn Msd 0.3 1↓
Felt Arapito (74) MM III.

87/2231
APR 27 2219 38.2s 39.48S 175.76E 61km M=3.5
0.4 0.04 0.03 5
Rsd 0.1s 6ph/6stn Dmin 43km Az.gap 304°
Corr. -0.445 1M/1stn Msd N.D. 1↓

87/2232
APR 27 2303 59.5s 37.97S 177.00E 2km M=3.0
0.4 0.01 0.01 3
Rsd 0.3s 12ph/10stn Dmin 2km Az.gap 158°
Corr. -0.106 8M/8stn Msd 0.1 1↑ 1↓
Felt Ohope (35) MM IV.

87/2233
APR 28 0108 32.1s 36.10S 178.06E 195km M=4.8
0.7 0.05 0.05 7
Rsd 0.4s 19ph/17stn Dmin 167km Az.gap 267°
Corr. 0.338 15M/15stn Msd 0.2 1↑

87/2234
APR 28 0947 03.8s 39.46S 175.74E 3km M=3.2
0.3 0.01 0.02 3
Rsd 0.3s 22ph/20stn Dmin 26km Az.gap 74°
Corr. 0.578 10M/10stn Msd 0.3 3↑ 4↓
Felt Moawhango (58) MM IV.

87/2237
APR 29 0453 14.3s 38.68S 175.81E 180km M=3.7
1.0 0.04 0.03 7
Rsd 0.1s 17ph/16stn Dmin 5km Az.gap 225°
Corr. -0.359 10M/10stn Msd 0.1 1↓

87/2245
APR 30 0008 49.7s 40.95S 174.90E 57km M=3.5
0.1 0.01 0.01 1
Rsd 0.1s 13ph/10stn Dmin 10km Az.gap 161°
Corr. -0.418 7M/7stn Msd 0.2 4↑3↓

87/2251
APR 30 1159 09.5s 39.67S 174.21E 232km M=4.4
0.5 0.02 0.04 4
Rsd 0.2s 31ph/30stn Dmin 45km Az.gap 130°
Corr. -0.500 14M/12stn Msd 0.2 8↑8↓

87/2255
APR 30 1631 24.3s 38.70S 176.13E 5km M=2.1
0.2 0.01 0.01 R
Rsd 0.2s 5ph/5stn Dmin 8km Az.gap 143°
Corr. 0.355 4M/4stn Msd 0.3 1↓
Felt Taupo (41) MM IV.

87/2256
MAY 01 0027 49.9s 40.45S 176.70E 18km M=4.2
0.2 0.01 0.03 2
Rsd 0.3s 32ph/29stn Dmin 52km Az.gap 182°
Corr. -0.785 11M/9stn Msd 0.4 9↑4↓
Felt Waipukurau (60) MM IV, Palmerston North (62), Pukewhinau (67).

87/2260
MAY 01 0629 53.1s 38.28S 176.41E 3km M=3.0
0.4 0.01 0.01 5
Rsd 0.3s 7ph/7stn Dmin 10km Az.gap 80°
Corr. 0.313 4M/4stn Msd 0.1 2↑1↓
Felt Waimangu Valley (33) MM V.

87/2264
MAY 01 0636 24.0s 38.28S 176.42E 5km M=2.6
0.3 0.03 0.02 R
Rsd 0.3s 6ph/5stn Dmin 10km Az.gap 123°
Corr. 0.162 3M/3stn Msd 0.0
Felt Ngapouri Road (33) MM V, Waimangu Valley (33) MM IV.

87/2266
MAY 01 0651 06.1s 38.27S 176.41E 5km M=3.0
0.1 0.01 0.01 R
Rsd 0.2s 8ph/7stn Dmin 10km Az.gap 85°
Corr. 0.038 7M/7stn Msd 0.4 1↑
Felt Waimangu Valley (33) MM IV.

87/2269
MAY 01 1302 54.1s 36.16S 177.76E 256km M=4.8
0.5 0.02 0.03 4
Rsd 0.2s 15ph/15stn Dmin 167km Az.gap 256°
Corr. 0.508 11M/11stn Msd 0.2 6↑1↓

87/2280
MAY 02 2015 04.7s 41.49S 172.98E 101km M=4.0
0.3 0.02 0.02 3
Rsd 0.2s 19ph/14stn Dmin 38km Az.gap 106°
Corr. -0.328 12M/10stn Msd 0.2 3↑6↓
Another event on KIW?

87/2281
MAY 02 2102 33.9s 40.16S 173.62E 190km M=4.2
0.3 0.01 0.02 3
Rsd 0.2s 30ph/23stn Dmin 106km Az.gap 167°
Corr. -0.199 17M/16stn Msd 0.3 10↑6↓

87/2286
MAY 03 0158 45.2s 42.28S 172.25E 12km M=3.5
0.2 0.02 0.02 R
Rsd 0.3s 18ph/18stn Dmin 72km Az.gap 129°
Corr. -0.527 22M/22stn Msd 0.2 1↑2↓
Felt Maruia (87) MM IV.

87/2298
MAY 03 1947 49.0s 38.69S 175.91E 178km M=3.8
0.8 0.04 0.04 7
Rsd 0.1s 18ph/15stn Dmin 8km Az.gap 213°
Corr. -0.025 9M/9stn Msd 0.1 2↑2↓

87/2300
MAY 04 0515 40.3s 36.75S 177.14E 246km M=4.4
0.8 0.03 0.05 7
Rsd 0.3s 27ph/20stn Dmin 138km Az.gap 202°
Corr. 0.359 19M/18stn Msd 0.2 1↑2↓

87/2305
MAY 04 0937 39.7s 38.69S 177.42E 32km M=3.5
0.2 0.01 0.01 2
Rsd 0.3s 26ph/23stn Dmin 27km Az.gap 116°
Corr. -0.128 20M/19stn Msd 0.3 7↑5↓

87/2306
MAY 04 0944 18.1s 39.06S 174.92E 227km M=4.9
0.4 0.02 0.02 3
Rsd 0.2s 43ph/30stn Dmin 56km Az.gap 117°
Corr. 0.065 13M/10stn Msd 0.3 26↑10↓
Felt Eastbourne (68).

87/2312
MAY 05 0039 56.3s 39.15S 177.42E 27km M=3.7
0.2 0.01 0.02 2
Rsd 0.3s 22ph/17stn Dmin 24km Az.gap 166°
Corr. -0.375 21M/18stn Msd 0.3 6↑5↓
Felt Wairoa (53) MM IV.

87/2318
MAY 05 1014 41.5s 38.57S 176.86E 52km M=4.4
0.2 0.01 0.01 4
Rsd 0.3s 26ph/22stn Dmin 37km Az.gap 45°
Corr. -0.162 11M/11stn Msd 0.1 8↑9↓
Felt Opotiki (35) MM V, Waimana (35) MM III.

87/2331
MAY 06 1036 51.2s 38.92S 175.61E 86km M=3.6
0.5 0.02 0.03 4
Rsd 0.4s 20ph/15stn Dmin 15km Az.gap 104°
Corr. 0.037 15M/14stn Msd 0.2 8↑7↓

87/2333
MAY 06 1457 54.3s 44.05S 168.94E 5km M=3.7
0.3 0.02 0.01 R
Rsd 0.2s 15ph/15stn Dmin 107km Az.gap 182°
Corr. 0.412 19M/18stn Msd 0.1 9↑2↓

87/2343
MAY 07 1751 32.0s 38.26S 176.94E 5km M=2.4
1.8 0.08 0.11 R
Rsd 1.0s 5ph/4stn Dmin 31km Az.gap 201°
Corr. -0.789 3M/3stn Msd 0.3
Felt Kawerau (33) MM IV. Magnitude about 2.0.

87/2346
MAY 07 2004 21.7s 37.19S 177.01E 185km M=4.0
1.1 0.05 0.05 11
Rsd 0.4s 12ph/12stn Dmin 124km Az.gap 235°
Corr. 0.046 7M/7stn Msd 0.1 1↑2↓

87/2353
MAY 08 1013 22.4s 37.26S 176.67E 266km M=4.6
0.3 0.04 0.02 2
Rsd 0.1s 19ph/16stn Dmin 109km Az.gap 232°
Corr. -0.330 20M/19stn Msd 0.3 6↑6↓

87/2355
MAY 08 1544 30.4s 38.12S 176.73E 1km M=3.3
0.8 0.03 0.05 4
Rsd 0.6s 17ph/13stn Dmin 23km Az.gap 147°
Corr. -0.281 14M/13stn Msd 0.3 1↑3↓
Felt Kawerau (34).

87/2356
MAY 08 1656 13.1s 38.00S 176.72E 5km M=2.0
0.8 0.07 0.06 R
Rsd 0.2s 4ph/4stn Dmin 23km Az.gap 230°
Corr. -0.980 4M/4stn Msd 0.2
Felt Awakeri (27) MM IV. Magnitude about 2.5.

87/2359
MAY 08 2204 00.3s 37.73S 176.55E 139km M=3.6
1.0 0.09 0.06 12
Rsd 0.2s 14ph/11stn Dmin 56km Az.gap 309°
Corr. 0.438 13M/12stn Msd 0.2 1↓

87/2363
MAY 09 0221 10.3s 41.53S 172.91E 121km M=3.9
0.4 0.05 0.04 3
Rsd 0.2s 23ph/20stn Dmin 31km Az.gap 154°
Corr. -0.824 8M/8stn Msd 0.2 3↑4↓

87/2370
MAY 09 1927 46.4s 44.66S 167.71E 5km M=4.1
0.2 0.01 0.02 R
Rsd 0.1s 21ph/21stn Dmin 17km Az.gap 227°
Corr. -0.836 5M/5stn Msd 0.5 1↓
Felt Mahitahi (104) MM IV.

87/2378
MAY 10 0522 14.3s 37.96S 176.27E 201km M=4.5
0.5 0.03 0.03 3
Rsd 0.2s 23ph/18stn Dmin 25km Az.gap 180°
Corr. 0.287 15M/14stn Msd 0.2 9↑7↓

87/2384
MAY 10 1711 42.6s 37.95S 176.98E 5km M=4.1
0.3 0.02 0.03 4
Rsd 0.3s 18ph/11stn Dmin 4km Az.gap 107°
Corr. 0.181 11M/11stn Msd 0.2 1↑3↓
Felt from Waihi (21) to Opotiki (35). Maximum intensity MM V at Awakeri (27).

87/2388
MAY 11 0144 41.2s 39.25S 174.73E 218km M=4.2
0.5 0.02 0.03 4
Rsd 0.2s 33ph/28stn Dmin 55km Az.gap 147°
Corr. -0.424 19M/16stn Msd 0.2 12↑10↓

87/2392
MAY 11 1118 13.5s 45.02S 167.47E 120km M=3.5
0.2 0.01 0.01 1
Rsd 0.1s 19ph/19stn Dmin 53km Az.gap 227°
Corr. -0.434 10M/9stn Msd 0.1 1↑

87/2396
MAY 11 1843 02.0s 39.74S 174.57E 108km M=4.3
0.3 0.01 0.03 4
Rsd 0.2s 35ph/27stn Dmin 66km Az.gap 96°
Corr. -0.660 10M/9stn Msd 0.1 10↑5↓
Felt New Plymouth (47).

87/2397
MAY 11 1923 14.4s 36.68S 179.29W 33km M=4.0
0.5 0.04 0.05 R
Rsd 0.2s 7ph/7stn Dmin 237km Az.gap 342°
Corr. -0.373 5M/5stn Msd 0.2

87/2401
MAY 12 0258 09.0s 38.10S 177.72E 20km M=3.5
0.3 0.04 0.03 9
Rsd 0.3s 15ph/12stn Dmin 65km Az.gap 160°
Corr. -0.605 10M/9stn Msd 0.2 1↑4↓

87/2409
MAY 12 2053 56.4s 42.24S 172.35E 0km M=4.3
0.5 0.01 0.03 4
Rsd 0.2s 20ph/18stn Dmin 64km Az.gap 174°
Corr. 0.037 19M/17stn Msd 0.2 1↑
Felt inland from Christchurch.

87/2422
MAY 13 1437 21.8s 38.66S 175.98E 113km M=3.9
1.2 0.03 0.04 10
Rsd 0.4s 13ph/13stn Dmin 5km Az.gap 124°
Corr. 0.071 10M/9stn Msd 0.2 9↑7↓

87/2426
MAY 13 1825 44.8s 38.63S 177.95E 38km M=3.7
0.4 0.02 0.03 26
Rsd 0.3s 13ph/11stn Dmin 73km Az.gap 216°
Corr. -0.355 7M/6stn Msd 0.2

87/2431
MAY 13 2020 22.8s 38.62S 176.10E 5km M=2.6
1.0 0.05 0.07 6
Rsd 0.8s 7ph/7stn Dmin 1km Az.gap 162°
Corr. 0.254 7M/7stn Msd 0.4 1↓
Felt Wairakei (41) MM IV. Poor solution.

87/2434
MAY 14 0108 01.2s 38.20S 176.25E 5km M=2.1
0.4 0.07 0.04 R
Rsd 0.5s 6ph/5stn Dmin 6km Az.gap 157°
Corr. 0.719 5M/5stn Msd 0.2 1↑
Felt Rotorua (33) MM V.

87/2438
MAY 14 0809 00.2s 38.07S 176.53E 192km M=4.2
0.9 0.05 0.05 6
Rsd 0.1s 16ph/13stn Dmin 19km Az.gap 295°
Corr. 0.005 8M/8stn Msd 0.4 2↑ 1↓

87/2455
MAY 16 0814 32.5s 38.44S 176.38E 1km M=3.6
0.4 0.01 0.02 1
Rsd 0.5s 28ph/24stn Dmin 25km Az.gap 67°
Corr. -0.068 23M/23stn Msd 0.2 2↑ 10↓
Felt MM VI at Reporoa (33). Precursors on some Wellington stations - Separate EQ?

87/2457
MAY 16 1229 16.5s 43.13S 172.13E 12km M=4.4
0.1 0.01 0.01 R
Rsd 0.1s 18ph/18stn Dmin 66km Az.gap 93°
Corr. -0.855 22M/20stn Msd 0.3
Felt Mount White Homestead (100) and Christchurch (110). The largest of four events; others of magnitude less than 3.5.

87/2462
MAY 16 2222 45.0s 38.44S 176.40E 2km M=3.5
0.2 0.01 0.01 1
Rsd 0.3s 28ph/20stn Dmin 13km Az.gap 60°
Corr. -0.190 16M/16stn Msd 0.2 3↑ 9↓
Felt Ngapouri Rd, Reporoa, Sangro Rd, Waimangu Valley (33) MM V and other places in locality (33) MM IV.

87/2464
MAY 17 0217 38.1s 38.13S 175.97E 189km M=4.3
0.5 0.03 0.04 4
Rsd 0.3s 28ph/22stn Dmin 44km Az.gap 134°
Corr. 0.080 17M/15stn Msd 0.2 4↑ 4↓

87/2471
MAY 17 0946 05.6s 38.17S 176.24E 166km M=4.3
0.5 0.02 0.03 4
Rsd 0.4s 26ph/18stn Dmin 24km Az.gap 137°
Corr. 0.131 17M/16stn Msd 0.3 7↑ 3↓

87/2478
MAY 17 1824 28.8s 47.73S 165.04E 33km M=4.8
2.1 0.10 0.19 R
Rsd 0.3s 15ph/15stn Dmin 250km Az.gap 324°
Corr. 0.813 12M/12stn Msd 0.5 1↑

87/2484
MAY 18 0757 04.5s 39.33S 178.98E 90km M=3.8
0.7 0.04 0.08 19
Rsd 0.4s 18ph/13stn Dmin 168km Az.gap 250°
Corr. -0.738 10M/10stn Msd 0.2

87/2485
MAY 18 0829 21.9s 38.45S 176.40E 3km M=3.7
0.4 0.01 0.02 4
Rsd 0.5s 19ph/16stn Dmin 26km Az.gap 65°
Corr. -0.001 20M/20stn Msd 0.2 2↑ 5↓
Felt widely in locality (33). Maximum intensity at Otto Road (33) MM VI.

87/2486
MAY 18 1313 14.3s 38.27S 177.17E 11km M=2.4
0.5 0.02 0.03 5
Rsd 0.3s 10ph/8stn Dmin 36km Az.gap 209°
Corr. -0.212 4M/4stn Msd 0.3
Felt Reporoa (33) MM IV.

87/2492
MAY 19 0221 15.7s 37.43S 178.29E 42km M=4.1
2.4 0.12 0.18 18
Rsd 0.2s 17ph/13stn Dmin 19km Az.gap 282°
Corr. 0.555 17M/16stn Msd 0.1 1↑ 1↓

87/2494
MAY 19 1054 11.6s 47.51S 165.71E 33km M=3.8
0.7 0.03 0.07 R
Rsd 0.2s 11ph/10stn Dmin 194km Az.gap 318°
Corr. 0.443 9M/9stn Msd 0.3 1↑

87/2504
MAY 20 1822 16.7s 37.99S 176.92E 3km M=3.1
0.4 0.02 0.02 3
Rsd 0.4s 9ph/9stn Dmin 6km Az.gap 158°
Corr. -0.128 8M/8stn Msd 0.1 1↓
Felt Thorton (27), Ohope, Ruatuna Road (35) MM IV.

87/2509
MAY 21 0715 25.3s 38.15S 176.67E 1km M=3.6
0.3 0.01 0.02 1
Rsd 0.3s 22ph/21stn Dmin 17km Az.gap 83°
Corr. 0.140 15M/15stn Msd 0.2 1↑ 6↓
Felt Waimangu Valley (33) MM IV, Pikowai (27), Kawerau (34).

87/2515
MAY 21 2348 33.3s 35.24S 178.72E 345km M=4.5
0.5 0.09 0.26 12
Rsd 0.0s 12ph/10stn Dmin 412km Az.gap 339°
Corr. -0.934 5M/5stn Msd 0.1

87/2517
MAY 22 0216 59.8s 36.89S 177.60E 12km M=3.7
0.5 0.04 0.01 R
Rsd 0.2s 6ph/6stn Dmin 79km Az.gap 265°
Corr. 0.424 3M/3stn Msd 0.4 2↑ 1↓

87/2536
MAY 24 0401 01.0s 44.22S 168.52E 5km M=4.1
0.2 0.01 0.02 R
Rsd 0.1s 18ph/16stn Dmin 111km Az.gap 202°
Corr. -0.492 14M/14stn Msd 0.2 1↑ 4↓

87/2541
MAY 25 0008 31.4s 35.37S 179.09W 33km M=4.3
0.2 0.03 0.03 R
Rsd 0.1s 8ph/7stn Dmin 341km Az.gap 336°
Corr. -0.695 4M/4stn Msd 0.2

87/2559
MAY 28 0949 49.2s 37.18S 177.57E 137km M=4.3
0.5 0.03 0.02 4
Rsd 0.2s 19ph/17stn Dmin 80km Az.gap 241°
Corr. -0.101 17M/17stn Msd 0.1 3↑ 10↓

87/2563
MAY 29 0323 49.6s 36.74S 177.97E 131km M=4.6
0.6 0.04 0.03 4
Rsd 0.2s 19ph/14stn Dmin 99km Az.gap 285°
Corr. 0.172 20M/17stn Msd 0.2 4↑ 6↓

87/2564
MAY 29 0330 59.2s 38.05S 175.97E 186km M=4.3
0.4 0.03 0.04 3
Rsd 0.2s 19ph/13stn Dmin 40km Az.gap 147°
Corr. 0.391 20M/18stn Msd 0.2 2↑ 4↓

87/2571
MAY 29 2105 01.5s 38.48S 175.69E 188km M=4.5
0.3 0.02 0.03 3
Rsd 0.2s 29ph/20stn Dmin 27km Az.gap 134°
Corr. 0.559 21M/18stn Msd 0.3 19↑ 9↓

87/2572
MAY 29 2121 51.2s 39.26S 174.78E 207km M=4.3
0.3 0.02 0.03 3
Rsd 0.2s 38ph/30stn Dmin 59km Az.gap 116°
Corr. -0.436 15M/15stn Msd 0.2 9↑ 4↓

87/2577
MAY 30 1456 32.8s 40.23S 173.52E 176km M=4.4
0.4 0.02 0.02 3
Rsd 0.2s 30ph/24stn Dmin 116km Az.gap 170°
Corr. -0.165 6M/6stn Msd 0.1 5↑ 3↓

87/2582
MAY 31 0012 26.7s 38.52S 174.90E 54km M=3.5
0.3 0.01 0.02 7
Rsd 0.3s 18ph/16stn Dmin 78km Az.gap 180°
Corr. -0.301 10M/10stn Msd 0.2 1↑ 2↓
Felt Mahoenui (38).

87/2585
MAY 31 0920 14.1s 37.71S 176.45E 23km M=3.2
2.5 0.17 0.08 24
Rsd 0.8s 7ph/5stn Dmin 56km Az.gap 230°
Corr. 0.032 5M/5stn Msd 0.4 1↑ 1↓
Felt Lake Rotoiti (33).

87/2592
JUN 01 1002 11.4s 39.64S 174.32E 223km M=4.6
0.3 0.01 0.03 2
Rsd 0.1s 37ph/30stn Dmin 45km Az.gap 116°
Corr. -0.512 15M/12stn Msd 0.2 9↑ 5↓

87/2604
JUN 03 1717 34.9s 38.04S 176.41E 5km M=2.9
0.3 0.02 0.02 R
Rsd 0.3s 6ph/5stn Dmin 24km Az.gap 214°
Corr. -0.375 6M/6stn Msd 0.3 2↑ 2↓
Felt Lake Okataina (33). Poor solution.

87/2605
JUN 04 0205 48.9s 37.96S 176.94E 2km M=3.0
0.6 0.01 0.02 2
Rsd 0.2s 11ph/10stn Dmin 5km Az.gap 113°
Corr. -0.101 8M/8stn Msd 0.2 1↑
Felt Whakatane (27).

87/2607
JUN 04 0250 12.6s 37.94S 176.95E 0km M=3.2
0.5 0.01 0.02 2
Rsd 0.2s 15ph/13stn Dmin 6km Az.gap 115°
Corr. -0.367 9M/9stn Msd 0.2 1↑ 1↓
Felt Whakatane (27).

87/2608
JUN 04 0739 10.7s 37.27S 177.34E 169km M=4.4
0.5 0.04 0.02 4
Rsd 0.2s 17ph/13stn Dmin 86km Az.gap 170°
Corr. -0.350 14M/14stn Msd 0.3 4↑ 6↓

87/2616
JUN 05 0146 44.3s 44.28S 167.66E 22km M=3.9
0.6 0.03 0.05 3
Rsd 0.1s 10ph/10stn Dmin 48km Az.gap 279°
Corr. -0.461 11M/11stn Msd 0.2 6↑ 1↓

87/2620
JUN 05 1219 38.1s 37.92S 176.01E 207km M=4.3
0.4 0.03 0.03 3
Rsd 0.1s 13ph/10stn Dmin 41km Az.gap 172°
Corr. 0.039 16M/16stn Msd 0.2 4↑ 5↓

87/2624
JUN 05 1921 00.9s 38.01S 176.30E 5km M=2.2
0.2 0.02 0.01 R
Rsd 0.1s 4ph/3stn Dmin 31km Az.gap 226°
Corr. 0.949 5M/5stn Msd 0.2
Felt Rotorua (33) MM V. Poor solution.

87/2625
JUN 05 1931 41.1s 37.83S 176.66E 148km M=4.0
0.3 0.02 0.02 3
Rsd 0.2s 16ph/10stn Dmin 33km Az.gap 111°
Corr. -0.020 14M/14stn Msd 0.2 5↑ 2↓

87/2626
JUN 06 0224 46.6s 33.52S 178.74W 196km M=4.6
0.9 0.15 0.11 74
Rsd 0.2s 11ph/6stn Dmin 526km Az.gap 341°
Corr. -0.488 10M/10stn Msd 0.4 1↑ 2↓

87/2629
JUN 06 1105 53.7s 38.19S 176.98E 3km M=3.5
0.5 0.01 0.02 4
Rsd 0.3s 22ph/20stn Dmin 23km Az.gap 79°
Corr. -0.124 10M/8stn Msd 0.1 3↑ 2↓
Felt Kawerau (34) MM V, Kutatere and Opotiki (35) MM IV.

87/2636
JUN 06 2319 25.8s 49.19S 164.86E 12km M=4.5
0.4 0.04 0.08 R
Rsd 0.1s 16ph/16stn Dmin 351km Az.gap 335°
Corr. -0.508 11M/10stn Msd 0.1 1↑

87/2639
JUN 07 0151 31.0s 36.83S 177.57E 166km M=4.3
0.9 0.06 0.05 10
Rsd 0.3s 11ph/9stn Dmin 108km Az.gap 214°
Corr. 0.295 14M/14stn Msd 0.1 3↑ 3↓

87/2651
JUN 08 0311 39.6s 33.05S 178.58W 290km M=4.9
1.3 0.12 0.11 55
Rsd 0.2s 10ph/9stn Dmin 579km Az.gap 311°
Corr. -0.420 11M/11stn Msd 0.1

87/2652
JUN 08 0411 48.9s 36.20S 177.86E 223km M=4.5
0.6 0.03 0.03 5
Rsd 0.1s 9ph/6stn Dmin 161km Az.gap 257°
Corr. 0.566 14M/14stn Msd 0.3 1↑ 3↓

87/2655
JUN 08 1013 03.4s 37.37S 176.53E 222km M=4.5
0.7 0.03 0.04 6
Rsd 0.2s 22ph/16stn Dmin 79km Az.gap 136°
Corr. 0.377 14M/13stn Msd 0.2 8↑ 3↓

87/2668
JUN 09 1206 54.2s 35.41S 179.42W 12km M=4.2
1.6 0.11 0.18 R
Rsd 0.4s 7ph/7stn Dmin 317km Az.gap 335°
Corr. -0.398 4M/4stn Msd 0.3

87/2675
JUN 10 0337 33.6s 38.10S 175.94E 285km M=4.4
0.8 0.06 0.05 7
Rsd 0.2s 10ph/8stn Dmin 40km Az.gap 138°
Corr. 0.144 14M/14stn Msd 0.2 2↑ 2↓

87/2681
JUN 10 1507 18.6s 45.03S 167.47E 85km M=3.9
0.4 0.02 0.04 3
Rsd 0.1s 14ph/14stn Dmin 53km Az.gap 226°
Corr. 0.703 5M/5stn Msd 0.7 3↑ 6↓

87/2684
JUN 10 2310 14.7s 45.08S 171.07E 12km M=2.8
0.9 0.04 0.08 R
Rsd 0.3s 13ph/12stn Dmin 12km Az.gap 307°
Corr. 0.287 9M/9stn Msd 0.3
Felt Oamaru (136) MM V.

87/2685
JUN 11 0153 41.7s 32.43S 176.97E 386km M=4.9
0.5 0.12 0.17 32
Rsd 0.1s 8ph/8stn Dmin 586km Az.gap 335°
Corr. -0.625 11M/11stn Msd 0.1

87/2698
JUN 13 1757 41.4s 40.35S 173.51E 194km M=4.0
0.5 0.02 0.03 5
Rsd 0.2s 27ph/21stn Dmin 105km Az.gap 165°
Corr. 0.090 13M/13stn Msd 0.2 4↑ 5↓

87/2701
JUN 13 2109 44.1s 41.20S 172.70E 206km M=4.5
0.2 0.02 0.01 2
Rsd 0.1s 25ph/22stn Dmin 12km Az.gap 156°
Corr. -0.254 14M/12stn Msd 0.2 9↑ 6↓

87/2703
JUN 14 0452 51.6s 38.43S 175.87E 157km M=4.6
0.4 0.02 0.03 3
Rsd 0.2s 23ph/17stn Dmin 32km Az.gap 118°
Corr. 0.520 14M/11stn Msd 0.3 6↑ 5↓

87/2704
JUN 14 0504 27.0s 35.28S 178.73W 33km M=5.0
0.6 0.02 0.05 R
Rsd 0.1s 14ph/14stn Dmin 371km Az.gap 301°
Corr. -0.249 14M/13stn Msd 0.2 1↑ 4↓

87/2705
JUN 14 0628 28.5s 38.20S 176.37E 243km M=4.2
0.5 0.03 0.03 4
Rsd 0.2s 12ph/11stn Dmin 59km Az.gap 134°
Corr. -0.570 13M/13stn Msd 0.3 2↑ 1↓

87/2707
JUN 14 1049 33.8s 38.77S 177.02E 44km M=3.5
0.3 0.01 0.02 5
Rsd 0.1s 11ph/10stn Dmin 41km Az.gap 201°
Corr. 0.229 2M/2stn Msd 0.1 1↑ 1↓

87/2711
JUN 15 0404 29.2s 37.02S 177.72E 155km M=4.3
0.9 0.06 0.05 7
Rsd 0.4s 14ph/14stn Dmin 82km Az.gap 259°
Corr. 0.121 18M/18stn Msd 0.2 2↑ 2↓

87/2712

JUN 15 1452 56.8s 35.60S 178.75W 33km M=4.8
0.6 0.03 0.06 R
Rsd 0.2s 15ph/13stn Dmin 345km Az.gap 302°
Corr. 0.173 8M/8stn Msd 0.3 1↑ 3↓
S arrivals particularly emergent.

87/2713

JUN 15 1659 58.1s 35.59S 179.20W 12km M=4.3
0.9 0.05 0.08 R
Rsd 0.2s 10ph/9stn Dmin 316km Az.gap 315°
Corr. -0.074 4M/4stn Msd 0.4
Traces partly obscured by event at 17h 14m.

87/2714

JUN 15 1714 08.2s 35.80S 179.62W 12km M=4.8
1.1 0.04 0.09 R
Rsd 0.2s 14ph/14stn Dmin 273km Az.gap 293°
Corr. 0.652 8M/7stn Msd 0.3 2↑ 3↓

87/2722

JUN 17 1215 53.6s 34.75S 179.46E 33km M=4.1
1.4 0.09 0.16 R
Rsd 0.4s 7ph/6stn Dmin 333km Az.gap 332°
Corr. -0.359 4M/4stn Msd 0.3

87/2736

JUN 19 1636 55.5s 38.10S 176.07E 5km M=2.0
0.1 R R R
Rsd 0.2s 3ph/3stn Dmin 41km Az.gap 181°
Corr. 0.000 2M/2stn Msd 0.1 1↓
Felt Rotorua (33), maximum intensity MM V.

87/2743

JUN 20 0910 20.2s 46.85S 165.42E 8km M=4.4
1.8 0.06 0.21 25
Rsd 0.2s 15ph/15stn Dmin 205km Az.gap 307°
Corr. 0.922 19M/19stn Msd 0.3 9↑ 1↓

87/2746

JUN 20 1514 42.5s 41.14S 175.17E 8km M=3.1
0.1 0.00 0.00 1
Rsd 0.1s 19ph/15stn Dmin 9km Az.gap 87°
Corr. 0.073 9M/7stn Msd 0.1 3↑ 9↓
Felt upper Hutt Valley (69), maximum intensity MM V.

87/2754

JUN 21 1431 14.4s 37.97S 176.84E 5km M=2.4
0.5 0.04 0.03 R
Rsd 0.5s 7ph/5stn Dmin 13km Az.gap 184°
Corr. -0.410 5M/5stn Msd 0.2
Felt Edgecumbe (27).

87/2758

JUN 21 2047 41.6s 36.72S 177.64E 199km M=4.3
0.3 0.01 0.01 3
Rsd 0.1s 9ph/9stn Dmin 115km Az.gap 224°
Corr. 0.311 11M/11stn Msd 0.2 1↑

87/2767

JUN 22 1723 53.3s 42.61S 172.37E 12km M=4.9
0.1 0.02 0.02 R
Rsd 0.2s 20ph/18stn Dmin 80km Az.gap 106°
Corr. -0.590 13M/12stn Msd 0.2 5↑ 1↓
Felt Lewis Pass (87) MM V, Maruia (87) MM IV, and Christchurch (110).

87/2771

JUN 22 2214 04.9s 39.54S 176.68E 71km M=3.9
0.1 0.01 0.01 1
Rsd 0.1s 35ph/29stn Dmin 12km Az.gap 109°
Corr. -0.229 17M/14stn Msd 0.2 4↑ 6↓

87/2774

JUN 23 1123 57.1s 42.58S 172.34E 3km M=3.3
0.8 0.01 0.02 7
Rsd 0.3s 12ph/12stn Dmin 77km Az.gap 106°
Corr. -0.059 13M/13stn Msd 0.2 1↑
Felt Lewis Pass (87).

87/2780

JUN 23 2140 07.7s 42.56S 172.31E 5km M=3.3
0.3 0.02 0.04 R
Rsd 0.6s 6ph/6stn Dmin 74km Az.gap 99°
Corr. -0.277 8M/8stn Msd 0.2 1↑
Felt Lewis Pass (87).

87/2799

JUN 24 2357 56.7s 42.60S 172.30E 5km M=3.7
0.1 0.01 0.02 R
Rsd 0.2s 18ph/17stn Dmin 74km Az.gap 96°
Corr. -0.177 19M/19stn Msd 0.3 1↑

87/2801

JUN 25 0027 31.1s 37.11S 177.22E 217km M=4.4
0.3 0.02 0.01 2
Rsd 0.0s 12ph/11stn Dmin 100km Az.gap 280°
Corr. 0.469 15M/15stn Msd 0.2 1↑ 1↓

87/2804

JUN 25 0458 27.3s 38.28S 176.05E 163km M=3.8
1.4 0.04 0.04 12
Rsd 0.4s 16ph/15stn Dmin 41km Az.gap 118°
Corr. -0.197 15M/15stn Msd 0.2 3↑ 1↓

87/2813

JUN 25 1847 40.1s 38.41S 176.14E 5km M=1.8
0.7 0.04 0.08 R
Rsd 0.7s 4ph/4stn Dmin 36km Az.gap 142°
Corr. -0.508 1M/1stn Msd N.D.
Felt Rotorua (33) MM IV.

87/2817

JUN 26 0959 48.5s 37.06S 177.13E 248km M=4.3
0.9 0.07 0.08 8
Rsd 0.4s 13ph/10stn Dmin 103km Az.gap 245°
Corr. -0.134 14M/12stn Msd 0.1 3↑ 1↓

87/2818
JUN 26 1004 52.5s 36.80S 177.10E 300km M=5.5
1.4 0.07 0.07 12
Rsd 0.3s 15ph/13stn Dmin 81km Az.gap 196°
Corr. 0.297 10M/8stn Msd 0.2 14↑ 5↓

87/2825
JUN 27 1703 00.3s 38.90S 176.17E 65km M=3.9
0.4 0.01 0.02 4
Rsd 0.3s 18ph/17stn Dmin 7km Az.gap 58°
Corr. -0.262 15M/13stn Msd 0.1 11↑ 5↓

87/2829
JUN 27 1947 09.5s 37.18S 179.91W 56km M=4.0
0.8 0.07 0.14 95
Rsd 0.3s 12ph/11stn Dmin 244km Az.gap 328°
Corr. -0.195 4M/4stn Msd 0.4 1↑

87/2830
JUN 27 2217 16.7s 38.29S 177.87E 80km M=4.9
0.4 0.01 0.03 5
Rsd 0.1s 17ph/17stn Dmin 84km Az.gap 178°
Corr. -0.239 12M/10stn Msd 0.1 5↑ 16↓
Felt Ruatuna Road (35), Kairoa Station (43), Ormond (44) and Wairoa (53) MM IV.

87/2837
JUN 28 1548 38.8s 40.16S 173.89E 175km M=3.9
0.2 0.03 0.02 3
Rsd 0.1s 13ph/12stn Dmin 117km Az.gap 326°
Corr. 0.383 8M/8stn Msd 0.2 5↑ 2↓

87/2839
JUN 28 1851 35.4s 39.29S 176.10E 72km M=3.7
0.4 0.02 0.02 5
Rsd 0.3s 25ph/23stn Dmin 27km Az.gap 79°
Corr. -0.328 14M/12stn Msd 0.1 8↑ 3↓

87/2841
JUN 29 0423 04.5s 39.56S 174.80E 159km M=4.3
0.6 0.02 0.03 5
Rsd 0.2s 26ph/26stn Dmin 69km Az.gap 86°
Corr. -0.777 15M/15stn Msd 0.2 6↑ 5↓

87/2846
JUN 29 1240 07.7s 40.99S 175.41E 12km M=3.4
0.1 0.01 0.01 R
Rsd 0.2s 25ph/20stn Dmin 20km Az.gap 76°
Corr. -0.373 9M/9stn Msd 0.3 7↑ 4↓
Felt Masterton (66), Carterton (70).

87/2849
JUN 29 2242 05.5s 37.91S 176.83E 5km M=3.2
0.2 0.02 0.02 R
Rsd 0.3s 11ph/10stn Dmin 16km Az.gap 166°
Corr. -0.416 11M/11stn Msd 0.2 1↓
Felt MM IV at Whakatane (27) and Ruatuna Road (35).

87/2850
JUN 29 2315 04.0s 37.92S 176.84E 5km M=3.3
0.2 0.02 0.02 R
Rsd 0.4s 16ph/15stn Dmin 15km Az.gap 126°
Corr. -0.295 13M/12stn Msd 0.3 1↑
Felt MM IV at Whakatane (27). Also felt Awakeri and Pikowai (27).

87/2851
JUN 29 2316 05.2s 37.97S 177.00E 5km M=3.3
0.4 0.03 0.05 R
Rsd 0.6s 13ph/12stn Dmin 1km Az.gap 115°
Corr. -0.590 7M/7stn Msd 0.2
Felt MM V at Katikati (25). Also felt MM IV at Awakeri (27) and Ruatuna Road (35).

87/2852
JUN 29 2343 54.0s 38.28S 176.20E 137km M=4.0
0.8 0.02 0.03 7
Rsd 0.3s 11ph/11stn Dmin 27km Az.gap 121°
Corr. -0.309 13M/13stn Msd 0.2 3↑ 6↓

87/2853
JUN 30 0023 48.7s 38.39S 176.13E 215km M=3.9
0.5 0.09 0.03 20
Rsd 0.1s 12ph/11stn Dmin 294km Az.gap 343°
Corr. 0.052 9M/9stn Msd 0.1

87/2857
JUN 30 0615 08.8s 38.04S 177.09E 56km M=3.6
0.6 0.03 0.04 8
Rsd 0.6s 15ph/13stn Dmin 11km Az.gap 122°
Corr. -0.422 6M/5stn Msd 0.2 1↓

87/2860
JUN 30 0947 51.4s 38.93S 176.96E 79km M=3.5
0.6 0.03 0.04 5
Rsd 0.3s 7ph/6stn Dmin 27km Az.gap 171°
Corr. -0.073 3M/2stn Msd 0.2 1↑ 1↓

87/2866
JUN 30 2339 14.2s 44.72S 167.60E 3km M=3.9
0.1 0.01 0.01 1
Rsd 0.0s 14ph/14stn Dmin 25km Az.gap 266°
Corr. 0.099 11M/11stn Msd 0.1 1↓

87/2867
JUL 01 0422 42.7s 42.69S 171.71E 12km M=4.1
0.2 0.01 0.02 R
Rsd 0.1s 20ph/19stn Dmin 31km Az.gap 91°
Corr. 0.154 26M/24stn Msd 0.3 1↑
Felt Inchbonnie (92) MM IV. Also felt at Jacksons and Rotomanu (93).

87/2869
JUL 01 0753 01.3s 41.26S 172.67E 193km M=4.3
0.7 0.05 0.03 6
Rsd 0.2s 19ph/16stn Dmin 19km Az.gap 160°
Corr. -0.279 10M/8stn Msd 0.2 11↑ 3↓

87/2883
JUL 02 1446 43.1s 38.75S 175.97E 139km M=3.6
0.6 0.03 0.04 5
Rsd 0.2s 17ph/16stn Dmin 18km Az.gap 115°
Corr. -0.617 9M/9stn Msd 0.2 1↑

87/2885
JUL 02 1740 33.6s 36.62S 177.81E 138km M=4.2
0.4 0.05 0.03 8
Rsd 0.2s 11ph/10stn Dmin 117km Az.gap 284°
Corr. -0.676 14M/12stn Msd 0.1 1↓

87/2890
JUL 03 0255 05.5s 38.51S 175.62E 125km M=3.6
0.6 0.04 0.07 10
Rsd 0.2s 15ph/15stn Dmin 87km Az.gap 279°
Corr. -0.256 12M/12stn Msd 0.1

87/2892
JUL 03 0412 08.4s 37.96S 176.92E 5km M=2.5
0.1 0.01 0.01 R
Rsd 0.3s 9ph/7stn Dmin 6km Az.gap 114°
Corr. -0.559 7M/7stn Msd 0.2 1↓
Felt Whakatane (27).

87/2893
JUL 03 0415 52.3s 37.44S 177.21E 187km M=4.1
1.6 0.08 0.12 13
Rsd 0.4s 12ph/11stn Dmin 108km Az.gap 315°
Corr. 0.488 15M/14stn Msd 0.3

87/2898
JUL 03 0650 45.5s 35.48S 179.35W 33km M=4.5
1.3 0.08 0.12 R
Rsd 0.1s 13ph/13stn Dmin 315km Az.gap 339°
Corr. 0.201 17M/16stn Msd 0.2

87/2899
JUL 03 0743 36.9s 35.97S 179.94E 33km M=4.4
5.4 0.19 0.46 R
Rsd 0.3s 10ph/10stn Dmin 233km Az.gap 309°
Corr. 0.965 10M/9stn Msd 0.3

87/2903
JUL 03 2258 27.8s 41.27S 178.59E 33km M=5.0
0.7 0.03 0.06 R
Rsd 0.4s 44ph/38stn Dmin 203km Az.gap 241°
Corr. -0.719 21M/19stn Msd 0.2 3↑4↓
USGS Epicentre 22 58 29.6 41.013S 178.454E 32km.

87/2919
JUL 05 1329 11.7s 40.12S 174.96E 5km M=3.6
0.1 0.01 0.02 R
Rsd 0.3s 32ph/26stn Dmin 82km Az.gap 103°
Corr. -0.512 20M/17stn Msd 0.3 2↑1↓

87/2920
JUL 05 2006 52.0s 36.74S 177.47E 147km M=5.2
0.4 0.05 0.03 4
Rsd 0.2s 15ph/15stn Dmin 91km Az.gap 216°
Corr. 0.048 15M/12stn Msd 0.1 3↑4↓
USGS Epicentre 20 06 34.5 36.49S 177.93E 33N M 5.2.

