CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA, CALIFORNIA

SEISMOLOGICAL LABORATORY

BULLETIN

1953

(Pasadena and Auxiliary Stations)

PERMANENT STATIONS, 1953

Station	Lat.N.	Long.W.	h	Symbol	Ground
Pasadena	34°08.9'	118°10.3'	295m	P, PX	Granitic rock
Mt. Wilson	34 13.4	118 03.5	1730	MW	Granitic rock
Riverside	33 59.6	117 22.5	260	R	Granitic rock
Palomar	33 21.2	116 51.7	1690	Pr	Granitic rock
Barrett	32 40.8	116 40.3	520	Bt	Granitic rock
Sta. Barbara	34 26.5	119 42.8	90	SB	Alluvial with boulders
Woody	35 42.0	118 50.8	490	W	Granitic rock
China Lake	35 49.0	117 35.8	766	CL	Granite with intrusions
Haiwee	36 08.2	117 56.8	1150	H	Tuff
Tinemaha	37 03.3	118 13.7	1195	T	Basalt
Big Bear	34 14.3	116 54.8	2060	BB	
Dalton	34 10.2	117 48.6	523	D	Granitic rock
Fort Tejon	34 52.4	118 53.6	990	FT	

TEMPORARY STATIONS, 1953

Station	Lat.N.	Long.W.	h	Symbol
Williams Ranch	35 17.9	118 36.7	430	WR
King Ranch	35 19.6	119 44.7	680	Kg

Williams Ranch was discontinued March 20.
Coordinates are being revised using new maps. Changes from data given for 1952 constitute revision, which is noteworthy only for Tinemaha.

All measurement and interpretation of seismograms is done at the central station, to which all communications should be addressed, as follows:
Seismological Laboratory, 220 North San Rafael Avenue, Pasadena 2, California.

Components are indicated as N, E, Z; where no such letter appears the reading is for Z alone.

Instruments for 1953 were as follows:

Short-period Benioff Z	One at each station
Short-period Wood-Anderson N,E	P,R,SB,W(E only)H,T
Long-Period Wood-Anderson N,E	P
Short-period Benioff N,E	P,Pr,Bt,CL
Long-period Benioff Z	P,CL,T
Long-period Benioff N,E	P,T(N only)
Other special and experimental instruments	P,Pr

PX = readings from long-period instruments at Pasadena. c = compression, d = dilatation. When surface waves are not reported for Pasadena they are not found or are small. Columns headed A and T refer to maximum amplitude (microns) of computed earth displacement, and period (seconds), of the indicated phase and component. H designates combined amplitude of N and E.

All times are G.C.T. Times are not reported for SB,H,BB,D,FT,WR, or Kg unless of exceptional interest or when other records are defective. Times are normally given for P or MW, but not both.

Earthquakes in Southern California are reported only if of magnitude 5 or over, unless they are of special interest.

November 19, 1954

Date	Sta.	Phase	h	m	s
January					
1	P	iP	04	50	03
	CL	eP		49	09
	USCGS: 22 S $169\frac{1}{2}$ E, 04:36:11				
1	P	e	11	23	52
	CL				39
2	P	eP	03	19	45
		i			55
		i		20	14
	Pr	iP		19	56
	CL	eP			40
		e			50
	BCIS: $54\frac{1}{2}$ N 162 E, 03:09:53				
2	P	eP	03	26	08
		e			21
	Pr	e			18
		e			30
	CL	iP			02
2	P	ePNEZ	11	32	27
		e			47
	Pr	e			21
	CL	eP			28
		e		33	42
	USCGS: 6 S 81 W, 11:23:00				
3	P	e(P)	13	45	30
		e			43
	CL	e(P)			31
		e			47
	T	e(P)			27
3	P	e(P)NZ	18	00	16
	CL	e(P)			21
	BCIS: 3 S 146 E, 17:46.7				
	Wellington: 3 S 149 E, 17:46:45				
3	P	iP	21	36	50
	Pr	iP			36
	CL	eP			54
		e		37	13
	Tacubaya: 16° 43' N, 93° 05' W, 21:31:15, 100 km				
4	P	iPNEZ	06	53	46
		i			52
		e		55	01
	Pr	iP		53	52
	CL	iP			41
		i			48
		e		55	30
	T	iP		53	33
	USCGS: 48 N 156 E, 06:43:15				
4	P	iPNEZ	09	29	31
	Pr	eP			36
		ePP		33	39
	CL	eP		29	34
	T	iP			33
	BCIS: $6\frac{1}{2}$ S 146 E, 09:15:50				
4	P	eP	11	28	01
	Pr	eP			05
		i			28
	CL	eP			09
	BCIS: 15 S $176\frac{1}{2}$ W, 11:16.4				
4	P	eP	22	48	08
		e			19
	CL	eP			11
		e			19
	USCGS: 51 N $157\frac{1}{2}$ E, 22:38:05				
5	P	iPNEZ	05	01	59
		i		02	10
		e			31
		ePP		03	28
	CL	eP		01	55
		i		02	05
	T	iP		01	47
		i			57
	USCGS: 04:52:42				
	Foreshock of next				
5	P	ePNEZ	07	57	34
		iEZ			41
		i			48
	PX	iSNEZ	08	05	08
		eLNEZ		10.7	
			A		T
		PZ	7		8
		PH	0.2		1
		SH	25		20
		MH	70		20
	CL	eP	07	57	24
		i			37
		i			42
		i		58	00
		e	08	01	40
		eS		05	09
	T	iP	07	57	21
		i			27
		i			34
		i		58	02
		eS	08	04	43
	Magnitude 7.1				
	USCGS: 54 N 170 E, 07:48:17				
5	P	iPNEZ	08	33	00
		i			21
	CL	iP		32	54
	T	iP			47
		i			59
		i		34	04
	USCGS: 54 N 171 E, 08:23:46				
5	P	iPNEZ	10	16	56 c
		INEZ		17	17
	PX	iSNEZ		25	25
		eN			44
		eGNEZ		32.5	
	P	e		45	48
		iP'P'			55
			A		T
		PZ	$\frac{1}{2}$		$1\frac{1}{2}$
		PH	$\frac{1}{4}$		$1\frac{1}{2}$
		SH	15		10
		MH	50		20
	CL	iP	10	16	51
		i			59
		e		21	33
		e		45	49
		eP'P'		46	05
	T	iP	10	16	45
		i		17	21
		i		18	05
		e(S)		25	07
	Magnitude 7.0				
	USCGS: 49 N 156 E, 10:06:25				

Date	Sta.	Phase	h	m	s
January					
5	P	iPNEZ	10	26	54
		ipP		27	07
	CL	iP		26	50
		epP		27	02
	T	iP		26	44
	USCGS: 49 N 155½ E, 10:16:25				
5	P	e(P)	16	14	12
		e			22
		e			37
	CL	eP			06
		e			18
	USCGS: 49 N 156 E, 16:03:45				
5	P	iPEZ	16	28	43
		i			48
	CL	iP			38
	USCGS: 16:19:20 Komandorskie Islands				
5	P	e(P)	17	21	55
	CL	e(P)			33
5	CL	eP	22	57	41
	BCIS: 8 N 85 W, 22:49:22				
6	P	iP	01	48	17
	CL	eP			11
6	P	iPNZ	10	37	27
		i			41
	CL	eP			21
		e			36
	T	eP			15
		i			29
		i			34
	USCGS: 49 N 156 E, 10:27:00				
6	P	iP	11	11	26
	CL	eP			30
	T	iP			33
6	CL	eP	15	57	09
		e			19
6	P	iPNEZ	16	16	55 d
		ipP		17	29
	CL	iP		16	59 d
		ipP		17	34
	T	iPNEZ			06
		ipP			40
	USCGS: 21½ S 68 W, 16:05:36, 150 km				
6	MW	eP	22	38	36
	CL	eP			30
6	P	ePNZ	23	31	14
		iEZ			25
		iPcP		32	46
	Pr	eP		31	11
		i		32	09
		i			33
	CL	eP		31	28
		ePcP		32	51
		e		34	53
	T	eP		31	37
		i		33	01
		i		34	57
	USCGS: 9½ N 83 W, 23:23:43				
7	CL	e	01	32	16
		e			57
	BCIS: 41.5 N 20.0 E, 01:18:57				
7	MW	e	05	09	58
	CL	e		10	02
	T	e			09