87/2921
JUL 05 2308 16.8s 48.39S 164.99E 33km M=4.7
0.3 0.03 0.04 R
Rsd 0.1s 12ph/12stn Dmin 287km Az.gap 337°
Corr. -0.680 10M/10stn Msd 0.2

87/2932
JUL 07 0623 40.2s 44.30S 168.72E 27km M=3.5
0.3 0.02 0.02 3
Rsd 0.1s 10ph/10stn Dmin 96km Az.gap 242°
Corr. -0.664 7M/7stn Msd 0.2 1↓

87/2938
JUL 07 2109 44.0s 40.33S 176.30E 85km M=3.6
0.4 0.01 0.03 9
Rsd 0.2s 16ph/15stn Dmin 114km Az.gap 205°
Corr. -0.793 10M/10stn Msd 0.1 1↑1↓

87/2942
JUL 08 0149 28.3s 40.25S 174.22E 89km M=3.8
0.4 0.01 0.02 5
Rsd 0.3s 32ph/29stn Dmin 90km Az.gap 121°
Corr. -0.184 17M/14stn Msd 0.3

87/2949
JUL 08 0938 60.0s 38.68S 175.48E 169km M=4.1
0.8 0.03 0.06 6
Rsd 0.4s 9ph/8stn Dmin 58km Az.gap 122°
Corr. 0.182 15M/13stn Msd 0.4

87/2955
JUL 09 0651 11.0s 43.82S 171.24E 1km M=3.0
1.0 0.08 0.08 R
Rsd 0.8s 4ph/4stn Dmin 106km Az.gap 200°
Corr. -0.484 3M/3stn Msd 0.1
Felt Fairlie (117) MM IV.

87/2958
JUL 09 0929 54.9s 37.34S 179.72W 33km M=3.5
1.1 0.05 0.11 R
Rsd 0.2s 4ph/4stn Dmin 178km Az.gap 333°
Corr. -0.707 4M/4stn Msd 0.3

87/2969
JUL 10 1518 17.7s 41.28S 174.77E 58km M=3.9
0.2 0.02 0.01 2
Rsd 0.2s 25ph/21stn Dmin 0km Az.gap 67°
Corr. -0.307 8M/7stn Msd 0.3 4↑3↓
Felt Kelburn, Tawa (68) MM IV, Marlborough (77).

87/2973
JUL 10 1908 01.0s 38.41S 175.92E 162km M=4.3
0.9 0.05 0.05 7
Rsd 0.5s 24ph/19stn Dmin 30km Az.gap 96°
Corr. 0.139 16M/15stn Msd 0.3

87/2974
JUL 10 2208 49.8s 40.39S 174.57E 92km M=3.5
0.2 0.01 0.01 2
Rsd 0.1s 16ph/12stn Dmin 60km Az.gap 303°
Corr. 0.112 9M/9stn Msd 0.1 1↓

87/2975
JUL 11 0136 39.9s 40.08S 174.88E 33km M=3.6
0.2 0.01 0.04 R
Rsd 0.4s 26ph/22stn Dmin 78km Az.gap 93°
Corr. -0.629 15M/13stn Msd 0.2 1↑ 1↓

87/2989
JUL 12 1704 10.8s 44.18S 168.68E 12km M=3.4
0.4 0.03 0.02 R
Rsd 0.3s 13ph/12stn Dmin 82km Az.gap 230°
Corr. -0.359 8M/8stn Msd 0.6 1↓
Felt Mt Aspiring Station (113) MM IV.

87/3007
JUL 14 0534 26.5s 37.70S 176.09E 253km M=4.6
0.8 0.06 0.07 7
Rsd 0.3s 13ph/13stn Dmin 55km Az.gap 204°
Corr. 0.018 13M/13stn Msd 0.3

87/3014
JUL 15 0625 32.6s 36.82S 179.73E 33km M=4.8
0.6 0.08 0.09 R
Rsd 0.2s 14ph/14stn Dmin 153km Az.gap 308°
Corr. -0.805 13M/12stn Msd 0.3

87/3016
JUL 15 0727 05.8s 40.33S 174.14E 91km M=4.1
0.4 0.01 0.02 5
Rsd 0.3s 24ph/19stn Dmin 88km Az.gap 124°
Corr. -0.074 4M/3stn Msd 0.3
Felt Wanganui (57).

87/3017
JUL 15 1017 13.6s 44.12S 168.32E 12km M=3.5
1.4 0.08 0.07 R
Rsd 0.5s 16ph/12stn Dmin 69km Az.gap 208°
Corr. -0.875 9M/9stn Msd 0.1

87/3022
JUL 16 0356 41.5s 36.41S 177.81E 33km M=4.1
2.0 0.12 0.10 R
Rsd 0.5s 6ph/6stn Dmin 139km Az.gap 313°
Corr. 0.527 3M/3stn Msd 0.2 1↓

87/3028
JUL 16 1523 21.6s 38.01S 178.51E 5km M=3.6
1.6 0.05 0.15 R
Rsd 1.2s 10ph/10stn Dmin 49km Az.gap 238°
Corr. -0.144 4M/4stn Msd 0.1 1↑

87/3029
JUL 16 1525 52.7s 40.01S 174.37E 153km M=4.1
0.6 0.01 0.02 6
Rsd 0.2s 28ph/28stn Dmin 85km Az.gap 115°
Corr. -0.422 7M/6stn Msd 0.2 2↑ 4↓

87/3031
JUL 17 0343 48.9s 40.30S 173.52E 195km M=4.3
0.5 0.02 0.03 4
Rsd 0.2s 22ph/21stn Dmin 110km Az.gap 166°
Corr. -0.340 6M/5stn Msd 0.1 1↓

87/3032
JUL 17 0846 42.2s 38.04S 175.98E 135km M=3.6
0.7 0.14 0.05 19
Rsd 0.4s 10ph/10stn Dmin 41km Az.gap 241°
Corr. -0.711 4M/4stn Msd 0.3 1↓

87/3036
JUL 17 1958 39.0s 37.96S 176.24E 163km M=4.6
0.8 0.03 0.03 6
Rsd 0.2s 22ph/22stn Dmin 24km Az.gap 165°
Corr. -0.406 6M/6stn Msd 0.1 6↑ 3↓

87/3045
JUL 19 0602 05.2s 45.04S 167.62E 83km M=3.7
0.6 0.02 0.05 5
Rsd 0.3s 8ph/7stn Dmin 47km Az.gap 206°
Corr. -0.719 4M/4stn Msd 0.3 1↑

87/3046
JUL 19 1425 56.0s 37.83S 179.99W 33km M=4.0
0.8 0.03 0.07 R
Rsd 0.2s 12ph/11stn Dmin 153km Az.gap 306°
Corr. -0.090 10M/10stn Msd 0.1 1↑

87/3047
JUL 20 0111 35.9s 45.86S 168.74E 12km M=3.5
0.3 0.01 0.03 R
Rsd 0.3s 8ph/8stn Dmin 94km Az.gap 169°
Corr. -0.228 2M/2stn Msd 0.1

87/3053
JUL 20 1934 07.6s 36.58S 177.78E 8km M=4.3
1.5 0.05 0.09 17
Rsd 0.4s 12ph/12stn Dmin 117km Az.gap 238°
Corr. 0.652 10M/10stn Msd 0.4 1↑

87/3056
JUL 21 0617 30.6s 44.16S 168.32E 12km M=3.8
1.0 0.06 0.05 R
Rsd 0.7s 7ph/7stn Dmin 65km Az.gap 247°
Corr. -0.563 4M/3stn Msd 0.2 1↑ 1↓

87/3057
JUL 21 1052 19.0s 40.79S 172.56E 12km M=3.6
1.9 0.10 0.14 R
Rsd 0.5s 9ph/8stn Dmin 36km Az.gap 192°
Corr. -0.723 5M/4stn Msd 0.2
Felt Paturau (71) MM IV, Bainham (72), Motueka (75).

87/3058
JUL 21 1708 25.1s 38.20S 176.25E 154km M=3.8
0.6 0.02 0.03 5
Rsd 0.3s 25ph/24stn Dmin 6km Az.gap 132°
Corr. -0.157 6M/6stn Msd 0.2 4↑ 4↓

87/3063
JUL 22 0215 29.9s 39.05S 174.88E 215km M=4.4
0.5 0.03 0.04 4
Rsd 0.3s 25ph/23stn Dmin 60km Az.gap 135°
Corr. -0.318 8M/7stn Msd 0.2 1↑

87/3064
JUL 22 0339 16.7s 40.26S 173.52E 178km M=4.0
0.5 0.02 0.03 5
Rsd 0.2s 25ph/24stn Dmin 113km Az.gap 169°
Corr. -0.086 10M/9stn Msd 0.9 1↑ 4↓

87/3067
JUL 22 1339 41.8s 41.57S 174.57E 56km M=3.9
0.1 0.01 0.01 2
Rsd 0.2s 17ph/17stn Dmin 31km Az.gap 162°
Corr. -0.436 2M/1stn Msd 0.0 1↓
Felt Wellington (68) MM IV and Picton (78).

87/3069
JUL 22 1528 59.0s 36.52S 178.03E 146km M=4.1
0.9 0.05 0.07 11
Rsd 0.3s 5ph/5stn Dmin 123km Az.gap 320°
Corr. -0.044 5M/5stn Msd 0.1 1↑

87/3070
JUL 22 1655 17.3s 38.14S 175.88E 185km M=3.9
0.9 0.07 0.05 6
Rsd 0.3s 7ph/7stn Dmin 39km Az.gap 127°
Corr. 0.559 6M/6stn Msd 0.1 1↓

87/3072
JUL 22 1902 37.0s 45.74S 167.14E 120km M=4.3
1.3 0.10 0.10 9
Rsd 0.5s 8ph/8stn Dmin 31km Az.gap 289°
Corr. 0.676 2M/2stn Msd 0.1 1↑

87/3078
JUL 23 2109 16.8s 38.61S 176.16E 95km M=3.8
0.4 0.01 0.02 4
Rsd 0.3s 26ph/25stn Dmin 14km Az.gap 72°
Corr. -0.073 8M/7stn Msd 0.2 5↑ 4↓
WLN picks are automatic and may not be accurate.

87/3081
JUL 24 0920 14.3s 45.06S 167.47E 12km M=3.8
0.9 0.03 0.12 R
Rsd 0.5s 5ph/5stn Dmin 56km Az.gap 224°
Corr. -0.723 4M/4stn Msd 0.2

87/3083
JUL 24 1912 14.5s 37.15S 177.43E 12km M=3.7
0.6 0.04 0.03 R
Rsd 0.4s 7ph/7stn Dmin 47km Az.gap 241°
Corr. 0.011 3M/3stn Msd 0.2 1↑

87/3085
JUL 24 2342 50.0s 44.93S 167.98E 12km M=3.8
0.2 0.02 0.02 R
Rsd 0.1s 14ph/14stn Dmin 29km Az.gap 174°
Corr. 0.891 7M/7stn Msd 0.1 1↓

87/3089
JUL 25 0832 35.5s 41.08S 172.94E 150km M=3.9
0.5 0.02 0.03 3
Rsd 0.2s 17ph/16stn Dmin 17km Az.gap 120°
Corr. -0.014 2M/2stn Msd 0.1 1↓
WLN picks are automatic and may not be accurate.

87/3090
JUL 25 0914 06.1s 37.68S 177.15E 5km M=3.6
0.4 0.03 0.02 R
Rsd 0.5s 8ph/8stn Dmin 17km Az.gap 112°
Corr. -0.338 4M/4stn Msd 0.1

87/3096
JUL 25 1737 51.6s 45.98S 165.30E 12km M=4.9
1.8 0.08 0.19 R
Rsd 0.4s 6ph/6stn Dmin 252km Az.gap 326°
Corr. 0.193 7M/7stn Msd 0.1 1↑

87/3097
JUL 25 1854 59.1s 36.74S 177.55E 33km M=3.7
1.2 0.08 0.05 R
Rsd 0.4s 9ph/9stn Dmin 116km Az.gap 272°
Corr. 0.110 9M/9stn Msd 0.3 1↑

87/3098
JUL 26 0243 27.8s 46.26S 165.22E 33km M=3.8
0.5 0.02 0.06 R
Rsd 0.1s 13ph/13stn Dmin 233km Az.gap 302°
Corr. 0.424 10M/10stn Msd 0.2 1↓

87/3101
JUL 26 1125 54.7s 42.09S 172.94E 72km M=3.7
0.2 0.01 0.01 3
Rsd 0.2s 18ph/17stn Dmin 32km Az.gap 99°
Corr. -0.062 3M/2stn Msd 0.1 1↑
WLN picks are automatic and may not be accurate.

87/3103
JUL 26 2202 49.4s 38.69S 175.82E 122km M=4.4
0.4 0.02 0.02 3
Rsd 0.2s 28ph/26stn Dmin 5km Az.gap 157°
Corr. -0.092 11M/9stn Msd 0.3 4↑ 3↓

87/3114
JUL 28 1920 24.8s 37.58S 176.54E 225km M=4.0
0.4 0.04 0.03 3
Rsd 0.2s 6ph/6stn Dmin 60km Az.gap 205°
Corr. 0.165 3M/3stn Msd 0.3

87/3115
JUL 29 0006 03.0s 45.20S 167.42E 127km M=3.9
0.3 0.01 0.02 2
Rsd 0.1s 19ph/19stn Dmin 65km Az.gap 222°
Corr. -0.381 10M/10stn Msd 0.2 2↑

87/3116
JUL 29 0213 36.6s 36.34S 179.03W 33km M=4.1
4.5 0.26 0.65 R
Rsd 0.2s 4ph/4stn Dmin 276km Az.gap 343°
Corr. -0.984 3M/3stn Msd 0.1

87/3118
JUL 29 0430 32.9s 40.30S 173.85E 142km M=4.8
0.4 0.01 0.02 4
Rsd 0.2s 28ph/24stn Dmin 108km Az.gap 144°
Corr. 0.090 11M/10stn Msd 0.2 10↑ 5↓
Felt Wellington (68). Maximum intensity MM IV.

87/3119
JUL 29 0554 30.8s 38.18S 176.26E 0km M=2.5
0.2 0.01 0.01 R
Rsd 0.3s 9ph/9stn Dmin 6km Az.gap 171°
Corr. 0.453 7M/7stn Msd 0.2 1↑
Felt Rotorua (33) MM V.

87/3133
JUL 31 0847 36.9s 40.52S 174.19E 76km M=4.0
0.3 0.01 0.02 6
Rsd 0.3s 29ph/23stn Dmin 72km Az.gap 115°
Corr. 0.011 6M/4stn Msd 0.1 9↑4↓
Felt Tawa (68) MM III.

87/3134
JUL 31 1725 19.4s 38.55S 176.02E 83km M=4.1
0.8 0.02 0.03 7
Rsd 0.3s 15ph/14stn Dmin 11km Az.gap 149°
Corr. -0.275 12M/11stn Msd 0.2 4↑5↓

87/3142
AUG 01 1432 43.0s 40.69S 176.95E 77km M=3.8
0.6 0.03 0.07 5
Rsd 0.2s 21ph/21stn Dmin 66km Az.gap 233°
Corr. -0.848 12M/12stn Msd 0.2 1↑

87/3148
AUG 02 0419 06.6s 45.39S 169.80E 6km M=3.8
0.1 0.01 0.01 1
Rsd 0.2s 19ph/17stn Dmin 46km Az.gap 84°
Corr. 0.076 6M/5stn Msd 0.4 2↑8↓
Felt St. Kilda (145).

87/3155
AUG 03 1156 24.7s 38.16S 176.26E 2km M=2.2
0.1 0.02 0.01 R
Rsd 0.2s 6ph/5stn Dmin 6km Az.gap 177°
Corr. 0.268 4M/4stn Msd 0.2 1↑
Felt Rotorua (33).

87/3159
AUG 03 1408 39.3s 37.55S 179.97E 33km M=4.9
0.6 0.05 0.07 R
Rsd 0.3s 21ph/19stn Dmin 210km Az.gap 322°
Corr. -0.469 18M/15stn Msd 0.2 3↑3↓

87/3160
AUG 03 1412 52.7s 37.58S 179.75W 33km M=4.1
0.4 0.03 0.05 R
Rsd 0.1s 11ph/9stn Dmin 321km Az.gap 338°
Corr. -0.719 4M/3stn Msd 0.1

87/3162
AUG 03 1619 48.3s 43.64S 169.76E 5km M=2.8
0.5 0.03 0.03 R
Rsd 0.2s 11ph/9stn Dmin 81km Az.gap 288°
Corr. 0.594 7M/7stn Msd 0.1
Felt Mahitahi (104) MM IV.

87/3164
AUG 03 1724 49.6s 38.35S 176.38E 7km M=2.7
0.2 0.01 0.01 4
Rsd 0.4s 16ph/16stn Dmin 11km Az.gap 81°
Corr. -0.283 11M/11stn Msd 0.3 1↑
Felt Waiotapu (33).

87/3165
AUG 03 1727 10.9s 38.33S 176.36E 9km M=2.7
0.2 0.01 0.01 2
Rsd 0.4s 15ph/11stn Dmin 11km Az.gap 90°
Corr. -0.289 7M/7stn Msd 0.2 1↓
Felt Waiotapu (33).

87/3174
AUG 04 0325 22.9s 41.34S 174.75E 8km M=3.0
0.1 0.01 0.01 1
Rsd 0.2s 16ph/14stn Dmin 7km Az.gap 99°
Corr. 0.475 8M/8stn Msd 0.3 5↑7↓
Felt Kelburn (68) MM IV.

87/3177
AUG 04 1412 56.3s 37.31S 179.70E 33km M=4.1
1.0 0.06 0.08 R
Rsd 0.4s 7ph/7stn Dmin 128km Az.gap 329°
Corr. -0.005 6M/6stn Msd 0.2 1↑1↓

87/3180
AUG 04 1922 30.7s 40.02S 174.41E 128km M=4.1
0.3 0.01 0.02 3
Rsd 0.2s 31ph/28stn Dmin 87km Az.gap 113°
Corr. -0.494 12M/10stn Msd 0.2 12↑7↓

87/3189
AUG 05 2008 29.4s 40.16S 176.87E 52km M=3.9
0.2 0.01 0.02 4
Rsd 0.1s 34ph/29stn Dmin 68km Az.gap 193°
Corr. -0.605 18M/15stn Msd 0.2 6↑5↓

87/3192
AUG 06 1245 50.5s 37.12S 177.55E 156km M=4.0
0.7 0.03 0.04 6
Rsd 0.3s 7ph/7stn Dmin 85km Az.gap 246°
Corr. 0.172 10M/10stn Msd 0.1 1↓

87/3196
AUG 07 0347 13.3s 39.08S 173.93E 12km M=3.0
0.6 0.02 0.04 R
Rsd 0.2s 10ph/10stn Dmin 26km Az.gap 204°
Corr. -0.664 3M/3stn Msd 0.1 1↑
Felt New Plymouth (47) MM IV.

87/3207
AUG 07 2227 31.5s 38.06S 178.75E 43km M=4.0
0.3 0.01 0.03 5
Rsd 0.1s 15ph/14stn Dmin 65km Az.gap 254°
Corr. -0.539 17M/16stn Msd 0.2 8↑3↓

87/3214
AUG 08 0748 02.4s 37.07S 179.17E 5km M=5.1
0.5 0.05 0.05 R
Rsd 0.2s 17ph/16stn Dmin 97km Az.gap 231°
Corr. -0.715 28M/26stn Msd 0.2 1↓

87/3215
AUG 08 0935 05.8s 42.08S 178.28E 33km M=5.0
0.3 0.02 0.03 R
Rsd 0.2s 50ph/42stn Dmin 216km Az.gap 124°
Corr. -0.578 19M/17stn Msd 0.2 10↑ 3↓
Felt Palmerston North (62) MM III.

87/3221
AUG 08 1821 12.0s 45.54S 167.27E 93km M=4.2
0.7 0.02 0.04 9
Rsd 0.3s 12ph/12stn Dmin 110km Az.gap 231°
Corr. -0.153 3M/3stn Msd 0.1 1↑ 5↓

87/3224
AUG 09 0301 28.1s 45.40S 167.50E 12km M=3.7
0.1 0.00 0.01 R
Rsd 0.1s 16ph/15stn Dmin 87km Az.gap 218°
Corr. -0.202 10M/10stn Msd 0.2 1↓

87/3226
AUG 09 0541 48.1s 36.74S 177.86E 159km M=4.3
0.4 0.02 0.03 4
Rsd 0.2s 19ph/14stn Dmin 103km Az.gap 233°
Corr. 0.408 17M/17stn Msd 0.2 1↑

87/3232
AUG 10 0453 20.6s 36.99S 179.45E 65km M=4.7
2.0 0.14 0.15 25
Rsd 0.2s 18ph/17stn Dmin 122km Az.gap 292°
Corr. 0.875 18M/17stn Msd 0.2 2↑ 1↓

87/3233
AUG 10 0536 52.6s 37.08S 178.82E 33km M=3.6
0.8 0.04 0.09 R
Rsd 0.4s 9ph/9stn Dmin 73km Az.gap 311°
Corr. -0.014 5M/5stn Msd 0.3

87/3244
AUG 11 0227 59.3s 35.41S 178.97E 33km M=4.4
1.0 0.06 0.09 R
Rsd 0.5s 9ph/9stn Dmin 250km Az.gap 326°
Corr. 0.001 6M/6stn Msd 0.2 1↑

87/3247
AUG 11 0608 22.4s 37.87S 176.35E 165km M=4.3
0.4 0.02 0.02 3
Rsd 0.3s 28ph/23stn Dmin 37km Az.gap 176°
Corr. -0.125 16M/15stn Msd 0.3 3↑ 4↓

87/3248
AUG 11 1408 38.7s 42.19S 173.94E 42km M=3.6
0.2 0.02 0.02 5
Rsd 0.2s 21ph/16stn Dmin 32km Az.gap 163°
Corr. 0.438 11M/9stn Msd 0.2 2↑ 5↓

87/3256
AUG 12 0811 21.4s 40.42S 173.74E 174km M=3.7
0.2 0.02 0.02 2
Rsd 0.1s 13ph/11stn Dmin 99km Az.gap 312°
Corr. -0.135 8M/8stn Msd 0.3 4↑ 1↓

87/3269
AUG 13 1858 01.5s 36.82S 179.85E 33km M=3.7
0.8 0.06 0.06 R
Rsd 0.2s 8ph/8stn Dmin 163km Az.gap 327°
Corr. 0.136 5M/5stn Msd 0.3

87/3280
AUG 14 0700 19.5s 40.51S 176.57E 86km M=4.6
0.1 0.01 0.01 2
Rsd 0.1s 35ph/31stn Dmin 53km Az.gap 181°
Corr. -0.680 9M/8stn Msd 0.1 7↑ 2↓
Felt Table Flat (58), Palmerston North (62), Ohau (65) MM IV; Pukewhinau (67).

87/3281
AUG 14 0703 09.9s 40.52S 176.60E 89km M=4.0
0.2 0.01 0.02 2
Rsd 0.2s 30ph/26stn Dmin 53km Az.gap 186°
Corr. -0.605 13M/13stn Msd 0.2 5↑ 1↓

87/3290
AUG 14 2031 45.8s 44.94S 167.50E 107km M=4.4
0.3 0.01 0.02 2
Rsd 0.0s 14ph/14stn Dmin 44km Az.gap 293°
Corr. -0.179 5M/5stn Msd 0.2 1↓

87/3291
AUG 14 2155 57.5s 45.11S 167.63E 127km M=4.5
0.3 0.01 0.02 3
Rsd 0.1s 18ph/18stn Dmin 54km Az.gap 216°
Corr. 0.136 6M/6stn Msd 0.3 1↓

87/3304
AUG 15 2320 09.4s 37.23S 176.80E 328km M=4.3
0.9 0.08 0.07 8
Rsd 0.3s 17ph/15stn Dmin 86km Az.gap 233°
Corr. -0.231 14M/14stn Msd 0.1

87/3306
AUG 16 0217 20.5s 38.94S 175.93E 112km M=3.7
0.2 0.01 0.02 2
Rsd 0.1s 11ph/11stn Dmin 15km Az.gap 106°
Corr. -0.160 9M/9stn Msd 0.2 3↑ 3↓

87/3307
AUG 16 0236 01.1s 36.70S 177.25E 248km M=5.0
0.5 0.05 0.09 5
Rsd 0.1s 19ph/18stn Dmin 145km Az.gap 235°
Corr. 0.820 17M/16stn Msd 0.2 1↑

87/3308
AUG 16 0409 30.9s 44.56S 168.35E 33km M=4.1
0.2 0.02 0.01 R
Rsd 0.2s 17ph/17stn Dmin 37km Az.gap 163°
Corr. 0.027 13M/13stn Msd 0.2 1↑ 6↓

87/3309
AUG 16 0518 10.9s 40.19S 175.15E 20km M=4.5
0.2 0.01 0.02 3
Rsd 0.3s 39ph/36stn Dmin 78km Az.gap 125°
Corr. -0.684 16M/16stn Msd 0.3 4↑7↓
Felt widely in SW of the North Island. Maximum Intensity MM V at Bulls (61) and Feilding (62).

87/3310
AUG 16 0547 25.0s 40.20S 175.23E 21km M=3.9
0.2 0.01 0.02 3
Rsd 0.3s 41ph/35stn Dmin 78km Az.gap 72°
Corr. -0.578 14M/13stn Msd 0.3 4↑8↓
Felt Ohingaiti (58), Foxton (61), Palmerston North (62); Levin (65).

87/3311
AUG 16 0601 24.5s 38.24S 176.22E 203km M=3.8
0.4 0.08 0.06 17
Rsd 0.1s 9ph/9stn Dmin 312km Az.gap 344°
Corr. -0.330 7M/7stn Msd 0.3 1↑

87/3312
AUG 16 0710 38.9s 43.23S 172.13E 12km M=3.8
0.2 0.02 0.03 R
Rsd 0.4s 15ph/14stn Dmin 57km Az.gap 90°
Corr. -0.087 11M/11stn Msd 0.2

87/3314
AUG 16 0950 17.0s 40.18S 175.14E 12km M=4.3
0.1 0.01 0.02 R
Rsd 0.3s 38ph/34stn Dmin 79km Az.gap 75°
Corr. -0.598 15M/14stn Msd 0.3 2↑10↓
Felt Ohakune (49), Foxton, Himatangi Beach (61), Feilding, Palmerston North (62), Levin (65) MM IV.

87/3315
AUG 16 1000 59.1s 40.19S 175.19E 17km M=3.3
0.3 0.01 0.04 4
Rsd 0.3s 27ph/25stn Dmin 79km Az.gap 102°
Corr. -0.781 16M/16stn Msd 0.3 1↑4↓
Felt Palmerston North (62).

87/3321
AUG 16 1404 00.3s 39.42S 174.97E 138km M=3.9
0.3 0.01 0.02 3
Rsd 0.2s 33ph/28stn Dmin 55km Az.gap 119°
Corr. -0.547 17M/15stn Msd 0.3 7↑2↓

87/3328
AUG 17 0057 22.4s 37.87S 176.19E 182km M=4.2
0.6 0.03 0.03 5
Rsd 0.3s 20ph/15stn Dmin 57km Az.gap 177°
Corr. -0.049 18M/18stn Msd 0.3 1↑

87/3331
AUG 17 0602 38.8s 40.29S 174.67E 94km M=3.5
0.3 0.01 0.02 5
Rsd 0.3s 28ph/23stn Dmin 67km Az.gap 95°
Corr. -0.232 14M/12stn Msd 0.1 3↑1↓

87/3333
AUG 17 0831 12.9s 43.13S 171.82E 2km M=2.9
0.4 0.01 0.02 5
Rsd 0.2s 9ph/9stn Dmin 75km Az.gap 107°
Corr. 0.052 6M/6stn Msd 0.4
Felt Mount White (100) MM IV.

87/3353
AUG 18 1316 30.2s 40.84S 179.71E 32km M=4.1
0.9 0.05 0.12 17
Rsd 0.4s 35ph/30stn Dmin 264km Az.gap 275°
Corr. -0.836 24M/20stn Msd 0.3 1↓

87/3358
AUG 18 1728 21.0s 40.18S 175.18E 12km M=3.5
0.1 0.01 0.02 R
Rsd 0.2s 29ph/23stn Dmin 79km Az.gap 102°
Corr. -0.754 20M/17stn Msd 0.3 4↑4↓
Felt Palmerston North (62).

87/3369
AUG 19 1742 07.9s 41.10S 173.09E 140km M=4.2
0.2 0.02 0.01 2
Rsd 0.1s 23ph/19stn Dmin 30km Az.gap 111°
Corr. -0.213 10M/10stn Msd 0.2 11↑2↓

87/3370
AUG 19 1917 02.0s 37.05S 176.83E 242km M=5.3
0.5 0.04 0.04 4
Rsd 0.2s 21ph/21stn Dmin 104km Az.gap 168°
Corr. 0.241 4M/4stn Msd 0.2 1↑

87/3374
AUG 19 2211 59.8s 38.10S 176.60E 96km M=3.7
0.4 0.02 0.02 4
Rsd 0.3s 16ph/16stn Dmin 17km Az.gap 149°
Corr. -0.408 13M/13stn Msd 0.2 2↑1↓

87/3378
AUG 20 0559 26.8s 40.21S 173.80E 179km M=3.8
0.3 0.02 0.02 3
Rsd 0.0s 11ph/10stn Dmin 119km Az.gap 327°
Corr. 0.237 9M/9stn Msd 0.3 1↑4↓

87/3380
AUG 20 0950 09.4s 37.68S 176.27E 202km M=4.6
0.4 0.03 0.03 4
Rsd 0.3s 29ph/28stn Dmin 56km Az.gap 201°
Corr. -0.277 21M/18stn Msd 0.2 3↑4↓

87/3384
AUG 21 0043 43.6s 39.22S 175.41E 12km M=3.8
0.2 0.01 0.02 R
Rsd 0.3s 25ph/25stn Dmin 12km Az.gap 99°
Corr. 0.136 21M/17stn Msd 0.2 1↓
Felt Ohakune (49) MM IV.

87/3387
AUG 21 0715 07.9s 41.27S 173.44E 96km M=4.3
0.4 0.02 0.02 4
Rsd 0.2s 24ph/20stn Dmin 63km Az.gap 85°
Corr. -0.396 11M/10stn Msd 0.2 2↑5↓
Felt Wellington (68) MM IV; Tawa (68) MM III; Nelson (76).

87/3393
AUG 21 2327 12.0s 38.86S 175.02E 233km M=4.2
0.5 0.03 0.03 4
Rsd 0.3s 30ph/27stn Dmin 59km Az.gap 144°
Corr. -0.127 22M/20stn Msd 0.2 9↑3↓

87/3395
AUG 22 0504 16.5s 40.22S 174.11E 130km M=3.6
0.3 0.01 0.03 4
Rsd 0.1s 19ph/16stn Dmin 99km Az.gap 224°
Corr. -0.420 9M/9stn Msd 0.2 1↑

87/3415
AUG 23 0812 02.4s 46.21S 167.29E 33km M=3.9
0.3 0.01 0.03 R
Rsd 0.2s 11ph/10stn Dmin 100km Az.gap 266°
Corr. -0.013 7M/7stn Msd 0.3

87/3417
AUG 23 0852 43.0s 36.75S 176.70E 295km M=4.0
1.3 0.13 0.16 15
Rsd 0.6s 11ph/11stn Dmin 139km Az.gap 266°
Corr. -0.574 13M/13stn Msd 0.1

87/3420
AUG 23 1521 09.3s 38.88S 175.34E 123km M=3.6
0.9 0.03 0.05 7
Rsd 0.4s 27ph/23stn Dmin 37km Az.gap 122°
Corr. -0.009 16M/16stn Msd 0.2 3↑5↓

87/3438
AUG 24 2241 20.0s 46.40S 165.97E 5km M=3.6
0.6 0.02 0.06 R
Rsd 0.1s 9ph/9stn Dmin 174km Az.gap 306°
Corr. 0.249 8M/8stn Msd 0.1

87/3440
AUG 25 0512 37.1s 41.76S 172.61E 89km M=4.1
0.6 0.03 0.04 6
Rsd 0.5s 19ph/18stn Dmin 20km Az.gap 139°
Corr. -0.059 9M/9stn Msd 0.2 1↑4↓

87/3452
AUG 25 1445 57.3s 38.57S 175.80E 142km M=4.1
0.4 0.02 0.03 3
Rsd 0.3s 27ph/22stn Dmin 16km Az.gap 100°
Corr. 0.247 18M/16stn Msd 0.3 4↑1↓

87/3458
AUG 25 1852 29.6s 41.49S 174.47E 25km M=3.5
0.1 0.01 0.01 2
Rsd 0.2s 22ph/18stn Dmin 32km Az.gap 127°
Corr. -0.498 12M/10stn Msd 0.2 5↑4↓
Felt Karori (68), Fighting Bay (78) MM IV.

87/3463
AUG 26 0757 08.9s 40.08S 176.74E 56km M=3.5
0.3 0.01 0.04 5
Rsd 0.1s 21ph/17stn Dmin 61km Az.gap 206°
Corr. -0.742 12M/12stn Msd 0.3 1↓

87/3468
AUG 26 1252 12.2s 38.21S 175.96E 12km M=1.7
1.9 0.21 0.11 R
Rsd 0.7s 5ph/5stn Dmin 21km Az.gap 217°
Corr. 0.930 1M/1stn Msd N.D.
Felt Rotorua (33).

87/3469
AUG 26 1357 56.2s 37.49S 176.52E 221km M=4.1
0.8 0.05 0.04 7
Rsd 0.3s 13ph/12stn Dmin 69km Az.gap 214°
Corr. -0.112 13M/13stn Msd 0.1

87/3477
AUG 26 2347 52.8s 38.64S 176.25E 2km M=3.0
0.4 0.01 0.01 1
Rsd 0.2s 20ph/17stn Dmin 12km Az.gap 62°
Corr. -0.357 18M/18stn Msd 0.2 5↑4↓
Felt Broadlands (41) MM V; Wairakei (41) MM IV.

87/3481
AUG 27 0825 46.3s 40.08S 176.67E 66km M=3.8
0.2 0.01 0.02 3
Rsd 0.2s 39ph/31stn Dmin 59km Az.gap 178°
Corr. -0.672 18M/17stn Msd 0.2 5↑6↓

87/3485
AUG 28 0223 09.8s 40.02S 175.88E 54km M=3.9
0.1 0.01 0.01 5
Rsd 0.2s 33ph/29stn Dmin 54km Az.gap 105°
Corr. -0.206 17M/14stn Msd 0.2 9↑5↓

87/3489
AUG 28 0600 53.6s 39.25S 175.41E 16km M=3.6
0.3 0.02 0.03 4
Rsd 0.4s 24ph/22stn Dmin 13km Az.gap 96°
Corr. -0.070 17M/17stn Msd 0.3 3↑6↓
Felt Ohakune (49) MM IV.

87/3497
AUG 28 2248 56.4s 39.86S 174.33E 207km M=3.6
0.4 0.05 0.04 5
Rsd 0.1s 12ph/10stn Dmin 122km Az.gap 324°
Corr. 0.136 9M/9stn Msd 0.2 4↑1↓

87/3498
AUG 29 0609 11.7s 38.62S 175.89E 182km M=3.6
0.7 0.03 0.02 6
Rsd 0.0s 18ph/16stn Dmin 14km Az.gap 253°
Corr. -0.111 10M/10stn Msd 0.2 1↑2↓

87/3501
AUG 29 2201 39.3s 37.27S 177.85E 128km M=4.2
0.5 0.02 0.02 4
Rsd 0.1s 21ph/21stn Dmin 54km Az.gap 243°
Corr. -0.015 16M/15stn Msd 0.2 7↑4↓

87/3512
AUG 30 2158 53.4s 39.13S 175.32E 164km M=3.7
0.3 0.02 0.02 3
Rsd 0.1s 18ph/15stn Dmin 109km Az.gap 250°
Corr. -0.633 12M/12stn Msd 0.2 2↑1↓

87/3535
AUG 31 1702 50.4s 38.65S 175.66E 142km M=4.3
0.8 0.04 0.06 7
Rsd 0.3s 13ph/12stn Dmin 12km Az.gap 217°
Corr. 0.111 12M/11stn Msd 0.3 6↑4↓

87/3547
SEP 01 1547 52.5s 38.63S 175.98E 3km M=3.0
0.2 0.01 0.01 2
Rsd 0.3s 19ph/18stn Dmin 9km Az.gap 90°
Corr. -0.328 19M/19stn Msd 0.4 6↑3↓
Felt Acacia Bay (41) MM V, Waihora Road (40), Oruanui, Taupo (41) MM IV.

87/3551
SEP 02 0523 14.1s 39.22S 174.70E 209km M=5.4
0.4 0.02 0.03 4
Rsd 0.2s 50ph/44stn Dmin 52km Az.gap 99°
Corr. -0.197 7M/5stn Msd 0.3 23↑16↓
Felt throughout the lower North Island and Christchurch (110), maximum intensity MM V at Moawhango (58).

87/3552
SEP 02 0843 39.5s 45.11S 167.53E 114km M=4.0
0.8 0.04 0.06 7
Rsd 0.4s 11ph/10stn Dmin 75km Az.gap 230°
Corr. -0.535 5M/5stn Msd 0.3 3↑3↓

87/3561
SEP 03 0215 35.2s 38.64S 175.97E 5km M=2.7
0.1 0.01 0.01 R
Rsd 0.4s 16ph/14stn Dmin 8km Az.gap 88°
Corr. -0.229 8M/8stn Msd 0.4 3↑6↓
Felt Wairakei (41) MM IV.

87/3565
SEP 03 1059 25.7s 45.15S 167.19E 33km M=3.8
0.3 0.01 0.03 R
Rsd 0.1s 12ph/12stn Dmin 78km Az.gap 247°
Corr. 0.180 6M/6stn Msd 0.2 1↓

87/3568
SEP 03 1937 33.9s 44.46S 168.01E 12km M=3.6
0.2 0.01 0.01 R
Rsd 0.1s 12ph/11stn Dmin 25km Az.gap 210°
Corr. -0.672 8M/8stn Msd 0.4 1↓

87/3571
SEP 04 0103 27.9s 38.70S 175.85E 136km M=3.6
0.3 0.01 0.02 2
Rsd 0.1s 19ph/18stn Dmin 7km Az.gap 147°
Corr. -0.641 8M/8stn Msd 0.2 1↑

87/3572
SEP 04 0227 39.9s 43.89S 169.24E 12km M=3.7
0.7 0.05 0.02 R
Rsd 0.3s 12ph/12stn Dmin 85km Az.gap 180°
Corr. 0.044 11M/10stn Msd 0.3 1↓

87/3574
SEP 04 0345 21.9s 38.64S 177.60E 62km M=3.5
0.4 0.02 0.04 4
Rsd 0.2s 12ph/11stn Dmin 67km Az.gap 279°
Corr. 0.473 4M/4stn Msd 0.3 1↓

87/3575
SEP 04 0354 59.8s 43.82S 169.28E 7km M=3.7
0.6 0.04 0.02 R
Rsd 0.3s 15ph/15stn Dmin 87km Az.gap 262°
Corr. 0.106 13M/13stn Msd 0.2 1↑2↓

87/3586
SEP 04 2231 17.6s 38.08S 176.30E 159km M=4.9
0.4 0.02 0.02 4
Rsd 0.3s 30ph/27stn Dmin 14km Az.gap 149°
Corr. 0.038 12M/12stn Msd 0.3 16↑11↓

87/3598
SEP 05 1631 32.9s 41.04S 174.45E 47km M=3.7
0.1 0.01 0.01 1
Rsd 0.1s 16ph/12stn Dmin 24km Az.gap 205°
Corr. -0.445 6M/6stn Msd 0.2 4↑4↓

87/3600
SEP 05 1945 24.7s 37.96S 176.89E 5km M=2.8
0.5 0.03 0.02 4
Rsd 0.4s 12ph/11stn Dmin 9km Az.gap 162°
Corr. -0.076 5M/5stn Msd 0.3 1↓
Felt Whakatane (27) MM V, Thornton (27).

87/3613
SEP 07 0835 07.8s 42.63S 173.12E 61km M=3.9
0.2 0.01 0.01 3
Rsd 0.2s 25ph/21stn Dmin 52km Az.gap 136°
Corr. -0.254 13M/11stn Msd 0.1 2↑2↓

87/3614
SEP 07 0902 31.6s 42.62S 173.11E 67km M=4.1
0.2 0.01 0.02 3
Rsd 0.2s 26ph/22stn Dmin 53km Az.gap 133°
Corr. -0.249 13M/11stn Msd 0.1 3↑1↓

87/3615
SEP 07 1054 21.4s 38.87S 175.61E 165km M=3.8
0.3 0.02 0.03 3
Rsd 0.1s 14ph/12stn Dmin 112km Az.gap 283°
Corr. -0.805 9M/9stn Msd 0.5

87/3627
SEP 08 0652 10.4s 39.09S 175.21E 226km M=4.4
0.6 0.03 0.05 6
Rsd 0.1s 18ph/16stn Dmin 120km Az.gap 238°
Corr. -0.813 12M/12stn Msd 0.2 6↑ 1↓

87/3629
SEP 08 0813 12.0s 39.80S 176.84E 44km M=3.7
0.1 0.01 0.01 2
Rsd 0.2s 40ph/36stn Dmin 27km Az.gap 177°
Corr. -0.441 17M/16stn Msd 0.2 5↑ 5↓

87/3631
SEP 08 2342 15.5s 34.60S 178.63E 427km M=5.2
0.5 0.11 0.13 11
Rsd 0.3s 17ph/16stn Dmin 334km Az.gap 334°
Corr. -0.270 16M/15stn Msd 0.1 1↑

87/3632
SEP 09 0445 21.8s 40.26S 176.36E 58km M=4.0
0.2 0.01 0.02 5
Rsd 0.2s 37ph/33stn Dmin 49km Az.gap 159°
Corr. -0.367 18M/16stn Msd 0.1 5↑ 3↓

87/3647
SEP 10 0414 44.8s 37.21S 178.41E 12km M=3.7
2.2 0.12 0.14 R
Rsd 0.4s 7ph/7stn Dmin 45km Az.gap 300°
Corr. 0.750 3M/3stn Msd 0.3

87/3659
SEP 11 0854 29.2s 39.68S 176.92E 59km M=3.1
1.0 0.05 0.08 7
Rsd 0.4s 10ph/8stn Dmin 18km Az.gap 204°
Corr. 0.227 9M/9stn Msd 0.1 1↑
Felt Waihora Rd (40) MM IV.