Date	Sta.	Phase	h	m	s
January					
7	P	iPNEZ	05	58	50
		i			55
		iNZ		59	18
	Pr	i			05
	CL	eP		58	44
	T	iPNEZ			35
		i			41
	USCGS: 53½ N 161 E, 05:48:54				
7	CL	e	09	33	52
	T	e			50
7	MW	e	12	08	21
		e			48
	CL	eP			17
		e			24
	T	iP			28
		i			33
	USCGS: 9½ N 83 W, 12:00:30				
7	P	iPNEZ	14	21	44 c
		ipPNEZ		22	00
	PX	eLN			47.2
	Pr	iP		21	49
		i		22	29
		e		23	34
	CL	iP		21	46
		ePP		25	45
	T	iPNEZ		21	45 c
		i			51
		ipP		22	01
	USCGS: 5½ S 150½ E, 14:08:20				
8	MW	e	00	04	31
	CL	eP			25
		e			37
	T	e			17
8	MW	e	03	27	05
	CL	e			05
	T	e			08
8	P	iPNEZ	13	17	51
	Pr	iP			54 c
	CL	eP			59
	T	iP		18	00
9	Pr	eP	16	22	58
	CL	eP		23	15
		e			26
	T	eP			23
		e			34
9	Pr	iP	16	55	45
	BCIS: 5 N 32 W, 16:42.9				
10	P	eP	00	41	29
		iSNEZ		42	43
	R	iP		41	16
		iS		42	26
	Pr	iP		40	56
		iS		42	01
	Pasadena: 27.5 N 114.4 W, 00:39:32, Magnitude 5.3 Foreshock of Jan. 10 at 02:54				
10	P	iPNZ	02	54	24
		iSNEZ		55	52
	R	iPNZ		54	16
		iSNEZ		55	38
	Pr	iP		54	05
		iS		55	07
	Pasadena: 27.5 N 114.4 W, 02:52:31; Magnitude 5.7				

Date	Sta.	Phase	h	m	s
January					
10	R	e	05	43	22
	CL	e		42	58
		e		43	12
10	R	eP	07	38	32
		e		39	08
		e			25
	Pr	iP		38	26
		i			57
		i		39	19
	CL	eP		38	42
		e		39	15
	T	eP		38	54
		e		39	28
	Tacubaya: 17° 42' N, 94° 07' W, 07:33:15, 100 km				
10	P	iP	10	09	37
	R	iP			41
	Pr	iP			47 d
	CL	eP			31
	T	iP			22
	USCGS: 51 N 171½ W, 10:01:45				
10	R	e	13	50	30
		e			49
	Pr	e			35
	CL	e			25
	T	e			16
	BCIS: 13:40.2; Kamchatka				
10	MW	eP	14	40	18
	R	iP			20
	Pr	iP			22
	CL	eP			23
	T	iP			24
	Wellington: 20½ S 170 E, 14:27:16				
11	R	iP	01	02	13
	Pr	eP			28
		e			37
	CL	eP			22
	T	iP			32
11	R	eP	10	34	02
		e			20
	Pr	iP			07
	CL	eP		33	53
		e		34	11
	T	eP		33	45
11	MW	eP	15	55	44
	R	iP			45
	Pr	iP			46
	CL	iP			51
	T	iP			51
11	Pr	i	18	41	49
	CL	i			52
	T	i			56
11	P	iP	22	03	32
	R	iP			26
	Pr	iP			22
	CL	eP			36
	T	eP			45
	Mexico				
11	P	iPNEZ	23	00	03 c
	PX	eSNE		05	14
		eLNE			08.3

(continued)

Date	Sta.	Phase	h	m	s
January (continued)					
11			A		T
		PZ	½		1
		PH	1		3
		SH	30		25
		MH	80		20
	R	iP	23	00	05
		eL		11	31
	Pr	iP		00	13 c
		iS		05	14
		i		06	41
		eL		11	08
	CL	iP	22	58	51
		i	23	01	01
	T	iP	22	59	40
		eS	23	05	07
	Magnitude 6.3 USCGS: 65 N 133 W, 22:53:30				
12	P	i	05	46	52
	R	e		47	10
	CL	e		46	42
	T	e			35
	USCGS: 53 N 161½ E, 05:36:53				
12	P	iPNEZ	12	42	14
		i		44	11
	R	iP		42	17
		e		44	14
	Pr	iP		42	18
	CL	eP			17
	T	iP			15
12	P	eP	12	53	21
		e		55	18
	R	e(P)		53	26
	Pr	e(P)			30
	CL	eP			16
		e		55	02
	T	eP		53	09
12	R	e	15	37	34
	Pr	iP			34
	CL	e			39
	T	e			41
12	P	eP	17	33	58
		iPNEZ		34	01
		ipP			12
	PX	iSPNEZ			21
		eSNEZ		42	21
		iNE			52
		iGN			49.6
		eREZ			51.9
	P	iP'P'	18	08	17
			A		T
		PZ	1		2
		PH	1		3
		SH	4		4
		M	irregular		
	R	iPNEZ	17	34	04
		ipP			22
		eP'P'	18	03	13
	Pr	iP	17	34	09
		ipP			24
		e(S)		42	40
		eP'P'	18	03	05

(continued)

Date	Sta.	Phase	h	m	s
January (continued)					
12	CL	eiP	17	33	53
		ipP		34	08
		i		36	04
		e		37	47
		eS		42	14
		eP'P'	18	03	06
	T	eiP	17	33	46
		ipP		34	07
		eS		42	04
	Magnitude 6.9				
	USCGS: 49½ N 156 E, 17:23:39, 60 km				
13	P	iPNEZ	02	01	31
	PX	e(L)		06	41
	R	iP		01	26
		e			36
	Pr	eP			16
		i			41
	CL	eP			46
	T	iP		02	02
	USCGS: 20 N 108 W, 01:57:30				
13	R	eP	07	46	53
	Pr	iP			52
	CL	eP		47	03
	T	e(P)			16
	USCGS: 2 S 81 W, 07:37:59				
13	MW	e	09	38	06
	R	e			09
		e			46
	CL	eP			00
	T	e		37	52
		e		38	16
		e			37
13	MW	e	12	50	17
	R	eP			18
	Pr	eP			20
	CL	eP			19
14	MW	eP	13	06	23
	R	eP			25
	CL	eP			15
	T	eP			07
	USCGS: 52½ N 159½ E, 12:56:17				
14	P	iP	21	06	36
	R	eP			37
	Pr	i			48
	CL	eP			39
	T	e			39
	BCIS: 4 S 153 E, 20:53.4				
15	P	iPNEZ	08	21	16
	R	eP			21
	Pr	iP			27
	CL	iP			11
	T	iPNEZ			04
	USCGS: 53 N 159 E, 08:11:09				
15	P	iPNEZ	12	11	46
		eNZ		13	24
	PX	iSNZ		17	32
		e		22	23
	R	eP		11	47
		e			58
	Pr	eP		11	47
	CL	eP		11	49
		e		12	00

(continued)

Date	Sta.	Phase	h	m	s
January (continued)					
15	T	eP	12	11	50
		i			58
		e		20	39
	USCGS: 19 N 156 W, 12:04:33				
15	CL	eP	17	53	00
15	P	eP	18	20	59
	Pr	e		21	41
	CL	eP		20	55
16	P	eP	11	19	59
	R	eP			50
		i			55
	CL	eP		20	03
	T	eP			17
		i			21
	Tacubaya: 16° 46' N, 97° 49' W, 11:14:40				
16	P	e(P')	12	47	19
		e		50	35
	CL	e(P')			20
		e(PP)		48	07
	BCIS: 7 S 130 E, 12:28.8				
17	CL	e	03	49	13
17	P	eP	08	12	46
	R	e			42
	Pr	eP			42
	CL	e			45
	BCIS: South Pacific				
17	P	e	09	27	51
	Pr	e			55
17	P	e(P)	10	43	55
	Pr	eP			59
	CL	e(P)		44	03
	T	e(P)			06
17	P	iPNEZ	17	40	15
		ipPEZ			45
	PX	iSNE		48	34
	R	iPNEZ		40	18
		i			35
		ipP			49
	Pr	iP			23 c
		ipP			53
		e		42	25
	CL	iP		40	10
		ipP			40
		e		41	25
		ePP		42	36
		eS		48	25
	T	iP		40	03
		e		41	38
		e		43	49
	USCGS: 50½ N 155 E, 17:30:03, 150 km				
17	P	iP	21	00	18
	R	eP			20
	Pr	eP			24
	CL	eP			16
	T	eP			10
		e			24
	CMO: 32.0 N 132.0 E, 20:47:36, 20 km				
17	R	e	23	00	18
	Pr	iP			40
	CL	eP			43
	T	eP			46

Date	Sta.	Phase	h	m	s
January					
18	P	iPEZ	03	32	59
	R	eP		33	04
	Pr	eP			08
	CL	eP		32	54
	T	i?			29
		i(P)			45
18	P	iPNEZ	18	18	07
		ipP			28
	Pr	eP			17
		ipP			37
		e		20	04
	CL	eP		18	03
		ipP			23
	T	eP		17	55
		ipP		18	14
		i		19	32
	USCGS: 53½ N 160½ E, 18:08:10				
19	P	eP	01	10	48
		iSNE		11	26
	R	ePN		10	09
	Pr	iP		09	39
	Magnitude 5.3				
	27.5 N 114.4 W, (aftershock of January 10)				
19	P	ePNEZ	05	09	00
		ipP			12
	PX	iSE		18	29
		eL		31	41
	Pr	eP		09	08
		ipP			20
	CL	eP		08	56
		epP		09	08
	T	eP		08	50
		epP		09	02
		e(PP)		11	10
	CMO: 41.6 N 143.8 E, 04:57:29, 40 kw				
19	P	iPNEZ	05	52	40
	Pr	eP			50
		i		53	16
	CL	eP		52	34
	T	eP			27
		e			49
19	P	iPNEZ	15	00	20
		ipP			36
	Pr	iP			24
		ipP			40
	CL	iP			22
		epP			38
	T	iP			21
		epP			36
	BCIS: New Guinea				
19	P	iPNEZ	19	02	19
	Pr	eP			01
	CL	eP			32
	T	iP			49
19	P	eP	19	05	47
	Pr	eP			31
	CL	eP		06	00
	T	eP			16
19	P	eP	20	28	16
	CL	eP			11
	T	eP			03

Date	Sta.	Phase	h	m	s
January					
20	P	ePNZ	02	05	21
		e(pP)			33
	Pr	eP			32
		e(pP)			43
	CL	eP			17
		e(pP)			29
	T	eP			10
		e(pP)			21
20	P	ePNEZ	02	49	09
		i			20
		ePP		52	29
	Pr	iP		49	13
	CL	eP			15
		e			25
		ePP		52	35
	T	eP		49	16
		i			26
	USCGS: 19½ S 169 E, 02:36:22				
20	P	ePNZ	05	23	29
		e(PP)		24	26
	Pr	iP		23	16
	CL	eP			33
	T	eP			43
	Tacubaya: 18° 27' N, 94° 16' W, 05:18:06				
20	Pr	eP	07	00	34
	CL	eP			36
	T	eP			33
20	P	iPNEZ	09	51	11
	R	iP			05
	CL	eP			13
	T	eP			21
	USCGS: 9½ N 79½ W, 09:43:09				
20	P	ePNEZ	10	24	02
	R	eP			05
	CL	eP			07
		e			17
	T	eP			06
	USCGS: 11½ S 165 E, 10:11:23				
20	P	eP	17	47	41
		i			53
		e		50	54
		i		51	43
		iPPEZ		52	14
	PX	eN		54	44
	P	e		56	23
	PX	eN		59	53
		e(PKKP)	18	02	27
		eGN		18	28
		eL		24	39
			A		T
		PPZ	0.1		1¼
		MH	7		20
	Pr	eP	17	47	47
		e		49	07
		e		51	51
		iPP		52	24
		e	18	04	56
	CL	eP	17	47	41
		iPP		52	15
		e(PKKP)	18	02	52

(continued)

Date	Sta.	Phase	h	m	s
January (continued)					
20	T	ePNEZ	17	47	38
		e		50	53
		iPP		52	09
		e(PKKP)	18	03	00
	Magnitude 6½				
	USCGS: 1½ N 126 E, 17:33:06				
21	P	iPNEZ	01	53	17
		ipPEZ			29
		i(PP)EZ		55	31
	PX	eL	02	11	51
	Pr	iP	01	53	25
		ipP			38
		e		56	07
	CL	iP		53	11
		ipP			23
		e(PP)		55	19
	T	iP		53	03
		ipP			15
	USCGS: 50 N 156 E, 01:43:00, 60 km				
21	P	ePNEZ	09	37	20
		ipPEZ			33
	Pr	eP			29
		ipP			42
	CL	eP			14
		ipP			27
	T	eP			05
		ipP			18
	USCGS: 52½ N 159 E, 09:27:12				
22	CL	eP	01	17	30
		e			46
23	P	eP	03	00	34
	CL	iP			31
	T	iP			25
	CMO: 33.3 N 132.2 E, 02:47:59, 40 km				
23	P	ePN	08	39	55
		eEZ		40	02
	CL	eP			07
		e			20
	T	eP			13
		i			15
	BCIS: 29½ S 71½ W, 08:28.1				
23	P	iPNEZ	09	39	50 c
		e			57
		epP		41	46
	CL	iP		39	59 c
	T	iP		39	59 c
		epP		41	52
	Wellington: 18 S 178 W, 09:28:52, 540 km				
	USCGS: 17½ S 177½ E, 09:27:40				
23	P	eP	11	42	12
	CL	eP			20
	T	eP			22
23	CL	eP	13	10	43
23	Pr	eP	22	25	00
	CL	eP			11
		e			19
	Tacubaya: 16° 24' N, 98° 39' W, 22:19:46				
23	CL	e	22	48	49
	T	e			46

Date	Sta.	Phase	h	m	s
January					
24	P	e	09	07	37
24	P	ePNZ	10	01	28
	PX	eSE		03	05
	Pr	eP		01	48
		eS		03	44
	CL	eP		01	19
		e			22
		e			41
		iS		02	48
		e		03	46
	T	ePNEZ		01	00
		iSNEZ		02	04
	Magnitude 5				
	Northern California				
24	P	ePNZ	22	47	26
		i			35
	Pr	eP			26
		e			43
	CL	eP			11
		e			28
	T	e			22
	USCGS: 55 N 158 E, 22:37:20				
25	Pr	eP	01	08	22
	CL	eP			26
25	P	eP	11	55	23
		e			33
		i(pP)			42
	Pr	eP			34
		e(pP)			52
	CL	eP			17
		e			32
		e		56	16
	T	eP		55	21
		e(pP)			41
	USCGS: 51½ N 160 E, 11:45:17				
25	P	e	15	51	21
	Pr	e			26
	CL	e			26
25	P	ePEZ	16	58	33
		eNZ			43
	Pr	eP			41
	CL	eP			27
		e			38
25	CL	e	18	51	51
25	P	iPEZ	19	55	58 c
	PX	eLN	20	13	
			A		T
		PZ	¼		1½
		MH	17		15
	Pr	iP	19	55	49
	CL	eP			57
		e		57	49
		e		59	01
	T	iP		56	04 c
	USCGS: 19 N 73½ W, 19:47:58				
26	P	e?	01	56	00
		e			32
	Pr	e			30
	CL	e			31
	T	i			17
		i			37

Date	Sta.	Phase	h	m	s
January					
26	P	iPNEZ	05	12	44 c
	Pr	iP			54 c
	CL	iP			39 c
	T	iPNEZ			31 c
	USCGS: 52½ N 159 E, 05:02:35				
26	P	ePEZ	07	40	50
		iNEZ			59
	Pr	eP		41	00
		i			09
	CL	eP		40	43
		e			52
26	P	e	09	07	59
26	P	e	11	54	18
	Pr	eP			21
	CL	eP		53	34
		e		54	22
26	P	iNEZ	14	44	55
	Pr	i			36
	CL	e		45	07
27	CL	eP	00	17	32
27	P	ePNEZ	03	23	03
		i			21
	PX	eSE		31	09
		e			51
		eE		41	01
		eGN	04	03.1	
		eR		06	28
		eNE		07	14
			A		T
		MH	2		20
	Pr	eP	03	23	10
		e			16
	CL	eP		22	55
		e		23	02
		e			15
	T	eP	03	22	52
		i		23	13
	USCGS: 52 N 159½ E, 03:12:55				
27	P	iPNEZ	03	38	13
		ipPNEZ			37
		e		41	25
	Pr	iP		38	17
		ipP			42
		i		42	10
	CL	eP		38	15
		ipP			40
		e		40	15
		e		42	05
	T	eP		38	15
		ipP			39
		e		42	09
	USCGS: 4½ S 153 E, 03:25:02				
27	P	ePEZ	04	16	29
		eEZ			46
	Pr	e(P)			38
		e		17	12
	CL	eP		16	23
		e			47
		e			55
	T	eP			16
		i			51
	USCGS: 52 N 160 E, 04:06:24				
27	Pr	e	04	53	27
	CL	e			27
	BCIS: 04:43.4, Kamchatka				