87/3660
SEP 11 0949 30.8s 38.63S 175.99E 7km M=2.2
0.1 0.01 0.01 3
Rsd 0.2s 9ph/9stn Dmin 9km Az.gap 87°
Corr. -0.258 6M/6stn Msd 0.3 1↑ 1↓
Felt Waihora Rd (40) MM IV.

87/3666
SEP 12 0630 23.7s 37.07S 179.51W 30km M=4.3
1.4 0.91 2.10 288
Rsd 0.3s 12ph/12stn. Dmin 203km Az.gap 325°
Corr. 0.992 20M/20stn Msd 0.1

87/3676
SEP 12 2009 40.4s 40.20S 175.23E 12km M=4.3
0.3 0.01 0.02 3
Rsd 0.2s 39ph/35stn Dmin 52km Az.gap 122°
Corr. -0.637 11M/10stn Msd 0.3 1↓
Felt Central North Island, maximum intensity MM V at Moawhango (58) and Palmerston North (62).

87/3683
SEP 13 1123 48.6s 35.22S 179.48E 217km M=4.3
1.2 0.10 0.18 22
Rsd 0.4s 7ph/7stn Dmin 285km Az.gap 330°
Corr. 0.127 12M/12stn Msd 0.3 1↓

87/3689
SEP 14 1135 27.6s 37.82S 176.47E 181km M=4.1
0.4 0.02 0.02 3
Rsd 0.2s 17ph/14stn Dmin 46km Az.gap 181°
Corr. 0.077 19M/17stn Msd 0.2 1↑
This event is the largest of three.

87/3696
SEP 15 0919 19.4s 37.57S 178.22E 22km M=3.5
1.0 0.08 0.08 5
Rsd 0.5s 8ph/8stn Dmin 8km Az.gap 206°
Corr. -0.090 4M/4stn Msd 0.1 1↑

87/3697
SEP 15 1754 39.1s 41.25S 174.64E 26km M=2.9
0.0 0.00 0.00 0
Rsd 0.1s 19ph/15stn Dmin 4km Az.gap 111°
Corr. 0.054 11M/10stn Msd 0.1 4↑ 3↓
Felt Paekakariki (65).

87/3702
SEP 16 0052 50.0s 46.35S 165.34E 12km M=3.9
1.5 0.06 0.15 R
Rsd 0.4s 15ph/14stn Dmin 182km Az.gap 301°
Corr. -0.187 9M/8stn Msd 0.2

87/3716
SEP 17 0028 09.2s 39.76S 177.03E 42km M=4.1
0.2 0.01 0.02 3
Rsd 0.2s 40ph/33stn Dmin 29km Az.gap 180°
Corr. -0.424 12M/12stn Msd 0.1 5↑ 1↓
Felt Hastings (60).

87/3722
SEP 17 1650 13.1s 42.06S 172.96E 79km M=4.4
0.2 0.01 0.02 4
Rsd 0.2s 23ph/19stn Dmin 29km Az.gap 117°
Corr. -0.621 16M/15stn Msd 0.2 10↑ 4↓
Felt MM IV at Westport (79), Howards Valley (81), also felt at Greymouth (85).

87/3729
SEP 18 0406 52.0s 45.08S 167.51E 101km M=3.7
0.2 0.02 0.02 2
Rsd 0.1s 15ph/15stn Dmin 56km Az.gap 216°
Corr. 0.363 10M/10stn Msd 0.1 1↑

87/3733
SEP 18 0939 21.8s 38.33S 176.32E 5km M=2.2
0.3 0.01 0.01 3
Rsd 0.3s 9ph/9stn Dmin 7km Az.gap 109°
Corr. -0.193 6M/6stn Msd 0.2 1↓
Felt Waimangu Valley (33) MM V. This is the largest event of a swarm of at least six.

87/3735
SEP 18 1212 09.0s 36.12S 178.82E 240km M=4.0
0.6 0.05 0.09 3
Rsd 0.2s 12ph/10stn Dmin 171km Az.gap 336°
Corr. -0.055 5M/5stn Msd 0.2 1↑

87/3737
SEP 18 1704 57.9s 38.45S 175.83E 177km M=5.0
0.5 0.02 0.03 4
Rsd 0.3s 31ph/29stn Dmin 29km Az.gap 94°
Corr. 0.297 8M/6stn Msd 0.1 17↑ 7↓

87/3742
SEP 19 1357 51.3s 37.63S 177.46E 84km M=3.7
0.4 0.04 0.02 3
Rsd 0.2s 20ph/18stn Dmin 57km Az.gap 206°
Corr. -0.699 12M/12stn Msd 0.1 2↑ 2↓

87/3747
SEP 19 2149 02.9s 46.39S 166.05E 12km M=4.0
1.1 0.04 0.11 R
Rsd 0.3s 12ph/11stn Dmin 169km Az.gap 287°
Corr. 0.699 11M/11stn Msd 0.2

87/3749
SEP 19 2220 49.6s 38.19S 175.88E 184km M=3.8
1.0 0.06 0.14 10
Rsd 0.3s 12ph/11stn Dmin 94km Az.gap 284°
Corr. -0.154 14M/14stn Msd 0.1 1↓

87/3756
SEP 20 1224 16.9s 43.16S 171.99E 5km M=3.3
0.3 0.02 0.05 R
Rsd 0.5s 8ph/8stn Dmin 71km Az.gap 108°
Corr. -0.330 12M/12stn Msd 0.2
Felt Mount White Homestead (100) MM IV.

87/3765
SEP 21 0629 40.6s 38.48S 175.53E 256km M=3.8
0.9 0.06 0.05 8
Rsd 0.2s 17ph/17stn Dmin 78km Az.gap 228°
Corr. -0.691 10M/10stn Msd 0.2 1↑

87/3767
SEP 21 0851 21.3s 37.74S 175.93E 279km M=4.2
0.6 0.13 0.08 8
Rsd 0.2s 16ph/14stn Dmin 137km Az.gap 247°
Corr. -0.703 18M/18stn Msd 0.1

87/3768
SEP 21 1050 28.3s 38.25S 178.73E 12km M=3.5
0.6 0.02 0.06 R
Rsd 0.2s 12ph/11stn Dmin 75km Az.gap 246°
Corr. -0.520 17M/17stn Msd 0.2 1↑

87/3774
SEP 21 2247 37.1s 41.27S 173.44E 96km M=5.2
0.4 0.03 0.02 5
Rsd 0.2s 21ph/17stn Dmin 62km Az.gap 86°
Corr. -0.484 8M/8stn Msd 0.2 6↑ 5↓
Felt Wellington and northern half of South Island, maximum intensity MM V at Kelburn (68), Nelson (76) and Blenheim (77).

87/3778
SEP 22 0520 16.4s 39.22S 175.35E 8km M=3.7
0.2 0.01 0.02 2
Rsd 0.2s 27ph/27stn Dmin 17km Az.gap 101°
Corr. 0.011 21M/21stn Msd 0.3 1↑ 1↓
Felt at Ohakune (49) MM IV.

87/3784
SEP 22 0957 10.0s 43.15S 172.29E 5km M=3.3
0.4 0.03 0.05 R
Rsd 0.7s 7ph/7stn Dmin 56km Az.gap 132°
Corr. 0.190 5M/5stn Msd 0.2
Felt Le Bons Bay (111) .

87/3802
SEP 23 1947 26.1s 40.60S 175.92E 12km M=3.9
0.2 0.01 0.03 R
Rsd 0.4s 25ph/21stn Dmin 38km Az.gap 95°
Corr. -0.766 9M/9stn Msd 0.2 3↑ 1↓
Felt Palmerston North (62) MM IV and Southern Hawkes Bay (60).

87/3811
SEP 24 1446 43.2s 37.77S 175.98E 277km M=4.2
0.9 0.08 0.10 7
Rsd 0.4s 19ph/18stn Dmin 43km Az.gap 201°
Corr. 0.022 17M/17stn Msd 0.1 1↓

87/3813
SEP 24 1937 54.4s 37.62S 176.43E 207km M=3.9
1.3 0.07 0.06 11
Rsd 0.4s 14ph/13stn Dmin 64km Az.gap 204°
Corr. -0.332 11M/11stn Msd 0.1

87/3819
SEP 25 0132 47.1s 40.42S 174.23E 61km M=3.8
0.4 0.03 0.04 6
Rsd 0.2s 15ph/12stn Dmin 76km Az.gap 217°
Corr. -0.523 11M/11stn Msd 0.2

87/3829
SEP 26 0711 41.1s 39.39S 177.62E 25km M=3.6
0.2 0.01 0.02 1
Rsd 0.2s 31ph/23stn Dmin 50km Az.gap 196°
Corr. -0.539 22M/21stn Msd 0.2 1↑ 5↓

87/3841
SEP 27 0216 37.9s 40.86S 172.98E 196km M=4.0
0.3 0.04 0.02 3
Rsd 0.2s 19ph/14stn Dmin 33km Az.gap 200°
Corr. -0.225 13M/12stn Msd 0.2 4↑ 1↓

87/3842
SEP 27 0321 57.7s 36.49S 177.87E 248km M=4.0
0.7 0.06 0.07 6
Rsd 0.3s 12ph/12stn Dmin 129km Az.gap 291°
Corr. -0.030 4M/4stn Msd 0.2

87/3854
SEP 28 1522 34.0s 40.22S 176.66E 42km M=3.6
0.2 0.01 0.03 4
Rsd 0.2s 29ph/24stn Dmin 29km Az.gap 191°
Corr. -0.598 12M/12stn Msd 0.1 3↑ 2↓

87/3858
SEP 28 2248 41.7s 38.87S 175.14E 207km M=4.7
0.3 0.02 0.02 3
Rsd 0.3s 33ph/31stn Dmin 51km Az.gap 136°
Corr. 0.108 19M/17stn Msd 0.3 15↑ 5↓

87/3865
SEP 29 0431 31.9s 38.04S 176.36E 2km M=2.0
0.3 0.02 0.02 R
Rsd 0.3s 6ph/5stn Dmin 21km Az.gap 228°
Corr. 0.436 3M/3stn Msd 0.0
Felt at Rotorua (33) MM V.

87/3866
SEP 29 0740 14.7s 35.50S 178.88E 221km M=4.3
0.6 0.09 0.06 10
Rsd 0.2s 11ph/11stn Dmin 238km Az.gap 325°
Corr. 0.135 15M/15stn Msd 0.3

87/3874
SEP 29 2120 32.5s 38.60S 176.16E 3km M=3.7
0.2 0.01 0.01 2
Rsd 0.3s 24ph/23stn Dmin 7km Az.gap 73°
Corr. -0.152 27M/27stn Msd 0.3 2↑ 9↓
Felt at Kinloch and Taupo (40) and Wairakei (41). Maximum intensity MM VI at Wairakei.

87/3875
SEP 29 2122 46.8s 38.61S 176.17E 5km M=2.7
0.1 0.01 0.01 R
Rsd 0.2s 16ph/14stn Dmin 7km Az.gap 72°
Corr. -0.342 5M/5stn Msd 0.2 2↑ 1↓
Felt at Wairakei (41) MM IV and at Kinloch (40).

87/3876
SEP 29 2125 43.8s 38.63S 176.21E 2km M=2.0
0.2 0.02 0.02 R
Rsd 0.4s 13ph/11stn Dmin 10km Az.gap 157°
Corr. -0.645 7M/7stn Msd 0.2
Felt at Wairakei (41) MM IV and at Kinloch (40).

87/3878
SEP 30 0039 10.1s 38.61S 176.17E 5km M=1.8
0.1 0.01 0.01 R
Rsd 0.3s 12ph/11stn Dmin 7km Az.gap 147°
Corr. -0.539 6M/6stn Msd 0.3 1↑
Felt Wairakei (41) MM IV.

87/3888
OCT 01 0852 45.5s 38.61S 176.18E 1km M=2.5
0.2 0.00 0.00 1
Rsd 0.2s 16ph/14stn Dmin 8km Az.gap 92°
Corr. -0.336 9M/9stn Msd 0.2
Felt at Taupo (41) MM IV.

87/3890
OCT 01 1244 11.2s 38.66S 176.05E 5km M=2.5
0.1 0.01 0.01 R
Rsd 0.2s 12ph/11stn Dmin 3km Az.gap 134°
Corr. -0.455 4M/4stn Msd 0.3 2↑ 4↓
Felt at Acacia Bay (41) MM IV.

87/3893
OCT 01 1744 05.1s 38.04S 176.16E 184km M=4.4
0.5 0.03 0.03 4
Rsd 0.3s 25ph/23stn Dmin 38km Az.gap 154°
Corr. 0.057 17M/15stn Msd 0.2 1↑

87/3907
OCT 03 0711 26.3s 39.09S 175.07E 224km M=3.8
0.7 0.04 0.08 8
Rsd 0.3s 18ph/17stn Dmin 130km Az.gap 246°
Corr. -0.813 13M/13stn Msd 0.2

87/3913
OCT 04 0135 04.3s 36.23S 178.18E 186km M=4.3
0.2 0.02 0.01 2
Rsd 0.1s 11ph/10stn Dmin 153km Az.gap 306°
Corr. -0.074 19M/19stn Msd 0.1

87/3918
OCT 04 1149 47.1s 47.62S 165.64E 33km M=3.9
0.3 0.02 0.03 R
Rsd 0.2s 15ph/13stn Dmin 203km Az.gap 321°
Corr. -0.109 8M/8stn Msd 0.1

87/3922
OCT 04 1747 53.2s 41.33S 173.53E 115km M=3.9
0.1 0.01 0.01 1
Rsd 0.1s 16ph/12stn Dmin 64km Az.gap 297°
Corr. -0.393 11M/11stn Msd 0.1 8↑ 1↓

87/3932
OCT 05 1854 11.7s 39.00S 175.93E 92km M=3.9
0.5 0.02 0.03 4
Rsd 0.3s 18ph/14stn Dmin 19km Az.gap 72°
Corr. 0.249 15M/14stn Msd 0.2 5↑ 5↓

87/3934
OCT 05 2012 44.1s 40.01S 176.82E 54km M=3.7
0.2 0.01 0.02 2
Rsd 0.2s 28ph/25stn Dmin 3km Az.gap 201°
Corr. -0.559 13M/12stn Msd 0.2 5↑ 4↓

87/3942
OCT 06 1449 31.3s 41.28S 174.30E 63km M=4.4
0.1 0.01 0.01 1
Rsd 0.1s 26ph/22stn Dmin 8km Az.gap 81°
Corr. -0.461 15M/12stn Msd 0.2 5↑ 6↓
Felt from Waikanae (65) to Miramar (68). Maximum intensity MM V at Northland and Tawa (68).

87/3954
OCT 08 0002 30.4s 41.35S 174.75E 0km M=2.3
0.1 R R R
Rsd 0.3s 9ph/9stn Dmin 7km Az.gap 168°
Corr. 0.000 8M/6stn Msd 0.2 1↑
Felt Island Bay (68) MM IV.QUARRY : Owhiro Bay.

87/3961
OCT 09 0222 53.2s 39.73S 174.39E 188km M=3.8
0.3 0.02 0.05 3
Rsd 0.2s 26ph/21stn Dmin 122km Az.gap 198°
Corr. -0.668 8M/7stn Msd 0.2 1↑

87/3964
OCT 09 2008 05.6s 44.84S 167.85E 59km M=4.1
0.8 0.02 0.06 7
Rsd 0.2s 14ph/14stn Dmin 20km Az.gap 184°
Corr. 0.025 5M/5stn Msd 0.2 3↑ 7↓

87/3969
OCT 10 1040 34.0s 38.91S 177.17E 65km M=3.8
0.2 0.01 0.02 2
Rsd 0.3s 29ph/24stn Dmin 12km Az.gap 117°
Corr. -0.076 18M/18stn Msd 0.2 5↑ 8↓

87/3980
OCT 11 1244 51.5s 38.47S 176.33E 5km M=2.5
0.1 0.01 0.01 R
Rsd 0.2s 11ph/10stn Dmin 5km Az.gap 116°
Corr. -0.527 8M/8stn Msd 0.2 1↓
Felt Reporoa (33) MM IV.

87/3985
OCT 11 1823 30.9s 39.75S 174.30E 132km M=4.5
0.4 0.01 0.03 3
Rsd 0.2s 42ph/36stn Dmin 56km Az.gap 121°
Corr. -0.660 13M/10stn Msd 0.3 12↑ 9↓
Felt Karori (68) MM V, Levin (65) MM III, Hawera (55).

87/3988
OCT 11 2314 54.7s 37.64S 177.16E 136km M=4.0
0.3 0.02 0.02 3
Rsd 0.2s 19ph/18stn Dmin 42km Az.gap 132°
Corr. -0.134 18M/18stn Msd 0.2 3↑ 1↓

87/3990
OCT 12 0104 05.7s 37.18S 177.59E 165km M=3.7
1.4 0.07 0.09 12
Rsd 0.6s 11ph/10stn Dmin 78km Az.gap 242°
Corr. 0.069 5M/5stn Msd 0.3 1↑

87/3998
OCT 12 1834 41.8s 38.34S 178.74E 51km M=4.2
0.3 0.01 0.03 3
Rsd 0.1s 14ph/13stn Dmin 71km Az.gap 244°
Corr. -0.656 21M/18stn Msd 0.2 1↑ 1↓

87/4005
OCT 13 0440 08.5s 39.81S 177.04E 49km M=3.7
0.3 0.01 0.02 2
Rsd 0.3s 33ph/27stn Dmin 28km Az.gap 216°
Corr. -0.354 13M/13stn Msd 0.2 4↑ 5↓

87/4008
OCT 13 0649 04.2s 38.30S 175.83E 279km M=4.2
0.7 0.08 0.08 5
Rsd 0.3s 14ph/12stn Dmin 87km Az.gap 197°
Corr. -0.424 16M/16stn Msd 0.2 1↑

87/4010
OCT 13 1626 30.2s 38.87S 175.68E 171km M=3.7
0.5 0.04 0.04 4
Rsd 0.1s 17ph/15stn Dmin 96km Az.gap 264°
Corr. -0.617 12M/12stn Msd 0.1 1↑

87/4012
OCT 13 1800 01.0s 39.13S 175.03E 160km M=4.3
0.4 0.01 0.02 3
Rsd 0.2s 42ph/36stn Dmin 45km Az.gap 120°
Corr. -0.157 22M/20stn Msd 0.2 13↑ 8↓

87/4021
OCT 14 1035 20.3s 39.01S 175.73E 127km M=3.7
0.4 0.03 0.04 5
Rsd 0.2s 18ph/15stn Dmin 89km Az.gap 253°
Corr. -0.621 12M/12stn Msd 0.1 5↑ 2↓

87/4022
OCT 14 1532 15.9s 48.83S 164.43E 33km M=4.5
0.2 0.45 0.71 R
Rsd 0.0s 9ph/9stn Dmin 549km Az.gap 360°
Corr. -0.996 5M/5stn Msd 0.1

87/4040
OCT 16 0425 36.7s 38.26S 176.50E 134km M=3.6
0.6 0.03 0.03 5
Rsd 0.4s 17ph/15stn Dmin 3km Az.gap 83°
Corr. 0.032 13M/13stn Msd 0.2 1↑ 3↓

87/4059
OCT 17 1703 27.1s 38.02S 176.13E 171km M=4.0
0.7 0.03 0.04 6
Rsd 0.3s 24ph/19stn Dmin 42km Az.gap 155°
Corr. 0.034 18M/18stn Msd 0.2 2↑ 3↓

87/4065
OCT 18 0813 12.8s 36.75S 177.15E 218km M=4.2
0.3 0.02 0.03 3
Rsd 0.2s 14ph/13stn Dmin 138km Az.gap 286°
Corr. -0.295 8M/8stn Msd 0.2 1↑

87/4066
OCT 18 1144 06.3s 44.77S 171.90E 33km M=3.8
0.3 0.02 0.04 R
Rsd 0.2s 11ph/11stn Dmin 85km Az.gap 197°
Corr. -0.531 8M/8stn Msd 0.2 1↑6↓

87/4069
OCT 18 1609 28.8s 35.65S 178.41E 223km M=4.9
0.3 0.03 0.03 4
Rsd 0.2s 26ph/25stn Dmin 216km Az.gap 286°
Corr. 0.482 21M/19stn Msd 0.1 5↑6↓

87/4075
OCT 19 0608 44.2s 41.81S 171.81E 12km M=4.0
0.2 0.01 0.01 R
Rsd 0.1s 13ph/12stn Dmin 86km Az.gap 196°
Corr. -0.707 25M/23stn Msd 0.2 1↑1↓
Felt Inangahua, Westport (79), MM V.

87/4084
OCT 20 0518 09.0s 37.20S 177.54E 165km M=4.1
0.5 0.03 0.03 5
Rsd 0.2s 19ph/19stn Dmin 81km Az.gap 239°
Corr. -0.179 16M/16stn Msd 0.2 5↑3↓

87/4086
OCT 20 1028 17.2s 39.13S 177.55E 28km M=3.5
0.2 0.01 0.02 2
Rsd 0.3s 19ph/16stn Dmin 35km Az.gap 176°
Corr. -0.295 9M/9stn Msd 0.3 6↑1↓
Felt Wairoa (53), MM III.

87/4088
OCT 20 1256 08.6s 40.92S 174.89E 60km M=3.6
0.1 0.01 0.01 1
Rsd 0.1s 16ph/12stn Dmin 6km Az.gap 141°
Corr. -0.199 6M/6stn Msd 0.1 6↑1↓

87/4118
OCT 23 0926 40.9s 40.98S 175.37E 11km M=3.5
0.1 0.01 0.01 1
Rsd 0.2s 25ph/21stn Dmin 23km Az.gap 104°
Corr. -0.373 12M/10stn Msd 0.3 5↑4↓

87/4141
OCT 24 2010 45.6s 35.49S 178.52E 224km M=4.7
0.5 0.05 0.04 7
Rsd 0.3s 19ph/15stn Dmin 234km Az.gap 292°
Corr. 0.516 15M/14stn Msd 0.3 1↑

87/4142
OCT 24 2036 20.8s 38.04S 176.68E 2km M=3.2
0.2 0.01 0.01 R
Rsd 0.3s 23ph/21stn Dmin 26km Az.gap 155°
Corr. 0.013 14M/14stn Msd 0.2 1↑
Felt at Kawerau (34).

87/4150
OCT 25 0707 56.3s 44.40S 167.37E 18km M=3.9
0.3 0.03 0.03 1
Rsd 0.1s 12ph/10stn Dmin 53km Az.gap 287°
Corr. 0.602 9M/9stn Msd 0.2

87/4163
OCT 26 0335 10.6s 37.72S 176.33E 184km M=4.0
0.5 0.03 0.03 4
Rsd 0.3s 23ph/17stn Dmin 59km Az.gap 194°
Corr. -0.113 17M/17stn Msd 0.2 1↑1↓

87/4167
OCT 26 0734 45.4s 36.12S 179.93E 37km M=4.0
0.7 0.05 0.09 295
Rsd 0.3s 10ph/9stn Dmin 219km Az.gap 329°
Corr. -0.395 8M/8stn Msd 0.3

87/4173
OCT 26 1558 05.6s 42.24S 172.80E 12km M=3.6
0.2 0.01 0.02 R
Rsd 0.3s 19ph/18stn Dmin 48km Az.gap 118°
Corr. -0.334 16M/16stn Msd 0.2 2↑1↓

87/4176
OCT 26 1906 34.5s 40.90S 175.89E 33km M=3.6
0.1 0.01 0.01 R
Rsd 0.2s 19ph/16stn Dmin 29km Az.gap 121°
Corr. -0.295 11M/9stn Msd 0.2 2↑1↓

87/4180
OCT 27 0314 59.6s 42.23S 172.78E 12km M=4.6
0.2 0.01 0.02 R
Rsd 0.3s 18ph/18stn Dmin 47km Az.gap 105°
Corr. -0.324 24M/21stn Msd 0.3 6↑1↓
Felt at Howard Valley (81) MM IV. Followed by a small number of aftershocks.

87/4185
OCT 27 0923 06.1s 41.84S 174.34E 12km M=4.9
0.2 0.02 0.02 R
Rsd 0.4s 21ph/19stn Dmin 14km Az.gap 154°
Corr. -0.598 25M/23stn Msd 0.4 2↑7↓
Felt from Palmerston North (62) to Kaikoura (90) Max. Int. MMV at Wellington (68).

87/4206
OCT 27 1208 20.6s 41.77S 174.33E 12km M=3.9
0.3 0.02 0.02 R
Rsd 0.4s 21ph/18stn Dmin 9km Az.gap 149°
Corr. -0.633 12M/10stn Msd 0.3 4↑3↓

87/4207
OCT 27 1216 56.5s 40.44S 173.47E 135km M=4.0
0.3 0.01 0.02 3
Rsd 0.2s 21ph/17stn Dmin 95km Az.gap 162°
Corr. 0.165 11M/9stn Msd 0.2 1↑1↓

87/4224
OCT 27 2239 54.4s 37.32S 177.03E 150km M=4.7
0.3 0.01 0.01 3
Rsd 0.1s 22ph/21stn Dmin 74km Az.gap 155°
Corr. 0.058 20M/18stn Msd 0.2 1↑1↓

87/4237
OCT 29 0007 04.0s 42.67S 171.14E 88km M=3.6
0.2 0.01 0.03 3
Rsd 0.3s 18ph/18stn Dmin 27km Az.gap 188°
Corr. -0.707 11M/11stn Msd 0.2

87/4251
OCT 30 1402 04.6s 42.07S 174.69E 34km M=3.8
0.2 0.02 0.01 3
Rsd 0.2s 23ph/19stn Dmin 53km Az.gap 184°
Corr. 0.081 8M/6stn Msd 0.2 3↑ 5↓

87/4252
OCT 30 1535 59.7s 37.33S 176.73E 233km M=4.0
0.6 0.05 0.04 5
Rsd 0.3s 11ph/11stn Dmin 76km Az.gap 225°
Corr. -0.019 13M/13stn Msd 0.2

87/4258
OCT 30 2242 04.3s 38.14S 176.21E 5km M=2.5
0.2 0.02 0.02 R
Rsd 0.4s 7ph/6stn Dmin 27km Az.gap 144°
Corr. 0.293 7M/7stn Msd 0.1 1↑
Felt at Rotorua and Te Ngae Junction (33) MM V.

87/4259
OCT 30 2246 54.1s 36.82S 176.79E 312km M=4.4
0.9 0.07 0.08 9
Rsd 0.4s 18ph/16stn Dmin 131km Az.gap 261°
Corr. -0.162 18M/18stn Msd 0.2 1↑ 1↓

87/4263
OCT 31 0425 36.3s 39.00S 174.95E 212km M=4.3
0.4 0.02 0.03 4
Rsd 0.3s 33ph/29stn Dmin 56km Az.gap 137°
Corr. 0.051 20M/18stn Msd 0.3 12↑ 2↓

87/4268
OCT 31 1433 25.3s 40.88S 172.90E 5km M=3.8
0.2 0.01 0.02 R
Rsd 0.2s 21ph/18stn Dmin 27km Az.gap 176°
Corr. -0.617 14M/12stn Msd 0.2 1↓

87/4280
NOV 01 1111 19.0s 40.79S 174.06E 59km M=3.7
0.2 0.02 0.01 4
Rsd 0.2s 18ph/14stn Dmin 51km Az.gap 189°
Corr. -0.055 8M/8stn Msd 0.2 2↑ 2↓
Felt at Mount Victoria (68).

87/4284
NOV 01 2343 35.3s 38.59S 175.72E 150km M=3.7
1.3 0.05 0.08 11
Rsd 0.4s 12ph/11stn Dmin 14km Az.gap 234°
Corr. 0.245 11M/10stn Msd 0.2 3↑ 1↓

87/4292
NOV 03 1835 13.0s 37.25S 177.50E 129km M=4.0
0.8 0.03 0.04 9
Rsd 0.3s 16ph/14stn Dmin 81km Az.gap 233°
Corr. 0.158 8M/8stn Msd 0.1

87/4310
NOV 05 1608 50.8s 37.61S 176.31E 237km M=4.0
1.0 0.06 0.06 9
Rsd 0.3s 16ph/14stn Dmin 64km Az.gap 247°
Corr. -0.273 16M/16stn Msd 0.4 1↑ 2↓

87/4312
NOV 05 1948 20.8s 38.27S 175.94E 165km M=5.3
0.3 0.02 0.02 3
Rsd 0.2s 39ph/36stn Dmin 25km Az.gap 83°
Corr. 0.096 4M/3stn Msd 0.2 18↑ 14↓
Felt Patoka (52), Palmerston North (62) MM IV and from Taupo (41) and Mahia Beach (54) to Wellington (68).

87/4313
NOV 05 2039 30.8s 45.50S 167.00E 86km M=3.9
0.2 0.01 0.03 2
Rsd 0.0s 13ph/13stn Dmin 52km Az.gap 246°
Corr. -0.836 9M/9stn Msd 0.1 1↓

87/4315
NOV 05 2236 52.7s 35.89S 178.39E 202km M=4.9
0.5 0.04 0.04 5
Rsd 0.3s 23ph/22stn Dmin 190km Az.gap 281°
Corr. 0.492 20M/20stn Msd 0.2 4↑ 2↓

87/4316
NOV 06 0004 18.5s 38.26S 175.83E 175km M=3.7
0.9 0.06 0.12 10
Rsd 0.3s 14ph/13stn Dmin 91km Az.gap 280°
Corr. -0.081 12M/12stn Msd 0.2 1↑

87/4319
NOV 06 0308 21.1s 45.14S 167.51E 82km M=4.4
0.5 0.02 0.04 10
Rsd 0.2s 15ph/15stn Dmin 139km Az.gap 242°
Corr. -0.508 6M/6stn Msd 0.2 2↓

87/4324
NOV 06 0711 07.6s 35.81S 178.11E 287km M=4.0
0.4 0.12 0.22 9
Rsd 0.1s 13ph/12stn Dmin 352km Az.gap 348°
Corr. -0.910 10M/10stn Msd 0.2

87/4350
NOV 08 1724 01.1s 38.42S 175.98E 136km M=4.1
0.5 0.02 0.03 5
Rsd 0.4s 25ph/19stn Dmin 32km Az.gap 96°
Corr. 0.121 17M/17stn Msd 0.4 8↑ 6↓

87/4378
NOV 09 1748 48.0s 37.74S 177.38E 233km M=3.7
0.3 0.05 0.07 4
Rsd 0.1s 10ph/9stn Dmin 165km Az.gap 339°
Corr. -0.766 1M/1stn Msd N.D.

87/4385
NOV 10 0011 33.6s 40.61S 175.03E 55km M=3.6
0.2 0.01 0.02 5
Rsd 0.2s 15ph/12stn Dmin 55km Az.gap 185°
Corr. -0.594 9M/9stn Msd 0.1 5↑ 2↓

87/4389
NOV 10 0414 20.4s 40.73S 174.26E 73km M=3.6
0.2 0.02 0.02 2
Rsd 0.1s 15ph/11stn Dmin 54km Az.gap 286°
Corr. -0.186 6M/6stn Msd 0.2 3↑ 3↓

87/4391
NOV 10 0602 09.6s 38.67S 177.45E 42km M=3.6
0.5 0.02 0.04 7
Rsd 0.2s 16ph/14stn Dmin 41km Az.gap 267°
Corr. 0.543 4M/4stn Msd 0.3 1↓

87/4392
NOV 10 0707 38.2s 39.77S 173.92E 253km M=5.0
0.3 0.01 0.02 3
Rsd 0.1s 45ph/37stn Dmin 57km Az.gap 161°
Corr. -0.445 14M/12stn Msd 0.2 13↑ 18↓
Felt Tawa (68) MM III.

87/4393
NOV 10 0852 01.3s 41.04S 174.20E 57km M=4.3
0.2 0.02 0.01 3
Rsd 0.2s 22ph/19stn Dmin 20km Az.gap 90°
Corr. -0.048 13M/10stn Msd 0.2 8↑ 6↓
Felt Wellington (68), Fighting Bay (78) MM IV.

87/4407
NOV 12 0939 33.6s 39.38S 174.78E 27km M=3.6
0.1 0.01 0.01 1
Rsd 0.2s 28ph/27stn Dmin 60km Az.gap 102°
Corr. -0.239 17M/15stn Msd 0.3 6↑ 1↓

87/4422
NOV 13 0351 31.2s 37.72S 177.90E 94km M=3.8
0.3 0.02 0.02 3
Rsd 0.2s 23ph/22stn Dmin 37km Az.gap 167°
Corr. -0.254 18M/17stn Msd 0.2 2↑ 2↓

87/4439
NOV 14 1409 54.8s 38.25S 176.04E 157km M=4.6
0.6 0.03 0.04 6
Rsd 0.4s 27ph/23stn Dmin 15km Az.gap 73°
Corr. 0.318 15M/13stn Msd 0.3 11↑ 11↓

87/4445
NOV 15 1825 28.9s 37.80S 177.08E 111km M=3.9
0.5 0.03 0.03 4
Rsd 0.3s 16ph/14stn Dmin 22km Az.gap 175°
Corr. 0.211 15M/15stn Msd 0.2 1↓

87/4446
NOV 15 1905 54.6s 38.70S 175.49E 127km M=3.9
1.0 0.06 0.08 12
Rsd 0.3s 15ph/14stn Dmin 90km Az.gap 264°
Corr. -0.235 12M/12stn Msd 0.2 3↑ 2↓

87/4449
NOV 16 0503 42.5s 38.24S 176.44E 7km M=2.1
0.3 0.02 0.02 7
Rsd 0.4s 7ph/7stn Dmin 6km Az.gap 125°
Corr. 0.211 2M/2stn Msd 0.0 1↑ 1↓
Felt Ngapouri Road (33) MM V.

87/4450
NOV 16 0535 05.4s 38.23S 176.45E 2km M=3.3
0.5 0.02 0.02 2
Rsd 0.5s 18ph/16stn Dmin 5km Az.gap 128°
Corr. -0.089 9M/9stn Msd 0.2 1↑ 3↓
Felt Rotorua region, MM V at Ngapouri and Spencer Roads (33). Largest of a series between 04h 35m and 07h 32m.

87/4471
NOV 19 1511 48.6s 46.82S 165.29E 33km M=3.6
1.1 0.06 0.10 R
Rsd 0.6s 10ph/9stn Dmin 208km Az.gap 308°
Corr. -0.234 8M/8stn Msd 0.1

87/4477
NOV 20 0643 32.4s 38.45S 175.75E 166km M=4.0
0.7 0.04 0.04 5
Rsd 0.4s 24ph/19stn Dmin 61km Az.gap 140°
Corr. 0.072 20M/18stn Msd 0.3 1↑

87/4478
NOV 20 0654 58.5s 41.78S 174.53E 34km M=3.5
0.1 0.01 0.01 2
Rsd 0.1s 17ph/11stn Dmin 26km Az.gap 217°
Corr. 0.142 6M/6stn Msd 0.2 4↑ 4↓

87/4490
NOV 21 0512 00.4s 45.35S 166.70E 42km M=3.5
0.4 0.02 0.04 10
Rsd 0.1s 15ph/15stn Dmin 81km Az.gap 264°
Corr. -0.605 10M/10stn Msd 0.2 1↓

87/4495
NOV 21 2214 45.2s 34.71S 179.85E 33km M=4.6
0.4 0.10 0.20 R
Rsd 0.0s 7ph/6stn Dmin 634km Az.gap 352°
Corr. -0.973 11M/11stn Msd 0.4

87/4497
NOV 22 0055 30.5s 38.13S 176.67E 5km M=3.2
0.3 0.02 0.02 R
Rsd 0.4s 16ph/14stn Dmin 18km Az.gap 146°
Corr. 0.445 6M/6stn Msd 0.2 1↑
Felt Kawerau (34) MM IV. Followed by about 20 smaller events over next 24 hours.

87/4499
NOV 22 0545 55.8s 40.46S 174.57E 87km M=3.8
0.2 0.02 0.01 2
Rsd 0.1s 16ph/12stn Dmin 54km Az.gap 299°
Corr. -0.379 8M/8stn Msd 0.1 6↑ 2↓

87/4502
NOV 22 1708 17.1s 36.53S 177.82E 12km M=3.9
1.7 0.09 0.08 R
Rsd 0.8s 9ph/8stn Dmin 127km Az.gap 241°
Corr. 0.797 4M/4stn Msd 0.3 1↓

87/4503
NOV 22 1718 36.1s 44.25S 167.89E 12km M=3.5
0.5 0.02 0.04 R
Rsd 0.2s 16ph/13stn Dmin 47km Az.gap 264°
Corr. -0.369 7M/7stn Msd 0.2 1↓

87/4505
NOV 22 1822 54.7s 41.38S 174.43E 10km M=3.5
0.1 0.01 0.01 1
Rsd 0.2s 23ph/19stn Dmin 23km Az.gap 108°
Corr. -0.520 11M/10stn Msd 0.3 3↑2↓
Felt at Fighting Bay (78) MM IV and at Tory Channel (78).

87/4520
NOV 24 1539 17.6s 38.85S 177.99E 35km M=3.5
0.3 0.02 0.02 6
Rsd 0.2s 11ph/10stn Dmin 23km Az.gap 221°
Corr. -0.471 6M/6stn Msd 0.3 1↓

87/4526
NOV 25 0039 36.3s 38.24S 176.25E 5km M=2.2
0.9 0.09 0.05 R
Rsd 0.7s 5ph/5stn Dmin 9km Az.gap 211°
Corr. 0.801 1M/1stn Msd N.D. 1↓
Felt at Rotorua (33) MM V.

87/4538
NOV 26 0305 43.2s 40.61S 174.11E 109km M=3.6
0.2 0.02 0.01 2
Rsd 0.1s 15ph/11stn Dmin 68km Az.gap 302°
Corr. -0.490 8M/8stn Msd 0.1 1↑

87/4544
NOV 27 0701 31.6s 37.95S 176.84E 5km M=3.3
0.2 0.01 0.01 R
Rsd 0.4s 11ph/11stn Dmin 13km Az.gap 122°
Corr. -0.166 4M/4stn Msd 0.1
Felt at Pikowai (27).

87/4551
NOV 28 0835 33.5s 40.37S 173.76E 186km M=3.6
0.2 0.04 0.02 4
Rsd 0.0s 11ph/9stn Dmin 103km Az.gap 326°
Corr. 0.459 8M/8stn Msd 0.3 1↑2↓

87/4559
NOV 29 1254 43.4s 37.89S 176.89E 5km M=4.0
0.3 0.02 0.02 R
Rsd 0.5s 16ph/16stn Dmin 14km Az.gap 126°
Corr. -0.119 11M/10stn Msd 0.2 1↑
Felt MM V at Ohope, also felt Pikowai and Whakatane (27).

87/4560
NOV 29 1300 01.6s 37.86S 176.88E 5km M=3.8
0.3 0.02 0.02 R
Rsd 0.3s 13ph/13stn Dmin 17km Az.gap 131°
Corr. 0.285 11M/10stn Msd 0.3 1↑
Felt MM V at Ohope (35), also felt Pikowai and Whakatane (27).

87/4563
NOV 30 0038 44.4s 35.38S 179.18E 264km M=4.8
0.9 0.09 0.11 14
Rsd 0.4s 19ph/18stn Dmin 259km Az.gap 327°
Corr. 0.332 18M/18stn Msd 0.2 1↑

87/4565
NOV 30 0345 00.2s 37.91S 176.88E 5km M=3.3
0.3 0.03 0.02 R
Rsd 0.5s 10ph/10stn Dmin 13km Az.gap 166°
Corr. -0.114 4M/4stn Msd 0.2
Felt at Pikowai (27).

87/4566
NOV 30 0601 14.7s 43.68S 170.69E 12km M=3.9
1.5 0.47 1.22 R
Rsd 0.5s 9ph/9stn Dmin 84km Az.gap 188°
Corr. -0.996 10M/10stn Msd 0.2 1↑1↓

87/4568
NOV 30 1816 11.4s 38.67S 175.46E 172km M=4.5
0.5 0.02 0.03 4
Rsd 0.3s 27ph/24stn Dmin 50km Az.gap 125°
Corr. 0.307 20M/19stn Msd 0.2 8↑4↓

87/4600
DEC 04 0035 41.1s 38.40S 175.62E 174km M=4.6
0.4 0.02 0.02 3
Rsd 0.2s 22ph/20stn Dmin 47km Az.gap 119°
Corr. 0.367 22M/20stn Msd 0.2 3↑2↓

87/4601
DEC 04 0722 29.2s 45.10S 167.56E 96km M=5.1
0.2 0.01 0.02 4
Rsd 0.1s 10ph/10stn Dmin 135km Az.gap 241°
Corr. -0.578 4M/4stn Msd 0.4 1↓
Felt at Te Anau Downs (130) MM V.

87/4623
DEC 06 0946 18.7s 37.30S 177.46E 138km M=4.0
0.7 0.04 0.03 6
Rsd 0.3s 14ph/11stn Dmin 82km Az.gap 227°
Corr. -0.037 13M/13stn Msd 0.1 1↑1↓

87/4631
DEC 06 1726 34.2s 41.42S 174.54E 20km M=3.6
0.1 0.01 0.01 1
Rsd 0.2s 17ph/13stn Dmin 22km Az.gap 127°
Corr. -0.203 8M/8stn Msd 0.4 5↑8↓
Felt widely in the Wellington area with maximum intensity MM IV.

87/4635
DEC 06 2012 46.8s 38.15S 176.11E 170km M=4.9
0.7 0.04 0.04 5
Rsd 0.4s 15ph/13stn Dmin 8km Az.gap 137°
Corr. 0.129 9M/7stn Msd 0.2 9↑5↓

87/4639
DEC 07 0512 44.1s 34.80S 179.60W 12km M=4.2
0.6 0.05 0.09 R
Rsd 0.3s 12ph/11stn Dmin 363km Az.gap 336°
Corr. -0.570 12M/12stn Msd 0.3
T waves on HBZ at 05 17.

87/4645
DEC 07 1659 19.2s 41.30S 174.43E 62km M=3.5
0.1 0.01 0.01 1
Rsd 0.1s 18ph/14stn Dmin 16km Az.gap 109°
Corr. -0.344 8M/8stn Msd 0.1 4↑ 6↓

87/4650
DEC 08 0454 53.6s 36.44S 177.36E 262km M=4.2
0.9 0.07 0.06 9
Rsd 0.3s 12ph/12stn Dmin 153km Az.gap 283°
Corr. 0.126 18M/18stn Msd 0.2 1↑

87/4652
DEC 08 0839 31.5s 38.12S 176.01E 162km M=3.8
0.4 0.02 0.06 4
Rsd 0.1s 16ph/16stn Dmin 95km Az.gap 315°
Corr. 0.089 12M/12stn Msd 0.3 1↑

87/4653
DEC 08 0855 37.5s 39.84S 175.93E 61km M=3.6
0.2 0.01 0.02 4
Rsd 0.2s 14ph/14stn Dmin 40km Az.gap 163°
Corr. -0.570 14M/14stn Msd 0.1

87/4654
DEC 08 1433 32.4s 33.87S 177.77W 12km M=4.9
0.9 0.05 0.10 R
Rsd 0.2s 11ph/11stn Dmin 545km Az.gap 329°
Corr. -0.451 7M/7stn Msd 0.3
T waves on HBZ at 14 40.