Date	Sta.	Phase	h	m	s
January					
27	CL	e	05	42	03
		e			20
27	P	e	06	46	18
		e			25
		e			48
	Pr	e			45
	CL	e			16
		e			25
	T	e?		45	33
		e		46	22
27	P	e(P)	08	27	41
		e		28	32
	Pr	e			37
	CL	e(P)			17
		e			28
		e		29	46
28	CL	e	03	45	35
		e			41
		e		47	42
28	CL	eP	06	27	30
		e			37
	T	e			26
28	CL	e	06	41	37
		e			50
28	CL	e(P)	11	14	13
		e			33
28	P	iPEZ	12	39	20
		i		40	07
		i			47
	CL	eP		39	26
		i			36
		e		40	13
		ePP		42	59
	T	eP		39	27
		i			35
		i			49
	USCGS: 20 S 169½ E, 12:26:29				
29	P	ePNZ	01	18	44
	CL	e			42
29	CL	eP	06	33	07
29	P	ePNEZ	08	38	40
		ePP		40	12
		e			25
	Pr	iP		38	30
		i			43
	CL	eP			44
	T	eP			54
		e		39	01
		iPP		40	43
	USCGS: 7 N 82½ W, 08:30:38				
29	P	ePNEZ	09	32	24
		i			57
	Pr	eP			32
		e			45
	CL	eP			18
		i			23
		e		33	20
	T	eP		32	17
		e			33
		e		33	07
	BCIS: 09:24.0, Kamchatka				
30	P	eP	02	44	48
	T	eP			41

Date	Sta.	Phase	h	m	s
January					
30	P	iP	02	59	18
	T	eP			26
	Wellington: $19\frac{1}{4}$ S $175\frac{3}{4}$ W, 02:47:55, 290 km				
30	P	iPEZ	15	40	49
		iNZ			54
	Pr	iP			57
	T	iP			35
		i		41	28
	USCGS: 52 N $158\frac{1}{2}$ E, 15:30:40				
30	P	eP	21	59	18
		i			22
		i(pP)			54
		e(PP)	22	02	38
	PX	eE		09	42
		i(S)NEZ		10	40
		iE		11	34
		eGN		21.5	
		eLEZ		24.9	
			A		T
		PZ	$1\frac{1}{2}$		3
		PH	1		3
		MH	10		20
	Pr	iP	21	59	22
		i			26
		i(pP)			52
	T	iP	21	59	22
		i			26
		i(pP)			57
		i(PP)	22	02	46
		e		09	46
	USCGS: 12 S $166\frac{1}{2}$ E, 21:46:50, 100 km				
31	CL	e	05	07	23
	T	e			36
31	CL	eP	14	15	52
		e		16	56
	T	iP		15	45
31	CL	e	22	12	48
		e		13	20
	BCIS: $16\frac{1}{2}$ S $12\frac{1}{2}$ W, 21:52:23				
February					
1	CL	eP	01	49	11
	T	eP			02
1	P	ePNZ	11	01	12
	Pr	e			22
		e			34
	CL	e			07
		e			19
	T	e			12
	USCGS: 49 N $157\frac{1}{2}$ E, 10:50:50				
1	P	ePNEZ	14	23	51
	Pr	iP			55
		epP		26	09
	BCIS: 14:12:42, $21\frac{1}{4}$ S $178\frac{3}{4}$ W, 600 km				
1	P	iPNEZ	20	46	13
		i			38
		iPcP		48	25

(continued)

Date	Sta.	Phase	h	m	s
February (continued)					
1	Pr	iP	20	46	24 c
		i			38
		iScP		52	12
	CL	iP		46	06
		i			09
		ePcP		48	23
		e			40
		eScP		52	03
	T	iP		45	57
		i		46	02
		iScP		51	59
	USCGS: 54 N 165 W, 20:38:57, 100 km				
2	Pr	eP	05	22	48
	Mexico				
2	P	ePNEZ	08	50	07
	Pr	eP			07
	CL	eP			15
		e			20
	T	eP			16
2	P	eP	09	05	01
	Pr	eP		04	59
	CL	eP		05	01
2	P	eP	09	23	06
	Pr	eP			07
	CL	eP		22	51
		e			59
	T	eP			52
	BCIS: 09:13.0 Kamchatka				
2	P	ePEZ	09	40	25
		i(pP)			46
	Pr	eP			33
	CL	eP			19
	T	eP			11
	USCGS: 49 N 156 E, 09:30:00				
2	P	ePEZ	10	29	05
		e			15
	Pr	eP			13
	CL	eP			00
		i			13
	T	eP		28	52
	BCIS: N W Pacific				
2	P	e(P)	15	34	32
	Pr	eP			08
	CL	eP			22
	T	e			31
	BCIS: 17 S 75 W, 15:23:32				
2	Pr	e	18	01	08
		e			16
	CL	e		00	58
		e		01	05
	T	e		00	51
		e			58
3	CL	eP	01	29	40
		e			51
	T	e			33
	CMO: 35.5 N 140.3 E, 01:19:28, 50 km				
3	CL	eP	10	58	28
		e			42
	T	e			21

Date	Sta.	Phase	h	m	s
February					
3	P	iPNEZ	14	50	57 c
		iSNEZ		51	36
	Pr	iP		51	15
	SB	iP		50	48
	FT	iP			46
	CL	eP			59
		iS		51	35
	T	iPNEZ			02
		iSNEZ			33
	35.6 N 121.1 W, 14:50.2 Magnitude 4.4 Intensity V at several points in San Luis Obispo County				
3	Pr	e	21	06	54
		e		07	00
		e			08
	CL	e		06	57
3	Pr	e?	21	12	00
		e			04
		e			15
	CL	e			11
		e			21
	T	e			11
		e			22
4	CL	e	02	48	08
	T	e			08
4	P	iPNEZ	04	36	42
		iSE		37	03
	R	iP		36	32
		iS			44
	Pr	iP		36	21
		i			22
	Pasadena: 33^{o} 24' N, 116^{o} 34' W, 04:36:16 Magnitude 4.3 Felt especially in San Diego County (reported maximum V)				
4	P	eP	11	04	50
		e		05	17
	Pr	eP		04	54
		e		05	19
	CL	eP		04	49
	T	eP			48
		e		05	06
	USCGS: $37\frac{1}{2}$ N $19\frac{1}{2}$ W, 10:53:07				
4	P	eP	12	46	(25)
	Pr	eP			22
		e			27
	T	e(P)			27
	BCIS: 8 N 38 W, 12:34:32				
4	P	eP	18	51	58
		i		52	12
		i			21
	Pr	eP			09
		e			21
	T	e(P)		51	45
		i		52	03
	USCGS: 48 N 157 E, 18:41:33				
4	Pr	eP	20	56	16
	T	e			00
		e			22
5	Pr	eP	04	33	06

Date	Sta.	Phase	h	m	s
February					
5	P	iPNEZ	11	56	58
	Pr	iP		57	01 c
		e			15
	T	iP			06
		e			25
		e		58	08
	USCGS: 14 S 176 W, 11:45:23 Wellington: 15 S $176\frac{1}{2}$ W, 11:45:56, 320 km				
5	CL	eP	21	47	40
	T	eP			49
	BCIS: 23 S 66 W, 21:36.3, 250 km				
5	CL	e	22	25	31
6	CL	eP	03	45	33
		e			49
	T	e			26
	BCIS: 52.9 N.160.1 E, 03:35:31				
6	P	ePE	05	43	30
		iNEZ			43
		i			47
	R	eP			34
		e			59
		e		44	03
	Pr	eP		43	40
		e			46
		i			56
	CL	eP			24
		i			38
	T	eP			23
		i			30
		i			39
	USCGS: 51 N 159 E, 05:33:22				
6	CL	iP	07	06	09
	T	e			25
		e			36
6	CL	e	08	54	17
6	R	e	09	46	31
	CL	e			10
		e			16
	T	e			10
6	CL	e	12	48	58
	T	e			52
		e			57
	USCGS: 12:38:45, Pakistan				
6	P	iPEZ	13	24	34
		i(pP)NZ			44
	PX	iSNE		33	59
		eLN		42.4	
		eLEZ		46	44
		e	14	27	27
			A		T
		PZ	$\frac{3}{4}$		2
		SH	4		7
		MH	15		20
	R	eP	13	24	37
		i(pP)			49
		e		25	49
		e		26	19
		e		27	27
	Pr	eP		24	41
		i			55
		i		25	25