87/4655
DEC 08 1442 58.4s 33.55S 178.14W 33km M=4.7
0.7 0.06 0.10 R
Rsd 0.2s 10ph/10stn Dmin 553km Az.gap 342°
Corr. -0.742 5M/5stn Msd 0.3
T waves on HBZ at 14 48.

87/4657
DEC 08 1727 29.7s 33.37S 178.05W 33km M=4.7
0.6 0.04 0.07 R
Rsd 0.1s 10ph/7stn Dmin 574km Az.gap 343°
Corr. -0.609 5M/5stn Msd 0.3
T waves on HBZ at 17 34.

87/4663
DEC 09 0938 24.5s 39.76S 174.48E 211km M=3.5
0.2 0.06 0.03 6
Rsd 0.1s 14ph/11stn Dmin 128km Az.gap 325°
Corr. 0.232 9M/9stn Msd 0.2 1↑

87/4669
DEC 09 2106 10.6s 35.95S 177.37E 266km M=4.1
0.5 0.08 0.07 6
Rsd 0.2s 5ph/5stn Dmin 201km Az.gap 328°
Corr. -0.138 3M/3stn Msd 0.1

87/4670
DEC 10 0218 10.6s 38.52S 175.92E 158km M=4.5
0.6 0.02 0.03 5
Rsd 0.4s 27ph/22stn Dmin 20km Az.gap 91°
Corr. 0.184 20M/18stn Msd 0.3 1↑ 11↓

87/4690
DEC 11 2331 10.2s 43.15S 170.73E 5km M=3.8
0.3 0.03 0.05 R
Rsd 0.3s 17ph/17stn Dmin 89km Az.gap 165°
Corr. -0.910 11M/11stn Msd 0.2

87/4694
DEC 12 0647 10.8s 40.88S 174.26E 61km M=3.7
0.1 0.01 0.01 1
Rsd 0.1s 12ph/8stn Dmin 37km Az.gap 270°
Corr. -0.153 5M/5stn Msd 0.1 1↑

87/4695
DEC 12 0652 28.9s 39.54S 174.53E 214km M=3.6
0.4 0.03 0.04 5
Rsd 0.1s 17ph/13stn Dmin 151km Az.gap 264°
Corr. -0.891 11M/11stn Msd 0.2 2↑ 2↓

87/4697
DEC 12 1139 48.9s 45.14S 167.53E 122km M=3.9
0.3 0.02 0.04 2
Rsd 0.1s 11ph/11stn Dmin 60km Az.gap 223°
Corr. -0.648 8M/8stn Msd 0.2

87/4704
DEC 13 0726 09.7s 36.92S 177.33E 199km M=4.8
0.8 0.07 0.04 7
Rsd 0.3s 13ph/13stn Dmin 115km Az.gap 197°
Corr. -0.069 20M/18stn Msd 0.1 1↓

87/4710
DEC 13 1940 59.2s 38.38S 175.97E 221km M=3.7
1.5 0.20 0.32 15
Rsd 0.1s 13ph/11stn Dmin 107km Az.gap 298°
Corr. -0.828 10M/10stn Msd 0.2 1↓

87/4714
DEC 14 0101 11.5s 41.14S 175.08E 4km M=3.3
0.1 0.00 0.00 1
Rsd 0.1s 23ph/19stn Dmin 3km Az.gap 65°
Corr. -0.207 8M/8stn Msd 0.4 2↑ 4↓
Felt from Haywards Hill, Manor Park and Taita (68) to Silverstream and Upper Hutt (69). MM V at Trentham (69).

87/4727
DEC 14 1935 29.4s 38.83S 175.10E 217km M=4.4
0.4 0.03 0.03 3
Rsd 0.3s 24ph/21stn Dmin 57km Az.gap 141°
Corr. 0.146 21M/19stn Msd 0.2 14↑ 3↓

87/4731
DEC 15 0214 20.9s 40.99S 173.64E 101km M=4.3
0.3 0.02 0.01 3
Rsd 0.2s 25ph/20stn Dmin 59km Az.gap 110°
Corr. -0.451 6M/4stn Msd 0.3 5↑ 1↓
Cross talk on KIW?

87/4738
DEC 15 1029 47.7s 38.46S 175.35E 180km M=4.0
0.4 0.02 0.05 6
Rsd 0.2s 23ph/18stn Dmin 110km Az.gap 271°
Corr. -0.551 14M/14stn Msd 0.4 1↑ 2↓

87/4741
DEC 15 2356 17.4s 38.70S 177.82E 32km M=3.8
0.4 0.02 0.03 3
Rsd 0.5s 19ph/19stn Dmin 19km Az.gap 140°
Corr. -0.303 12M/12stn Msd 0.2 1↑ 1↓

87/4752
DEC 16 1340 33.2s 41.12S 175.04E 6km M=2.1
0.1 0.00 0.01 2
Rsd 0.1s 12ph/9stn Dmin 2km Az.gap 93°
Corr. 0.125 6M/6stn Msd 0.2 3↑ 3↓
Felt Upper Hutt (69) MM V.

87/4753
DEC 16 1533 26.7s 40.20S 176.74E 63km M=3.9
0.2 0.01 0.02 6
Rsd 0.2s 28ph/21stn Dmin 73km Az.gap 189°
Corr. -0.500 14M/13stn Msd 0.2 4↑ 5↓
Felt Waipawa and Waipukurau (60) MM V, and Mount Vernon (60). Crosstalk on PAH?

87/4771
DEC 18 0840 37.2s 41.49S 172.97E 86km M=3.8
0.6 0.06 0.05 6
Rsd 0.4s 20ph/17stn Dmin 37km Az.gap 154°
Corr. -0.734 12M/10stn Msd 0.2 3↑ 4↓

87/4782
DEC 20 0503 14.0s 38.39S 175.94E 147km M=5.1
0.4 0.02 0.03 4
Rsd 0.3s 31ph/29stn Dmin 32km Az.gap 88°
Corr. 0.264 6M/4stn Msd 0.1 12↑ 13↓

87/4786
DEC 20 1610 12.2s 41.29S 173.36E 121km M=3.9
0.2 0.01 0.02 1
Rsd 0.0s 16ph/12stn Dmin 77km Az.gap 334°
Corr. 0.187 9M/9stn Msd 0.2 1↓

87/4791
DEC 21 0016 03.9s 45.32S 166.90E 33km M=3.7
0.1 0.04 0.01 R
Rsd 0.0s 9ph/9stn Dmin 187km Az.gap 356°
Corr. -0.672 6M/6stn Msd 0.1

87/4792
DEC 21 0304 31.0s 44.94S 167.61E 62km M=3.6
0.7 0.02 0.08 3
Rsd 0.1s 14ph/14stn Dmin 39km Az.gap 216°
Corr. -0.793 9M/9stn Msd 0.1 1↑ 3↓

87/4795
DEC 21 0922 59.1s 36.28S 179.22W 93km M=5.3
0.4 0.05 0.05 12
Rsd 0.2s 15ph/15stn Dmin 265km Az.gap 257°
Corr. -0.590 18M/16stn Msd 0.4 3↑ 2↓

87/4809
DEC 23 1529 02.6s 39.67S 179.95E 28km M=4.0
1.2 0.10 0.51 60
Rsd 0.4s 13ph/11stn Dmin 201km Az.gap 299°
Corr. -0.836 12M/10stn Msd 0.3 1↑

87/4810
DEC 23 2154 45.7s 37.74S 177.76E 101km M=4.0
0.5 0.02 0.02 4
Rsd 0.2s 22ph/18stn Dmin 51km Az.gap 169°
Corr. -0.115 17M/17stn Msd 0.3 5↑ 2↓

87/4814
DEC 24 0634 52.0s 35.74S 179.24E 149km M=4.7
0.7 0.05 0.07 15
Rsd 0.3s 14ph/12stn Dmin 223km Az.gap 298°
Corr. 0.504 12M/12stn Msd 0.2 1↑ 1↓

87/4817
DEC 24 1130 09.6s 39.06S 177.94E 64km M=3.6
0.4 0.02 0.05 6
Rsd 0.2s 10ph/9stn Dmin 69km Az.gap 300°
Corr. 0.003 13M/13stn Msd 0.2 1↑

87/4820
DEC 24 1746 16.3s 36.79S 177.68E 196km M=4.5
2.1 0.08 0.06 17
Rsd 0.3s 16ph/13stn Dmin 106km Az.gap 273°
Corr. 0.461 19M/19stn Msd 0.2 3↑ 4↓

87/4822
DEC 24 2227 37.6s 41.30S 173.07E 163km M=3.9
0.2 0.03 0.04 3
Rsd 0.1s 15ph/12stn Dmin 101km Az.gap 219°
Corr. -0.490 9M/9stn Msd 0.2 1↓

87/4827
DEC 25 1913 29.9s 40.12S 174.93E 5km M=3.5
0.2 0.01 0.02 R
Rsd 0.4s 27ph/23stn Dmin 73km Az.gap 133°
Corr. -0.656 21M/19stn Msd 0.4 1↓

87/4829
DEC 26 0336 12.5s 40.04S 173.49E 147km M=4.2
0.6 0.04 0.03 7
Rsd 0.3s 20ph/18stn Dmin 133km Az.gap 215°
Corr. -0.271 16M/14stn Msd 0.3 1↑ 4↓

87/4836
DEC 26 1744 19.8s 38.11S 176.22E 5km M=2.1
0.2 0.01 0.01 R
Rsd 0.2s 6ph/5stn Dmin 8km Az.gap 151°
Corr. -0.212 1M/1stn Msd N.D. 1↓
Felt Rotorua (33) MM IV.

87/4848
DEC 27 2156 32.8s 42.57S 173.11E 50km M=3.5
0.4 0.04 0.04 25
Rsd 0.1s 17ph/16stn Dmin 179km Az.gap 168°
Corr. -0.085 9M/9stn Msd 0.2

87/4851
DEC 28 0517 20.4s 44.27S 168.72E 5km M=4.1
1.4 0.06 0.11 R
Rsd 0.5s 14ph/14stn Dmin 78km Az.gap 220°
Corr. -0.742 6M/6stn Msd 0.2 1↑ 9↓
Felt Albert Burn Valley (113) MM V.

87/4861
DEC 29 0351 42.2s 37.76S 176.74E 175km M=3.9
0.3 0.01 0.01 2
Rsd 0.2s 22ph/17stn Dmin 33km Az.gap 117°
Corr. 0.067 15M/15stn Msd 0.2 5↑ 2↓

87/4868
DEC 30 0253 55.8s 38.22S 175.88E 217km M=3.8
1.1 0.04 0.05 9
Rsd 0.3s 10ph/7stn Dmin 44km Az.gap 119°
Corr. -0.038 15M/15stn Msd 0.2 1↑

87/4883
DEC 31 0741 42.2s 37.18S 177.79E 33km M=3.8
0.3 0.02 0.01 R
Rsd 0.1s 12ph/10stn Dmin 65km Az.gap 199°
Corr. 0.217 17M/17stn Msd 0.2 3↑ 4↓

87/4885
DEC 31 0922 07.9s 44.62S 167.93E 66km M=3.8
0.6 0.04 0.05 2
Rsd 0.1s 11ph/11stn Dmin 6km Az.gap 214°
Corr. -0.844 9M/9stn Msd 0.2 4↑ 4↓

87/4887
DEC 31 1126 52.6s 38.14S 176.20E 162km M=3.9
1.2 0.05 0.08 10
Rsd 0.4s 12ph/12stn Dmin 63km Az.gap 145°
Corr. 0.426 17M/15stn Msd 0.3 1↑ 4↓

87/4896
DEC 31 2106 17.6s 39.36S 174.92E 225km M=3.7
0.2 0.02 0.02 2
Rsd 0.0s 17ph/14stn Dmin 129km Az.gap 246°
Corr. -0.910 11M/11stn Msd 0.2 1↑

LISTS OF ORIGINS AND MAGNITUDE DETERMINATIONS

HIGHER MAGNITUDE EARTHQUAKES

A chronological list of 1987 New Zealand earthquakes of $M_L \geq 5.0$ follows. A reference number at the beginning of each entry identifies the origin with the instrumental data summary, and also with the listing of non-instrumental data (if there is any) that appears in a later section.

The latter "R" following a depth indicates that the depth was restricted to some likely value because the data did not provide sufficient constraint for the depth to be determined by calculation. Choice of the depth of restriction is usually made on the basis the crustal phases observed or the predominant depth of shallow earthquakes in the epicentral area. (For sub-crustal earthquakes, depth restriction is seldom necessary.)

The letter "G" after a depth shows that the depth was restricted on the basis of information that could not be used by the location program, such as macroseismic information, overseas PKP observations etc.

The letter "F" following a magnitude indicates that at least one report of the earthquake being felt has been received by the Observatory.

NUM	DATE	TIME	LAT	LONG	DEP	MAG
0089	JAN 11	01 13 33.2	39.09S	174.95E	239	5.0
0157	JAN 16	21 43 51.5	35.32S	176.21W	33 R	5.1
0224	JAN 24	12 44 44.2	31.84S	179.33W	356	5.4
0254	JAN 28	00 49 16.0	38.57S	175.46E	280	5.0
0318	FEB 03	00 26 57.9	33.33S	178.40W	33 R	5.0
0330	FEB 04	16 06 40.2	34.27S	179.32W	33 R	5.4
0340	FEB 05	23 39 13.0	37.30S	177.76E	103	5.0
0666	MAR 02	01 42 35.0	37.89S	176.80E	10 R	6.1F
0671	MAR 02	01 50 57.8	37.91S	176.73E	11 R	5.6F
0685	MAR 02	02 07 49.8	38.10S	176.65E	5 R	5.0F
0910	MAR 02	07 55 08.2	37.88S	176.84E	1	5.0F
1388	MAR 06	10 16 04.5	32.05S	178.91W	455	5.9
1414	MAR 07	07 57 07.8	33.78S	179.33W	209	5.8
1446	MAR 08	09 22 55.1	37.72S	176.29E	226	5.1
1459	MAR 08	19 17 59.0	43.22S	173.20E	30R	5.2F
1511	MAR 10	18 14 57.7	32.08S	177.71W	329	5.0
1517	MAR 11	02 50 47.6	33.44S	179.93W	99	5.6
1535	MAR 12	01 50 42.1	31.59S	178.12W	443	5.2
1603	MAR 15	21 44 04.2	33.17S	179.26W	268	5.1
1743	MAR 18	13 37 36.7	33.98S	179.97E	356	5.1
1789	MAR 20	23 12 07.4	37.32S	176.78E	187	5.1
1807	MAR 22	12 12 35.8	37.17S	176.75E	359	6.1F
1867	MAR 26	20 52 07.1	34.30S	179.66E	237	5.0
2010	APR 06	17 35 33.0	33.89S	177.39E	619	5.3
2704	JUN 14	05 04 27.0	35.28S	178.73W	33 R	5.0
2818	JUN 26	10 04 52.5	36.80S	177.10E	300	5.5
2903	JUL 03	22 58 27.8	41.27S	178.59E	33R	5.0
2920	JUL 05	20 06 52.0	36.74S	177.47E	147	5.2
3214	AUG 08	07 48 02.4	37.07S	179.17E	5 R	5.1
3215	AUG 08	09 35 05.8	42.08S	178.28E	33 R	5.0F
3307	AUG 16	02 36 01.1	36.70S	177.25E	248	5.0
3370	AUG 19	19 17 02.0	37.05S	176.83E	242	5.3
3551	SEP 02	05 23 14.1	39.22S	174.70E	209	5.4F
3631	SEP 08	23 42 15.5	34.60S	178.63E	427	5.2
3737	SEP 18	17 04 57.9	38.45S	175.83E	177	5.0
3774	SEP 21	22 47 37.1	41.27S	173.44E	96	5.2F
4312	NOV 05	19 48 20.8	38.27S	175.94E	165	5.3F
4392	NOV 10	07 07 38.2	39.77S	173.92E	253	5.0F
4601	DEC 04	07 22 29.2	45.10S	167.56E	96	5.1F
4782	DEC 20	05 03 14.0	38.39S	175.94E	147	5.1
4795	DEC 21	09 22 59.1	36.28S	179.22W	93	5.3

EDGECUMBE EARTHQUAKE SEQUENCE

The following list includes all crustal earthquakes of $M_L \geq 3.5$ with epicenters in the area bounded by latitudes 37.35° and 38.35° and longitudes 176.20° and 177.20°E from February 21st to March 17th, 1987.

NUM	DATE	TIME	LAT	LONG	DEP	MAG
0463	FEB 21	19 20 53.9	37.75S	176.50E	5 R	3.5F
0468	FEB 22	13 30 59.2	37.71S	176.53E	5 R	4.0F
0502	FEB 25	19 11 25.4	37.72S	176.53E	5 R	4.4F
0504	FEB 25	19 16 30.3	37.74S	176.52E	5 R	3.6F
0529	FEB 26	16 24 02.9	37.69S	176.54E	5 R	3.8F
0535	FEB 27	00 58 41.4	37.69S	176.51E	5 R	4.1F
0536	FEB 27	01 02 49.4	37.89S	176.84E	5 R	4.1F
0541	FEB 27	07 37 18.6	37.93S	176.84E	5 R	3.5F
0547	FEB 27	11 26 42.8	37.90S	176.85E	5 R	4.2F
0551	FEB 27	11 40 00.4	37.89S	176.87E	5 R	4.0
0561	FEB 27	22 34 54.5	37.72S	176.53E	5 R	3.7F
0582	FEB 28	16 09 41.2	37.68S	176.53E	5 R	4.0F
0589	FEB 28	18 13 02.5	37.71S	176.52E	5 R	4.0F
0602	FEB 28	21 37 29.4	37.72S	176.52E	5 R	3.7F
0609	MAR 01	00 04 50.0	37.90S	176.87E	5 R	3.5
0612	MAR 01	01 18 41.9	37.77S	176.49E	5 R	3.7F
0624	MAR 01	06 24 28.7	37.70S	176.53E	5 R	3.7F
0630	MAR 01	07 27 17.8	37.70S	176.53E	5 R	3.5
0631	MAR 01	07 46 52.9	37.70S	176.50E	5 R	4.1F
0656	MAR 01	20 13 38.6	37.73S	176.50E	5 R	3.6F
0661	MAR 02	01 35 36.1	37.89S	176.84E	0	4.9
0664	MAR 02	01 41 11.3	37.90S	176.80E	5 R	3.5
0665	MAR 02	01 41 29.8	37.92S	176.82E	5 R	4.4F
0666	MAR 02	01 42 35.0	37.89S	176.80E	10 R	6.1F
0667	MAR 02	01 45 39.7	37.90S	176.75E	5 R	4.4F
0668	MAR 02	01 47 20.2	38.00S	176.70E	5 R	4.0
0669	MAR 02	01 49 08.0	37.87S	176.99E	5 R	4.5F
0670	MAR 02	01 50 44.7	38.00S	176.70E	5 R	3.9
0671	MAR 02	01 50 57.8	37.91S	176.73E	11 R	5.6F
0672	MAR 02	01 53 09.2	38.00S	176.75E	5 R	3.5
0673	MAR 02	01 54 33.0	37.90S	176.75E	5 R	3.8F
0679	MAR 02	02 02 09.0	38.00S	176.75E	5 R	3.5
0680	MAR 02	02 02 45.2	38.10S	176.67E	5 R	4.4F
0681	MAR 02	02 03 27.0	37.95S	176.80E	5 R	4.6F
0682	MAR 02	02 04 15.7	38.10S	176.70E	5 R	4.6F
0684	MAR 02	02 07 24.6	38.15S	176.63E	5 R	4.7F
0685	MAR 02	02 07 49.8	38.10S	176.65E	5 R	5.0F
0689	MAR 02	02 12 07.3	37.90S	176.77E	5 R	4.1F
0690	MAR 02	02 13 43.5	38.05S	176.84E	5 R	3.7F
0693	MAR 02	02 16 18.3	38.04S	176.67E	5 R	4.3F

NUM	DATE	TIME	LAT	LONG	DEP	MAG
0694	MAR 02	02 17 59.0	38.00S	176.71E	5 R	4.0
0696	MAR 02	02 18 50.6	38.00S	176.85E	5 R	4.0
0700	MAR 02	02 23 32.7	37.89S	176.91E	5 R	3.8F
0702	MAR 02	02 24 46.8	37.84S	176.88E	5 R	3.8F
0706	MAR 02	02 29 38.9	38.01S	176.76E	5 R	3.5
0707	MAR 02	02 30 25.4	37.77S	177.09E	5 R	4.1F
0714	MAR 02	02 37 14.6	37.89S	176.72E	5 R	3.6
0716	MAR 02	02 40 48.3	38.06S	176.76E	5 R	3.7F
0717	MAR 02	02 42 36.9	37.94S	176.74E	5 R	4.4F
0718	MAR 02	02 43 23.3	38.00S	176.80E	5 R	4.3
0719	MAR 02	02 44 22.2	37.96S	176.85E	5 R	3.5
0720	MAR 02	02 46 35.9	38.11S	176.70E	5 R	4.2F
0721	MAR 02	02 48 06.4	37.90S	176.85E	5 R	3.5
0723	MAR 02	02 50 22.3	37.92S	176.76E	5 R	4.3F
0733	MAR 02	03 06 00.3	38.11S	176.71E	5 R	3.8
0738	MAR 02	03 09 26.5	38.11S	176.72E	5 R	3.9
0739	MAR 02	03 09 28.2	38.10S	176.70E	5 R	4.5
0740	MAR 02	03 10 04.7	38.06S	176.65E	5 R	3.8
0741	MAR 02	03 11 17.6	37.93S	177.05E	5 R	4.1F
0744	MAR 02	03 13 36.9	38.09S	176.72E	5 R	4.0
0745	MAR 02	03 15 22.8	38.01S	176.72E	5 R	4.3F
0747	MAR 02	03 16 51.6	38.05S	176.70E	5 R	3.7F
0751	MAR 02	03 20 46.3	38.07S	176.74E	5 R	3.7F
0756	MAR 02	03 27 36.9	38.04S	176.73E	5 R	4.5F
0757	MAR 02	03 28 29.5	38.05S	176.75E	5 R	4.6F
0758	MAR 02	03 30 13.5	38.04S	176.69E	5 R	4.3F
0771	MAR 02	03 46 30.9	38.05S	176.71E	5 R	3.7F
0803	MAR 02	04 35 08.5	38.22S	176.63E	5 R	3.5
0816	MAR 02	04 54 57.4	38.05S	176.78E	5 R	3.6
0821	MAR 02	05 10 56.9	38.09S	176.73E	5 R	4.2
0822	MAR 02	05 13 12.9	38.02S	176.77E	5 R	4.4F
0824	MAR 02	05 19 12.7	37.86S	176.95E	5 R	4.1
0830	MAR 02	05 32 17.3	37.94S	176.81E	2	3.6
0835	MAR 02	05 38 40.9	37.99S	176.91E	5 R	3.8
0850	MAR 02	06 01 25.3	37.93S	176.83E	2 R	3.5
0867	MAR 02	06 25 01.6	37.98S	176.80E	5 R	3.5
0868	MAR 02	06 26 22.4	37.90S	176.78E	32	3.6
0870	MAR 02	06 32 48.4	37.63S	177.03E	1	3.8
0872	MAR 02	06 41 38.5	38.17S	176.63E	0	4.4
0873	MAR 02	06 44 30.1	38.13S	176.68E	9	4.6F
0874	MAR 02	06 45 12.3	37.98S	176.76E	5 R	3.9F
0875	MAR 02	06 46 05.8	37.95S	176.80E	5 R	3.5F
0877	MAR 02	06 48 01.6	37.89S	176.83E	5 R	4.7F
0879	MAR 02	06 52 58.7	38.13S	176.72E	5	3.7
0881	MAR 02	06 56 34.4	38.14S	176.71E	5 R	4.8F

NUM	DATE	TIME	LAT	LONG	DEP	MAG
0883	MAR 02	07 00 10.2	38.12S	176.67E	5 R	4.5
0884	MAR 02	07 01 05.3	38.09S	176.75E	5 R	4.3
0901	MAR 02	07 27 42.0	38.02S	176.71E	2	3.8F
0910	MAR 02	07 55 08.2	37.88S	176.84E	1	5.0F
0913	MAR 02	07 59 34.4	37.91S	176.84E	5 R	3.6F
0931	MAR 02	08 43 51.5	38.11S	176.66E	4	3.7
0933	MAR 02	09 00 58.3	38.10S	176.70E	9	3.5F
0943	MAR 02	09 31 16.2	38.12S	176.69E	1	4.2F
0944	MAR 02	09 34 11.4	37.88S	176.86E	5 R	3.6
0945	MAR 02	09 34 27.0	38.14S	176.71E	5 R	4.1F
0952	MAR 02	10 31 11.4	38.00S	176.75E	2	3.8F
0954	MAR 02	10 33 34.5	37.98S	176.75E	6	3.9
0967	MAR 02	11 17 30.9	38.00S	176.79E	5 R	3.5
0981	MAR 02	12 32 01.1	38.02S	176.73E	4	3.7
0989	MAR 02	13 22 18.4	38.08S	176.70E	2	3.6
0994	MAR 02	13 41 15.3	38.00S	176.74E	2	3.6
1006	MAR 02	15 17 30.8	38.12S	176.69E	6	3.9
1009	MAR 02	15 34 13.7	38.11S	176.65E	5 R	3.5
1010	MAR 02	15 43 25.0	38.14S	176.67E	5 R	3.5
1026	MAR 02	17 06 14.9	38.14S	176.63E	0	3.9
1028	MAR 02	17 14 46.7	37.85S	176.82E	25	4.1F
1034	MAR 02	17 38 26.0	38.16S	176.65E	1	3.6
1035	MAR 02	17 40 59.2	38.07S	176.72E	5	3.6
1039	MAR 02	18 14 27.1	37.87S	176.95E	5	3.5
1040	MAR 02	18 15 05.1	37.92S	176.98E	5 R	3.6
1044	MAR 02	18 50 49.0	37.90S	176.88E	5 R	3.6F
1049	MAR 02	19 47 53.9	38.07S	176.55E	5 R	3.6
1069	MAR 02	21 56 23.2	37.76S	176.93E	5	4.0
1071	MAR 02	22 03 48.5	38.05S	176.53E	5 R	3.5F
1072	MAR 02	22 04 11.8	38.12S	176.74E	6	3.6
1075	MAR 02	22 09 51.5	38.11S	176.68E	5	3.5
1097	MAR 03	00 36 37.8	37.79S	177.03E	5 R	3.7F
1098	MAR 03	00 47 57.8	38.03S	176.72E	2	3.5
1099	MAR 03	00 57 31.9	38.04S	176.70E	21	4.2F
1106	MAR 03	01 14 44.7	38.06S	176.47E	5 R	3.6
1107	MAR 03	01 15 41.4	38.04S	176.76E	5 R	4.0F
1118	MAR 03	02 39 18.4	37.65S	177.05E	5 R	3.6
1125	MAR 03	04 49 53.3	37.72S	177.00E	5 R	3.7F
1127	MAR 03	05 13 47.2	37.62S	177.07E	5 R	4.1F
1128	MAR 03	05 15 25.5	37.63S	177.02E	5 R	3.6F
1129	MAR 03	05 17 03.3	37.60S	177.08E	5 R	4.1F
1133	MAR 03	05 21 07.8	37.62S	176.97E	5 R	3.9F
1141	MAR 03	05 54 10.6	37.67S	177.07E	5 R	3.6F
1143	MAR 03	05 54 41.4	37.62S	177.01E	5 R	4.0
1146	MAR 03	06 01 15.2	37.65S	177.00E	5 R	3.5

NUM	DATE	TIME	LAT	LONG	DEP	MAG
1155	MAR 03	07 08 04.9	37.64S	177.05E	5 R	3.5
1196	MAR 03	12 14 29.4	38.09S	176.72E	5	4.2F
1211	MAR 03	14 30 30.8	37.81S	176.93E	5 R	3.6
1215	MAR 03	14 48 20.9	38.14S	176.66E	2	3.7
1218	MAR 03	15 34 08.7	37.90S	176.90E	5 R	3.5
1262	MAR 03	20 20 53.3	38.13S	176.68E	2	3.5
1274	MAR 03	23 43 45.0	38.05S	176.73E	5 R	3.9F
1306	MAR 04	08 38 38.0	37.60S	176.55E	5 R	3.8F
1313	MAR 04	12 34 57.5	37.87S	176.93E	5 R	3.7
1358	MAR 05	08 35 55.2	38.10S	176.73E	5 R	3.5F
1378	MAR 06	01 38 09.3	37.76S	176.88E	2	3.5
1398	MAR 06	15 41 13.6	37.90S	176.84E	5 R	3.8F
1442	MAR 08	03 07 44.9	38.02S	176.76E	2	3.5
1443	MAR 08	04 57 10.4	37.82S	177.00E	5 R	3.6F
1458	MAR 08	18 11 11.7	37.90S	176.88E	5	3.6F
1524	MAR 11	14 31 30.0	37.84S	176.98E	0	4.4F
1532	MAR 11	20 56 57.4	38.08S	176.67E	2	3.7F
1565	MAR 13	16 21 39.8	37.74S	177.08E	12 R	3.7F
1579	MAR 14	08 38 14.1	37.85S	176.84E	4	3.8F
1585	MAR 14	12 27 19.3	37.92S	176.80E	5 R	3.5F
1681	MAR 17	12 58 33.8	38.08S	176.67E	33	3.9F

WELLINGTON AREA SEISMICITY

Because of its close station spacing and the relative ease with which stations can be reached when repairs or adjustments are necessary, the Wellington Network can be relied on to furnish enough data for determination of earthquake origins in its neighbourhood from smaller events than those needed to achieve the same accuracy in other parts of the country. The following list includes all earthquakes of magnitude (M_L) 2.0 or more in the area surrounding Wellington, and includes the earthquakes of magnitude 3.5 or more, which were listed on earlier pages.

The location of earthquakes in the neighbourhood of Wellington is no longer performed separately from the location of regional earthquakes as was done in the past. The old practice sometimes resulted in earthquakes having two listed origins, one arrived at from use of National Network data and a regional velocity model, and the other from Wellington Network data and a local model. In current practice the local model is merged into the regional model. A map of these epicentres and a cross-section showing their distribution in depth appears in the final section of this Report.

In the following table, Rsd is as defined on page 31 and NP phases from NS recording stations have been used to determine the origins.

The regional velocity model and its boundaries are listed in the table on page 26.

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
003	JAN 01	1646 25.6	41.01S	174.52E	61	3.3	0.0	11	10
011	JAN 02	1706 25.3	41.11S	175.36E	27	2.7	0.1	10	9
013	JAN 02	1926 32.4	40.71S	175.39E	32	2.0	0.1	7	6
015	JAN 03	0356 46.4	41.69S	175.66E	33	3.2	0.2	9	8
016	JAN 03	0534 13.2	40.94S	174.55E	44	2.6	0.0	9	7
018	JAN 03	1454 5.0	40.97S	173.51E	58	2.6	0.0	5	4
020	JAN 03	1948 44.7	41.28S	174.50E	58	2.3	0.1	8	7
026	JAN 04	2026 6.5	41.35S	174.15E	38	2.1	0.2	7	6
027	JAN 04	2044 7.2	40.80S	175.32E	28	2.5	0.1	9	9
028	JAN 04	2129 46.7	41.22S	174.24E	40	2.5	0.2	7	7
029	JAN 04	2311 30.3	41.63S	173.68E	38	2.4	0.1	6	6
032	JAN 05	0526 32.7	41.50S	173.96E	44	2.5	0.2	9	9
033	JAN 05	0549 51.7	40.95S	174.55E	54	2.1	0.1	9	8
037	JAN 05	1232 41.3	40.87S	175.91E	40	2.0	0.0	6	5
038	JAN 05	1343 53.8	41.10S	174.85E	28	2.6	0.1	10	9
040	JAN 05	1836 32.2	41.13S	174.63E	59	2.0	0.1	6	6
043	JAN 05	2305 31.3	40.96S	175.23E	39	2.4	0.1	9	9
046	JAN 06	0843 16.5	41.03S	174.72E	58	2.4	0.1	9	9
047	JAN 06	0943 46.9	41.30S	173.71E	92	2.7	0.0	10	9
049	JAN 06	2007 49.6	40.93S	175.47E	16	2.2	0.1	9	8
050	JAN 06	2052 59.3	41.29S	173.88E	50	2.7	0.2	8	7
056	JAN 07	0755 59.3	41.23S	174.71E	33	2.3	0.1	10	9
057	JAN 07	2122 5.8	40.73S	174.81E	14	2.2	0.2	7	7
058	JAN 08	0255 30.2	40.82S	175.32E	28	3.0	0.1	11	10
063	JAN 08	0625 11.1	40.98S	175.64E	28	2.2	0.1	10	9

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
069	JAN 09	0108 2.8	40.66S	174.80E	34	2.0	0.1	7	7
071	JAN 09	0817 8.7	40.62S	173.98E	95	2.6	0.1	7	7
073	JAN 09	1321 9.2	41.48S	173.98E	50	3.1	0.2	12	11
075	JAN 09	2256 12.4	40.93S	174.62E	59	2.5	0.1	11	10
078	JAN 10	0117 49.9	40.56S	175.50E	30	2.1	0.1	7	5
080	JAN 10	0204 13.8	41.76S	174.18E	34	2.0	0.1	8	7
081	JAN 10	0735 22.6	40.58S	174.65E	27	2.0	0.2	7	5
082	JAN 10	0801 23.3	41.61S	174.17E	23	2.2	0.1	8	6
090	JAN 11	0159 26.6	41.29S	175.31E	26	2.0	0.1	9	7
091	JAN 11	1233 57.0	40.78S	175.11E	61	2.3	0.1	7	6
093	JAN 11	1739 3.3	41.67S	174.98E	33	2.8	0.1	12	11
104	JAN 12	0723 16.9	40.51S	174.31E	28	2.3	0.2	9	9
107	JAN 12	0941 36.1	40.77S	174.43E	52	2.0	0.1	6	6
113	JAN 13	0202 49.0	41.79S	174.48E	36	3.6	0.1	13	12
114	JAN 13	0336 37.7	41.35S	174.13E	43	2.1	0.1	6	6
120	JAN 13	2214 1.6	41.86S	174.72E	31	2.2	0.1	6	5
121	JAN 14	0356 34.8	40.81S	175.32E	28	2.2	0.1	9	9
122	JAN 14	0653 47.9	41.47S	174.48E	25	2.2	0.1	9	8
124	JAN 14	1144 2.9	40.92S	175.77E	35	2.0	0.1	6	4
126	JAN 14	1243 58.5	41.58S	174.31E	29	2.6	0.2	9	9
127	JAN 14	1440 38.4	40.93S	174.79E	56	2.1	0.1	7	7
134	JAN 15	1118 6.4	40.62S	174.47E	67	2.8	0.1	6	6
135	JAN 15	1224 28.6	41.31S	173.77E	62	2.3	0.2	5	5
137	JAN 15	1916 11.7	41.65S	173.84E	10	2.2	0.4	8	8
141	JAN 15	2309 19.1	40.87S	174.67E	51	2.5	0.1	10	7
143	JAN 16	0052 39.0	41.09S	174.69E	33	3.1	0.1	12	11
144	JAN 16	0210 49.4	41.03S	174.27E	50	3.3	0.1	11	10
146	JAN 16	0604 42.8	41.07S	174.47E	63	2.5	0.0	10	10
148	JAN 16	0747 57.8	41.70S	174.26E	15	2.1	0.1	11	9
151	JAN 16	1022 42.5	41.19S	174.54E	38	2.1	0.1	10	8
152	JAN 16	1028 38.7	41.74S	174.48E	31	2.2	0.1	12	10
153	JAN 16	1554 10.3	41.53S	174.53E	17	2.4	0.3	15	13
156	JAN 16	2010 19.5	41.11S	174.55E	48	2.2	0.1	11	9
159	JAN 16	2343 55.4	40.87S	173.97E	69	2.7	0.2	8	7
162	JAN 17	1122 59.9	40.84S	174.86E	8	2.0	0.1	8	8
163	JAN 17	1324 6.4	41.09S	174.80E	34	3.2	0.1	13	11
166	JAN 18	1214 4.9	41.36S	173.96E	59	3.0	0.2	13	12
173	JAN 19	0639 21.9	41.27S	175.14E	25	2.2	0.1	11	10
174	JAN 19	0833 59.9	41.20S	173.55E	102	2.9	0.0	10	8
179	JAN 20	0257 33.6	42.00S	173.98E	16	2.3	0.2	6	6
183	JAN 20	0849 7.0	41.31S	173.82E	66	2.7	0.1	10	8
190	JAN 20	1852 29.7	41.74S	174.17E	17	3.0	0.2	12	10
191	JAN 20	1911 37.2	41.41S	174.36E	33	2.0	0.1	9	6
195	JAN 20	2324 33.3	41.76S	174.49E	34	2.1	0.1	12	11
201	JAN 21	1119 10.3	40.52S	174.46E	96	2.5	0.1	9	7

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
205	JAN 21	1534 8.1	41.02S	174.46E	61	2.4	0.0	10	9
207	JAN 22	0732 29.2	40.64S	174.67E	74	2.8	0.1	12	11
211	JAN 22	1709 48.8	41.31S	174.82E	24	2.4	0.1	14	11
219	JAN 23	2240 58.6	41.70S	174.45E	33	2.1	0.2	8	7
227	JAN 25	0321 13.8	40.59S	173.89E	11	2.8	0.1	6	5
228	JAN 25	0812 44.6	41.81S	174.54E	38	3.2	0.1	10	9
230	JAN 25	1058 6.7	40.94S	174.73E	5R	2.2	0.2	7	7
231	JAN 25	1849 56.4	41.76S	174.23E	37	2.7	0.2	8	6
232	JAN 25	1944 38.8	40.85S	174.02E	73	2.7	0.1	7	6
233	JAN 25	2049 12.5	41.21S	175.25E	24	2.7	0.1	11	11
239	JAN 26	0800 59.3	41.58S	174.30E	30	2.7	0.1	13	12
241	JAN 26	1051 22.1	41.70S	174.62E	33	2.0	0.1	14	12
242	JAN 26	1138 42.6	40.88S	174.12E	68	2.7	0.1	11	9
244	JAN 26	1921 13.7	41.39S	174.86E	16	2.0	0.2	11	10
248	JAN 27	0627 40.3	41.27S	175.32E	28	2.9	0.1	12	11
251	JAN 27	1316 25.4	41.72S	174.62E	7	2.0	0.2	9	8
255	JAN 28	0120 21.9	40.57S	174.65E	29	2.1	0.2	8	7
259	JAN 28	1520 18.3	40.64S	174.08E	72	2.8	0.1	6	6
260	JAN 28	1751 25.5	41.77S	174.51E	32	2.2	0.1	10	9
261	JAN 28	1900 25.2	41.73S	173.75E	19	2.4	0.1	6	6
262	JAN 28	1902 29.6	41.74S	173.68E	18	2.6	0.2	7	7
263	JAN 28	1941 15.1	41.74S	174.50E	32	2.1	0.2	9	9
267	JAN 28	2311 42.2	41.30S	175.03E	25	2.1	0.1	13	13
269	JAN 29	0931 21.0	41.59S	174.29E	15	2.2	0.1	11	10
271	JAN 29	0948 3.6	40.53S	174.81E	49	3.2	0.1	10	9
272	JAN 29	1303 54.9	41.74S	174.52E	29	2.0	0.1	8	7
273	JAN 29	1439 24.4	40.65S	174.21E	81	2.4	0.1	9	8
274	JAN 29	1939 39.1	40.88S	175.77E	29	2.0	0.1	8	7
277	JAN 30	0719 14.6	41.26S	173.67E	86	3.3	0.2	12	10
278	JAN 30	0725 52.3	41.85S	174.35E	64	2.8	0.8	13	11
279	JAN 30	0832 2.3	41.60S	174.21E	21	2.1	0.1	6	6
281	JAN 30	1801 54.7	41.08S	175.48E	28	3.8	0.2	20	19
284	JAN 31	0013 51.6	40.61S	173.70E	139	2.9	0.2	7	6
287	JAN 31	0631 18.0	41.01S	174.53E	60	3.5	0.0	15	12
292	JAN 31	1307 40.4	41.62S	174.64E	32	2.5	0.2	11	10
298	JAN 31	1700 31.7	41.05S	174.68E	56	2.3	0.0	12	11
299	JAN 31	1735 34.8	40.65S	174.21E	71	2.3	0.1	7	6
301	JAN 31	2347 20.7	41.25S	173.98E	51	2.2	0.1	8	7
303	FEB 01	1251 31.2	41.08S	175.50E	30	2.0	0.2	11	10
305	FEB 01	1327 30.6	40.95S	174.04E	57	2.6	0.2	9	7
306	FEB 01	1350 50.7	40.94S	175.85E	33	2.6	0.1	12	10
307	FEB 01	1657 26.1	41.36S	174.44E	33	2.1	0.1	7	5
310	FEB 02	0827 55.5	41.00S	175.32E	25	2.1	0.1	8	8
315	FEB 02	1459 45.5	41.06S	174.81E	29	2.0	0.1	11	10
316	FEB 02	1646 15.5	40.69S	174.95E	35	2.2	0.1	8	8