(continued)

Date	Sta.	Phase	h	m	s
February (continued)					
6	CL	eP	13	24	29
		i(pP)			40
		eS		33	28
	T	eP		24	24
		i(pP)			35
		e		25	36
		e		26	18
	Magnitude $6\frac{3}{4}$±				
	CMO: 42.0 N 144.2 E, 13:13:03, 80 km				
6	P	e(P)	19	22	34
	R	e(P)			38
	Pr	eP			43
	CL	iP			30
		e			44
	T	e			43
	USCGS: 52 N 158 E, 19:12:25				
6	CL	e	19	51	20
	BCIS: 53 N 160 E, 19:41:06				
7	R	e(P)	00	32	24
	Pr	e			35
	CL	iP			13
	T	eP			05
7	CL	eP	11	54	52
7	CL	eP	14	05	42
	T	e			33
7	Pr	iP	16	22	40
	CL	eP			44
	T	e(P)			48
7	P	eP	16	49	18
	Pr	iP			21
	CL	eP			25
7	P	iP	18	33	39
		i(pP)			52
	Px	eGN		50	10
		eREZ			52.5
		eN		55	29
	Pr	iP		33	48
		i		34	04
		e		36	35
	CL	eP		33	33
		i(pP)			46
	T	eP			27
		e			52
		e		34	46
	USCGS: 49 N 156 E, 18:23:12				
7	P	i?	21	59	06
	CL	e		58	34
	T	e			27
		e			48
7	Pr	e	22	48	53
	CL	e(P)		45	00
		e		49	04
	BCIS: 35 N $24\frac{1}{2}$ E, 22:31:05				
7	P	e(P)	23	09	15
		e			21
	Pr	e			23
		e			33
	CL	eP			02
		e			15
	T	e			08
8	Pr	eP	05	33	01
	CL	eP		32	47
	T	e			40

Date	Sta.	Phase	h	m	s
February					
9	Pr	eP	03	23	09
		i			23
	CL	eP			13
		e			29
	T	e		22	45
	USCGS: $30\frac{1}{2}$ S $177\frac{1}{2}$ W, 03:10:28				
9	CL	eP	03	39	10
		e			18
9	CL	e	06	43	38
9	P	iP	10	33	47
	Pr	iP			49
	CL	eP			53
9	P	ePNEZ	15	00	13
		i(pP)			23
		i			31
	Pr	eP			22
		i(pP)			33
		i			48
	CL	eP			07
		i			13
	T	eP	14	59	59
	USCGS: 53 N 160 E, 14:50:12				
9	P	eP	21	40	20
		e			28
		eE			33
		i			37
	PX	eGN			49.6
	Pr	iP		40	29
		i			50
		i		41	50
	CL	eP		40	14
		e			23
		e(ScP)		46	26
	T	eP		40	09
		i			24
		i			51
	USCGS: $52\frac{1}{2}$ N 169 W, 21:32:36				
10	CL	eP	01	24	40
		i			58
	CMO: 42.7 N 144.9 E, 01:13:23, 40 km				
10	Pr	eP	07	20	01
	CL	eP			05
	T	eP			07
10	P	ePNZ	08	06	12
		i			28
		iEZ			39
	PX	e(S)E			12.5
		eGN			16.4
	Pr	iP		06	23
		i			40
		i			57
		i		07	23
		e		08	23
	CL	eP		06	06
		e			49
	T	iP		05	57
		i		06	27
		e(ScP)		11	52
	USCGS: 52 N 169 W, 07:58:29				

Date	Sta.	Phase	h	m	s
February					
10	P	eP	13	51	00
	Pr	iP			05
	CL	eP			06
		e			15
		ePP		54	51
	T	eP		51	09
	USCGS: 13:38:10				
	Wellington: $21\frac{1}{2}$ S 170 E, 13:38.4				
10	Pr	e(P)	14	05	02
	CL	e			03
10	P	iPEZ	14	10	30
		e			44
	Pr	iP			33
		e			54
	CL	eP			36
		e			43
		e			52
	T	iP			38
	BCIS: $20\frac{1}{2}$ S 171 E, 13:57:45				
10	P	iPNEZ	17	25	29
	Pr	iP			32 c
		i			36
		i			52
	CL	iP			36
		e			43
		e			45
	T	iP			38
		i			45
		e		26	04
	Wellington: 20 S 175 W, 17:14.1, 500 km				
11	Pr	e	12	21	12
	CL	e			18
		e			50
11	Pr	e	12	34	14
	CL	eP		33	57
		e		34	08
	T	eP		33	50
11	P	i(P)	16	31	04
	CL	eP		30	45
11	Pr	e	22	13	49
	CL	eP			52
12	CL	e	01	19	30
		e			46
12	Pr	e	01	34	07
	CL	e		33	42
	USCGS: 01:27:18				
	Yukon, foreshock				
12	P	e(P)EZ	02	15	14
		e			22
	Pr	eP			00
		e			07
	CL	eP			15
		e		17	44
	T	eP		15	23
	BCIS: off Chile				
12	P	eP	04	37	51
	PX	eLE			48.4
	CL	eP		37	38
		ePcP		40	32
	T	eP		37	28
	USCGS: 65 N 133 W, 04:31:16				

Date	Sta.	Phase	h	m	s
February					
12	P	e(S)	06	28	08
	CL	e		28	55
	Tucson (courtesy USCGS)				
		eP	06	26	07
		i(S)		27	16
12	P	eP"	08	33	42
		ePP		34	24
		ePPP		37	12
	PX	eSP		44	09
		iPSN			15
	P	ePKKP		45	07
		i			16
		e		46	24
	PX	iSSN		50	38
		e(SSS)N		54	05
		eRN	09	04.8	
			A		T
		PPZ	$1\frac{3}{4}$		10
		MH	30		20
	CL	eP"	08	33	21
		ePP		34	17
		iPKKP		45	09
	T	e	08	33	34
		e		45	17
	Magnitude $6\frac{1}{2}$±				
	BCIS: 35.8 N 55.0 E, 08:15:32				
13	CL	eP	10	54	18
		e			27
	T	iP			19
		i			30
	New Hebrides				
	USCGS: 10:41:23				
13	CL	eP	13	48	16
		e			26
	T	iP			07
		e			17
13	P	eP	15	37	44
	CL	eP			50
	South America				
	BCIS: 15:28.0				
13	CL	e	18	00	31
13	P	iPNZ	21	59	57
		i	22	00	04
		i			08
	Pr	iP	21	59	58
		i	22	00	14
		i			19
	CL	iP			04
		e			16
		i			25
	T	iP			06
		i			28
	Wellington: 35 S 177 W, 21:47:10, magnitude 5.9				
13	CL	eP	22	31	42
	BCIS: 42 N 25 W, 22:20.4				
14	Pr	e	01	43	02
14	CL	e	08	57	02
	BCIS: $35\frac{1}{2}$ N $26\frac{1}{2}$ E, 08:43:13, 100 km				
14	P	e	16	55	14
14	Pr	e	17	16	16
	CL	eP			01

Date	Sta.	Phase	h	m	s	
February						
14	Pr	eP	18	21	38	
	CL	eP			56	
14	Pr	e	18	37	14	
	CL	e			33	
14	P	iPNEZ	22	00	43	d
		i			48	
		i			53	
		i		03	02	
	PX	iPP			57	
	P	i			19	
	PX	iSNEZ		10	57	
		e			59	
		e		11	42	
		eGN		22.3		
		eLEZ		26	14	
			A		T	
		PZ	0.7		1	
		PH	0.3		1	
		PPZ	$\frac{3}{4}$		4	
		SH	$3\frac{1}{2}$		7	
	Pr	iP	22	00	48	d
	CL	iP			42	d
		i		01	18	
		e(S)		11	15	
	T	iP		00	38	
		i		01	23	
		iPP		03	49	
	Magnitude $6\frac{3}{4}$					
	USCGS: $18\frac{1}{2}$ N 146 E, 21:48:12, 60 km					
14	P	iPNEZ	22	19	16	d
		ipP			58	
		i(PcP)		20	24	
	Pr	iP		19	06	
		epP			49	
		e		21	10	
	CL	iP		19	18	
		ePcP		20	24	
	T	iP		19	29	
		iPcP		20	32	
	USCGS: $1\frac{1}{2}$ S $77\frac{1}{2}$ W, 22:10:20, 200 km					
14	Pr	eP	22	24	00	
	CL	eP			06	
15	CL	e	02	59	58	
15	P	ePNEZ	09	42	46	
		e			50	
	Pr	eP			27	
	CL	eP			41	
	T	eP			50	
		i		43	07	
	USCGS: 12 S $77\frac{1}{2}$ W, 09:32:25					
15	P	eP	13	24	30	
	Pr	e			33	
	CL	eP			30	
	T	e			20	
15	Pr	i	16	28	07	
	CL	e			25	
15	Pr	e	17	29	37	
	CL	eP			32	
	CMO: 42.4 N 144.8 E, 17:18:09, 60 km					
15	CL	eP	20	12	53	
	USCGS: 19:59:40					
	Solomon Islands					

Date	Sta.	Phase	h	m	s	
February						
15	CL	e	22	27	27	
	T	e			27	
16	P	iP	00	18	36	
	Pr	eP			44	
	CL	eP			32	
	T	eP			26	
	CMO: 42.3 N 142.9 E, 00:07:10, 100 km					
16	CL	e	17	15	04	
16	P	iPNEZ	10	18	12	c
		i			20	
		iPP		19	25	
		iPcP		20	11	
	Pr	iP		18	02	c
		i			05	
		i		20	06	
	CL	iP		18	16	c
		i			32	
		i			42	
		ePcP		20	12	
	T	iP		18	26	
		i			53	
		iPcP		20	16	
	USCGS: $8\frac{1}{2}$ N 83 W, 10:10:22					
17	Pr	e	19	30	25	
	CL	eP			25	
17	Pr	e	22	54	03	
	CL	eP			07	
		e			30	
	T	e			31	
		e			46	
18	CL	e	00	44	19	
	T	e			18	
19	P	iPNEZ	13	18	19	
		i			37	
		i			55	
		i		19	31	
		e(pP)			46	
		i(sP)		20	17	
		iPKKP		36.22		
			A		T	
		PZ	0.3		1	
	Pr	iP	13	18	21	d
		e		19	39	
	CL	iP		18	26	d
		i			44	
		eS		28	42	
		iPKKP		36	19	
		eP'P'		44	26	
	T	iP		18	27	
		i		19	46	
		epP		20	28	
		esP		22	06	
		i		28	26	
		ePKKP		36	17	
		eP'P'		44	26	
	Wellington: $29\frac{1}{2}$ S $178\frac{1}{4}$ W, 13:06:06, 370 km					
19	P	eP	15	35	22	
	CL	eP			17	
	T	eP			04	
	BCIS: 0.0, 17.9 W, 15:17:43					
20	P	iP	02	08	53	
	CL	eP			56	
	T	iP		09	05	
	BCIS: 01:57.2; Chile					

Date	Sta.	Phase	h	m	s
February					
20	P	iP	10	22	47
	Pr	i			49
		i		23	05
	CL	eP		22	52
		e		23	00
	T	iP		22	58
		i		23	13
		i			41
	BCIS: South Pacific				
20	Pr	eP	18	31	22
		i		32	02
	CL	eP		31	34
20	P	iPNEZ	23	34	49
		i			55
		i		35	17
	Pr	iP		34	52
		i		36	07
	CL	eP		34	57
	T	iP		35	00
		e			14
		i			45
		e		36	44
	BCIS: 26 S 178 W, 23:22.4				
	Wellington: $27\frac{3}{4}$ S 172 W, 23:22:48, 100 km				
21	Pr	e	01	13	54
	CL	e			24
	BCIS: 01:03:27; Kamchatka				
21	CL	eP	04	06	44
21	Pr	e	05	00	26
	CL	e			02
21	P	iPNEZ	11	03	56
	Pr	i			35
		i			59
	CL	eP		04	03
	T	i(P)			04
21	P	e	15	30	38
	T	e			23
21	CL	e	22	26	19
22	CL	eP	02	29	17
	USCGS: 87 N 45 E, 02:19:00				
22	Pr	eP	04	16	30
	CL	eP			26
	T	eP			31
	BCIS: 04:06:24				
	Same as Nov. 4, 1952				
	Kamchatka				
22	CL	eP	07	48	43
		e			45
	T	e			33
	BCIS: $65\frac{1}{2}$ N $167\frac{1}{2}$ W, 07:40:50				
22	CL	e	09	26	01
	T	e			09
22	P	e	20	28	52
	Pr	e(P)			54
	CL	eP			44
	T	eP			40
	Stuttgart: 50° 53' N, 10° 01' E, 20:16:18.5				
22	CL	e	21	55	01
22	P	iPNEZ	22	26	41
		e			47
	Pr	eP			43

(continued)

Date	Sta.	Phase	h	m	s
February (continued)					
22	CL	iP	22	26	49
		e		27	00
	T	iP		26	28
	BCIS: $15\frac{1}{4}$ S $173\frac{3}{4}$ W, 22:15:15				
23	CL	e	01	04	44
		e		05	31
		e			56
	USCGS: $29\frac{1}{2}$ N 81 E, 00:46:08				
23	P	iPNEZ	01	16	58
	Pr	iP		17	08
	CL	eP		16	37
		i			52
	T	iP			30
		i			46
		i		17	39
	BCIS: 01:06:19; Kamchatka				
23	P	ePEZ	03	51	43
		iNEZ			46
		ipP			57
	Pr	iP			58
	CL	eP			35
		e			40
		e(pP)			51
	T	eP			28
		i			32
		i(PcP)		52	28
		i		53	04
	USCGS: 53 N 161 E, 03:41:45				
23	Pr	e	03	59	16
	CL	iP		58	33
	T	e			25
		e		59	00
	BCIS: 03:48.7; Kamchatka				
23	Pr	e	05	29	01
	CL	e		28	41
23	P	i(P)EZ	07	45	10
		iSEZ		46	58
	CL	e(P)		45	03
		eS		46	23
	T	eP		44	47
		i			56
		iS		46	26
	USCGS: 42 N $124\frac{1}{2}$ W, 07:43:00				
23	Pr	iP	17	56	06
	CL	eP			01
		e			27
		e			39
	T	eP			08
		e			34
		e			43
23	P	e(P)	23	35	50
	CL	e			44
		e			50
	T	e			32
		e			34
		e		36	15
	USCGS: $52\frac{1}{2}$ N 160 E, 23:25:46				
25	P	iPNEZ	12	44	36
		ipP			48

(continued)

Date	Sta.	Phase	h	m	s	
February (continued)						
25	Pr	iP	12	44	44	
		ipP			58	
	CL	iP			31	
		ipP			44	
	T	iP			23	
		ipP			35	
	USCGS: 49 N 156 E, 12:34:10					
25	P	iP	14	52	46	
		e		53	25	
	Pr	iP		52	57	
		i		53	20	
		e			44	
	CL	eP		52	41	
	T	iP			32	
		e			50	
25	P	iP	15	43	57	
	Pr	iP		44	00	
	CL	eP			04	
	T	eP			06	
25	P	iPNEZ	21	23	02	d
		ipPNEZ			14	
		i			23	
		i			38	
		ePP		24	21	
		iPcPNZ		25	37	
		i			53	
		eS		29	17	
		i			42	
	PX	eRNEZ			32.0	
				A	T	
		PZ		1	1	
		PH		$\frac{1}{2}$	1	
		pPZ		$1\frac{1}{4}$	1	
		PPZ		2	3	
		MH		20	20	
	R	iP	21	23	06	
		ipP			19	
		iPcP		25	38	
		iS		29	19	
		i			42	
	Pr	iP		23	14	
		ipP			27	
	CL	iP		22	54	d
		ipP		23	07	
		iPcP		25	34	
		i			49	
		eS		29	14	
		i			39	
	T	iP		22	44	
		ipP			56	
		i		23	33	
		iPcP		25	31	
		i			45	
		i(S)		27	53	
		e		29	35	
	Magnitude $6\frac{3}{4}$					
	USCGS: 56 N $156\frac{1}{2}$ W, 21:16:18, 60 km					
25	R	e	22	50	45	
	Pr	e			42	
		e		51	06	
	CL	e			01	
	T	e			16	
	Tacubaya: 16° 31' N, 100° 23' W, 22:45:55					