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
317	FEB 02	2242 40.7	41.73S	174.54E	30	2.0	0.1	12	11
321	FEB 03	1838 19.3	40.81S	175.11E	32	2.3	0.1	8	8
322	FEB 03	2253 25.0	40.95S	175.59E	28	2.2	0.1	10	10
324	FEB 04	0513 9.9	40.99S	175.58E	9	2.3	0.1	8	8
327	FEB 04	1145 46.5	41.30S	175.14E	24	2.2	0.1	13	12
328	FEB 04	1220 7.0	40.56S	174.75E	38	2.4	0.2	9	8
329	FEB 04	1456 31.6	41.00S	174.22E	44	2.8	0.1	9	9
332	FEB 04	2238 5.0	41.05S	175.42E	27	2.1	0.1	10	7
333	FEB 05	0252 24.4	41.22S	174.84E	0R	2.2	0.1	8	8
335	FEB 05	1238 34.4	41.03S	175.55E	17	2.3	0.1	11	10
337	FEB 05	1722 15.7	41.81S	173.89E	35	2.3	0.1	8	7
339	FEB 05	2129 37.0	40.85S	174.31E	62	2.5	0.1	9	8
343	FEB 06	0242 17.5	41.54S	174.40E	34	2.1	0.2	11	9
345	FEB 06	0501 49.7	40.67S	175.12E	52	2.3	0.5	6	6
346	FEB 06	1054 16.6	41.42S	174.58E	31	2.4	0.2	12	10
348	FEB 06	2029 45.9	41.03S	174.67E	34	2.2	0.1	12	11
353	FEB 07	0959 51.8	40.79S	174.60E	64	2.2	0.1	12	11
356	FEB 07	1717 49.8	41.39S	175.34E	16	2.2	0.1	10	9
357	FEB 07	2301 7.1	41.41S	175.47E	20	2.5	0.2	12	11
359	FEB 08	0240 28.5	41.38S	174.63E	17	3.8	0.2	23	20
360	FEB 08	0241 21.0	41.36S	174.64E	17	2.0	0.2	10	9
362	FEB 08	0439 55.5	41.23S	175.27E	16	2.2	0.3	9	8
363	FEB 08	0517 34.2	41.27S	175.23E	23	2.1	0.1	12	11
367	FEB 08	0755 15.6	40.79S	174.18E	73	3.1	0.1	10	8
374	FEB 08	2252 17.7	41.27S	174.43E	16	2.6	0.2	12	11
378	FEB 09	0948 37.4	41.37S	174.64E	18	3.1	0.2	13	12
382	FEB 10	0128 36.1	40.90S	174.57E	6	2.5	0.1	13	10
384	FEB 10	0926 16.1	41.33S	174.84E	28	2.2	0.1	12	11
385	FEB 10	1141 41.4	40.57S	175.77E	35	2.6	0.3	11	11
392	FEB 11	0052 10.0	41.16S	174.15E	55	2.5	0.0	10	9
397	FEB 11	2209 14.6	41.05S	175.28E	25	2.3	0.1	11	10
398	FEB 12	0037 15.4	41.74S	174.93E	32	3.4	0.1	14	11
400	FEB 12	0910 54.1	40.93S	175.21E	29	2.6	0.1	11	11
405	FEB 13	0533 46.6	41.62S	174.66E	33	2.9	0.1	13	12
406	FEB 13	0545 7.4	41.62S	174.66E	32	2.2	0.2	13	12
408	FEB 13	0705 1.8	40.97S	174.65E	58	2.6	0.1	12	11
409	FEB 13	1448 55.3	40.56S	175.43E	52	2.6	0.1	12	11
413	FEB 13	1933 25.9	40.99S	175.72E	15	2.0	0.1	8	8
414	FEB 13	2230 43.7	41.69S	174.93E	32	2.3	0.2	11	10
415	FEB 13	2326 1.2	41.55S	174.44E	18	3.6	0.2	21	17
416	FEB 14	0401 58.3	41.02S	175.56E	11	2.4	0.2	9	8
418	FEB 15	0320 52.3	41.02S	174.54E	39	2.7	0.0	12	9
419	FEB 15	0446 21.5	41.19S	175.71E	15	2.1	0.1	9	8
420	FEB 15	0756 52.4	40.89S	174.03E	78	3.8	0.3	18	15
424	FEB 16	0713 33.9	41.81S	174.51E	28	4.3	0.2	19	17

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
426	FEB 16	1842 15.0	40.74S	175.36E	30	2.7	0.2	12	12
428	FEB 17	0110 22.9	41.02S	174.96E	54	2.2	0.1	8	8
429	FEB 17	0233 40.1	40.78S	175.26E	33	2.8	0.2	12	11
430	FEB 17	0235 0.1	41.70S	174.52E	32	3.0	0.2	13	13
431	FEB 17	0237 50.0	41.69S	174.52E	30	2.2	0.2	12	11
434	FEB 17	1857 51.2	40.97S	174.51E	34	2.0	0.1	10	9
437	FEB 18	1022 15.1	41.45S	174.37E	20	2.6	0.2	13	12
440	FEB 19	0301 10.7	40.58S	174.67E	29	2.2	0.1	9	8
441	FEB 19	0603 16.8	40.88S	174.34E	57	3.4	0.1	11	10
442	FEB 19	0822 51.5	41.04S	174.83E	38	2.0	0.1	7	7
444	FEB 19	1021 38.0	40.90S	175.93E	32	2.4	0.2	9	9
445	FEB 19	1343 2.0	40.93S	175.46E	26	2.0	0.1	10	10
447	FEB 19	2124 23.1	41.81S	174.47E	36	3.5	0.2	12	11
449	FEB 20	0654 55.4	41.45S	174.97E	28	2.3	0.1	11	10
450	FEB 20	0952 55.4	40.83S	174.18E	49	2.2	0.1	9	7
451	FEB 20	1057 15.7	41.81S	174.45E	40	2.3	0.1	11	10
453	FEB 20	1242 42.7	41.11S	174.65E	56	2.1	0.1	9	7
456	FEB 21	0252 2.1	41.74S	174.50E	31	2.5	0.2	11	10
461	FEB 21	1600 56.1	41.74S	174.26E	23	2.8	0.1	11	10
462	FEB 21	1757 0.7	41.28S	174.87E	19	2.1	0.2	10	9
469	FEB 22	1452 22.6	41.40S	174.17E	39	2.4	0.1	9	8
470	FEB 22	1733 28.8	40.80S	174.77E	18	2.0	0.1	8	8
473	FEB 22	2328 2.1	41.75S	174.15E	21	2.6	0.2	11	11
478	FEB 23	1627 22.8	41.60S	173.65E	68	3.4	0.2	12	11
480	FEB 23	1706 47.8	41.13S	174.67E	61	2.1	0.1	10	9
481	FEB 23	1733 1.6	41.63S	174.92E	29	2.3	0.1	11	10
482	FEB 23	1830 24.0	40.85S	174.26E	55	2.1	0.1	6	5
485	FEB 23	2224 29.3	41.58S	174.09E	20	2.3	0.2	7	7
488	FEB 23	2328 16.5	41.16S	174.53E	34	2.2	0.1	9	9
492	FEB 24	0854 43.3	41.15S	175.08E	22	2.6	0.1	11	10
494	FEB 24	1343 32.6	41.75S	174.45E	31	2.4	0.2	11	10
495	FEB 24	1428 59.4	40.69S	174.36E	70	2.7	0.2	10	8
498	FEB 25	0424 14.5	41.73S	175.10E	34	3.1	0.1	12	11
514	FEB 25	2236 1.3	41.22S	175.54E	7	2.1	0.1	7	6
515	FEB 25	2323 2.1	41.38S	174.72E	53	2.3	0.1	10	10
545	FEB 27	1030 57.3	41.31S	175.73E	18	2.9	0.1	12	11
555	FEB 27	1253 0.2	41.09S	175.18E	25	2.0	0.2	12	10
572	FEB 28	0625 7.4	40.94S	175.80E	33	2.0	0.2	8	7
578	FEB 28	1155 9.0	40.86S	175.10E	28	2.0	0.1	9	8
580	FEB 28	1535 12.6	40.93S	174.12E	70	3.1	0.1	10	9
618	MAR 01	0307 19.3	40.89S	174.56E	54	2.3	0.0	10	8
649	MAR 01	1325 24.6	41.59S	175.26E	11	2.8	0.1	11	11
653	MAR 01	1456 37.7	41.07S	174.99E	27	2.1	0.1	11	10
1018	MAR 02	1625 47.4	40.97S	174.60E	54	2.1	0.1	9	7
1078	MAR 02	2218 48.8	41.29S	173.76E	75	3.3	0.3	14	12

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
1192	MAR 03	1203 12.6	41.74S	174.18E	18	2.5	0.1	9	8
1208	MAR 03	1409 36.5	40.73S	175.30E	29	2.4	0.1	7	7
1224	MAR 03	1620 13.3	41.22S	175.04E	21	2.1	0.2	8	8
1227	MAR 03	1636 38.8	41.09S	174.50E	59	2.9	0.0	7	6
1228	MAR 03	1642 15.8	40.78S	174.77E	19	2.1	0.2	6	5
1309	MAR 04	0939 41.7	41.57S	175.13E	17	2.3	0.1	7	7
1316	MAR 04	1327 0.9	40.70S	174.48E	50	2.9	0.2	9	8
1318	MAR 04	1332 29.6	41.10S	174.69E	30	2.9	0.1	12	11
1351	MAR 05	0546 49.6	40.87S	174.78E	45	2.9	0.1	12	10
1386	MAR 06	0710 34.5	40.62S	175.84E	64	2.8	0.1	12	11
1397	MAR 06	1448 52.2	40.76S	175.98E	40	2.2	0.1	9	7
1407	MAR 07	0210 12.6	41.23S	175.26E	24	2.3	0.1	12	11
1447	MAR 08	1056 13.2	41.16S	173.92E	61	2.2	0.2	7	7
1466	MAR 08	2118 23.0	41.59S	173.85E	13	2.1	0.3	8	7
1480	MAR 09	0449 44.6	40.83S	174.31E	59	3.1	0.2	11	11
1486	MAR 09	1121 32.8	40.69S	174.05E	75	2.4	0.1	5	5
1492	MAR 09	1555 17.2	41.00S	174.16E	59	2.3	0.2	6	6
1498	MAR 09	2221 33.0	40.69S	174.33E	64	2.9	0.2	9	9
1499	MAR 10	0328 18.9	41.04S	175.55E	11	2.4	0.1	12	12
1501	MAR 10	0552 11.0	41.14S	174.52E	33	2.7	0.1	12	11
1507	MAR 10	1407 44.7	41.39S	174.96E	27	2.4	0.1	11	10
1509	MAR 10	1711 40.2	41.06S	174.80E	31	2.5	0.1	12	10
1514	MAR 10	2233 16.4	40.56S	174.33E	36	2.6	0.1	9	8
1519	MAR 11	0504 52.9	41.70S	173.85E	12	2.6	0.1	10	8
1549	MAR 12	2111 59.0	40.79S	174.87E	43	3.4	0.1	15	11
1552	MAR 13	0114 15.2	41.24S	174.27E	41	3.0	0.1	14	11
1555	MAR 13	0219 45.9	40.91S	175.48E	30	3.1	0.1	13	11
1557	MAR 13	0424 28.9	40.78S	174.98E	47	2.9	0.5	12	10
1558	MAR 13	0430 26.8	40.93S	175.45E	25	2.1	0.1	9	8
1576	MAR 14	0736 19.0	40.83S	174.96E	51	2.2	0.5	12	10
1578	MAR 14	0820 4.6	40.85S	173.85E	76	2.6	0.2	13	10
1580	MAR 14	0907 53.2	40.98S	173.82E	83	2.9	0.1	10	6
1582	MAR 14	0940 8.0	41.36S	174.74E	52	2.5	0.1	18	15
1590	MAR 14	1539 54.7	41.00S	174.67E	50	2.5	0.1	11	9
1593	MAR 15	0354 27.1	41.75S	173.80E	29	2.7	0.1	13	11
1594	MAR 15	0608 7.9	40.58S	174.50E	76	2.6	0.1	13	10
1597	MAR 15	1306 25.1	41.64S	174.60E	32	2.0	0.1	11	9
1599	MAR 15	1849 59.0	41.65S	173.86E	44	2.8	0.2	14	12
1600	MAR 15	1910 32.9	41.76S	174.23E	21	2.1	0.3	10	9
1601	MAR 15	2005 51.2	41.69S	174.01E	21	2.5	0.3	11	9
1615	MAR 16	1607 36.5	40.79S	174.68E	2	2.0	0.1	15	12
1622	MAR 16	2231 13.4	40.98S	174.59E	56	2.5	0.1	11	8
1623	MAR 16	2249 22.1	41.36S	175.23E	25	2.0	0.1	12	11
1631	MAR 17	0845 57.7	41.61S	174.64E	33	2.6	0.1	13	11
1727	MAR 17	2310 5.9	41.58S	173.95E	10	2.3	0.3	11	10

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
1739	MAR 18	0719 55.9	40.73S	175.09E	35	2.2	0.1	8	7
1744	MAR 18	1340 19.3	40.94S	174.93E	48	2.6	0.1	11	9
1751	MAR 18	1901 26.4	41.78S	173.75E	9	2.5	0.2	14	12
1753	MAR 18	2002 14.9	40.50S	173.57E	165	4.2	0.1	19	15
1762	MAR 19	0526 58.2	41.52S	174.66E	47	2.0	0.1	10	9
1768	MAR 19	1025 15.8	41.01S	175.60E	28	2.1	0.1	11	9
1769	MAR 19	1100 33.8	40.67S	174.07E	85	3.3	0.1	13	11
1770	MAR 19	1121 23.5	41.01S	175.61E	28	2.9	0.1	14	11
1784	MAR 20	1231 6.1	41.10S	174.74E	28	2.2	0.1	15	11
1785	MAR 20	1515 45.3	40.65S	174.54E	87	2.1	0.0	11	9
1794	MAR 21	0557 50.7	41.40S	175.05E	26	2.3	0.1	13	11
1798	MAR 21	1032 54.7	41.00S	173.80E	52	2.4	0.2	10	9
1802	MAR 22	0229 10.7	41.85S	174.43E	26	2.4	0.2	12	11
1806	MAR 22	0807 4.0	40.81S	174.11E	71	2.2	0.1	8	7
1810	MAR 22	1620 11.1	41.76S	174.01E	14	2.7	0.2	20	16
1817	MAR 23	0617 40.1	41.84S	174.39E	32	2.1	0.2	13	11
1827	MAR 24	0116 27.6	40.54S	173.94E	110	3.7	0.1	12	10
1833	MAR 24	1001 55.7	40.70S	174.45E	66	3.0	0.1	13	10
1836	MAR 24	1310 52.0	40.88S	175.76E	28	2.0	0.1	11	9
1837	MAR 24	1339 32.6	41.54S	174.32E	14	3.0	0.3	14	13
1840	MAR 24	1354 36.4	41.55S	174.36E	3	2.4	0.3	14	13
1841	MAR 24	1401 11.9	41.55S	174.32E	15	2.8	0.3	14	13
1844	MAR 24	1841 52.7	41.55S	174.32E	14	2.8	0.3	14	13
1848	MAR 25	1130 18.4	40.90S	174.86E	35	2.1	0.1	10	8
1850	MAR 25	1220 34.0	40.58S	174.60E	27	2.5	0.2	10	9
1852	MAR 25	1543 52.7	41.53S	173.55E	96	3.0	0.1	9	9
1853	MAR 25	1606 8.9	40.95S	175.16E	24	2.1	0.2	8	8
1854	MAR 25	1717 55.1	41.96S	173.76E	45	3.1	0.2	10	9
1857	MAR 26	0449 32.2	41.76S	173.67E	55	2.6	0.2	11	9
1859	MAR 26	0845 24.7	40.53S	175.67E	27	2.0	0.2	9	6
1865	MAR 26	1910 49.9	41.24S	174.46E	16	2.6	0.3	21	14
1871	MAR 26	2155 24.5	41.43S	174.50E	55	2.4	0.1	11	10
1873	MAR 27	0122 44.7	40.89S	175.13E	39	2.4	0.5	9	8
1875	MAR 27	0343 59.3	41.11S	174.51E	63	2.4	0.1	12	12
1885	MAR 27	1153 23.5	40.98S	175.43E	27	2.0	0.2	9	8
1888	MAR 27	1333 27.3	41.40S	174.33E	58	2.6	0.1	23	20
1893	MAR 27	2320 0.2	40.52S	174.25E	85	3.0	0.1	19	14
1894	MAR 27	2342 49.2	40.91S	173.79E	81	3.9	0.2	22	18
1895	MAR 28	0118 34.5	40.59S	174.44E	81	3.0	0.1	12	11
1902	MAR 28	0841 18.1	41.63S	174.80E	30	3.2	0.1	14	12
1904	MAR 28	0949 31.2	41.63S	174.80E	28	2.2	0.1	12	10
1909	MAR 28	1237 31.6	41.06S	174.74E	52	2.2	0.1	11	10
1912	MAR 28	1932 49.8	40.90S	174.49E	65	2.5	0.1	13	10
1914	MAR 28	2109 41.5	41.17S	175.08E	26	2.0	0.1	10	10
1915	MAR 28	2135 22.8	40.77S	174.47E	25	2.1	0.2	8	7

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1933	MAR 30	1434 54.1	40.65S	176.00E	40	2.6	0.2	7	6
1940	MAR 31	1607 9.4	40.99S	174.93E	47	2.3	0.1	9	8
1944	APR 01	0011 25.2	40.58S	174.18E	83	2.6	0.1	9	8
1952	APR 02	0132 8.5	41.05S	174.80E	54	2.4	0.1	12	12
1959	APR 02	1844 41.6	41.28S	174.54E	35	2.0	0.1	12	11
1961	APR 02	2205 19.8	41.03S	175.08E	24	2.0	0.2	11	10
1962	APR 02	2209 19.1	41.26S	175.28E	22	2.2	0.3	10	9
1967	APR 03	0530 19.7	40.50S	174.56E	83	2.8	0.1	10	9
1969	APR 03	0644 0.3	41.65S	174.60E	30	2.2	0.1	8	6
1970	APR 03	1649 41.5	40.91S	174.71E	58	2.7	0.1	14	11
1971	APR 03	1900 26.0	40.84S	174.30E	45	2.3	0.3	9	7
1972	APR 03	2034 21.5	40.83S	175.17E	30	2.0	0.2	10	8
1973	APR 03	2303 54.9	41.13S	174.59E	34	2.3	0.1	13	11
1975	APR 04	0152 56.7	41.56S	173.78E	18	2.4	0.3	9	8
1989	APR 05	0806 42.8	40.92S	174.89E	45	2.2	0.1	10	9
1990	APR 05	0900 59.0	40.55S	174.32E	76	2.4	0.2	8	7
1998	APR 06	0400 32.1	41.15S	173.98E	56	2.3	0.1	9	8
2005	APR 06	1421 31.3	41.02S	175.42E	9	2.3	0.1	11	10
2007	APR 06	1602 41.1	41.31S	174.63E	31	2.5	0.1	13	11
2008	APR 06	1712 30.0	41.18S	174.73E	59	3.5	0.1	15	12
2009	APR 06	1717 31.9	41.54S	173.82E	21	2.5	0.3	14	12
2018	APR 07	1310 39.0	40.65S	174.52E	44	2.1	0.1	10	8
2020	APR 07	2052 25.4	41.81S	174.16E	19	2.4	0.2	13	12
2021	APR 07	2101 13.2	40.96S	173.95E	61	2.5	0.1	10	6
2031	APR 08	0431 22.4	41.38S	174.59E	20	2.8	0.2	14	10
2034	APR 08	1139 13.1	40.91S	175.79E	35	3.2	0.1	14	12
2048	APR 09	0831 11.8	41.15S	174.92E	17	2.1	0.1	8	6
2049	APR 09	0912 54.6	41.62S	174.77E	28	2.3	0.1	11	8
2051	APR 09	1739 31.3	41.11S	174.62E	56	2.2	0.1	7	7
2066	APR 10	1112 13.5	41.00S	175.39E	17	2.3	0.1	11	9
2070	APR 10	1557 34.6	41.08S	174.06E	77	2.3	0.1	12	6
2071	APR 10	1641 30.1	41.04S	175.48E	28	2.0	0.1	14	11
2084	APR 11	2350 45.9	41.24S	174.71E	33	2.5	0.1	12	10
2096	APR 13	0211 8.2	41.00S	174.87E	30	3.0	0.1	15	11
2100	APR 13	0542 11.9	40.80S	174.46E	24	2.0	0.1	8	7
2101	APR 13	0625 41.4	40.84S	175.13E	28	2.8	0.1	15	12
2104	APR 13	1054 26.4	41.78S	174.31E	26	2.3	0.1	14	9
2106	APR 13	1456 31.7	41.02S	174.49E	57	2.4	0.1	12	8
2109	APR 13	2147 45.3	41.21S	173.91E	58	2.3	0.1	9	9
2111	APR 14	0308 37.2	40.68S	174.41E	65	3.2	0.2	18	13
2112	APR 14	0311 1.5	40.65S	174.40E	59	2.4	0.2	9	9
2113	APR 14	0533 47.9	41.04S	174.59E	34	3.3	0.1	16	12
2114	APR 14	0757 0.5	40.57S	174.30E	87	2.4	0.2	9	9
2118	APR 15	0527 23.7	40.63S	174.87E	34	2.0	0.1	7	7
2119	APR 15	0547 23.4	40.81S	175.06E	31	2.1	0.3	9	8

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
2121	APR 15	0705 42.1	40.97S	174.37E	54	2.3	0.2	12	9
2123	APR 15	1538 0.4	41.30S	175.21E	28	2.0	0.1	14	11
2126	APR 16	0209 47.1	40.89S	175.85E	32	2.2	0.2	7	6
2127	APR 16	0324 19.6	40.77S	174.56E	43	2.3	0.1	11	9
2129	APR 16	1603 44.7	41.04S	174.81E	51	2.0	0.1	12	8
2133	APR 17	0836 45.8	40.52S	174.06E	100	2.9	0.1	12	11
2141	APR 17	1821 4.6	41.02S	174.17E	73	2.5	0.1	7	7
2143	APR 17	2121 3.1	40.74S	175.35E	29	2.0	0.1	12	11
2144	APR 17	2317 58.8	41.14S	174.16E	49	2.2	0.1	9	7
2151	APR 18	1336 48.8	41.72S	174.09E	10	2.0	0.1	10	9
2156	APR 19	0703 33.7	41.94S	174.15E	19	2.9	0.2	15	11
2157	APR 19	1258 22.4	40.57S	175.83E	53	3.0	0.1	13	11
2158	APR 19	1510 18.9	40.72S	174.15E	89	2.3	0.1	8	6
2175	APR 20	1539 0.3	41.71S	174.45E	49	2.4	0.1	11	9
2179	APR 21	0455 51.6	40.68S	174.71E	41	2.9	0.1	12	10
2186	APR 21	1738 14.8	40.92S	175.49E	33R	2.5	0.2	11	10
2189	APR 22	0233 18.5	40.87S	175.73E	29	2.3	0.1	10	7
2190	APR 22	0328 35.6	40.67S	174.38E	67	2.7	0.0	6	5
2196	APR 22	0728 21.8	41.18S	173.81E	91	2.6	0.1	10	7
2197	APR 22	1733 25.5	41.38S	175.80E	20	2.5	0.1	10	8
2199	APR 22	2338 9.0	41.18S	174.78E	31	2.3	0.1	14	10
2204	APR 24	0031 13.3	40.72S	174.52E	24	3.0	0.1	12	10
2207	APR 24	0708 38.3	41.31S	173.78E	99	2.8	0.1	9	6
2209	APR 24	2235 54.7	40.95S	174.89E	39	2.3	0.1	9	7
2212	APR 25	1357 47.3	41.34S	175.26E	22	2.1	0.1	10	8
2214	APR 25	1442 8.7	41.72S	174.47E	32	2.3	0.1	6	4
2216	APR 26	0350 3.3	41.15S	174.66E	33	3.0	0.1	13	10
2217	APR 26	1301 10.4	41.65S	174.58E	31	2.8	0.1	12	8
2218	APR 26	1339 34.6	41.75S	174.44E	30	3.0	0.1	11	8
2220	APR 27	0207 12.5	41.70S	174.23E	19	2.3	0.2	7	7
2226	APR 27	1328 50.0	40.50S	175.37E	69	3.1	0.1	7	5
2228	APR 27	1339 25.9	40.51S	175.40E	65	2.9	0.1	7	5
2229	APR 27	1409 58.0	41.46S	174.07E	4	2.9	0.2	10	8
2235	APR 29	0139 38.4	41.79S	175.07E	21	2.1	0.1	8	8
2236	APR 29	0224 57.1	41.13S	173.99E	59	2.7	0.1	10	8
2238	APR 29	0536 41.7	40.50S	174.63E	75	2.5	0.1	7	6
2242	APR 29	1804 26.1	41.61S	175.40E	26	2.1	0.1	11	10
2245	APR 30	0008 49.7	40.95S	174.90E	57	3.5	0.1	13	10
2246	APR 30	0037 44.4	40.97S	175.57E	30	2.0	0.2	5	5
2247	APR 30	0049 44.6	40.71S	173.95E	87	2.4	0.2	6	6
2254	APR 30	1529 19.0	41.50S	174.47E	21	2.4	0.1	14	12
2258	MAY 01	0435 34.5	41.06S	174.62E	61	2.7	0.1	15	13
2270	MAY 01	2054 33.6	41.19S	174.57E	40	3.5	0.1	13	10
2284	MAY 03	0119 43.2	41.73S	174.24E	24	2.4	0.2	21	19
2293	MAY 03	1238 13.8	40.63S	174.03E	22	2.2	0.2	11	9

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2297	MAY 03	1928 23.0	41.10S	174.68E	57	2.3	0.1	15	12
2299	MAY 04	0351 12.2	41.17S	174.68E	32	2.3	0.1	15	14
2308	MAY 04	1638 6.6	41.07S	174.71E	33	2.3	0.1	13	13
2315	MAY 05	0350 31.0	41.13S	173.91E	54	3.1	0.0	14	13
2316	MAY 05	0538 27.4	41.13S	175.34E	30	2.0	0.1	16	14
2319	MAY 05	1040 56.3	40.99S	174.11E	53	3.3	0.2	14	11
2325	MAY 06	0106 36.1	41.08S	175.92E	32	2.1	0.2	16	14
2327	MAY 06	0630 51.3	40.92S	175.48E	25	2.0	0.1	14	14
2332	MAY 06	1453 30.5	40.63S	175.54E	24	2.6	0.2	17	15
2335	MAY 06	1630 19.3	41.57S	174.71E	31	2.7	0.1	24	18
2340	MAY 07	0346 0.3	41.16S	174.93E	0	2.0	0.3	12	9
2344	MAY 07	1854 22.0	41.59S	173.95E	38	2.3	0.3	11	8
2349	MAY 08	0226 16.2	40.57S	175.47E	30	2.9	0.1	16	11
2352	MAY 08	0649 25.9	40.88S	174.76E	49	2.2	0.1	17	13
2361	MAY 08	2352 40.7	41.62S	174.79E	30	3.4	0.1	20	16
2390	MAY 11	0328 47.8	41.04S	174.84E	52	2.2	0.0	15	14
2391	MAY 11	0355 25.1	40.73S	174.74E	46	3.5	0.1	20	19
2393	MAY 11	1423 4.4	41.72S	174.39E	29	2.1	0.2	15	11
2398	MAY 11	2307 16.3	41.15S	174.42E	65	2.3	0.1	18	14
2405	MAY 12	1012 56.8	40.68S	173.95E	95	2.7	0.1	16	12
2418	MAY 13	0910 19.9	40.97S	174.63E	53	2.2	0.1	11	7
2427	MAY 13	1841 23.3	41.32S	175.83E	25	2.2	0.2	14	10
2435	MAY 14	0410 16.0	40.54S	175.87E	26	2.3	0.1	12	8
2436	MAY 14	0506 33.6	40.83S	174.60E	61	2.2	0.1	11	8
2439	MAY 14	0857 25.3	41.33S	175.77E	23	2.2	0.1	15	13
2442	MAY 15	0028 20.9	41.08S	174.64E	31	2.5	0.2	20	16
2453	MAY 16	0341 0.6	41.18S	174.96E	38	3.1	0.1	15	10
2454	MAY 16	0702 3.1	41.18S	173.94E	71	2.9	0.1	10	9
2456	MAY 16	1025 25.2	40.61S	174.08E	80	2.9	0.1	9	8
2458	MAY 16	1337 21.5	41.15S	175.70E	22	2.3	0.0	17	14
2463	MAY 16	2233 46.2	41.33S	174.95E	41	2.4	0.1	17	14
2468	MAY 17	0615 38.2	41.95S	174.04E	17	2.7	0.1	13	8
2472	MAY 17	1133 40.1	40.86S	175.64E	26	2.1	0.1	9	5
2473	MAY 17	1226 2.5	40.87S	175.65E	24	2.0	0.1	9	6
2482	MAY 18	0438 6.2	41.66S	174.58E	31	2.0	0.1	10	8
2487	MAY 18	1659 8.9	41.58S	173.74E	49	2.7	0.2	15	12
2489	MAY 18	1800 19.5	40.60S	175.00E	34	2.3	0.1	6	6
2493	MAY 19	0751 1.9	40.64S	175.04E	38	2.2	0.1	11	10
2495	MAY 19	1152 34.8	40.92S	174.95E	37	2.2	0.1	6	5
2496	MAY 19	2117 40.3	41.25S	173.73E	97	3.2	0.1	12	11
2501	MAY 20	0240 52.1	41.26S	174.37E	34	2.1	0.1	15	13
2502	MAY 20	0400 18.0	41.34S	175.27E	23	2.4	0.1	17	12
2505	MAY 20	1830 11.6	41.78S	174.39E	41	2.4	0.1	12	8
2506	MAY 20	2254 14.6	40.68S	174.40E	58	2.5	0.2	6	5
2507	MAY 21	0239 59.8	40.81S	174.54E	42	2.4	0.1	13	11

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2508	MAY 21	0609 15.0	41.23S	175.25E	29	2.1	0.2	13	10
2510	MAY 21	1008 44.1	41.72S	174.08E	16	2.9	0.3	15	13
2511	MAY 21	1012 55.9	41.86S	174.07E	0R	2.2	0.2	11	10
2516	MAY 22	0041 26.4	41.08S	175.50E	27	2.1	0.1	13	11
2519	MAY 22	0627 50.0	41.03S	174.23E	78	2.6	0.1	13	10
2520	MAY 22	0832 13.7	40.52S	174.10E	24	2.1	0.2	7	6
2521	MAY 22	1436 1.0	41.12S	175.05E	29	2.6	0.1	19	16
2522	MAY 22	1545 8.1	41.47S	174.05E	48	3.1	0.2	18	15
2526	MAY 22	2144 52.1	40.98S	175.57E	12	2.9	0.1	19	17
2529	MAY 22	2259 54.6	40.93S	174.61E	60	2.3	0.1	18	14
2537	MAY 24	0429 8.9	40.73S	174.37E	58	2.5	0.1	10	10
2538	MAY 24	1317 20.9	41.76S	174.54E	30	2.0	0.2	18	15
2539	MAY 24	1326 50.0	40.83S	175.65E	27	2.0	0.2	14	10
2540	MAY 24	2214 57.6	41.18S	174.65E	32	2.4	0.1	21	11
2544	MAY 25	0906 8.7	41.93S	174.13E	12R	2.3	0.2	20	12
2545	MAY 25	1156 5.0	41.51S	174.08E	37	2.4	0.2	15	10
2547	MAY 25	1520 19.5	41.00S	174.55E	58	2.4	0.0	14	9
2549	MAY 25	1959 38.9	41.85S	174.12E	20	2.3	0.2	12	9
2550	MAY 25	2127 4.7	41.82S	174.20E	19	2.3	0.2	16	11
2552	MAY 26	0331 40.2	40.89S	175.29E	25	2.1	0.2	16	11
2553	MAY 27	0221 13.2	40.89S	175.29E	27	2.6	0.2	20	15
2555	MAY 27	0950 54.5	41.02S	174.49E	58	2.5	0.1	14	10
2565	MAY 29	0532 27.8	40.95S	175.15E	30	2.1	0.2	15	13
2567	MAY 29	1128 39.5	40.50S	174.27E	28	2.6	0.0	12	9
2568	MAY 29	1426 45.3	40.53S	174.41E	72	3.2	0.1	18	15
2570	MAY 29	1910 0.6	41.10S	174.03E	52	2.4	0.1	16	13
2573	MAY 30	0615 29.2	40.85S	175.64E	20	2.5	0.2	20	16
2576	MAY 30	1329 20.0	40.87S	175.30E	28	2.0	0.2	13	13
2578	MAY 30	1659 12.5	40.98S	175.10E	29	2.2	0.1	17	11
2583	MAY 31	0317 49.3	41.75S	174.43E	57	2.4	0.1	15	15
2584	MAY 31	0746 10.7	41.05S	174.55E	39	2.1	0.2	16	14
2587	MAY 31	1145 23.5	41.67S	174.57E	33	2.7	0.1	24	19
2589	MAY 31	1422 32.5	40.54S	174.40E	81	2.4	0.2	13	9
2590	MAY 31	1937 38.8	41.42S	175.33E	16	2.1	0.1	19	15
2591	MAY 31	2352 53.8	41.10S	173.97E	62	2.4	0.1	14	9
2593	JUN 01	1320 32.7	40.61S	174.43E	58	2.1	0.1	10	7
2594	JUN 01	1519 10.4	41.00S	174.64E	36	2.4	0.1	19	11
2597	JUN 02	0224 43.5	40.69S	174.37E	64	2.5	0.2	12	8
2598	JUN 02	0926 5.6	41.75S	174.43E	30	2.5	0.2	20	13
2599	JUN 02	1110 7.9	41.78S	174.31E	14	3.3	0.3	23	17
2601	JUN 03	0326 18.2	41.06S	175.36E	27	2.4	0.1	19	12
2602	JUN 03	0827 49.4	40.85S	174.11E	58	3.4	0.1	20	12
2609	JUN 04	1125 11.3	41.11S	174.79E	35	3.2	0.1	20	16
2610	JUN 04	1639 42.6	40.88S	175.57E	24	2.0	0.2	11	8
2612	JUN 04	1919 46.4	41.71S	174.27E	11	2.2	0.2	13	11

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2614	JUN 04	2259 21.2	41.05S	174.66E	63	2.1	0.0	8	6
2618	JUN 05	0747 3.0	40.84S	174.98E	35	2.1	0.2	8	7
2622	JUN 05	1234 33.5	40.84S	174.79E	14	2.6	0.1	19	14
2623	JUN 05	1824 46.0	40.61S	175.48E	29	2.5	0.1	16	10
2628	JUN 06	0531 46.4	41.44S	173.69E	67	2.6	0.1	10	10
2632	JUN 06	1234 48.7	40.56S	175.62E	26	2.2	0.1	9	9
2635	JUN 06	1936 27.8	41.03S	175.10E	25	2.0	0.1	11	10
2637	JUN 06	2339 42.2	40.90S	175.85E	31	3.2	0.2	15	11
2638	JUN 07	0013 16.5	41.07S	174.82E	27	2.1	0.1	13	11
2640	JUN 07	0527 41.0	40.63S	174.32E	87	2.7	0.2	9	7
2649	JUN 07	1913 42.7	41.76S	174.46E	32	2.1	0.1	18	17
2653	JUN 08	0543 56.6	41.64S	174.18E	8	2.7	0.3	13	12
2654	JUN 08	0758 7.1	40.57S	174.77E	33	2.2	0.1	8	7
2658	JUN 08	1315 29.1	41.46S	173.52E	102	3.4	0.2	20	16
2660	JUN 08	1406 6.3	41.63S	174.17E	5R	2.3	0.3	13	8
2662	JUN 08	1911 44.2	41.63S	174.21E	0	2.2	0.3	11	9
2666	JUN 09	0135 13.5	40.66S	175.49E	30	2.4	0.2	11	9
2667	JUN 09	0435 22.1	40.81S	175.26E	28	2.5	0.1	13	10
2669	JUN 09	1415 57.9	40.98S	175.34E	27	2.1	0.2	9	8
2670	JUN 09	1445 35.6	41.45S	174.97E	27	2.0	0.1	15	11
2672	JUN 09	1918 4.1	41.66S	173.95E	20R	2.0	0.3	9	8
2677	JUN 10	0831 52.1	40.78S	174.82E	45	2.1	0.1	7	7
2680	JUN 10	1416 20.5	41.38S	174.44E	47	3.5	0.1	16	12
2683	JUN 10	1651 48.8	41.44S	174.78E	38	2.6	0.1	15	11
2687	JUN 11	1044 33.5	41.29S	175.30E	29	2.3	0.1	15	11
2688	JUN 11	2152 26.8	41.13S	173.66E	53	2.6	0.2	8	8
2689	JUN 11	2212 24.6	41.46S	174.47E	25	2.2	0.1	11	9
2693	JUN 12	1014 21.1	41.74S	174.50E	31	2.1	0.2	16	11
2694	JUN 13	0422 11.3	41.14S	174.79E	51	2.4	0.1	11	8
2695	JUN 13	0914 58.4	40.60S	174.74E	39	2.1	0.0	6	5
2700	JUN 13	2032 57.9	40.80S	174.39E	95	3.2	0.2	14	13
2716	JUN 16	1153 35.7	41.24S	175.17E	22	2.0	0.1	14	10
2724	JUN 17	2150 0.6	40.85S	175.60E	23	3.0	0.2	17	12
2725	JUN 17	2307 30.7	41.24S	173.90E	66	3.0	0.1	13	9
2727	JUN 18	1417 11.3	41.22S	173.96E	63	2.7	0.1	13	10
2729	JUN 19	0105 15.9	41.01S	175.30E	21	2.3	0.2	11	10
2730	JUN 19	0418 11.8	40.88S	175.61E	27	2.0	0.1	9	8
2731	JUN 19	0437 10.0	41.27S	175.34E	32	2.1	0.1	12	10
2732	JUN 19	0439 39.3	41.30S	174.51E	35	2.0	0.1	10	9
2733	JUN 19	0640 37.4	40.98S	174.42E	43	2.2	0.1	12	11
2734	JUN 19	0830 30.1	41.24S	174.61E	30	2.0	0.1	15	11
2735	JUN 19	1602 38.9	41.88S	174.16E	35	3.4	0.2	16	12
2738	JUN 19	2216 52.2	40.92S	175.27E	24	2.3	0.2	14	10
2746	JUN 20	1514 42.5	41.14S	175.17E	8	3.1	0.1	19	15
2749	JUN 20	2240 13.3	40.87S	174.75E	34	2.2	0.1	10	9

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2752	JUN 21	0744 24.3	40.99S	174.84E	31	2.2	0.1	14	10
2756	JUN 21	1759 24.9	41.26S	175.34E	14	2.2	0.1	15	10
2757	JUN 21	2019 33.2	41.83S	174.33E	18	2.2	0.3	10	9
2763	JUN 22	0807 38.0	40.56S	174.50E	30	2.1	0.3	10	8
2765	JUN 22	1007 47.9	41.29S	175.21E	20	2.7	0.1	14	12
2768	JUN 22	1741 31.7	41.69S	174.20E	17	3.1	0.2	17	15
2770	JUN 22	1907 53.3	41.11S	175.03E	25	2.0	0.1	12	9
2772	JUN 22	2316 6.6	41.06S	174.16E	56	2.3	0.1	6	6
2777	JUN 23	1524 1.2	41.72S	174.53E	33	2.4	0.2	15	13
2779	JUN 23	2023 38.6	41.03S	175.34E	26	2.1	0.1	12	8
2783	JUN 23	2312 45.7	41.29S	175.21E	21	2.4	0.1	14	11
2784	JUN 24	0132 54.2	41.07S	173.84E	57	2.4	0.3	7	7
2785	JUN 24	0322 15.6	41.55S	174.32E	33	2.0	0.2	12	10
2786	JUN 24	0349 39.1	41.17S	174.55E	34	2.0	0.2	13	10
2787	JUN 24	0406 41.9	40.87S	174.72E	13	2.0	0.2	14	11
2788	JUN 24	0411 41.4	41.54S	173.66E	86	2.7	0.1	15	14
2794	JUN 24	1117 20.4	41.59S	174.61E	33	2.0	0.1	11	7
2795	JUN 24	1517 18.0	41.24S	173.82E	82	2.6	0.1	12	10
2796	JUN 24	1645 23.8	40.57S	174.08E	115	2.4	0.2	6	6
2798	JUN 24	1913 55.5	41.21S	175.42E	22	2.2	0.1	16	14
2800	JUN 25	0010 58.1	40.85S	174.72E	15	2.0	0.2	10	7
2807	JUN 25	1217 2.8	40.71S	174.26E	52	2.2	0.2	13	10
2810	JUN 25	1420 29.5	41.35S	175.76E	24	3.1	0.1	18	15
2811	JUN 25	1423 56.5	40.63S	174.66E	0R	2.0	0.2	8	6
2812	JUN 25	1622 6.2	41.60S	174.66E	30	2.0	0.1	14	11
2814	JUN 25	2127 14.8	40.85S	175.18E	34	2.0	0.1	8	8
2820	JUN 26	1401 36.8	40.94S	175.79E	33	2.0	0.2	10	8
2823	JUN 27	0531 14.5	40.87S	174.69E	52	2.1	0.0	10	7
2833	JUN 28	0445 59.7	40.66S	174.73E	44	2.7	0.2	12	10
2834	JUN 28	0531 31.9	40.64S	174.34E	5	2.4	0.3	10	7
2835	JUN 28	0752 48.1	40.90S	175.36E	28	2.0	0.2	10	7
2836	JUN 28	1126 10.6	41.08S	174.39E	68	2.4	0.1	7	6
2846	JUN 29	1240 7.7	40.99S	175.41E	12R	3.4	0.2	25	20
2847	JUN 29	1319 22.2	40.88S	173.81E	101	2.9	0.1	13	10
2848	JUN 29	2204 10.9	41.70S	174.57E	30	2.0	0.2	16	12
2854	JUN 30	0102 18.8	41.85S	174.06E	33	2.7	0.2	14	13
2855	JUN 30	0302 49.1	41.53S	174.19E	11	2.8	0.3	16	13
2856	JUN 30	0435 44.1	40.58S	174.54E	75	2.9	0.1	12	10
2858	JUN 30	0638 41.9	40.69S	173.81E	113	2.8	0.2	8	8
2859	JUN 30	0806 43.1	40.91S	174.93E	44	2.2	0.1	8	7
2862	JUN 30	1658 53.4	40.87S	175.84E	27	2.0	0.3	8	8
2863	JUN 30	1852 34.8	41.67S	174.22E	14	2.5	0.2	14	11
2864	JUN 30	1923 14.7	40.82S	174.36E	57	2.7	0.2	8	6
2865	JUN 30	2318 7.2	40.89S	175.50E	28	2.0	0.2	8	7
2868	JUL 01	0600 26.4	40.79S	174.36E	71	3.2	0.1	13	11

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2871	JUL 01	1030 45.8	41.14S	173.71E	74	3.2	0.2	12	10
2874	JUL 01	1542 42.0	40.89S	174.71E	68	2.7	0.2	10	9
2875	JUL 01	1831 30.6	41.03S	174.52E	56	2.9	0.1	9	8
2876	JUL 01	2035 57.1	40.78S	175.35E	24	2.1	0.1	12	10
2879	JUL 02	0352 45.9	40.81S	174.67E	43	2.6	0.1	9	8
2881	JUL 02	0749 39.0	40.57S	174.10E	53	3.2	0.2	10	10
2882	JUL 02	1032 22.7	41.63S	174.66E	33	3.2	0.1	14	11
2884	JUL 02	1619 21.2	40.58S	175.81E	67	2.6	0.1	9	7
2886	JUL 02	1921 14.5	41.33S	174.99E	28	2.1	0.1	14	11
2896	JUL 03	0526 41.3	40.67S	175.95E	43	2.2	0.1	6	6
2897	JUL 03	0612 56.0	40.81S	174.86E	41	2.2	0.3	9	8
2900	JUL 03	1225 8.0	41.02S	174.49E	11	2.5	0.1	12	9
2901	JUL 03	1534 27.7	41.76S	174.10E	14	2.2	0.2	10	9
2906	JUL 04	0829 58.4	41.38S	175.10E	24	2.6	0.1	13	11
2907	JUL 04	0831 29.8	41.17S	175.03E	28	2.0	0.0	11	9
2908	JUL 04	1448 42.1	41.15S	175.77E	42	2.8	0.1	11	8
2909	JUL 04	2117 51.5	41.44S	173.65E	93	2.7	0.0	11	10
2910	JUL 04	2136 15.6	40.54S	174.63E	27	2.3	0.2	11	10
2911	JUL 04	2150 59.2	40.50S	175.62E	30	2.8	0.2	15	11
2912	JUL 04	2203 56.3	41.10S	174.65E	31	2.3	0.1	12	10
2915	JUL 05	0331 55.0	41.03S	175.22E	15	2.0	0.2	11	10
2917	JUL 05	1219 26.4	41.88S	175.21E	30	2.5	0.2	12	10
2918	JUL 05	1237 38.0	41.57S	174.57E	56	3.3	0.1	14	12
2922	JUL 06	0733 3.8	41.79S	173.78E	5	2.1	0.1	7	7
2923	JUL 06	1201 28.2	41.79S	174.68E	28	2.9	0.1	15	12
2924	JUL 06	1431 35.0	40.65S	175.72E	33	2.2	0.1	7	6
2926	JUL 06	1813 34.0	40.98S	174.61E	34	2.9	0.2	15	13
2928	JUL 06	2043 18.2	40.99S	174.27E	52	3.4	0.2	14	11
2931	JUL 07	0435 5.8	41.02S	174.53E	37	2.2	0.1	12	10
2933	JUL 07	0910 52.6	41.67S	174.12E	14	2.4	0.1	13	10
2937	JUL 07	1812 37.1	41.19S	174.58E	38	3.4	0.1	18	15
2939	JUL 07	2156 14.3	40.64S	175.84E	51	2.4	0.1	9	8
2940	JUL 07	2322 2.1	40.81S	175.03E	30	2.1	0.1	10	8
2941	JUL 07	2323 15.8	40.77S	174.98E	37	2.1	0.1	8	7
2943	JUL 08	0410 59.9	41.78S	174.51E	31	2.2	0.1	11	9
2944	JUL 08	0559 20.2	40.99S	174.46E	64	2.1	0.1	9	9
2945	JUL 08	0559 34.0	41.27S	173.82E	57	2.3	0.1	9	9
2946	JUL 08	0626 24.8	41.02S	173.87E	95	3.1	0.1	14	12
2952	JUL 09	0230 38.9	40.98S	175.45E	16	2.5	0.1	12	12
2953	JUL 09	0418 36.7	40.54S	174.60E	79	3.3	0.1	13	13
2956	JUL 09	0752 43.6	41.00S	174.80E	55	2.2	0.1	8	7
2957	JUL 09	0928 53.5	41.34S	174.99E	27	2.0	0.1	12	10
2959	JUL 09	1326 15.7	41.29S	175.21E	21	2.1	0.1	13	13
2966	JUL 10	0818 40.6	41.08S	175.50E	28	2.3	0.1	14	12
2967	JUL 10	0857 20.2	40.87S	175.16E	33	2.2	0.1	11	9

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
2968	JUL 10	1441 56.6	41.06S	175.20E	15	2.7	0.2	19	17
2969	JUL 10	1518 17.7	41.29S	174.77E	58	3.9	0.2	25	21
2972	JUL 10	1724 33.8	41.27S	175.28E	23	2.4	0.1	15	12
2979	JUL 11	0415 46.1	41.27S	174.57E	54	2.2	0.1	7	6
2980	JUL 11	0858 18.5	40.79S	174.48E	25	2.0	0.1	7	7
2981	JUL 11	0950 32.5	40.83S	175.78E	31	2.5	0.2	12	11
2982	JUL 11	1553 43.0	41.61S	173.73E	54	2.2	0.2	9	8
2983	JUL 11	1621 26.5	40.82S	174.00E	28	2.7	0.2	12	8
2984	JUL 11	2042 22.7	41.29S	175.31E	29	2.1	0.2	12	11
2985	JUL 12	0305 19.9	40.96S	174.69E	57	2.4	0.1	15	12
2990	JUL 12	1757 29.9	41.28S	175.32E	28	2.3	0.1	13	10
2991	JUL 12	1856 23.9	40.78S	175.31E	33R	2.2	0.3	12	10
2994	JUL 12	2137 51.3	40.96S	175.06E	28	2.0	0.1	13	11
2997	JUL 13	0141 2.6	40.64S	174.54E	60	3.0	0.1	16	10
2998	JUL 13	0157 37.2	40.71S	174.55E	63	3.1	0.1	16	12
2999	JUL 13	0349 37.3	41.75S	174.48E	32	2.9	0.1	20	17
3000	JUL 13	0548 41.7	40.94S	174.89E	47	2.2	0.2	10	7
3001	JUL 13	0550 22.0	41.27S	173.83E	64	2.4	0.1	9	7
3006	JUL 13	2255 13.5	41.14S	175.78E	32	2.4	0.1	15	9
3009	JUL 14	1238 45.4	41.05S	174.79E	55	2.4	0.1	10	7
3011	JUL 14	2141 14.4	40.98S	175.30E	27	2.6	0.2	10	10
3012	JUL 15	0408 38.1	40.83S	175.89E	12R	2.0	0.3	8	8
3018	JUL 15	1120 34.9	41.27S	175.07E	29	2.1	0.5	7	7
3023	JUL 16	0645 57.8	41.22S	174.30E	62	2.7	0.1	8	8
3026	JUL 16	1109 33.1	40.78S	175.34E	27	2.3	0.1	12	11
3030	JUL 17	0152 14.6	40.90S	175.17E	27	2.0	0.1	9	9
3033	JUL 17	0916 25.7	41.81S	174.47E	31	2.1	0.1	10	8
3034	JUL 17	1504 11.1	40.94S	174.90E	30	2.0	0.1	10	9
3035	JUL 17	1937 52.1	41.62S	174.77E	27	2.0	0.0	7	5
3037	JUL 17	2157 36.0	40.92S	175.71E	31	2.3	0.1	9	8
3039	JUL 18	1438 14.4	41.18S	174.65E	52	2.0	0.1	8	7
3040	JUL 18	1830 55.9	41.80S	174.51E	33	2.3	0.1	6	6
3051	JUL 20	0741 34.9	41.28S	175.30E	27	2.5	0.1	10	9
3052	JUL 20	1829 56.7	41.27S	174.43E	41	2.4	0.1	10	9
3054	JUL 20	2317 49.8	41.40S	174.53E	31	2.0	0.1	7	6
3055	JUL 21	0424 46.5	41.36S	174.35E	32	2.3	0.1	8	8
3059	JUL 21	1844 41.2	40.87S	175.19E	27	2.0	0.2	9	9
3060	JUL 21	2008 53.1	41.52S	175.17E	26	2.0	0.1	9	8
3062	JUL 22	0048 11.7	41.80S	174.43E	29	2.7	0.2	12	10
3066	JUL 22	0920 50.3	41.39S	174.11E	35	2.6	0.3	8	8
3067	JUL 22	1339 41.8	41.57S	174.57E	56	3.9	0.2	17	17
3068	JUL 22	1353 17.6	41.52S	174.58E	51	2.3	0.2	9	8
3074	JUL 23	0200 12.4	41.01S	175.48E	25	2.0	0.1	8	8
3077	JUL 23	1405 55.9	40.84S	175.83E	32	3.2	0.2	11	10
3094	JUL 25	1433 31.4	41.06S	174.64E	28	2.6	0.1	14	11

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
3106	JUL 27	0818 14.3	41.64S	174.48E	28	2.1	0.2	11	10
3109	JUL 28	0309 10.1	40.92S	174.91E	54	2.3	0.1	10	9
3117	JUL 29	0214 51.0	41.41S	174.04E	103	2.3	0.0	5	5
3122	JUL 29	1922 41.9	41.26S	175.15E	27	2.6	0.1	14	10
3124	JUL 30	0255 27.2	40.76S	174.21E	91	2.8	0.0	10	9
3127	JUL 31	0219 28.4	41.40S	173.79E	57	2.3	0.1	8	6
3133	JUL 31	0847 36.9	40.52S	174.19E	76	4.0	0.3	29	23
3137	JUL 31	2022 51.0	40.88S	175.14E	31	2.4	0.1	11	11
3139	AUG 01	0050 38.9	41.07S	176.00E	33R	2.5	0.2	9	9
3141	AUG 01	1313 59.4	40.97S	174.17E	61	2.3	0.2	6	5
3143	AUG 01	1614 20.9	41.22S	174.61E	57	2.4	0.0	8	7
3144	AUG 01	1622 36.7	41.71S	174.85E	26	2.9	0.1	13	12
3147	AUG 02	0332 11.5	40.94S	174.42E	38	2.4	0.1	11	9
3152	AUG 03	0833 51.4	40.98S	175.59E	26	2.0	0.1	9	8
3163	AUG 03	1653 58.0	41.32S	174.09E	48	2.3	0.1	10	10
3166	AUG 03	1737 56.8	41.67S	174.30E	10	2.2	0.2	14	13
3167	AUG 03	1838 51.7	40.61S	173.83E	108	3.2	0.1	14	11
3168	AUG 03	1853 33.4	41.81S	174.14E	33R	2.0	0.1	9	9
3169	AUG 03	1900 44.1	40.84S	174.00E	103	2.5	0.1	10	9
3172	AUG 04	0230 56.4	41.70S	174.13E	12R	2.1	0.3	11	10
3174	AUG 04	0325 22.9	41.34S	174.75E	8	3.0	0.2	16	14
3175	AUG 04	0650 52.3	40.82S	175.01E	33	2.4	0.2	12	9
3179	AUG 04	1915 39.6	41.50S	174.12E	39	2.4	0.2	11	8
3181	AUG 04	1943 10.5	40.77S	175.41E	28	2.3	0.1	9	9
3183	AUG 05	0057 25.9	41.07S	174.67E	36	2.1	0.1	9	7
3186	AUG 05	1639 14.2	41.43S	173.91E	56	2.6	0.1	12	12
3190	AUG 06	0420 23.2	41.32S	175.10E	23	2.1	0.1	15	11
3193	AUG 06	2306 34.8	41.12S	174.83E	27	2.7	0.1	15	10
3199	AUG 07	0445 43.7	41.77S	174.50E	36	2.5	0.1	11	9
3201	AUG 07	1336 41.5	41.48S	174.42E	59	2.4	0.1	15	11
3209	AUG 08	0040 15.3	40.58S	175.85E	54	2.5	0.1	6	6
3210	AUG 08	0327 47.6	40.69S	174.50E	29	2.2	0.2	11	10
3212	AUG 08	0658 32.8	41.24S	175.26E	25	2.2	0.1	15	11
3220	AUG 08	1755 39.5	41.52S	174.61E	57	2.5	0.1	15	11
3225	AUG 09	0314 7.7	40.81S	173.75E	92	2.7	0.1	7	6
3228	AUG 09	1723 28.1	41.69S	174.48E	35	2.2	0.2	11	8
3230	AUG 09	2220 34.4	40.78S	174.89E	19	2.6	0.1	14	11
3231	AUG 10	0112 27.2	41.14S	175.33E	26	2.0	0.1	14	13
3234	AUG 10	0851 50.2	40.63S	174.68E	27	2.6	0.1	14	11
3235	AUG 10	1213 50.4	41.01S	174.34E	48	2.3	0.1	10	8
3236	AUG 10	1231 0.6	41.08S	173.93E	58	2.3	0.2	9	7
3241	AUG 10	2122 4.6	40.63S	174.35E	64	2.6	0.2	13	10
3243	AUG 10	2312 41.1	41.06S	174.46E	62	2.7	0.1	17	13
3246	AUG 11	0321 53.1	41.18S	174.06E	74	2.3	0.0	7	6
3251	AUG 11	2149 58.2	40.81S	175.68E	34	2.3	0.1	10	9

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3257	AUG 12	2056 4.8	41.72S	174.51E	33	2.3	0.1	12	8
3261	AUG 13	0642 2.7	41.64S	174.55E	32	2.0	0.1	15	11
3262	AUG 13	0654 11.6	40.53S	173.80E	150	3.1	0.1	10	8
3266	AUG 13	1552 44.7	40.97S	174.54E	59	2.7	0.1	9	6
3268	AUG 13	1835 30.3	41.59S	174.68E	33	2.0	0.2	9	8
3270	AUG 13	1945 30.0	41.04S	174.82E	49	2.1	0.1	8	7
3274	AUG 13	2306 1.1	41.72S	174.51E	29	2.1	0.1	10	8
3287	AUG 14	1414 42.8	40.62S	174.97E	34	2.0	0.1	12	8
3292	AUG 15	0023 13.6	41.82S	174.93E	33	2.1	0.1	12	9
3293	AUG 15	0028 23.1	40.78S	174.20E	64	2.4	0.1	7	7
3295	AUG 15	0800 34.1	40.93S	174.47E	42	2.3	0.1	10	9
3299	AUG 15	1704 28.6	41.08S	175.75E	34	2.0	0.2	8	8
3301	AUG 15	2031 31.9	40.67S	174.09E	98	2.7	0.1	10	8
3317	AUG 16	1023 47.9	40.89S	175.85E	36	2.3	0.2	7	6
3323	AUG 16	1917 56.8	41.82S	174.40E	29	2.1	0.3	7	7
3324	AUG 16	1942 53.5	40.70S	174.69E	42	3.2	0.1	13	11
3327	AUG 16	2344 53.1	41.10S	174.14E	56	2.5	0.1	10	8
3330	AUG 17	0531 49.3	41.38S	174.58E	30	2.1	0.1	8	7
3334	AUG 17	0835 17.8	40.88S	174.56E	18	2.1	0.1	7	7
3335	AUG 17	0854 14.9	41.26S	174.37E	34	2.6	0.0	10	9
3338	AUG 17	1313 21.5	40.74S	174.84E	14	2.0	0.2	7	7
3340	AUG 17	2002 7.4	41.28S	174.60E	33	2.5	0.1	15	11
3343	AUG 18	0114 56.9	40.98S	175.62E	31	3.1	0.1	15	11
3344	AUG 18	0235 6.1	41.37S	174.65E	21	2.5	0.2	14	10
3346	AUG 18	0538 13.0	41.22S	173.72E	61	2.6	0.2	11	8
3352	AUG 18	1307 21.3	40.60S	174.10E	93	2.6	0.1	6	6
3355	AUG 18	1456 46.3	40.61S	175.50E	31	2.0	0.2	6	5
3356	AUG 18	1600 24.4	40.73S	175.09E	32	2.4	0.1	13	11
3360	AUG 18	1846 0.5	41.20S	173.50E	55	2.2	0.1	9	7
3362	AUG 19	0346 16.6	40.72S	175.89E	61	2.5	0.1	7	6
3363	AUG 19	0742 22.7	40.69S	174.39E	51	2.3	0.1	8	8
3364	AUG 19	0810 22.4	41.29S	174.04E	47	2.6	0.2	14	9
3365	AUG 19	0925 23.5	41.88S	174.12E	34	2.5	0.2	12	10
3371	AUG 19	1935 15.3	41.63S	174.63E	29	2.0	0.1	7	6
3376	AUG 20	0013 40.3	41.33S	174.74E	0R	2.1	0.2	11	10
3394	AUG 22	0311 9.8	41.22S	173.93E	53	2.6	0.1	11	9
3399	AUG 22	0941 46.2	41.42S	174.42E	24	2.1	0.2	13	10
3403	AUG 22	1842 5.0	40.72S	174.94E	37	2.0	0.1	7	7
3406	AUG 22	2028 1.2	41.76S	174.17E	17	2.4	0.2	14	10
3407	AUG 22	2110 23.0	41.09S	174.46E	36	2.7	0.0	14	10
3410	AUG 22	2227 53.8	41.98S	174.07E	11	2.2	0.2	12	9
3419	AUG 23	1433 21.9	40.55S	174.50E	76	2.3	0.1	9	9
3421	AUG 23	1644 8.2	40.73S	174.49E	65	2.2	0.1	7	7
3423	AUG 23	1904 11.1	40.96S	175.79E	33R	2.0	0.1	9	8
3428	AUG 24	0550 49.3	40.96S	174.89E	34	2.0	0.1	9	7

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3439	AUG 25	0510 40.4	41.76S	174.09E	14	2.1	0.2	9	8
3454	AUG 25	1512 10.5	40.89S	175.91E	31	2.6	0.2	15	11
3455	AUG 25	1721 0.2	41.06S	174.25E	51	2.5	0.1	12	8
3458	AUG 25	1852 29.6	41.49S	174.47E	25	3.5	0.2	22	18
3462	AUG 26	0747 24.9	40.97S	174.76E	56	2.3	0.1	15	10
3464	AUG 26	1008 11.5	41.76S	174.47E	32	2.5	0.2	18	13
3465	AUG 26	1019 14.3	41.74S	174.47E	31	2.2	0.1	14	10
3471	AUG 26	1545 11.6	41.44S	174.21E	58	2.0	0.1	12	10
3474	AUG 26	1910 10.5	41.68S	173.70E	17	2.7	0.2	11	10
3476	AUG 26	2158 11.4	41.04S	174.82E	51	2.9	0.1	14	10
3480	AUG 27	0651 4.8	41.01S	175.54E	28	2.4	0.1	11	9
3494	AUG 28	1542 58.9	41.12S	174.62E	35	2.3	0.0	14	10
3495	AUG 28	1744 47.1	40.66S	174.35E	59	2.4	0.2	7	6
3499	AUG 29	0918 4.3	41.38S	174.60E	29	2.0	0.1	15	11
3504	AUG 29	2309 31.5	41.58S	173.63E	33	2.1	0.3	11	8
3509	AUG 30	1419 47.9	40.95S	174.88E	28	2.6	0.0	12	9
3510	AUG 30	1738 40.4	41.49S	173.72E	80	2.7	0.1	20	17
3511	AUG 30	2037 41.5	41.03S	174.19E	49	2.3	0.1	8	8
3513	AUG 30	2357 31.1	41.10S	175.76E	29	2.0	0.1	12	11
3523	AUG 31	0944 4.2	40.76S	174.62E	43	3.2	0.1	15	10
3524	AUG 31	1015 58.9	40.78S	174.62E	39	2.1	0.1	9	7
3526	AUG 31	1036 15.7	40.76S	174.61E	41	2.1	0.1	8	7
3532	AUG 31	1434 36.3	40.90S	175.82E	33R	2.6	0.1	14	9
3539	AUG 31	2119 18.3	40.60S	174.20E	80	2.6	0.2	10	8
3541	AUG 31	2248 2.0	40.92S	175.45E	28	2.0	0.1	11	10
3543	SEP 01	0053 40.9	40.79S	174.72E	35	2.4	0.1	13	10
3544	SEP 01	0456 52.4	40.82S	174.22E	56	2.1	0.1	8	7
3553	SEP 02	1136 5.0	41.08S	174.13E	58	2.5	0.1	11	9
3556	SEP 02	1424 5.6	41.05S	174.97E	58	2.4	0.0	11	9
3557	SEP 02	2011 40.2	40.97S	175.67E	32	2.2	0.1	9	8
3564	SEP 03	0535 39.7	40.50S	175.54E	31	2.3	0.1	7	7
3566	SEP 03	1136 25.2	41.12S	175.25E	26	2.0	0.2	9	7
3567	SEP 03	1227 17.0	40.87S	174.72E	14	2.7	0.1	15	11
3570	SEP 03	2232 37.8	41.39S	174.64E	21	2.2	0.1	11	9
3576	SEP 04	0509 13.1	41.56S	173.69E	43	2.3	0.1	6	5
3577	SEP 04	0905 43.9	41.66S	173.71E	11	2.5	0.2	13	13
3578	SEP 04	0918 19.5	41.70S	173.67E	13	2.2	0.2	10	8
3582	SEP 04	1432 54.8	41.31S	174.23E	36	2.1	0.2	12	9
3583	SEP 04	1543 42.8	41.22S	173.67E	94	2.4	0.2	11	8
3584	SEP 04	2059 12.5	41.15S	174.55E	33	2.3	0.1	14	10
3587	SEP 04	2317 39.3	40.53S	175.08E	35	2.3	0.1	12	8
3590	SEP 05	0355 40.3	40.65S	175.02E	39	2.7	0.1	13	11
3591	SEP 05	0531 14.8	41.10S	174.66E	34	2.0	0.1	15	12
3593	SEP 05	0745 33.5	41.06S	174.66E	60	2.5	0.1	16	12
3598	SEP 05	1631 32.9	41.04S	174.45E	47	3.7	0.1	16	12

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3599	SEP 05	1839 59.6	40.93S	175.79E	33R	2.0	0.2	11	8
3605	SEP 06	1359 31.2	40.71S	174.20E	64	2.4	0.2	11	8
3606	SEP 06	2154 58.3	41.23S	175.37E	26	2.6	0.1	17	12
3607	SEP 06	2248 4.9	41.75S	174.50E	32	2.6	0.2	16	12
3612	SEP 07	0615 55.1	41.70S	175.05E	39	2.9	0.1	17	13
3619	SEP 07	2025 21.0	41.64S	174.42E	12R	2.1	0.4	10	9
3620	SEP 07	2052 57.1	40.53S	174.64E	27	3.1	0.2	13	11
3622	SEP 07	2116 38.0	41.03S	173.73E	80	2.3	0.1	7	5
3624	SEP 08	0241 0.1	40.88S	173.88E	55	2.9	0.2	10	8
3625	SEP 08	0400 43.5	41.35S	173.90E	59	2.9	0.2	9	9
3633	SEP 09	0834 7.9	41.02S	174.58E	36	2.7	0.1	12	9
3642	SEP 09	2318 50.9	41.36S	175.12E	28	2.0	0.1	15	11
3644	SEP 10	0305 42.1	40.96S	174.40E	60	2.7	0.1	10	8
3646	SEP 10	0328 36.4	41.72S	174.18E	18	2.1	0.2	9	8
3648	SEP 10	0440 38.1	41.02S	174.79E	30	2.1	0.1	13	11
3649	SEP 10	0619 10.9	41.01S	175.37E	29	2.0	0.1	11	10
3652	SEP 10	2200 57.7	40.52S	173.58E	167	3.0	0.1	9	8
3656	SEP 11	0542 36.1	41.28S	174.48E	59	2.2	0.1	7	7
3658	SEP 11	0627 39.3	41.72S	174.12E	26	2.1	0.2	7	7
3661	SEP 11	1803 32.6	41.40S	173.53E	108	2.5	0.0	9	8
3665	SEP 12	0324 19.8	41.69S	174.84E	145	2.6	0.2	7	7
3667	SEP 12	0805 6.0	41.65S	174.58E	32	2.5	0.2	14	10
3668	SEP 12	0924 21.4	40.70S	174.93E	33	2.6	0.2	12	10
3669	SEP 12	1019 37.5	40.71S	174.96E	33	2.2	0.1	8	7
3670	SEP 12	1232 42.1	41.71S	173.96E	31	2.2	0.3	10	9
3671	SEP 12	1437 2.9	40.98S	174.47E	66	2.2	0.1	9	7
3672	SEP 12	1452 36.9	40.88S	175.85E	36	2.3	0.2	7	7
3673	SEP 12	1628 2.7	41.80S	174.76E	49	2.5	0.1	13	9
3674	SEP 12	1703 41.9	41.60S	174.66E	32	2.0	0.1	13	10
3675	SEP 12	1812 22.3	41.71S	174.52E	34	2.1	0.1	8	7
3679	SEP 12	2314 20.1	41.35S	173.97E	43	2.7	0.2	13	9
3684	SEP 13	1310 12.3	41.10S	174.53E	35	3.1	0.1	18	14
3687	SEP 14	0738 13.4	41.68S	174.65E	27	2.0	0.1	7	7
3691	SEP 14	1347 26.8	40.99S	175.37E	25	2.0	0.1	9	9
3693	SEP 14	1747 26.9	41.03S	174.02E	68	2.6	0.1	14	9
3697	SEP 15	1754 39.1	41.25S	174.64E	26	2.9	0.1	19	15
3699	SEP 15	1843 43.6	40.80S	174.61E	46	2.4	0.1	9	8
3700	SEP 15	2231 43.3	40.61S	174.17E	75	2.5	0.2	9	6
3703	SEP 16	0143 41.4	40.86S	175.82E	33	2.4	0.1	10	8
3710	SEP 16	1539 45.7	41.25S	174.64E	26	2.4	0.1	16	11
3712	SEP 16	2147 9.8	41.57S	174.33E	24	2.4	0.1	11	10
3713	SEP 16	2150 0.1	41.59S	174.31E	23	2.3	0.1	11	9
3720	SEP 17	1057 38.0	40.61S	174.90E	32	2.1	0.1	10	10
3721	SEP 17	1647 14.3	40.59S	174.91E	30	2.0	0.1	8	7
3725	SEP 17	2125 39.2	41.67S	174.10E	33	2.3	0.1	13	9

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
3734	SEP 18	1102 53.4	41.27S	174.92E	21	2.2	0.1	12	11
3741	SEP 19	1349 29.2	41.54S	173.96E	20	2.0	0.2	12	8
3743	SEP 19	1704 3.7	40.52S	175.73E	45	2.8	0.1	14	11
3744	SEP 19	1930 25.5	40.90S	175.71E	31	2.2	0.1	12	9
3746	SEP 19	2135 36.4	40.86S	174.66E	70	2.1	0.0	6	6
3748	SEP 19	2159 41.7	41.85S	173.85E	45	2.4	0.1	9	8
3750	SEP 20	0026 55.3	40.93S	175.68E	34	2.8	0.2	10	10
3752	SEP 20	0137 22.3	41.23S	174.35E	37	2.6	0.1	11	10
3754	SEP 20	0704 17.9	41.71S	173.75E	16	2.3	0.2	9	9
3758	SEP 20	1623 9.9	40.99S	175.37E	26	2.5	0.1	13	12
3762	SEP 20	2209 53.0	41.88S	173.97E	17	2.4	0.3	10	9
3769	SEP 21	1054 24.4	40.56S	174.74E	35	2.0	0.1	8	8
3776	SEP 22	0223 12.1	41.05S	174.68E	29	2.0	0.1	12	10
3779	SEP 22	0544 25.6	40.74S	173.67E	33R	2.2	0.1	8	8
3786	SEP 22	1038 14.6	40.60S	174.80E	34	2.8	0.1	16	12
3787	SEP 22	1311 17.9	41.45S	175.30E	16	2.0	0.1	14	11
3788	SEP 22	1424 24.3	40.57S	173.89E	135	2.7	0.1	10	9
3801	SEP 23	1746 43.4	41.00S	173.96E	60	3.1	0.2	13	11
3802	SEP 23	1947 26.1	40.60S	175.92E	12R	3.9	0.4	25	21
3803	SEP 23	2001 30.5	41.04S	175.90E	31	2.2	0.1	10	9
3804	SEP 23	2052 3.7	41.23S	173.78E	100	3.4	0.2	15	12
3805	SEP 23	2308 18.7	41.74S	174.46E	29	2.4	0.1	14	12
3806	SEP 24	0126 54.5	41.45S	174.56E	22	2.6	0.1	16	11
3808	SEP 24	0607 52.3	41.52S	174.46E	22	2.1	0.1	11	9
3816	SEP 25	0000 15.1	40.92S	174.49E	66	2.1	0.1	6	6
3823	SEP 25	0637 34.6	40.79S	174.29E	60	2.3	0.1	6	6
3826	SEP 25	1543 54.2	40.91S	174.94E	33	2.3	0.1	11	11
3840	SEP 26	2202 51.3	41.45S	174.48E	58	2.3	0.1	14	10
3847	SEP 28	0113 48.8	40.50S	174.15E	33R	2.4	0.1	7	6
3848	SEP 28	0151 22.9	41.71S	174.21E	16	2.1	0.1	6	6
3849	SEP 28	0507 52.9	41.00S	175.67E	33R	2.0	0.1	6	6
3850	SEP 28	0551 56.9	41.05S	174.63E	34	3.1	0.1	14	10
3851	SEP 28	1101 5.2	41.02S	174.73E	30	2.0	0.1	8	8
3852	SEP 28	1109 24.5	41.78S	174.70E	23	2.1	0.0	6	5
3853	SEP 28	1151 23.3	41.02S	174.74E	31	2.2	0.1	9	7
3855	SEP 28	1652 21.9	41.19S	173.66E	101	2.8	0.0	10	8
3859	SEP 28	2259 22.4	40.62S	175.04E	32	2.1	0.2	8	8
3860	SEP 29	0044 11.2	41.67S	174.96E	30	2.3	0.1	13	10
3864	SEP 29	0342 23.9	41.16S	174.12E	55	3.3	0.1	13	9
3869	SEP 29	1014 18.5	41.37S	173.88E	51	2.5	0.2	7	6
3871	SEP 29	1514 51.9	41.23S	174.65E	33	2.4	0.1	15	11
3872	SEP 29	1628 28.1	40.86S	174.32E	60	2.6	0.2	10	10
3873	SEP 29	1945 45.1	40.68S	174.48E	83	2.6	0.1	5	5
3879	SEP 30	0418 12.2	41.33S	175.14E	26	2.1	0.1	8	7
3882	SEP 30	1856 34.4	41.19S	174.56E	34	2.2	0.1	15	11

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
3885	SEP 30	2123 32.3	41.23S	174.65E	34	2.0	0.2	10	10
3889	OCT 01	1207 29.4	41.07S	175.92E	31	2.1	0.1	9	9
3897	OCT 01	2115 33.3	41.84S	174.93E	40	2.4	0.2	10	9
3909	OCT 03	1032 50.0	41.01S	174.92E	26	2.1	0.1	16	12
3911	OCT 03	1605 55.5	41.73S	174.50E	32	2.2	0.1	15	11
3912	OCT 03	1643 1.1	41.76S	174.55E	27	2.1	0.2	16	12
3915	OCT 04	0436 23.4	40.73S	174.90E	12	2.0	0.2	8	8
3921	OCT 04	1448 12.4	41.33S	174.64E	18	2.7	0.1	16	12
3922	OCT 04	1747 53.2	41.33S	173.53E	115	3.9	0.1	16	12
3923	OCT 04	1908 49.5	40.69S	174.71E	38	2.8	0.2	12	10
3924	OCT 05	0001 7.3	41.73S	174.28E	23	2.3	0.2	10	9
3929	OCT 05	1208 41.2	41.54S	174.46E	57	2.5	0.2	10	9
3930	OCT 05	1824 27.1	41.32S	174.92E	27	2.4	0.1	14	10
3931	OCT 05	1824 57.7	41.32S	174.93E	28	2.4	0.1	13	10
3933	OCT 05	2008 26.3	40.95S	174.81E	33	2.1	0.1	12	10
3936	OCT 06	0121 2.8	40.92S	175.58E	33	2.1	0.1	10	8
3937	OCT 06	0337 50.6	41.28S	173.76E	85	2.7	0.1	15	13
3938	OCT 06	0532 19.2	41.31S	174.93E	25	2.3	0.1	14	11
3940	OCT 06	1314 19.8	41.86S	173.90E	44	3.0	0.2	14	12
3942	OCT 06	1449 31.3	41.28S	174.30E	63	4.4	0.1	26	22
3945	OCT 06	1746 2.7	41.30S	175.30E	29	2.6	0.1	13	9
3949	OCT 07	1402 59.8	40.95S	175.67E	33	2.3	0.1	8	8
3953	OCT 07	2258 27.7	41.27S	175.19E	28	2.1	0.1	14	13
3954	OCT 08	0002 30.4	41.35S	174.75E	0R	2.3	0.3	9	9
3958	OCT 08	1631 2.5	41.62S	175.63E	35	2.3	0.1	8	8
3959	OCT 08	2334 0.0	40.68S	174.11E	87	2.4	0.1	8	7
3962	OCT 09	1008 52.9	41.01S	175.57E	27	2.5	0.1	13	11
3963	OCT 09	1147 32.5	41.01S	174.49E	10	2.0	0.1	9	8
3968	OCT 10	0730 11.2	40.93S	174.70E	58	3.0	0.1	15	11
3971	OCT 11	0113 30.1	41.32S	174.92E	28	2.2	0.1	14	12
3972	OCT 11	0200 11.3	41.06S	174.22E	49	2.8	0.1	11	8
3978	OCT 11	1107 4.0	40.67S	173.85E	12	2.3	0.1	10	7
3989	OCT 12	0055 48.2	40.60S	175.57E	25	2.2	0.1	9	8
3993	OCT 12	1306 38.8	41.78S	174.23E	16	2.1	0.1	12	10
3994	OCT 12	1457 33.3	40.55S	173.93E	65	2.7	0.1	8	7
3995	OCT 12	1530 27.4	40.72S	175.01E	31	2.1	0.2	10	9
3997	OCT 12	1641 44.4	41.86S	174.81E	31	3.3	0.2	16	12
3999	OCT 12	1928 47.0	41.83S	174.81E	34	2.3	0.2	7	6
4000	OCT 12	1931 11.2	41.85S	174.81E	31	3.1	0.2	14	11
4006	OCT 13	0457 1.4	41.42S	174.58E	27	2.0	0.1	8	7
4013	OCT 13	1833 51.0	41.27S	175.18E	27	2.4	0.1	14	11
4015	OCT 13	2057 23.9	41.99S	174.05E	12R	2.6	0.3	12	10
4016	OCT 13	2246 44.2	41.97S	175.03E	33	2.3	0.1	7	6
4017	OCT 13	2328 51.1	41.84S	174.44E	37	2.7	0.1	14	11
4019	OCT 14	0002 30.0	41.83S	174.94E	32	2.4	0.2	7	6

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
4025	OCT 14	2251 47.2	41.33S	174.62E	17	2.6	0.2	12	12
4026	OCT 15	0012 52.4	41.74S	174.83E	33	3.5	0.1	19	15
4027	OCT 15	0017 19.3	41.70S	174.83E	34	2.6	0.2	16	11
4030	OCT 15	0200 18.7	41.73S	174.80E	30	2.2	0.1	12	9
4031	OCT 15	0354 39.9	41.04S	175.25E	25	2.1	0.1	11	9
4034	OCT 15	1039 16.6	40.96S	174.91E	31	2.0	0.1	10	10
4039	OCT 16	0402 7.8	41.83S	174.40E	30	2.3	0.2	11	9
4044	OCT 16	1220 43.8	41.63S	174.06E	14	2.0	0.2	11	8
4046	OCT 16	1302 54.1	40.82S	174.20E	63	2.4	0.2	11	8
4049	OCT 16	2018 40.6	41.22S	173.78E	96	2.9	0.1	13	11
4058	OCT 17	1044 16.7	41.61S	174.62E	32	2.2	0.1	13	8
4067	OCT 18	1144 53.1	41.75S	174.73E	38	2.5	0.1	9	8
4071	OCT 18	1822 52.4	40.70S	174.64E	66	2.0	0.2	6	6
4078	OCT 19	1307 53.6	41.14S	174.50E	35	2.2	0.1	8	7
4085	OCT 20	0741 8.5	41.41S	174.62E	21	2.0	0.2	17	13
4088	OCT 20	1256 8.6	40.92S	174.89E	60	3.6	0.1	16	12
4091	OCT 20	1753 41.3	41.14S	175.38E	26	2.0	0.1	13	10
4092	OCT 20	2026 20.1	40.56S	175.07E	29	2.1	0.2	7	6
4096	OCT 21	0010 25.1	40.95S	174.41E	67	2.3	0.1	7	6
4098	OCT 21	1028 31.6	41.86S	174.83E	30	2.5	0.1	14	12
4099	OCT 21	1412 41.0	40.82S	174.25E	30	2.4	0.2	9	7
4100	OCT 21	1515 2.0	40.96S	174.88E	51	2.5	0.2	16	13
4101	OCT 21	1649 48.3	41.61S	174.08E	16	2.0	0.1	8	7
4103	OCT 21	1826 11.9	41.75S	174.15E	36	2.9	0.2	15	11
4104	OCT 21	1853 40.4	41.30S	175.21E	33R	2.4	0.1	14	10
4105	OCT 21	2203 3.6	40.60S	174.02E	117	2.5	0.1	7	6
4110	OCT 22	0905 48.4	40.82S	175.56E	20	2.3	0.1	12	9
4112	OCT 22	1454 0.5	41.66S	174.26E	12R	2.2	0.2	16	11
4113	OCT 22	1643 45.2	41.02S	174.00E	53	2.2	0.1	9	6
4116	OCT 23	0130 34.3	40.85S	175.82E	33R	2.2	0.2	6	5
4118	OCT 23	0926 40.9	40.98S	175.37E	11	3.5	0.2	25	21
4119	OCT 23	1026 4.3	41.71S	174.34E	31	2.1	0.1	15	9
4122	OCT 23	1207 31.4	41.75S	174.48E	32	2.0	0.1	12	10
4127	OCT 23	1420 35.0	40.83S	175.20E	32	2.2	0.2	11	10
4129	OCT 23	2039 7.5	40.80S	175.26E	29	2.3	0.2	15	15
4130	OCT 23	2117 12.2	40.92S	175.70E	32	2.0	0.1	8	7
4135	OCT 24	1108 34.6	40.50S	174.36E	27	2.2	0.2	8	7
4140	OCT 24	1908 17.2	40.71S	174.74E	44	3.4	0.1	15	11
4143	OCT 24	2129 46.5	41.86S	174.82E	43	2.2	0.2	12	8
4147	OCT 25	0326 22.3	41.19S	174.59E	35	2.3	0.1	14	10
4157	OCT 25	2220 45.4	41.10S	174.64E	35	2.5	0.1	14	9
4158	OCT 25	2234 32.7	41.43S	174.74E	31	2.6	0.1	14	10
4160	OCT 25	2353 17.8	41.95S	174.16E	18	2.5	0.3	17	13
4162	OCT 26	0312 52.8	41.89S	174.42E	5R	2.0	0.1	7	7
4166	OCT 26	0456 20.5	41.06S	173.56E	126	2.7	0.1	9	6

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
4168	OCT 26	0755 25.8	40.69S	174.50E	42	2.5	0.1	12	8
4169	OCT 26	0842 45.3	40.69S	174.51E	46	2.7	0.2	16	12
4172	OCT 26	1304 19.7	41.53S	174.80E	31	2.0	0.1	15	11
4176	OCT 26	1906 34.5	40.90S	175.89E	33R	3.6	0.2	19	16
4179	OCT 26	2216 55.7	40.88S	175.65E	17	2.1	0.2	10	8
4185	OCT 27	0923 6.1	41.84S	174.34E	12R	4.9	0.4	21	19
4187	OCT 27	0936 20.4	41.84S	174.24E	12R	2.3	0.2	11	8
4188	OCT 27	0936 40.0	41.78S	174.27E	12R	2.6	0.1	7	6
4189	OCT 27	0936 56.5	41.89S	174.26E	12R	2.2	0.2	11	9
4191	OCT 27	0939 47.1	41.79S	174.34E	12R	3.4	0.3	19	17
4192	OCT 27	0941 27.0	41.91S	174.19E	12R	3.0	0.3	15	12
4193	OCT 27	0946 19.8	41.87S	174.23E	12R	2.4	0.3	15	11
4194	OCT 27	0947 18.3	40.82S	174.79E	10	2.4	0.1	15	11
4195	OCT 27	0947 48.5	41.88S	174.22E	12R	2.8	0.3	16	12
4196	OCT 27	0955 4.3	41.83S	174.28E	12R	2.1	0.3	12	10
4197	OCT 27	1000 20.0	41.84S	174.23E	12R	2.7	0.2	16	11
4198	OCT 27	1004 4.4	41.83S	174.29E	12R	2.6	0.3	14	11
4199	OCT 27	1019 52.3	41.76S	174.30E	12R	2.0	0.2	12	10
4200	OCT 27	1057 22.6	41.81S	174.32E	9	3.1	0.3	17	15
4201	OCT 27	1110 8.0	41.88S	174.23E	16	2.3	0.2	15	10
4202	OCT 27	1112 1.7	41.87S	174.25E	12R	2.7	0.2	17	11
4203	OCT 27	1114 22.0	41.88S	174.25E	12R	2.3	0.3	14	11
4204	OCT 27	1122 48.5	41.88S	174.24E	12R	2.5	0.3	17	12
4205	OCT 27	1152 6.6	41.85S	174.28E	12R	2.2	0.2	14	10
4206	OCT 27	1208 20.6	41.77S	174.33E	12R	3.9	0.4	21	18
4208	OCT 27	1235 13.7	41.82S	174.30E	12R	2.7	0.3	15	13
4210	OCT 27	1316 34.8	41.82S	174.30E	12R	2.9	0.3	15	13
4211	OCT 27	1349 26.1	41.90S	174.16E	15	2.0	0.2	11	11
4212	OCT 27	1351 17.2	41.78S	174.24E	15	2.0	0.1	10	9
4213	OCT 27	1400 3.3	41.80S	174.11E	18	2.0	0.1	10	8
4215	OCT 27	1559 32.8	41.91S	174.22E	12R	2.5	0.3	16	10
4217	OCT 27	1646 36.5	41.86S	174.18E	21	2.1	0.1	12	10
4218	OCT 27	1743 18.3	41.76S	174.36E	12R	3.3	0.3	20	16
4221	OCT 27	1926 33.0	41.80S	174.81E	12R	2.0	0.2	15	10
4223	OCT 27	2128 2.1	41.87S	174.20E	16	2.0	0.2	9	9
4225	OCT 27	2330 13.8	41.10S	174.30E	69	2.5	0.0	8	8
4226	OCT 27	2358 36.8	41.88S	174.18E	18	2.8	0.2	12	11
4227	OCT 28	0322 12.6	41.86S	174.21E	20	3.2	0.2	11	10
4228	OCT 28	0359 26.4	41.95S	174.11E	11	2.2	0.4	9	9
4230	OCT 28	0529 28.9	41.84S	174.20E	14	2.1	0.1	8	7
4232	OCT 28	0726 30.6	41.93S	174.17E	12R	2.1	0.3	7	6
4233	OCT 28	0804 18.9	41.70S	174.85E	31	2.1	0.1	6	6
4234	OCT 28	0816 57.1	41.70S	174.88E	28	2.2	0.1	12	10
4235	OCT 28	1103 53.6	41.87S	174.18E	14	2.2	0.2	11	9
4236	OCT 28	1352 2.7	41.89S	174.26E	12R	2.5	0.3	12	9