Date	Sta.	Phase	h	m	s	
February						
26	P	iPNEZ	00	42	29	d
		ipP		43	11	
		i			17	
		i		46	59	
				A	T	
		PZ		1	$1\frac{1}{2}$	
	R	iP	00	42	33	
		ipP		43	13	
		ePP		44	24	
		i		46	14	
	Pr	iP		42	39	
		ipP		43	21	
		i		45	26	
		e		47	06	
	CL	iP		42	25	d
		i			57	
		e		44	33	
		e		46	56	
	T	iP		42	16	d
		i			49	
		i		43	01	
		e		46	51	
	USCGS: 51 N $156\frac{1}{2}$ E, 00:32:07					
26	R	e	02	18	52	
	Pr	e			45	
	CL	e			52	
	T	e			51	
26	P	e	02	28	48	
	R	e			46	
	Pr	e			40	
	CL	eP			17	
	T	eP			13	
		e			19	
	USCGS: 02:18:20; Kamchatka					
26	P	iPNZ	04	51	12	
		e			54	
	R	iP			06	
		i			29	
		e		52	09	
	Pr	iP		51	00	
		i			24	
		i			38	
	CL	iP			19	
	T	iP			32	
		i			34	
		e			40	
	Tacubaya: 16° 31' N, 100° 23' W, 04:45:54					
26	P	eP	07	48	06	
		ipPNEZ			20	
	R	eP			10	
		ipP			24	
	Pr	eP			15	
		ipP			29	
	CL	eP			00	
		i			10	
		e			45	
	T	eP		47	54	
		ipP		48	08	
		e			55	
		e		49	45	
	USCGS: 50 N 157 E, 07:37:45					

Date	Sta.	Phase	h	m	s	
February						
26	P	iP	10	25	57	
		ipP		26	08	
		ePP		29	39	
	R	iP		26	01	
		ipP			11	
	Pr	iP			02	
		ipP			12	
	CL	eP			03	
		epP			14	
	T	eP			04	
		ipP			15	
	USCGS: 20 S 169 E, 10:13:07					
26	P	iPNEZ	11	55	10	c
		i			15	
		ePP		58	26	
	PX	eSNE	12	05	33	
		e(S)NEZ			40	
		e(PS)		06	48	
		eG			17.6	
		eR			19.7	
				A	T	
		PZ		3	3	
		PPZ		$\frac{1}{2}$	$2\frac{1}{2}$	
		SH		35	15	
		MH		60	20	
	R	eP	11	55	13	
		i			15	
		i(PP)		58	35	
	Pr	iP		55	16	
		i			40	
		i(PP)		58	46	
	CL	iP		55	14	
		i			25	
		ePP		58	39	
		e	12	00	41	
		eG		17	16	
	T	iP	11	55	16	
		i			21	
		iPP		58	38	
		i			45	
		eS	12	05	57	
	Magnitude 7.0					
	USCGS: 11 S $164\frac{1}{2}$ E, 11:42:26					
26	R	e	12	28	35	
	CL	e			37	
26	R	e	13	00	38	
		i			48	
	Pr	e			46	
	CL	e			45	
26	P	eP	13	26	00	
		e			11	
	CL	eP		25	53	
	T	e			46	
		e			57	
	BCIS: 52.0 N $159\frac{1}{2}$ E, 13:15:53					
26	R	e	13	56	18	
		e			39	
	CL	e			38	
26	P	iPNEZ	16	17	26	c
		i			44	
		i			55	
		ePP		19	10	

(continued)

Date	Sta.	Phase	h	m	s	
February (continued)						
26	PX	eL	16	36	23	
	R	iP		17	21	
		i			37	
		iPP		19	09	
		i		20	04	
	Pr	iP		17	16	
		i		18	00	
		iPP			59	
	CL	eP		17	25	
		ePP		19	09	
	T	iP		17	32	c
		i			36	
		i			44	
		ePP		19	32	
		e(PPP)		20	33	
	USCGS: 19 N $73\frac{1}{2}$ W, 16:09:25					
26	CL	eP	18	04	58	
	T	eP			57	
26	P	iP	19	53	43	
	R	eP			47	
		e			58	
	Pr	e(P)			52	
	CL	iP			39	
	T	iP			29	
	USCGS: 50 N 156 E, 19:43:20					
26	P	i	20	24	02	
	Pr	i			02	
	CL	eP		23	39	
		i			53	
27	P	eP	05	08	53	
	CL	eP			46	
27	P	eP	05	58	30	
	R	eP			33	
	P	e			41	
	CL	eP			31	
	T	e			31	
	BCIS: $5\frac{1}{2}$ S $152\frac{3}{4}$ E, 05:45:11					
27	R	eP	06	07	45	
		e		08	16	
	Pr	e		07	48	
	CL	eP			45	
		e		08	13	
	T	eP		07	47	
27	R	e	11	56	59	
	Pr	e			55	
	CL	e			57	
27	R	e	12	13	40	
	CL	e			16	
27	R	e	16	41	59	
	CL	eP			43	
27	R	e(P)	17	35	31	
	Pr	e			33	
	CL	eP			36	
	T	eP			38	
27	CL	eP	20	10	55	
27	CL	eP	22	15	17	
	CMO: 36.0 N 137.4 E, 22:03:38, 250 km					
28	P	iPNEZ	04	29	07	
		i			13	

(continued)

Date	Sta.	Phase	h	m	s
February (continued)					
28	PX	eSNE	04	33	02
		iS			04
		eLN		34.2	
		e			26
	R	eP		28	58
		i		29	10
		iPP			36
	Pr	eP		28	50
		i		29	21
		ePP		30	25
		e		31	27
		e(L)		36	17
	CL	eP		29	15
		i			24
		e		38	41
	T	iP		29	30
		i			42
		i			45
		e		38	58
	USCGS: $18\frac{1}{2}$ N 105 W, 04:24:33				
28	Pr	eP	05	13	21
	CL	eP			24
28	R	e	13	40	53
		e			58
		e		41	07
	CL	e			05
		e			10
		e		43	52
	T	e		40	22
		e		43	01
28	CL	e	14	38	17
	T	e			35
	BCIS: Mexico				
28	R	eP	18	52	26
	P	e			27
	CL	eP			29
	T	eP			30
	Wellington: 21 S 171 E, 18:39.1				
28	P	ePNZ	21	57	44
		i		58	21
	PX	eSE	22	01	31
		e(S)			41
		iSN			45
		eLNE		02.8	
		eL		03	03
	R	e(P)	21	57	29
		i			39
		i			49
		e		58	14
	Pr	eP		57	30
		i			36
		i			53
		e		58	35
	CL	e(P)		57	44
		eP			54
		e		58	01
		i			10
		e	22	07	07
	T	eP	21	57	59
		i		58	10
		i			18
	USCGS: $18\frac{1}{2}$ N 105 W, 21:53:15				

Date	Sta.	Phase	h	m	s
February					
28	R	e	23	31	18
	Pr	e			33
	CL	e			37
	BCIS: Mexico				
28	R	i	23	52	10
	CL	eP			31
	T	eP			23
March					
1	P	e	05	00	46
	R	e			38
	CL	e			59
	T	e		01	08
	BCIS: 11 N 104 W, 04:55.3				
1	R	eP	23	09	54
		epP		10	21
	Pr	e		09	57
	CL	iP			55
		ipP		10	23
	T	eP		09	56
		epP		10	22
	USCGS: 11 S 166 E, 22:57:24, 100 km				
2	R	eP	02	25	53
		epP		26	14
	CL	eP		25	51
		epP		26	14
		ePP		29	25
	T	e		26	14
	BCIS: $6\frac{1}{4}$ S $155\frac{1}{4}$ E, 02:12:55, 60 km				
2	Pr	e	21	06	46
	CL	eP			33
		e			43
		e			52
	T	eP			35
		i			44
		i		07	06
	BCIS: $52\frac{1}{2}$ N 160 E, 20:56:36				
2	CL	eP	22	28	53
	T	eP			53
	BCIS: $52\frac{1}{2}$ N 160 E, 22:18:49				
2	CL	eP	22	55	12
		e			22
	T	i			34
		i		56	18
		e		57	18
	USCGS: 51 N 159 E, 22:45:18				
3	P	eP	11	39	50
		iNEZ			55
		i		40	12
		eE		41	18
		ePP		43	27
	PX	eSE		50	24
		eSPE		51	38
		eGN		12	03.0
		eREZ			07.0
			A		T
		PZ	0.3		1
		PH	0.2		$1\frac{1}{2}$
		SH	5		10
		MH	20		16

(continued)