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
4239	OCT 29	0448 41.3	41.77S	174.30E	12R	2.2	0.3	10	9
4240	OCT 29	0508 51.2	41.38S	175.73E	15	2.7	0.1	10	8
4241	OCT 29	0615 31.7	41.37S	175.73E	15	2.0	0.1	6	5
4245	OCT 29	1157 18.6	41.08S	175.95E	29	2.2	0.4	7	6
4247	OCT 29	1942 26.0	40.59S	174.72E	59	2.4	0.2	7	6
4250	OCT 30	0738 50.1	40.78S	174.14E	21	2.4	0.1	11	6
4253	OCT 30	1914 47.1	41.04S	175.93E	30	2.0	0.1	9	8
4254	OCT 30	1921 19.2	41.03S	175.84E	28	2.4	0.1	10	8
4255	OCT 30	2017 51.4	41.04S	175.79E	27	2.4	0.1	11	8
4256	OCT 30	2120 44.0	40.97S	173.98E	99	2.8	0.1	10	6
4257	OCT 30	2224 20.1	41.88S	174.26E	12R	2.1	0.2	10	8
4260	OCT 30	2250 1.2	41.83S	174.33E	8	3.1	0.4	19	16
4264	OCT 31	0519 47.2	40.85S	173.87E	45	2.5	0.1	8	6
4265	OCT 31	0708 12.4	40.65S	173.62E	143	3.5	0.0	15	10
4269	OCT 31	1612 15.1	41.91S	174.20E	12R	2.7	0.3	14	10
4270	OCT 31	1615 52.1	41.41S	175.11E	18	2.1	0.1	14	9
4273	OCT 31	2026 30.0	41.53S	173.79E	55	3.4	0.3	13	11
4280	NOV 01	1111 19.0	40.79S	174.06E	59	3.7	0.2	18	14
4281	NOV 01	1936 28.7	41.23S	174.44E	34	2.2	0.1	10	6
4282	NOV 01	2147 20.0	41.60S	174.79E	29	2.4	0.1	12	9
4286	NOV 02	0236 29.1	41.29S	174.84E	27	2.2	0.1	13	9
4290	NOV 03	0536 58.0	40.78S	174.29E	65	2.8	0.1	8	6
4291	NOV 03	1105 31.0	40.93S	175.49E	24	2.2	0.1	10	9
4293	NOV 03	1922 17.9	41.89S	174.23E	12R	2.9	0.3	11	9
4294	NOV 04	0037 9.9	41.63S	174.67E	30	2.3	0.1	11	9
4295	NOV 04	0235 18.8	41.83S	173.81E	24	2.5	0.2	8	8
4296	NOV 04	1330 35.4	40.60S	174.39E	80	3.4	0.1	17	13
4299	NOV 04	2212 15.1	41.01S	175.49E	23	2.5	0.1	11	9
4301	NOV 05	0002 50.9	40.97S	175.54E	25	2.1	0.1	12	9
4303	NOV 05	0240 59.6	41.39S	174.52E	56	2.7	0.1	14	10
4304	NOV 05	0403 43.7	41.59S	174.11E	12R	2.4	0.3	14	11
4305	NOV 05	0708 2.5	40.83S	175.95E	32	2.2	0.0	7	6
4306	NOV 05	0728 10.2	40.58S	174.24E	22	2.1	0.1	7	5
4308	NOV 05	1402 42.5	40.56S	174.42E	92	2.7	0.0	12	8
4317	NOV 06	0038 27.9	40.65S	174.00E	92	2.6	0.1	7	6
4320	NOV 06	0506 50.0	41.03S	173.86E	79	2.7	0.1	14	9
4321	NOV 06	0532 4.8	41.43S	175.30E	14	2.1	0.1	12	11
4322	NOV 06	0539 13.2	41.45S	175.31E	16	2.3	0.1	13	9
4323	NOV 06	0546 15.1	40.85S	175.63E	21	2.3	0.1	10	8
4325	NOV 06	0738 17.9	40.56S	174.43E	79	2.5	0.1	12	9
4328	NOV 06	1300 5.5	41.01S	174.68E	34	2.0	0.0	13	9
4330	NOV 06	2205 59.7	40.80S	174.33E	67	3.0	0.1	11	7
4333	NOV 07	1103 44.5	41.89S	175.39E	72	2.1	0.1	6	4
4337	NOV 07	1347 16.0	41.52S	175.75E	12	2.3	0.1	11	10
4340	NOV 07	1643 48.7	41.68S	174.28E	12R	2.2	0.2	14	11

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
4341	NOV 07	1649 42.3	40.80S	174.51E	14	2.0	0.1	8	7
4342	NOV 07	1713 25.5	40.82S	175.60E	31	2.0	0.1	11	9
4343	NOV 07	1915 0.9	41.98S	173.67E	77	2.6	0.1	7	5
4345	NOV 08	0104 28.4	40.75S	174.91E	37	2.7	0.1	16	12
4352	NOV 08	2157 26.7	40.50S	174.51E	82	2.6	0.1	8	6
4353	NOV 08	2220 21.1	41.15S	173.68E	63	2.6	0.2	8	6
4355	NOV 09	0215 25.3	41.58S	173.67E	77	3.1	0.1	11	9
4356	NOV 09	0253 54.0	41.76S	174.72E	32	2.1	0.0	9	6
4360	NOV 09	0743 33.6	40.87S	175.49E	20	2.5	0.2	16	13
4364	NOV 09	1310 24.5	41.57S	174.18E	8	2.1	0.3	12	10
4379	NOV 09	1802 11.3	41.72S	174.48E	29	2.3	0.1	13	10
4385	NOV 10	0011 33.6	40.61S	175.03E	55	3.6	0.2	15	12
4388	NOV 10	0322 6.5	41.63S	174.19E	18	2.2	0.2	11	8
4389	NOV 10	0414 20.4	40.73S	174.26E	73	3.6	0.1	15	11
4390	NOV 10	0437 13.2	41.07S	174.10E	45	2.9	0.3	12	8
4393	NOV 10	0852 1.3	41.04S	174.20E	57	4.3	0.2	22	19
4395	NOV 10	2108 34.4	41.79S	174.54E	33	2.6	0.2	17	12
4396	NOV 11	0009 24.6	41.74S	174.49E	32	2.7	0.1	18	12
4399	NOV 11	0833 35.9	41.40S	174.68E	30	2.3	0.1	15	11
4400	NOV 11	1229 13.3	40.71S	175.34E	29	2.7	0.1	15	10
4401	NOV 11	1533 17.9	41.67S	174.22E	12R	2.0	0.2	10	8
4405	NOV 12	0653 35.0	41.65S	174.31E	10	2.9	0.2	15	11
4410	NOV 12	1210 42.1	41.09S	174.38E	68	2.6	0.1	15	13
4412	NOV 12	1337 13.0	41.07S	174.84E	29	2.0	0.1	14	11
4416	NOV 12	1702 32.0	40.51S	174.34E	28	2.3	0.2	11	8
4417	NOV 12	1808 14.9	40.98S	175.09E	32	2.3	0.1	13	10
4421	NOV 13	0149 21.0	40.50S	174.03E	31	2.1	0.1	6	6
4424	NOV 13	0947 9.1	41.90S	174.26E	12R	2.2	0.3	13	13
4427	NOV 13	1728 36.0	40.83S	175.62E	20	2.0	0.2	10	9
4428	NOV 13	1911 43.5	41.03S	174.16E	53	2.4	0.1	12	9
4431	NOV 13	2219 46.6	41.03S	173.57E	129	3.5	0.1	18	15
4434	NOV 14	0216 7.8	40.99S	173.85E	61	2.6	0.2	9	8
4435	NOV 14	0232 59.9	41.09S	173.86E	65	2.7	0.1	9	7
4437	NOV 14	0923 33.5	41.26S	174.86E	33	2.7	0.1	13	9
4438	NOV 14	1113 17.8	41.08S	174.20E	58	2.7	0.1	8	7
4440	NOV 14	1730 4.8	40.87S	175.55E	23	2.3	0.2	11	10
4441	NOV 14	1845 31.5	40.58S	174.66E	52	2.6	0.1	10	9
4443	NOV 14	2058 22.5	40.90S	175.08E	30	2.6	0.1	16	12
4444	NOV 15	1620 8.7	40.55S	174.57E	19	2.3	0.1	11	8
4455	NOV 17	1035 1.2	41.78S	174.47E	34	2.4	0.1	8	6
4456	NOV 17	1204 13.7	40.79S	175.07E	33	2.3	0.2	13	11
4458	NOV 17	2359 29.5	40.73S	174.00E	83	2.8	0.2	7	6
4459	NOV 18	0028 12.1	41.38S	174.34E	36	2.8	0.1	15	10
4460	NOV 18	0217 35.0	41.22S	174.84E	0R	2.0	0.2	9	9
4461	NOV 18	1229 52.5	41.71S	174.60E	20	2.3	0.3	18	10

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
4462	NOV 18	1233 58.0	41.94S	173.94E	41	2.5	0.1	14	7
4463	NOV 18	1916 10.9	41.17S	174.37E	34	2.4	0.1	11	8
4464	NOV 19	0113 24.0	41.26S	174.35E	36	2.1	0.1	8	5
4466	NOV 19	0555 17.2	40.53S	173.95E	30	2.4	0.1	8	5
4470	NOV 19	1301 27.6	41.73S	174.95E	32	2.2	0.2	15	11
4475	NOV 20	0010 59.2	41.22S	173.83E	56	2.1	0.1	9	7
4476	NOV 20	0403 1.1	41.66S	174.33E	10	2.1	0.2	11	11
4478	NOV 20	0654 58.5	41.78S	174.53E	34	3.5	0.1	17	11
4481	NOV 20	1133 19.7	41.65S	174.30E	12R	3.0	0.2	16	12
4482	NOV 20	1144 33.7	41.64S	174.31E	12R	2.1	0.2	14	10
4483	NOV 20	1512 31.7	40.57S	174.23E	29	2.1	0.2	6	4
4484	NOV 20	1825 22.8	41.06S	174.77E	54	2.7	0.1	15	11
4486	NOV 20	2040 17.6	40.85S	174.13E	61	2.2	0.2	7	6
4487	NOV 20	2206 6.6	40.84S	174.71E	51	2.2	0.1	9	7
4488	NOV 20	2223 37.0	40.86S	173.89E	88	2.4	0.1	5	5
4491	NOV 21	0756 33.2	41.01S	174.69E	37	2.4	0.1	13	9
4493	NOV 21	0923 27.5	41.88S	174.46E	28	2.0	0.1	11	8
4498	NOV 22	0434 59.6	40.87S	175.89E	31	2.6	0.2	11	9
4500	NOV 22	0643 8.1	41.66S	174.33E	4	3.3	0.2	19	17
4504	NOV 22	1806 58.9	41.66S	174.30E	14	2.3	0.2	14	10
4505	NOV 22	1822 54.7	41.38S	174.43E	10	3.5	0.2	23	19
4506	NOV 22	1824 28.3	40.86S	174.72E	15	3.2	0.1	13	11
4508	NOV 22	2111 38.1	41.03S	174.79E	53	2.1	0.0	10	9
4513	NOV 24	0032 16.0	40.69S	174.96E	12R	2.6	0.2	13	11
4517	NOV 24	0656 36.7	40.92S	175.89E	33R	2.4	0.1	10	9
4523	NOV 24	2232 39.7	40.88S	175.09E	37	2.2	0.1	8	7
4527	NOV 25	0230 57.5	40.88S	175.91E	32	2.9	0.1	11	9
4530	NOV 25	1112 16.5	41.53S	175.18E	29	2.1	0.1	9	6
4533	NOV 26	0013 54.3	41.14S	174.57E	40	3.0	0.1	14	9
4534	NOV 26	0120 4.9	41.66S	174.32E	12R	2.1	0.1	9	7
4536	NOV 26	0243 35.2	40.60S	174.30E	87	2.3	0.1	10	8
4538	NOV 26	0305 43.2	40.61S	174.11E	109	3.6	0.1	15	11
4539	NOV 26	0458 47.4	40.81S	174.72E	42	2.0	0.1	9	7
4541	NOV 26	1909 32.9	40.87S	175.80E	30	3.0	0.2	9	7
4542	NOV 27	0230 8.8	40.89S	175.80E	30	2.9	0.1	13	10
4548	NOV 27	1955 34.9	40.95S	175.75E	32	2.4	0.1	8	7
4552	NOV 28	2048 10.6	40.59S	174.61E	36	2.9	0.2	14	9
4553	NOV 28	2111 19.8	41.45S	174.20E	35	3.4	0.2	17	12
4554	NOV 29	0131 9.6	41.47S	174.14E	36	2.4	0.1	7	7
4556	NOV 29	0733 12.8	41.41S	173.89E	48	2.4	0.0	6	6
4557	NOV 29	1102 48.7	41.29S	174.76E	50	2.8	0.1	15	10
4567	NOV 30	1309 39.0	41.06S	174.60E	58	2.0	0.1	10	8
4572	DEC 01	0128 42.7	41.01S	175.42E	26	2.5	0.1	15	11
4573	DEC 01	0132 23.8	40.96S	174.51E	13	2.4	0.1	12	9
4574	DEC 01	0414 9.2	40.86S	175.89E	32	3.1	0.1	15	11

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
4575	DEC 01	0724 30.4	41.12S	175.36E	22	2.0	0.1	12	9
4581	DEC 02	0356 19.9	41.40S	175.83E	21	2.2	0.1	10	8
4582	DEC 02	0440 24.9	41.48S	174.51E	19	2.8	0.2	16	12
4586	DEC 02	1819 32.7	41.19S	174.50E	33	2.0	0.1	11	8
4587	DEC 02	1926 59.2	40.51S	175.75E	40	2.4	0.1	8	7
4588	DEC 02	2055 52.0	40.93S	173.79E	115	2.8	0.1	10	9
4590	DEC 03	0151 44.3	41.66S	174.36E	2	2.1	0.1	7	6
4591	DEC 03	0657 57.5	41.79S	174.46E	34	2.7	0.1	15	12
4592	DEC 03	0855 6.4	40.58S	174.45E	12R	2.2	0.1	6	6
4593	DEC 03	0902 28.4	41.12S	175.94E	31	2.7	0.2	17	11
4595	DEC 03	1358 12.8	41.20S	174.88E	53	2.2	0.1	10	9
4596	DEC 03	2010 51.7	40.87S	175.47E	22	2.0	0.2	9	9
4603	DEC 04	0838 5.4	41.30S	174.36E	36	2.8	0.1	15	10
4604	DEC 04	1936 43.0	41.26S	175.04E	19	2.1	0.1	15	9
4605	DEC 04	2028 34.0	41.91S	174.26E	14	2.2	0.1	13	11
4607	DEC 05	0018 28.6	40.91S	174.25E	46	2.9	0.2	15	11
4608	DEC 05	0439 7.0	40.88S	175.94E	32	2.9	0.2	13	11
4609	DEC 05	0651 2.8	41.76S	174.52E	33	2.3	0.1	16	10
4612	DEC 05	1221 53.3	40.57S	174.65E	26	2.0	0.1	10	9
4614	DEC 05	2247 20.8	41.19S	173.91E	53	2.3	0.1	10	7
4619	DEC 06	0411 59.9	41.87S	174.10E	33	2.3	0.2	14	11
4621	DEC 06	0820 2.0	41.58S	174.03E	20	2.2	0.2	11	10
4622	DEC 06	0841 11.3	41.75S	174.46E	31	2.6	0.1	18	15
4624	DEC 06	1137 35.0	40.52S	174.41E	30	3.0	0.1	11	7
4627	DEC 06	1417 36.0	41.57S	174.09E	12R	2.6	0.3	17	14
4628	DEC 06	1433 16.0	41.33S	175.13E	28	2.6	0.1	14	11
4631	DEC 06	1726 34.2	41.42S	174.54E	20	3.6	0.2	17	13
4633	DEC 06	1844 31.3	41.78S	174.50E	37	2.6	0.1	16	12
4638	DEC 07	0450 35.1	40.91S	174.75E	34	2.4	0.1	16	10
4643	DEC 07	0848 7.0	40.97S	175.65E	27	2.9	0.1	18	13
4645	DEC 07	1659 19.2	41.30S	174.43E	62	3.5	0.1	18	14
4646	DEC 07	1837 26.1	40.89S	174.64E	51	2.5	0.1	13	10
4649	DEC 08	0011 9.6	40.67S	174.61E	36	2.6	0.1	13	11
4651	DEC 08	0649 47.5	41.46S	174.02E	41	2.8	0.2	17	13
4656	DEC 08	1506 48.2	40.98S	174.23E	48	2.5	0.2	14	9
4658	DEC 09	0012 22.7	41.84S	174.80E	32	2.3	0.1	15	9
4659	DEC 09	0112 19.1	40.91S	174.96E	36	2.0	0.1	10	9
4660	DEC 09	0119 59.4	41.00S	175.33E	21	2.3	0.1	14	12
4662	DEC 09	0729 38.8	41.02S	175.32E	20	3.4	0.1	18	14
4664	DEC 09	1154 30.2	40.62S	175.83E	51	2.3	0.2	7	6
4666	DEC 09	1358 19.5	41.31S	174.48E	35	2.0	0.1	15	11
4671	DEC 10	0358 53.8	41.56S	173.80E	52	3.2	0.2	16	12
4672	DEC 10	0609 45.4	41.32S	174.13E	44	2.8	0.1	13	9
4675	DEC 10	1119 17.4	41.13S	175.06E	23	2.0	0.1	18	13
4692	DEC 12	0500 9.8	41.42S	174.71E	27	3.1	0.1	16	12

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
4694	DEC 12	0647 10.8	40.88S	174.26E	61	3.7	0.1	12	8
4696	DEC 12	1108 22.6	40.78S	175.03E	34	2.2	0.1	13	9
4705	DEC 13	0817 2.8	41.40S	175.09E	22	2.1	0.0	14	9
4708	DEC 13	1434 21.9	41.26S	173.50E	97	2.7	0.1	15	10
4712	DEC 13	2104 49.4	40.74S	174.63E	72	3.2	0.1	15	11
4714	DEC 14	0101 11.5	41.14S	175.08E	4	3.3	0.1	23	19
4718	DEC 14	0448 52.1	40.97S	174.40E	52	2.1	0.1	8	7
4720	DEC 14	1111 39.2	41.00S	174.34E	49	2.3	0.2	13	9
4721	DEC 14	1332 30.2	41.45S	173.62E	96	3.0	0.1	15	11
4731	DEC 15	0214 20.9	40.99S	173.64E	101	4.3	0.2	25	20
4732	DEC 15	0353 43.0	41.70S	174.26E	12R	2.0	0.2	9	8
4733	DEC 15	0526 40.5	41.05S	175.35E	27	2.0	0.1	12	10
4740	DEC 15	2313 4.1	41.42S	175.83E	28	2.1	0.1	9	5
4743	DEC 16	0345 37.8	41.28S	175.32E	27	2.0	0.1	13	7
4746	DEC 16	0535 20.3	40.61S	174.40E	69	2.5	0.1	11	8
4749	DEC 16	1111 52.3	41.24S	174.69E	27	2.0	0.1	13	9
4752	DEC 16	1340 33.2	41.12S	175.04E	6	2.1	0.1	12	9
4754	DEC 16	1725 4.6	40.51S	174.31E	28	2.2	0.1	5	5
4757	DEC 16	2356 3.1	40.77S	175.05E	34	2.4	0.2	13	11
4761	DEC 17	0716 31.1	40.89S	174.81E	49	2.3	0.1	7	6
4765	DEC 17	2209 27.0	41.04S	174.82E	51	2.3	0.1	13	10
4768	DEC 18	0414 29.4	40.91S	174.46E	56	2.8	0.1	14	10
4773	DEC 18	1609 43.7	41.79S	173.76E	12R	2.4	0.3	9	9
4778	DEC 19	2114 52.4	41.44S	175.30E	16	2.2	0.1	16	12
4780	DEC 20	0155 58.5	40.70S	175.45E	24	2.2	0.1	8	7
4784	DEC 20	1057 4.7	40.84S	174.56E	58	2.7	0.1	14	9
4787	DEC 20	1658 47.5	41.38S	173.97E	52	2.2	0.1	9	8
4788	DEC 20	1853 2.7	40.62S	174.19E	84	2.7	0.1	9	8
4789	DEC 20	2205 28.2	41.37S	174.48E	34	3.1	0.1	18	14
4790	DEC 20	2340 19.5	41.56S	173.87E	40	2.2	0.1	7	7
4793	DEC 21	0437 56.4	41.58S	173.60E	58	2.6	0.2	17	11
4794	DEC 21	0840 37.6	41.91S	175.16E	34	2.4	0.1	12	9
4796	DEC 21	1842 57.3	41.18S	174.39E	54	2.0	0.1	11	7
4797	DEC 22	0344 22.1	40.91S	175.01E	29	2.4	0.1	15	10
4802	DEC 23	0048 6.5	41.18S	174.56E	33	2.1	0.1	13	9
4803	DEC 23	0317 5.4	41.21S	173.67E	87	2.4	0.1	8	8
4804	DEC 23	0433 26.7	41.10S	175.48E	26	2.2	0.1	11	9
4807	DEC 23	0755 27.2	40.93S	174.86E	34	2.7	0.1	14	11
4811	DEC 24	0208 18.1	41.29S	175.27E	25	2.4	0.1	13	11
4813	DEC 24	0543 32.3	41.17S	174.46E	34	2.1	0.0	11	9
4815	DEC 24	0754 6.2	41.27S	175.31E	29	2.2	0.1	16	12
4825	DEC 25	1454 7.0	41.36S	173.93E	40	2.5	0.1	12	9
4826	DEC 25	1858 35.1	41.05S	174.52E	60	2.1	0.1	11	8
4828	DEC 25	2312 8.9	41.63S	173.66E	43	2.9	0.2	15	13
4830	DEC 26	0952 12.4	41.93S	175.17E	31	2.2	0.1	12	9

NUM	DATE	TIME	LAT	LONG	DEP	MAG	Rsd	NP	NS
4831	DEC 26	1050 48.5	40.63S	175.13E	33	2.1	0.2	8	8
4832	DEC 26	1219 26.6	41.07S	174.27E	42	3.0	0.1	14	10
4834	DEC 26	1632 42.3	41.65S	174.28E	13	2.3	0.2	16	13
4835	DEC 26	1714 7.9	41.65S	174.31E	10	2.4	0.2	15	12
4839	DEC 27	0018 58.7	40.65S	174.31E	44	2.2	0.1	15	11
4841	DEC 27	0948 24.6	41.71S	174.04E	27	2.1	0.1	12	7
4842	DEC 27	1055 23.7	40.79S	175.92E	37	3.1	0.2	15	11
4843	DEC 27	1150 48.4	41.06S	174.25E	43	2.5	0.1	15	12
4845	DEC 27	1733 23.8	40.90S	175.45E	25	2.5	0.1	14	11
4846	DEC 27	1734 10.8	40.88S	175.47E	23	2.1	0.2	12	9
4847	DEC 27	1823 27.4	40.60S	174.50E	59	2.3	0.1	12	9
4852	DEC 28	0616 45.5	41.44S	174.45E	31	2.3	0.1	6	6
4853	DEC 28	0624 26.5	41.19S	175.76E	18	2.0	0.2	8	7
4854	DEC 28	0824 20.3	40.74S	175.83E	51	2.4	0.2	6	6
4857	DEC 28	1932 12.3	41.71S	174.35E	30	2.5	0.1	12	9
4859	DEC 29	0047 25.8	40.70S	174.44E	69	2.4	0.1	10	7
4860	DEC 29	0253 38.8	40.94S	175.04E	29	2.7	0.1	12	10
4862	DEC 29	0932 18.6	41.31S	173.89E	79	3.0	0.1	9	8
4864	DEC 29	1223 15.9	41.26S	174.84E	29	2.7	0.1	14	11
4865	DEC 29	1506 38.6	41.27S	175.19E	11	2.1	0.1	13	10
4879	DEC 30	2113 38.8	41.96S	173.71E	115	2.6	0.2	12	9
4880	DEC 30	2325 49.2	41.15S	175.18E	12	2.3	0.1	13	11
4882	DEC 31	0711 32.6	40.80S	174.99E	11	2.3	0.2	11	10
4884	DEC 31	0807 59.7	41.72S	174.16E	15	2.6	0.2	16	11
4889	DEC 31	1607 49.0	40.76S	174.72E	70	3.1	0.1	14	10
4891	DEC 31	1714 26.3	41.10S	174.13E	56	2.7	0.1	12	8

TUAMOTU ARCHIPELAGO NUCLEAR EXPLOSIONS

Nuclear explosions at the French nuclear test sites in the Tuamotu Archipelago are often recorded at Rarotonga (RAR). The P-wave is usually not recorded but the T-waves have a rather distinctive signature with a very emergent onset, followed after a few seconds by a more prominent burst of energy which reaches its maximum and decays before the arrival of a smaller "echo" trailing the main energy by some 110 seconds. Although other teleseismic readings from the New Zealand instrumental networks are published by the International Seismological Centre, these T-wave observations are not.

Because the emergent first arrival cannot always be seen clearly when the explosions are relatively small, the instant of arrival is not recorded here. Instead, an inferred origin time is listed, based on the estimated travel time from the test site to Rarotonga, and indications that it is common practice to detonate tests exactly on the minute.

A means of estimating the magnitudes of these explosions has been devised, based on a comparison of maximum amplitudes of T-waves recorded at Rarotonga with magnitude estimates from the United States National Earthquake Information Service. (W.D. Smith, 1987: Underground nuclear explosions recorded at Rarotonga: estimation of m_b from T-phase amplitude. Geophys. J. R. astr. Soc. 90: 35-42). These magnitudes are given, together with the N.E.I.S. and I.S.C. estimates where these are available. The maximum recorded trace amplitude at Rarotonga (in millimetres) is also listed. All tests during 1987 are believed to have been conducted at Mururoa.

DATE	TIME h m	AMPLITUDE millimetres	m_b (T-wave)	m_b (N.E.I.S.)	m_b (I.S.C.)
May 5	16 58	2.0	4.8	4.9	--
May 20	17 05	9.0	5.4	5.6	5.6
Jun 6	18 00	1.2	4.5	--	4.7
Jun 21	17 55	5.0	5.2	5.1	5.1
Oct 23	16 50	14.0	5.6	5.5	5.5
Nov 5	17 30	6.0	5.3	5.7	5.4
Nov 19	16 31	16.5	5.7	5.9	5.8
Nov 29	17 59	1.5	4.7	--	--

NON-INSTRUMENTAL DATA

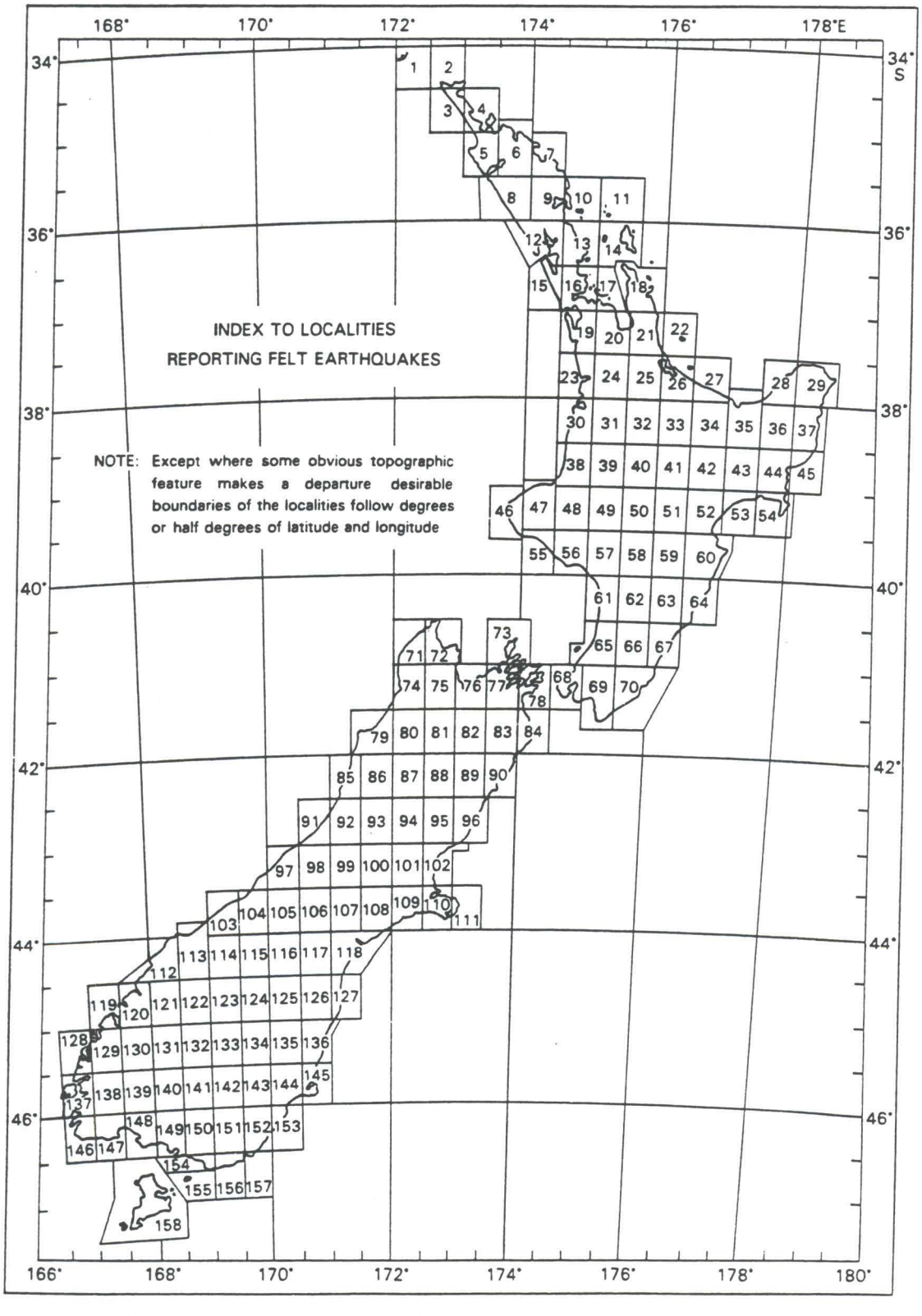
THE FELT REPORTING SYSTEM

The Observatory has recruited a network of about 600 voluntary observers spread throughout the country, who use a standard form to describe the effects of any earthquake they feel. The Observatory also collects casual reports from newspapers, meteorological observers, postmasters and members of the local public. For large earthquakes, or ones with features of special interest, questionnaires are issued and assessed.

Several difficulties arise in assessing the distribution of felt intensity. The population of the country is very unevenly spread, and the observers' personal circumstances may prevent them from feeling a shock that has been noticed by others. These problems also affect lists of earthquakes felt in particular localities. It may reasonably be assumed that a strong earthquake reported from one township was felt in another nearby, even though the Observatory has received no report. However, an index of this kind must summarise data and not deductions, so the following scheme is used.

The land area of New Zealand has been divided into 'localities', mostly bounded by half-degree lines of latitude and longitude, but varied as necessary to avoid splitting obvious geographic or structural units (see map opposite). Each locality has a number and a name, usually that of the principal population centre within it. The names are listed overleaf. In most localities there are at least two well-separated reporters, but there are still some sparsely populated parts of the country without observers, notably in Southland. Felt information is summarised in information lines following the instrumental data in the main list of earthquakes. Modified Mercalli intensities quoted there have been assessed by the Observatory from replies to standard questionnaires. Assessments based on less formal descriptions of intensity are included in the following list, in which the localities which have reported shocks during the year are presented in alphabetical order, each followed by the reference numbers of the shocks felt and their respective maximum reported intensities within that locality. By comparing the reports from neighbouring localities, it is possible to form a truer estimate of the incidence of the felt effects than would be possible from a simple list of places reporting each shock.

A further list records reports received from places in the south-west Pacific.



Standard Reporting Localities

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 Island
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 Island	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		

EARTHQUAKES FELT IN STANDARD LOCALITIES

Localities within which earthquakes were felt are listed in alphabetical order, each preceded by its number on the locality 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 location of the earthquake and the instrumental magnitude may be found in the list of origin determinations.

111	Akaroa	1459 (5), 3774 (4), 3784 (4*).
93	Arthur's Pass	140 (5), 1459 (4*), 2867 (4*).
16	Auckland	666 (4).
152	Balclutha	150 (4*).
14	Barrier Islands	666 (4*).
77	Blenheim	424 (5), 1807 (3), 2969 (4*), 3774 (5), 4185 (4).
10	Bream Head	666 (4*).
104	Bruce Bay	2370 (4), 3162 (4).
61	Bulls	175 (3), 666 (4*), 3309 (5), 3310 (4*), 3314 (4), 3551 (4).
46	Cape Egmont	22 4), 24 (4), 666 (4*), 2056 (4).
67	Castlepoint	666 (4*), 2256 (4*), 3280 (4*).
50	Chateau	666 (4*), 3676 (3*).
110	Christchurch	1459 (7), 1554 (3*), 2457 (4*), 2767 (4*), 3551 (4*), 3774 (4*).
18	Coromandel	666 (7).
95	Culverden	1459 (6).
63	Dannevirke	666 (4*), 1807 (4).
145	Dunedin	150 (5), 3148 (4*).
73	D'Urville Island	3387 (4*).
29	East Cape	661 (4), 666 (4).
117	Fairlie	2955 (4).
69	Featherston	666 (4*), 2746 (5), 3551 (4), 3774 (4*), 4185 (4), 4714 (5), 4752 (5).
45	Gisborne	661 (4), 665 (3), 666 (6), 671 (4), 685 (3), 936 (5*).
81	Glenhope	1459 (4), 1554 (4), 3722 (4), 4180 (4).
121	Glenorchy	123 (4).
85	Greymouth	1459 (4*),1554 (3*),3722(4*).
24	Hamilton	666 (5).
60	Hastings	666 (5), 881 (4), 1807 (4), 2256 (4), 3551 (4), 3716 (4*), 3802 (4*), 4753 (5).

55	Hawera	666 (4*), 3985 (4*).
15	Helensville	666 (4*).
91	Hokitika	1459 (5).
113	Jackson's Bay	2989 (4), 4852 (5).
90	Kaikoura	1459 (4*), 4185 (3).
12	Kaipara	666 (4*).
74	Karamea	1554 (5), 2224 (3).
51	Kaweka	666 (3).
30	Kawhia	666 (4*).
92	Kumara	12 (4), 1459 (4), 1554 (4), 1807 (4), 2867 (4).
100	Lake Coleridge	2457 (5), 3333 (4), 3756 (4).
54	Mahia	666 (5), 4312 (4*).
70	Martinborough	666 (4*), 2846 (4*).
87	Maruia	2286 (4), 2767 (5), 2774 (3*), 2780 (5*).
66	Masterton	666 (4*), 2846 (4*).
25	Matamata	631 (4), 666 (6), 671 (3), 673 (4), 2851 (5).
20	Mercer	666 (5).
38	Mokau	666 (4*), 2582 (4*).
36	Motu	661 (4), 665 (4), 666 (5).
75	Motueka	3057 (4*).
107	Mount Somers	23 (4).
71	Mount Stevens	132 (5), 596 (5), 3057 (4), 4185 (4).
34	Murapara	661 (5), 666 (9), 873 (7), 1264 (5), 1274 (5), 1470 (4), 1524 (4*), 532 (5), 2099 (5), 2343 (4), 2355 (4*), 2509 (5*), 2629 (5), 4142 (4*), 4450 (4*), 4497 (4).
52	Napier	666 (4), 1807 (4), 4312 (4).
76	Nelson	1807 (4*), 3774 (5).
47	New Plymouth	22 (5*), 666 (4*), 2056 (5), 2396 (4*), 3196 (4).
136	Oamaru	352 (4), 2684 (5).
49	Ohakune	666 (4*), 3309 (4), 3314 (4), 3384 (4), 3489 (4), 551 (4), 3676 (4), 3778 (4).
35	Opotiki	502 (3), 536 (4), 547 (4), 607 (5), 619 (3), 631 (4), 661 (7), 666 (7), 667 (5*), 668 (4*), 669 (4*), 671 (5), 673 (6), 674 (4*), 675 (4*), 677 4*), 680 (5), 681 (4*), 682 (4*), 684 (4*), 685 (4*), 687 (4*), 689 (4*), 690 (4*), 692 (4*), 693 (4*), 697 (4*), 700 (4*), 701 (4*), 702 (4*), 703 (4*), 704 (4*), 707 (4*), 709 (5*), 710 (4*), 711 (4*), 716 (4*), 717 (4*), 720 (5), 723 (4), 726 (4*), 728 (4*), 741 (4*), 742 (4*), 745 (4*), 746 (4*), 747 (4*), 751 (4*), 756 (4*), 757 (4*),

		75 (4*), 766 (4*), 768 (4*), 771 (4*), 772 (4*), 773 (4*), 776 (4*), 778 (4*), 779 (4*), 781 (4*), 787 (4*), 789 (4*), 791 (4*), 795 (4*), 796 (4*), 797 (4*), 800 (4*), 802 (4*), 804 (4*), 805 (4*), 806 (4*), 809 (4*), 810 (4*), 822 (5*), 841 (4*), 901 (4*), 909 (4*), 910 (5*), 913 (4*), 943 (4*), 945 (4*), 952 (4), 999 (4), 1028 (4), 1044 (4), 1064 (4*), 1079 (4*), 1097 (4*), 1099 (5), 1108 (4*), 1125 (4*), 1127 (4*), 1128 (4*), 1129 (4*), 1130 (4*), 1132 (4*), 1133 (4*), 1137 (4*), 1141 (4*), 1196 (4*), 1274 (4*), 1295 (4*), 1336 (4*), 1347 (4*), 1398 (4), 1438 (3), 1443 (3), 1458 (4), 1524 (5), 1528 (3), 1547 (4), 1565 (4), 1579 (5), 1807 (4), 1825 (4), 1918 (4), 1919 (4), 1936 (3*), 2026 (5), 2027 (4), 2028 (4), 2029 (5), 2030 (4), 2232 (4), 2318 (5), 2384 (4), 2504 (4), 2629 (4), 2830 (4), 2849 (4), 2851 (4), 4559 (5), 4560 (5).
65	Otaki	666 (4*), 1807 (4), 3280 (4), 3309 (4*), 3310 (4*), 3314 (4), 3697 (4*), 3942 (4*), 3985 (3), 4185 (4).
101	Oxford	1459 (4*).
62	Palmerston North	666 (4), 1807 (4), 2256 (4*), 3215 (3), 3280 (4), 3309 (5), 3310 (4*), 3314 (4), 3315 (4*), 3358 (4*), 3551 (4*), 3676 (5), 3802 (4), 4185 (4), 4312 (4).
78	Picton	637 (4), 1807 (4), 1865 (3), 3067 (4*), 3458 (4), 4393 (4), 4505 (4).
64	Porangahau	666 (4*).
19	Pukekohe	666 (3).
146	Puysegur Point	432 (4).
23	Raglan	666 (4*).
102	Rangiora	1459 (7).
33	Rotorua	128 (4), 661 (5), 666 (8), 671 (4), 673 (4), 674 (5), 678 (4), 687 (4), 692 (4), 707 (4), 820 (4), 864 (3), 873 (4), 902 (4), 913 (4), 933 (4), 1066 (3), 1071 (4), 1107 (4), 1413 (4), 1562 (5), 2260 (5), 2264 (5), 2266 (4), 2434 (5), 2455 (6), 2462 (5), 2485 (6), 2486 (4), 2509 (4), 2585 (4), 2604 (4), 2624 (5), 2736 (5), 2813 (4), 3119 (5), 3155 (4*), 3164 (4*), 3165 (4*), 3468 (4*), 3733 (5), 3865 (5), 3980 (4), 4258 (5), 4449 (5), 4450 (5), 4526 (5), 4837 (4).
59	Ruahine	666 (4*).
58	Taihape	666 (4*), 1807 (4), 2234 (4), 3280 (4), 3309 (4), 3310 (3*), 3314 (3), 3551 (5), 3676 (5).
72	Takaka	3057 (4*).
39	Taumarunui	666 (4*), 1638 (4*), 1639 (4).

41	Taupo	325	(4),	666	(5),	882	(3),	936	(5),	1638	(4),										
		1639	(4),	1667	(5),	2255	(4),	2431	(4),	3477	(5),										
		3547	(5),	3561	(4),	3874	(6),	3875	(4),	3876	(4),										
		3878	(4),	3888	(4),	3890	(4),	4312	(4*).												
26	Tauranga	463	(4),	468	(4),	472	(4),	483	(4),	490	(4),										
		502	(4),	504	(4),	508	(4*),	517	(4*),	521	(3*),										
		524	(4*),	624	(4),	631	(5),	661	(5),	665	(6),										
		666	(7),	669	(5),	671	(5),	673	(5),	685	(4),										
		687	(4),	689	(4),	692	(3),	874	(3),	875	(4),										
		877	(3),	882	(3),	910	(4),	914	(4),	945	(4),										
		1398	(5),	1579	(3).																
130	Te Anau	92	(4),	4601	(5).																
28	Te Kaha	661	(4*),	666	(6),	671	(4).														
31	Te Kuiti	666	(4).																		
42	Te Whaiti	661	(3),	666	(6),	671	(4),	820	(4),	873	(4),										
		1274	(4),	1358	(4).																
21	Thames	538	(5),	600	(4),	602	(6),	661	(4),	666	(7),										
		671	(4*),	673	(5),	910	(4),	1297	(4),	1298	(4),										
		1301	(4),	1304	(5),	1306	(6),	1310	(4),	1458	(6),										
		1524	(6),	1681	(6),	1807	(6),	2026	(5),	2029	(5),										
		2384	(4).																		
40	Tokaanu	252	(4),	253	(4),	370	(4),	666	(3),	1638	(4),										
		1639	(4),	1667	(4*),	3547	(4)	3660	(4),	3874	(4*),										
		3875	(4*),	3876	(4*).																
32	Tokoroa	666	(5),	3660	(4*).																
37	Tolaga Bay	666	(5).																		
43	Tuai	661	(4*),	666	(6),	671	(4*),	677	(5),	678	(5),										
		894	(4),	906	(4),	909	(4),	2830	(4).												
17	Waiheke	666	(4*).																		
82	Wairau	3774	(4).																		
53	Wairoa	661	(5),	666	(5),	881	(4),	913	(4),	1807	(4),										
		2312	(4),	2830	(4),	4086	(3),	4312	(3).												
57	Wanganui	666	(4*),	3016	(4*),	3309	(4*),	3310	(5*),	3551	(4),										
		3676	(4).																		
13	Warkworth	666	(4*).																		
56	Waverley	666	(4*).																		
68	Wellington	99	(2),	281	(4),	359	(5),	415	(4*),	424	(5),										
		661	(3),	666	(4*),	1459	(4*),	1554	(4*),	1807	(4),										
		2306	(4*),	2969	(4),	3067	(4),	3118	(4),	3133	(3),										
		3174	(4),	3309	(4),	3387	(4),	3458	(4),	3551	(4),										
		3774	(5),	3942	(5),	3954	(4),	3985	(5),	4185	(5),										
		4280	(4*),	4312	(4*),	4392	(3),	4393	(4),	4631	(4),										
		4714	(4*).																		
79	Westport	1554	(4*),	3722	(4),	4075	(5).														
44	Whakapunaki	666	(5),	692	(4),	882	(4),	910	(4),	1807	(4),										
		2830	(4).																		

27	Whakatane	463 (4), 468 (4), 472 (4), 483 (4), 490 (4), 500 (3), 502 (4), 504 (4), 508 (4), 512 (3), 513 (3), 517 (3), 520 (4), 522 (4), 524 (4), 529 (4), 531 (5), 532 (4), 535 (5), 536 (4), 538 (4), 541 (4), 547 (4), 561 (3), 582 (5), 583 (5), 589 (5), 602 (4), 607 (5), 611 (4), 612 (4), 625 (5), 631 (5), 638 (4), 640 (4), 641 (4), 656 (4), 661 (6), 665 (4), 666 (10), 667 (5), 669 (5), 671 (6), 685 (4), 1306 (4), 1350 (4), 1357 (4), 1358 (4), 1359 (4), 1398 (5), 1483 (5), 1520 (4), 1524 (5), 1533 (5), 1579 (5), 1585 (5), 1586 (5), 1587 (5), 1807 (4), 2356 (4), 2384 (5), 2504 (4), 2509 (4*), 2605 (4*), 2607 (4*), 2754 (4*), 2849 (4), 2850 (4), 2851 (4), 2892 (4*), 3600 (5), 4544 (4*), 4559 (4), 4560 (4), 4565 (4*).
48	Whangamomona	666 (4*).
9	Whangarei	666 (4*).

REPORTS FROM OUTSIDE NEW ZEALAND

The Observatory sometimes receives reports of earthquakes felt on islands of the south-west Pacific and other places beyond the limits of its systematic reporting network. Where Modified Mercalli scale intensities in the list below are shown in quotes, they have been estimated by the reporters, not the Observatory.

DATE	TIME	INTENSITY	PLACE
Feb 17	06h 17m	'MM 4'	Raoul Island.
Feb 25	02h 01m	'MM 4'	Raoul Island.
Mar 27	11h 54m	'felt'	Raoul Island.
Apr 02	01h 45m	'felt'	Raoul Island.
May 03	07h 43m	'MM 4'	Raoul Island.
May 03	11h 03m	'MM 4'	Raoul Island.
May 13	22h 08m	'MM 4'	Raoul Island.
May 18	02h 35m	'MM 4'	Raoul Island.
May 28	11h 47m	'MM 4'	Raoul Island.
Jun 25	04h 14m	'felt'	Raoul Island.
Jun 25	18h 14m	'MM 4'	Raoul Island.
Aug 26	17h 11m	MM 4	Raoul Island.
Aug 30	12h 15m	'MM 4'	Raoul Island.
Aug 31	06h 53m	'MM 4'	Raoul Island.
Nov 01	08h 42m	MM 6	Raoul Island.

PUBLICATIONS BY STAFF MEMBERS

The following papers, which have not previously been given notice in an Annual Report, were published in 1986 and 1987.

S-302 Stern, Tim; Muirhead, K.J.; Smith, E.G.C. and Davey, F.J.: Crustal and upper mantle structure of the northwestern North Island, New Zealand, from seismic refraction data. Geophys. J. R. astr. Soc., 91, 913-936.

The crustal and upper mantle structure of the northwestern North Island of New Zealand is derived from the results of a seismic refraction experiment; shots were fired at the ends and middle of a 575 km-long line extending from Lake Taupo to Cape Reinga. The principal finding from the experiment is that the crust is 25 ± 2 km thick, and is underlain by what is interpreted to be an upper mantle of seismic velocity 7.6 ± 0.1 km s^{-1}, that increases to 7.9 km s^{-1} at a depth of about 45 km. Crustal seismic velocities vary between 5.3 and 6.36 km s^{-1}. Crustal seismic velocities vary between 5.3 and 6.36 km s^{-1} with an average value of 6.04 km s^{-1}. There are close geophysical and geological similarities between the northwestern North Island of New Zealand and the Basin and Range province of the western United States. In particular, the conditions of low upper-mantle seismic velocities, thin crust with respect to surface elevation, and high heatflow (70-100 mW m^{-2}) observed in these two areas can be ascribed to their respective positions behind an active convergent margin for about the past 20 Myr.

S309 Smith, Warwick D.: Underground nuclear explosions recorded at Rarotonga: estimation of m_b from T-phase amplitude. Geophys. J. R. astr. Soc. 90:35-42.

More than seventy underground nuclear explosions detonated in the Tuamotu Archipelago of French Polynesia have been detected on the short-period vertical Benioff seismograph at Rarotonga in the Cook Islands. Early data suggested that the duration of the T-phase provides a better estimate of the magnitude of the events than does the amplitude, but with more data now available it has been shown that amplitude is in fact the more reliable parameter. Data prior to 1980 are more scattered than those since. This appears to be related to the substantially different station network in those early years, compared with the later period, and suggests some unreliability in early data. Station corrections have been extracted and improved estimates of the magnitudes of the events obtained.

S310 Robinson, R.: Temporal variations in coda duration of local earthquakes in the Wellington region, New Zealand. Pure, App. Geoph. 125: 579-596.

Temporal variations of coda duration, relative to event magnitude, for local earthquakes near Wellington have been investigated. The region is one of plate convergence and subduction. The data consist of routinely made observations for events from 1978 through 1985 (1552 events), magnitude 1.6 to 5.2, depth 0.5 to 90.0 km. The observed average (over time) correspondence between duration (as measured from the origin time) and magnitude is reasonably well predicted by the single backscattering theory of coda formation for events of magnitude 4 or less; for larger events the observed durations are longer than predicted. This theory predicts that a temporal increase in scattering attenuation will reduce the coda duration relative to magnitude. Thus, any temporal changes in the duration-magnitude relation can be interpreted in terms of changes in Q. However, it is necessary to consider spatial biases since the observed durations are relatively long for shallow events and, for events of all depths, at stations situated in the south-eastern half of the region, usually believed part of the accretionary border. For both these situations other evidence would suggest that the scattering coefficient would be relatively high (low Q). These observations may be due to a relatively high component of surface wave scattering and the importance of multiple scattering in the later part of the coda in regions of low Q as suggested by finite element studies of coda formation. Despite lack of any significant earthquakes during the 1978-1985 period there is nevertheless a significant temporal change in duration observed in the Wellington region: a change from relatively long to relatively short codas occurred in mid-1981. This change correlates well with changes in the rate of activity, b-value, radon emission, and ground tilt as derived from lake levels. It is not yet clear how all these parameters are related physically, but an episode of aseismic slip, or creep, along the plate interface below the region may have been the cause.

S-314 Reyners, Martin: Subcrustal earthquakes in the central South Island, New Zealand, and the root of the Southern Alps. Geology 15, 1168-1171.

The Pukaki microearthquake network has revealed significant earthquake activity deeper than 15 km in the central South Island, New Zealand, extending to a depth of 73 km beneath the crest of the Southern Alps. Events deeper than 25 km define a planar seismic zone that has a strike of 41° and dips northwest at 19°. Gravity models suggest that earthquakes in this zone are occurring in a seismogenic uppermost mantle underlying an aseismic lower crustal root to the Southern Alps. The 17° difference in strike of the dipping seismic zone and the Alpine fault provides an explanation for the pattern of uplift and crustal thickening seen in the central South Island.

------ Gledhill, K.R.; Randall, M.J.: EARSS: A microprocessor controlled earthquake recording system. New Zealand Electronics Review 20, 7.

Description of new equipment for automatic recording of seismic signals with a rate that is suitable for other data acquisition applications.

------ Eiby, G.A.: Ground deformation and Robert Hook. New Zealand Geophysical Society Newsletter 17, 15-16.

A review of the ideas on ground deformation expressed by Hooke in a volume of works first published after his death.

------ Eiby, G.A.: Prelude to Lisbon, 1755. New Zealand Geophysical Society Newsletter 18, 18-19.

A review of the paper "Some considerations on the causes of earthquakes" by Stephen Hales, read before the Royal Society on April 5th, 1750.

------ Smith, E.G.C.: Research in Seismology and the Physics of the Earth's Interior in New Zealand 1983-1986.

Report of the New Zealand National Committee for Geology and Geophysics to the International Association of Seismology and Physics of the Earth's Interior. Royal Society of New Zealand, Wellington.

---- Smith, W.D.: Principal New Zealand earthquakes in 1985. Bulletin of the New Zealand National Society for Earthquake Engineering 19. p64.

A review of significant earthquakes of the year.

------ Smith, W.D.: Principal New Zealand earthquakes in 1986. Bulletin of the New Zealand National Society for Earthquake Engineering 20. p1.

A review of the significant earthquakes of the year.

------ Latter, J.H.; Balsillie, F.H.; Harris, J.S.; Waters, D.W.: Volcano-seismic activity at Ruapehu during 1984. New Zealand Volcanological Record 14, 3-40.

Report on instrumentation changes and activity.

------ Latter, J.H.; Balsillie, F.H.; Harris, J.S.; Waters, D.W.: Volcano-seismic activity at Ngauruhoe during 1984. New Zealand Volcanological Record 14: 50-54.

Report on instrumentation changes and activity.

-----Gledhill, K.R.; Randall, M.J.: SNARE: Users Manual. Geophysics Division Technical Note No. 98. 55p.

------ Sherburn, S.: A baseline microearthquake survey of the Mokai Geothermal Field. Geophysics Division Report No. 209. 19p.

OBSERVATORY SERVICES

PUBLICATIONS

The Seismological Observatory issues the following series of publications:

1. E-bulletins. These consist of the 'New Zealand Seismological Reports' containing summaries of the data used for each origin determination, lists of origins, felt intensity data, and brief accounts of the principal earthquakes of the year. They also provide details of the instruments used to record earthquakes and descriptions of Observatory practices.

2. S-bulletins. These are mostly reprints of papers by members of the Observatory staff, but occasionally they have included other material not published elsewhere, such as the Eiby-Muir near-earthquake tables. Their automatic circulation is not now as widespread as it was in the past, but they are usually available from the Observatory on request.

Copies of this material may be purchased from the Observatory. In suitable cases the Observatory may be able to enter into agreements for a free exchange of publications on a continuing basis.

EARTHQUAKE CATALOGUE

The Observatory has a master file of some 30,000 earthquake origins and associated information stored on magnetic tape. From this, lists of earthquakes within particular geographical areas of New Zealand, or in categories defined in other ways, can be made available to researchers. Full details have been published elsewhere (W.D. Smith, 1976: 'A Computer File of New Zealand Earthquakes'; Bull. N.Z. Natl. Soc. Earthq. Eng., Vol. 9, No. 2, pp.136-7, or N.Z. J. Geol. Geophys., Vol. 19, No. 3, pp.393-4). Criteria that may be specified are dates, magnitudes, focal depths, intensities and regions bounded in a number of different ways. Because of the dangers inherent in the use of incompletely assessed data, it is recommended that users should discuss their search criteria with the Observatory.

THE NEW ZEALAND TIME SERVICE

Until 1987 the Seismological Observatory was responsible for the New Zealand Time Service, which distributes accurate time for civil and scientific purposes, both by radio and by land-line. The Observatory used three Hewlett-Packard double-oven quartz-crystal oscillators, with a measured stability exceeding two parts in 10^{11}. From these, suitable signals for wider distribution were generated by electronic sub-division. Stand-by power supplies and duplicated equipment ensured that failures were rare.

In 1987 the most accurate source of time in New Zealand was, as it still is in 1991, the caesium beam primary frequency standard at the Physics and Engineering Laboratory (now DSIR Physical Sciences), at Lower Hutt, which is periodically compared by flying clock with the standards at the U.S. National Bureau of Standards and other time-keeping observatories. The Observatory clocks were kept in close agreement with the P.E.L. standard by daily comparison, followed if necessary, by correction. (The comparison was made indirectly by comparing both the P.E.L. standard and the Time Service clocks with a synchronisation pulse transmitted by the national television network TV One. Details of the method may be found in P.E.L. Report No. 600 "Frequence and Time in New Zealand via the T.V. Sync. Pulses").

The signals transmitted by the Time Service are an approximation (to the accuracy specified below) to Coordinated Universal Time (UTC), which is basically atomically kept time, adjusted when necessary by one second steps (leap seconds) to keep it in near agreement with the astronomically determined time known as UTI. Adjustments are normally made at the end of June or December.

The error of the signals seldom exceeded 100 microseconds on leaving the Observatory, but delays were introduced by the circuits between the Observatory and the individual radio transmitters. A typical delay (that for station 2YA) was 1.8 milliseconds.

A formal discussion of time-scales is to be found in the Time Service Reports, Series 11, of the U.S. Naval Observatory. To the precision required for the great majority of civil purposes the distinctions between them are of no consequence.

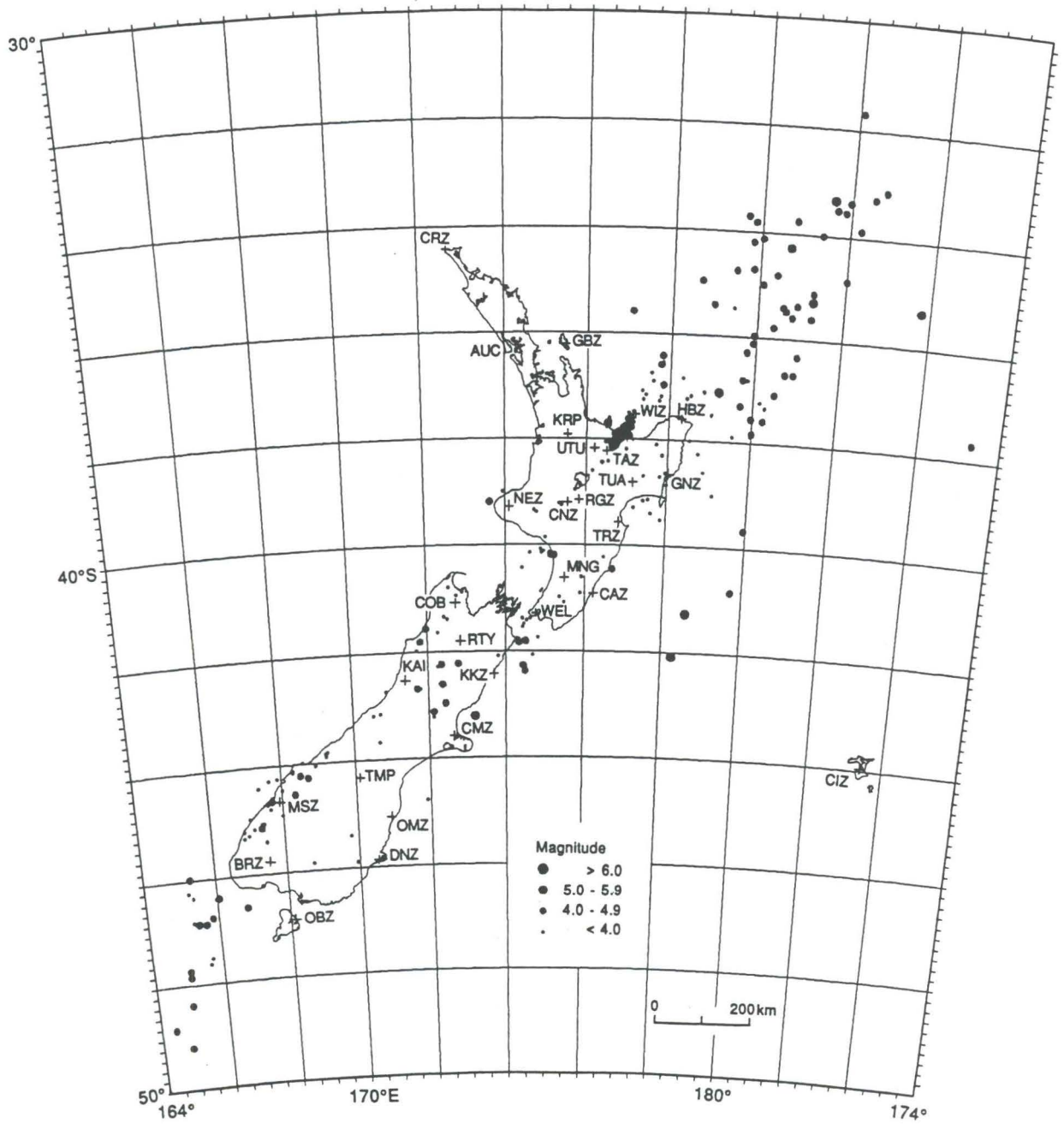
The most widely used signals from the Time Service are the six 'pips' transmitted by those stations of the Broadcasting Corporation of New Zealand that carry the National Programme. The beginnings of the pips mark the 55th to 60th seconds of a particular minute and each consists of 150 ms of 1 kHz tone, except when the pip indicates an exact hour and its length is doubled. Signals are transmitted on each hour and at 22h 58m and 22h 59m U.T.

Time-pips originating at the Time Service are also transmitted by some commercial stations of the Broadcasting Corporation of New Zealand, by Radio Windy (Wellington) on 891 kHz and by Radio Rhema (Christchurch, Nelson and Wellington) on 1503 kHz, but signals from other private stations are not under Observatory control, and cannot be recommended for navigational or scientific purposes.

A more extended signal intended for navigational purposes, formerly transmitted by Wellington Radio on 417.5 kHz (call sign ZMO) between 22h 54m and 23h 00m each day, has not been broadcast since 1985.

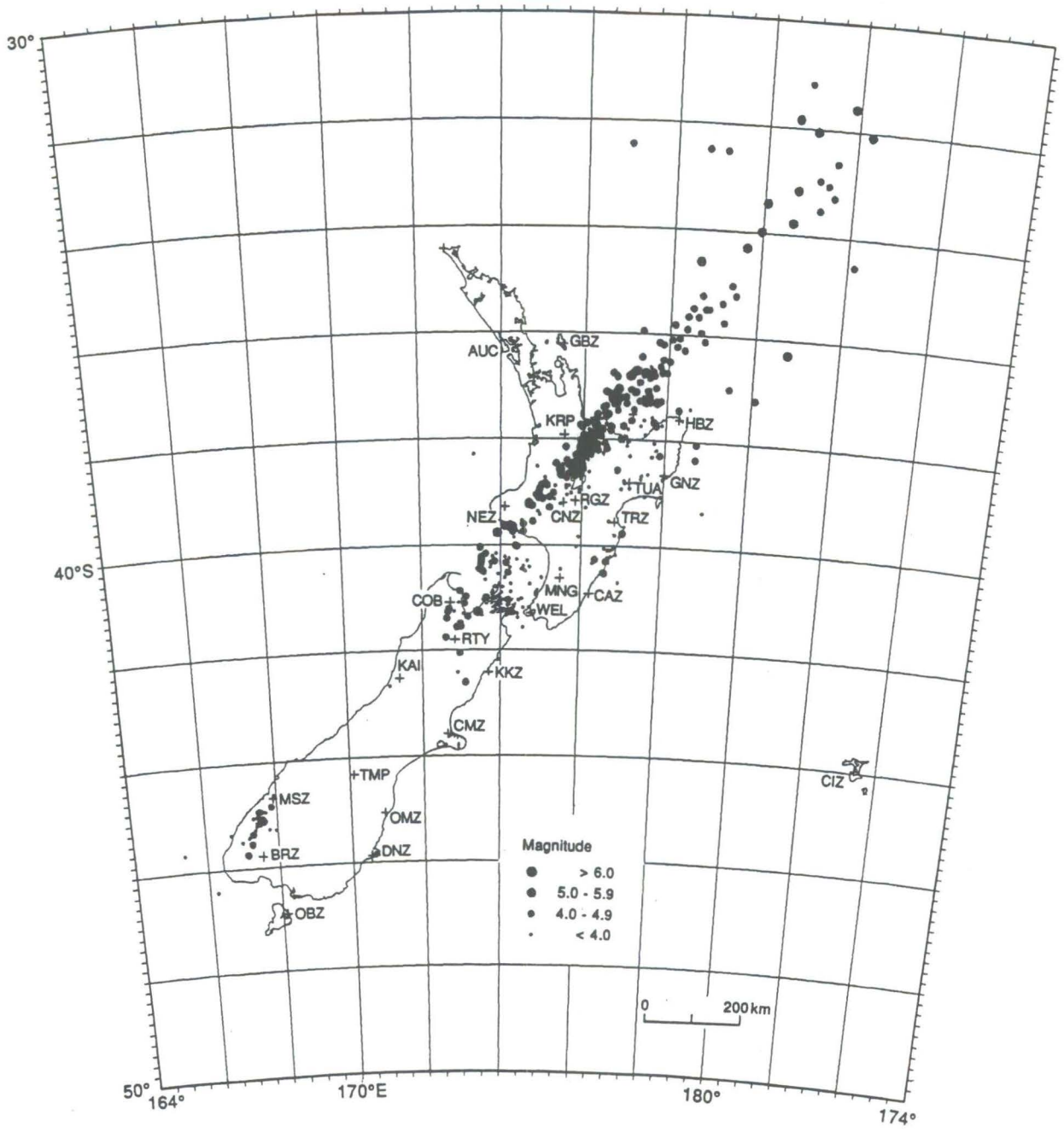
EPICENTRE AND ISOSEISMAL MAPS 1989

REGIONAL SHALLOW EARTHQUAKES



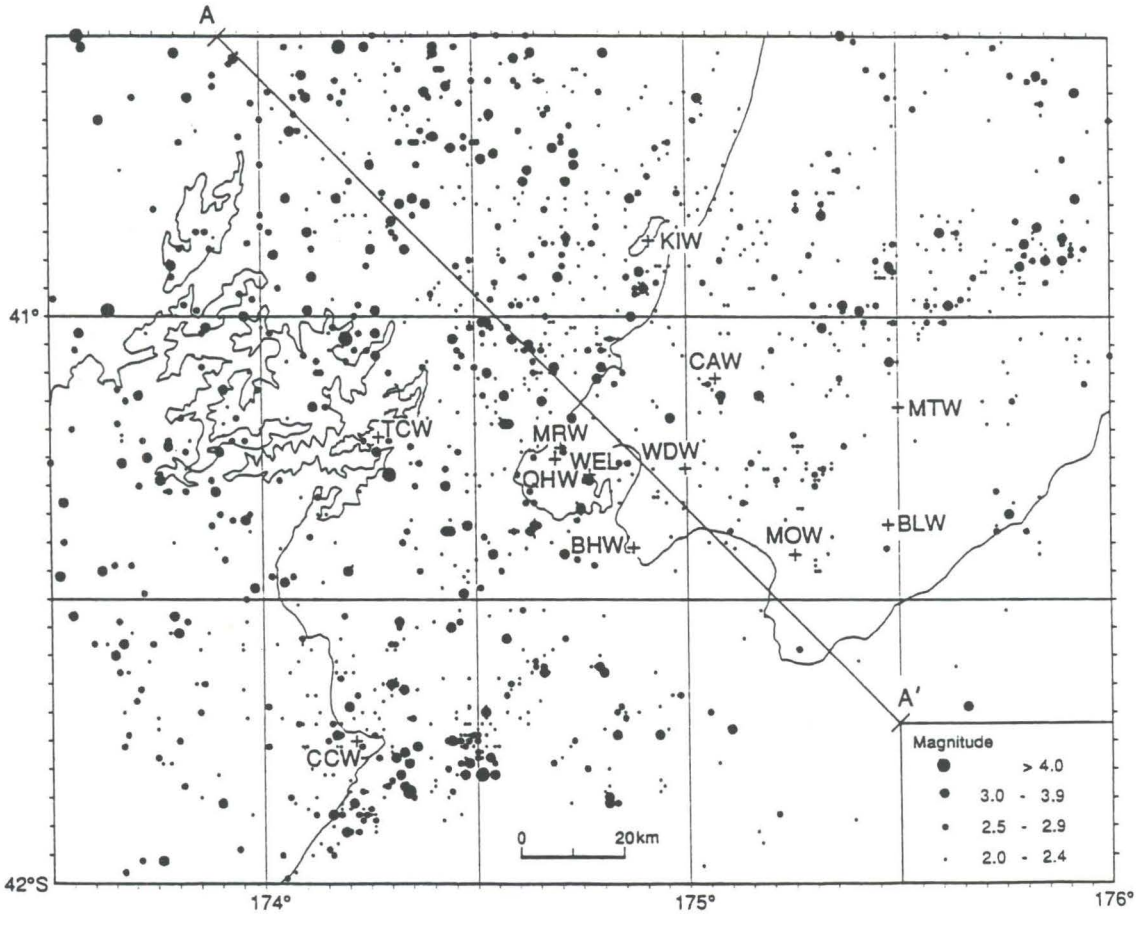
Epicentres of all earthquakes of $M_L \geq 3.5$ with focal depths less than 40 km. When several shocks have the same epicentres, the largest is shown.

REGIONAL DEEP EARTHQUAKES



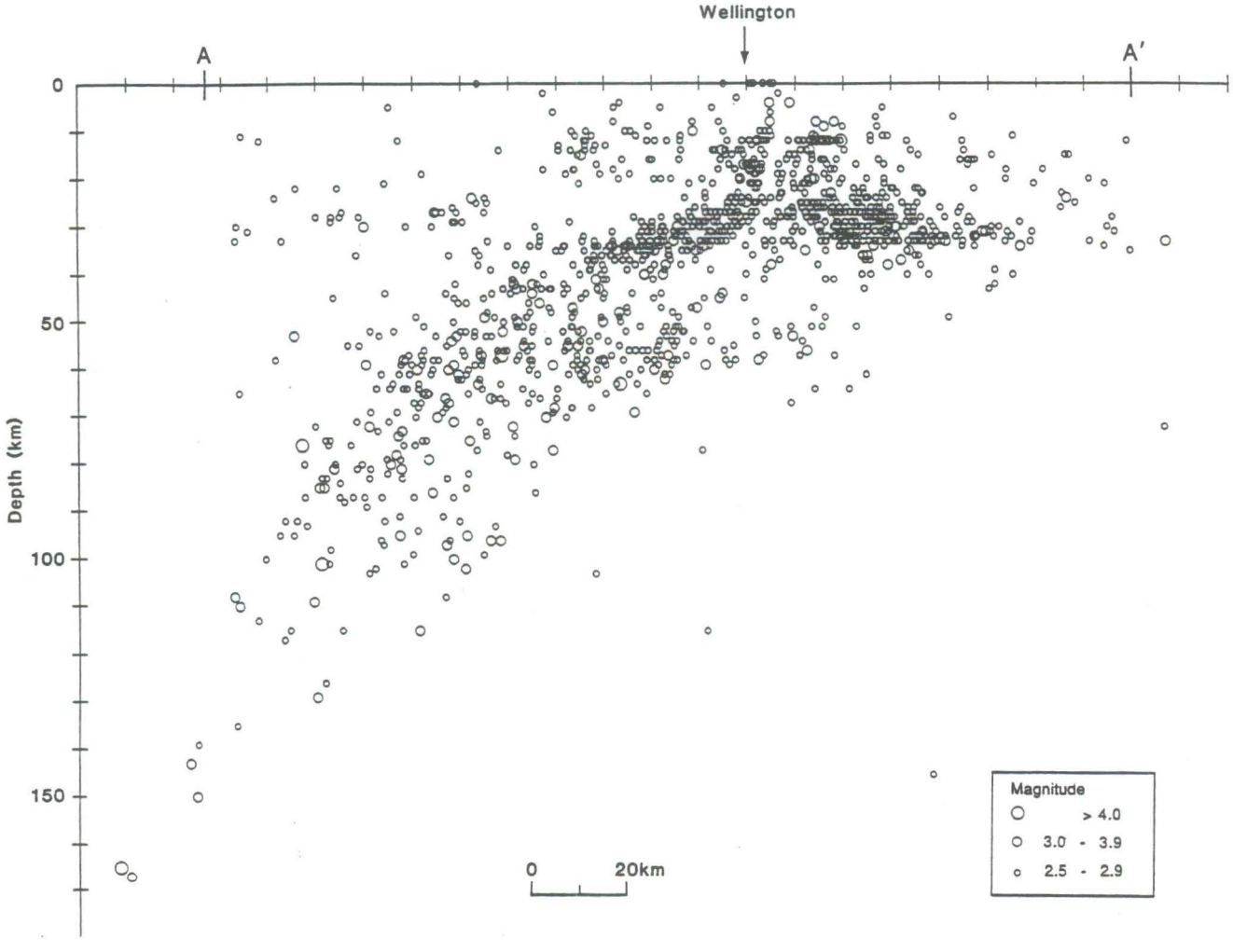
Epicentres of all earthquakes of $M_L \geq 3.5$ with focal depths of 40 km or more. When several shocks have the same epicentre, the largest is shown.

WELLINGTON AREA EPICENTRES



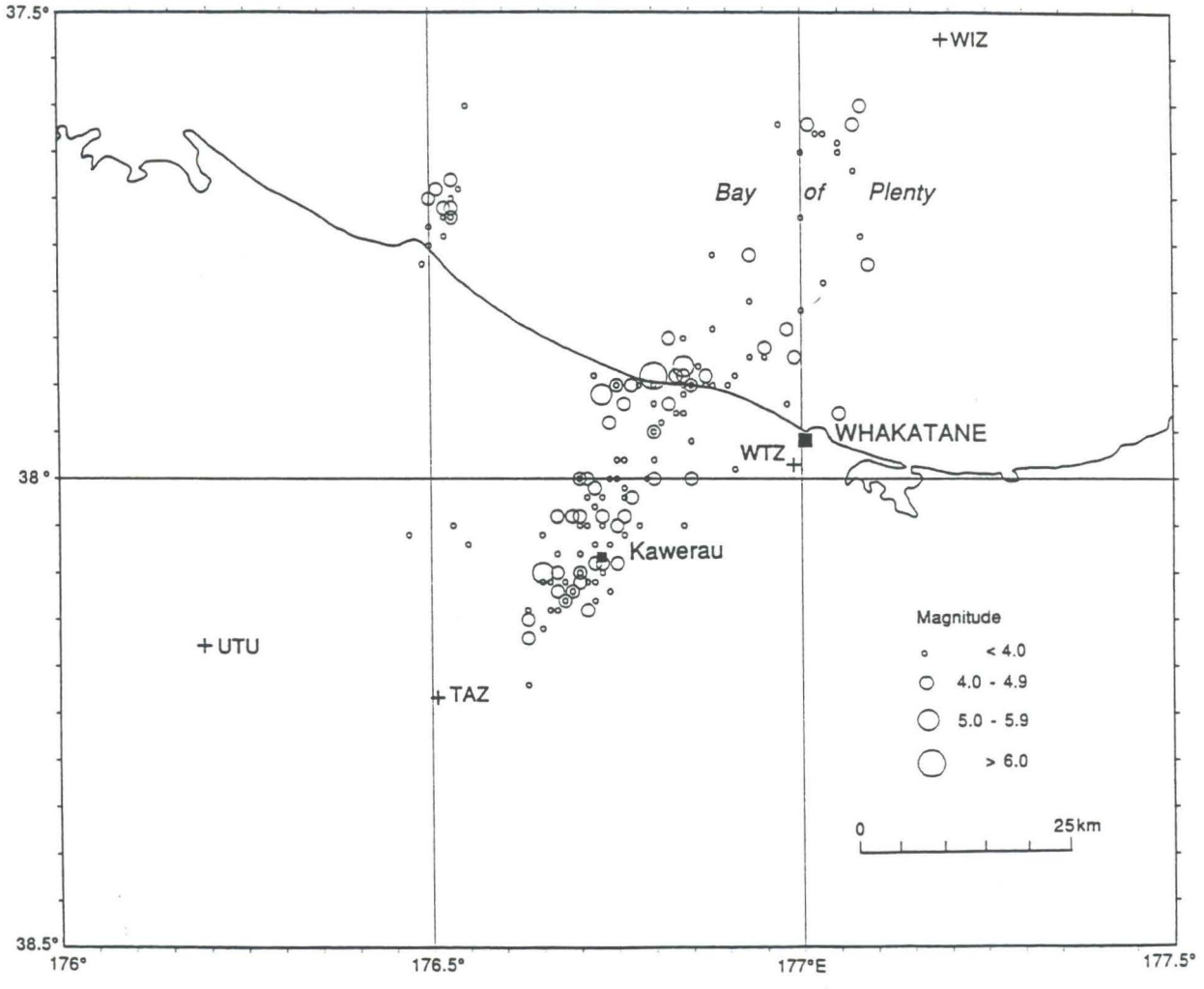
Epicentres of all earthquakes of $M_L \geq 2.0$ in the Wellington area. The distribution of these earthquakes in depth is shown on the next page, where the hypocentres have been projected onto a vertical plane passing through the line A-A'.

WELLINGTON HYPOCENTRE DEPTHS



In this diagram, the hypocentres of all the shocks mapped on the previous page have been projected onto a vertical plane passing through the line A-A', which is roughly normal to the Pacific/Australian plate boundary.

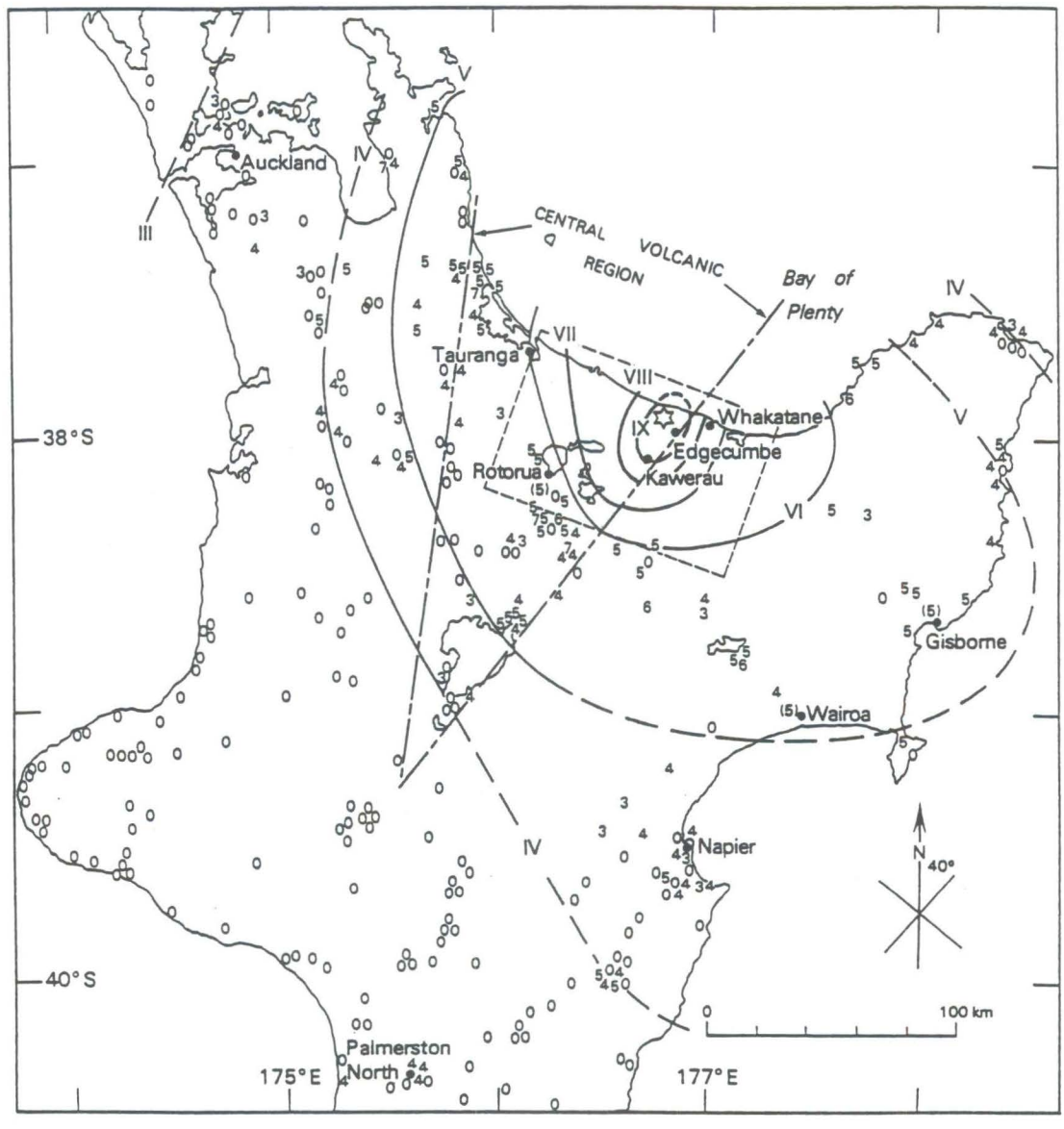
EDGECUMBE SEQUENCE EPICENTRES



Epicentres of all earthquakes of M_L 3.5 or more that occurred in the area surrounding Edgecumbe in the period from February 21 to March 17, 1987. Details of how the sequence developed in time are given by Smith and Oppenheimer in the Special Issue of the N.Z. Journal of Geology and Geophysics on the 1987 Edgecumbe Earthquake (Vol. 32, No. 1, 1989).

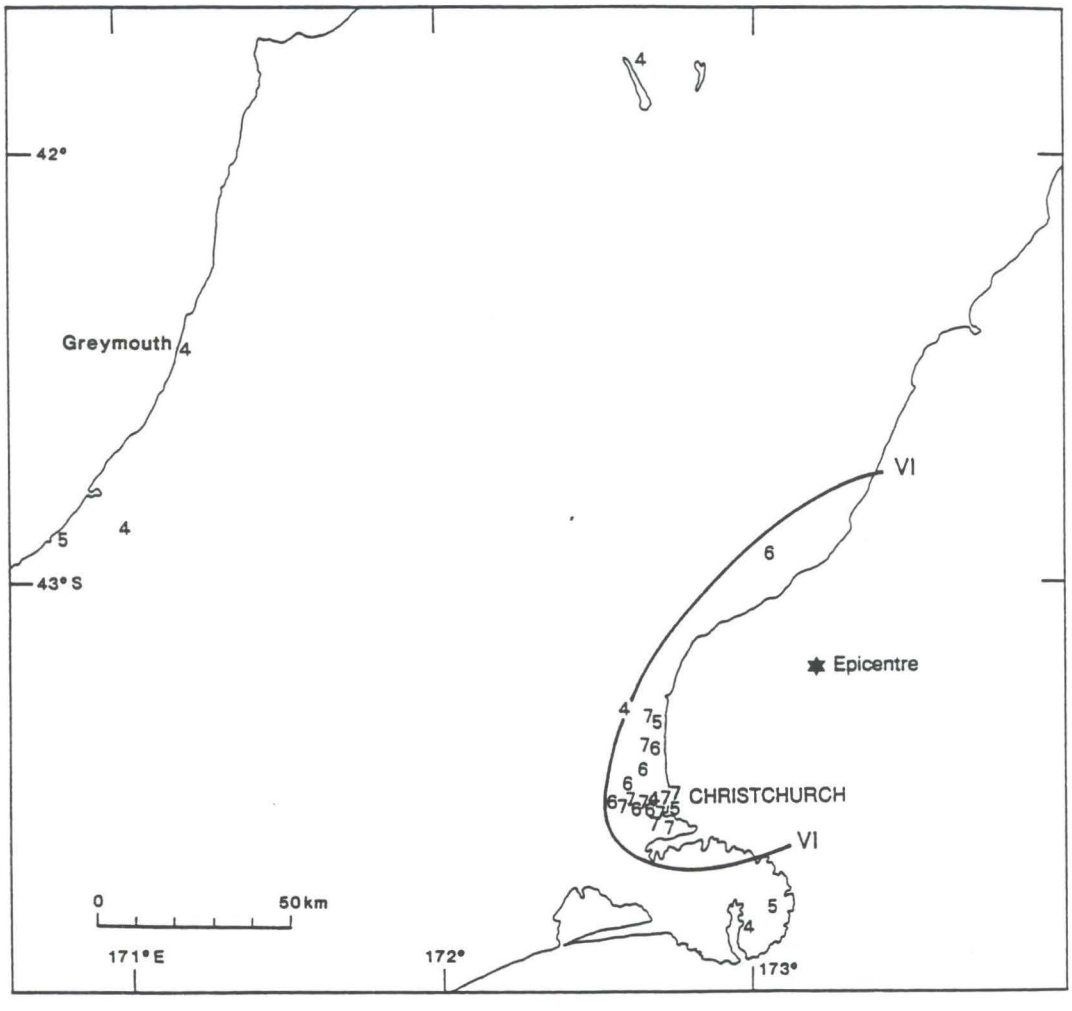
EDGECUMBE MAIN SHOCK INTENSITIES

(Mar 2d 01h 35m)



In the parts of this map more distant from the epicentre, reported Modified Mercalli intensities are shown. Closer in there is insufficient room for individual reports to be mapped. An intensity of zero indicates that a reporter who returned a questionnaire form had not felt the earthquake. Lines labelled with Roman numerals show a broad interpretation of the isoseismal pattern.

PEGASUS BAY SHOCK INTENSITIES



The map shows intensities reported for the Pegasus Bay shock of Mar 8d 19h 17m and an interpretation of the position of the MM VI isoseismal.