Date	Sta.	Phase	h	m	s
March (continued)					
3	R	eP	11	39	52
		i		41	22
	Pr	eP		39	54
		i			59
		i		40	18
	CL	eP		39	56
		i		40	01
		i			17
		i			35
		e		47	18
	T	iP		39	56
		i		40	01
		i			18
		i		41	43
		ePP		43	37
	Magnitude $6\frac{3}{4}$				
	BCIS: 20.4 S 169.0 E, 11:26:59				
3	R	e	12	05	54
	Pr	e		06	00
	CL	e		05	53
	T	e			51
3	R	e	12	12	22
	Pr	e			24
	CL	eP			28
	T	e			28
3	P	iPNZ	12	38	46
	R	iP			34
		e		39	10
		e			36
	Pr	eP		38	38
	CL	eP			42
	T	eP			45
		e		39	14
		e			38
	BCIS: 12:27.1 Loyalty Islands				
3	P	iP	13	15	39
		i			48
	R	i			42
	Pr	i(P)			43
	CL	eP			45
	T	eP			45
		e		16	19
	USCGS: 13:02:49 Loyalty Islands				
3	P	iP	13	51	48
	Pr	iP			56
	CL	eP			55
	T	iP			54
	USCGS: 13:38:58 Loyalty Islands				
	Wellington: $20\frac{1}{2}$ S 169 E, 13:39.0; Magnitude $6\frac{1}{4}$				
3	P	iPNZ	13	54	08
		i			24
		i			58
		e		58	42
	R	iP		54	13
		e		55	31
	Pr	iP		54	14
		e			51
	CL	iP			16

(continued)

Date	Sta.	Phase	h	m	s
March (continued)					
3	T	iP	13	54	16
		e			29
	USCGS: $19\frac{1}{2}$ S $168\frac{1}{2}$ E, 13:41:20				
	Wellington: 21 S 169 E, 13:42.4; magnitude $6\frac{1}{2}$				
3	P	iP	14	21	40
	CL	e			47
	T	e			47
3	R	e	16	50	39
	Pr	eP			38
	CL	eP			41
	T	e			42
3	R	iP	23	00	24
		i			34
		i			54
	Pr	iP			26
		i			39
	CL	eP			41
	T	iP			50
		e		01	03
3	P	iPEZ	23	04	29
		i			42
		i		05	06
	R	iP		04	33
		i			44
		e		05	13
		e			46
	Pr	iP		04	38
		i		05	07
		i			27
	CL	iP		04	24
	T	eP			16
		e			28
		ePP		06.	20
	USCGS: 48 N 155 E, 22:53:54.				
	CMO: 49 N 157 E, 22:53:54				
4	P	iPEZ	01	09	11
		i			17
		ipP		11	14
		esP		12	27
	PX	iSNE		18	28
			A		T
		PZ	$\frac{1}{4}$		1
		SH	2		5
	R	iP	01	09	08
		e			23
		epP		11	11
	Pr	iP		09	04
		i			31
		ipP		11	07
		e		12	06
		e		12	47
	CL	iP		09	16
		i			32
		ipP		11	18
		i(PP)			34
	T	iP	01	09	22
		i			39
		ipP		11	26
		e		12	27
	Magnitude $6\frac{1}{4}$				

(continued)

Date	Sta.	Phase	h	m	s
March (continued)					
4	BCIS: $27\frac{3}{4}$ S $63\frac{1}{2}$ W, 00:57:58, 600 km				
	USCGS: 28 S $62\frac{1}{2}$ W, 00:57:52, 600 km				
4	R	e	01	27	50
	CL	eP			47
4	R	e	01	31	42
	CL	e			50
4	R	eP	06	05	21
	Pr	i(P)			22
	CL	eP			25
	T	eP			28
4	P	iP	07	26	38
	R	iP			40
		e		27	09
	Pr	iP		26	41
	CL	eP			43
	T	iP			44
	USCGS: $19\frac{1}{2}$ S $168\frac{1}{2}$ E, 07:13:47				
4	P	e	09	37	48
	R	eP			50
		i		38	04
	Pr	e		37	57
	CL	eP			34
	T	e			31
4	P	eP	14	59	32
	R	e			29
	Pr	i			40
	T	eP			23
	USCGS: 24 N 122 E, 14:45:48				
4	P	i(P)	19	47	29
	R	iP			25
		e			35
	Pr	iP			20
	CL	iP			33
	T	iP			42
	BCIS: 19:37.4; Peru				
5	P	e	03	55	21
	R	e			25
		e			41
	CL	e		54	59
		e		55	16
	T	e			08
	BCIS: 03:45:02: Kamchatka				
5	P	iPNZ	05	59	27
		e			45
		e	06	00	35
	R	eP	05	59	25
		e			43
		e	06	00	34
	Pr	eP	05	59	21
		e	06	00	04
	CL	iP		59	37
	T	eP			45
		e(PP)		01	35
	BCIS: 35 S 113 W, 05:48:22				
5	R	e	06	08	45
	CL	e			41
	T	e			58

Date	Sta.	Phase	h	m	s
March					
5	R	eP	07	42	13
		e			20
	Pr	e			21
	CL	eP			17
	T	eP			16
		e			23
	USCGS: 07:29:20, Loyalty Islands				
5	P	iP	11	48	22
	Pr	iP			24
	CL	iP			28
	T	e			56
	BCIS: South Pacific				
5	R	e(P)	17	58	43
	Pr	eP			43
	T	eP			47
5	P	i(P')NZ	19	12	30
		i		13	54
	R	e(P')		12	29
		e			49
		e		13	50
	Pr	e(P')		12	28
	T	e(P')			35
		e			55
		e		14	12
	BCIS: 18:53.8 South Atlantic				
5	P	iPNEZ	21	11	34 c
		iE			42
		ipP			47
		i			57
	PX	iSE(Z)		19	48
		eSN		20	16
		eGN			26.7
		eREZ			29.3
	P	eP'P'		40	55
			A		T
		PZ	$\frac{3}{4}$		$1\frac{1}{2}$
		PH	$\frac{1}{2}$		$1\frac{1}{2}$
		SH	3		7
		MH	10		20
	R	iP	21	11	37
		i			54
		i		12	25
	Pr	iP		11	42
		ipP			57
	T	iP	12	11	21
		i		12	07
		i		13	19
	BCIS: 52.0 N 157.0 E, 21:01:20				
5	P	eP	21	32	10
		i(pP)			24
		i			39
	R	e(P)			18
		i(pP)			32
	Pr	e(P)			24
		i(pP)			37
	T	eP		31	59
		i		32	16
	USCGS: 49 N 156 E, 21:21:45				

Date	Sta.	Phase	h	m	s
March					
5	P	iPNZ	23	00	24
	R	iP			20
		i(pP)			48
	Pr	eP			15
		i(pP)			44
	T	iP			37
		i(pP)			59
	USCGS: 14 S $71\frac{1}{2}$ W, 22:49:46, 100 km				
6	P	eP	00	55	27
		iNZ			41
	R	eP			37
		e			47
		e		56	30
	Pr	e		55	43
		e			49
	T	eP			21
		e			40
		e		56	12
	BCIS: 00:45:00; Kamchatka				
6	P	ePNZ	04	32	18
	PX	eLEZ			56.7
	R	eP		32	21
		e		33	06
	Pr	eP		32	22
		e		33	07
	USCGS: 16 S 177 E, 04:20:10				
6	P	iP	07	04	16
		ipPNEZ			45
		isP		05	06
		ipPcP		07	21
	R	iP		04	19
		ipP			49
		isP		05	09
		e		06	11
		ipPcP		07	22
	Pr	iP		04	27
		ipP			57
		i		05	32
		e(pPcP)		07	26
		eScP		10	23
	T	iP		03	56
		ipP		04	25
		esP			45
		iPP		05	13
		ePPP			49
		ipPcP		07	15
	Depth 150 km				
	USCGS: $58\frac{1}{2}$ N $156\frac{1}{2}$ W; 06:57:26, 100 km				
6	P	e	10	27	04
	R	e			04
	Pr	e			02
6	P	e	10	32	38
	R	e			31
	Pr	e			28
6	P	eP	22	12	06
	R	eP		11	56
	Pr	eP		12	15
		e			31
		ePP		16	06
	T	eP		11	58
	BCIS: $25\frac{1}{4}$ N $123\frac{1}{2}$ E; 21:58:36				

Date	Sta.	Phase	h	m	s
March					
7	Pr	e	09	25	44
	T	e?			34
8	P	eP'	12	25	06
		e(PP)		30	42
	R	eP'		25	06
	T	eP'			06
	BCIS: 33 S 57 E; 12:04:52				
8	P	iPNZ	12	37	08
		ipPNEZ			23
	R	iP			12
		ipP			27
		e		38	39
	T	iP		36	55
		ipP		37	10
		e		38	29
	USCGS: 50 N $156\frac{1}{2}$ E; 12:26:52				
9	P	iPNZ	10	16	51
		i(pP)NEZ		17	14
		i(sP)			21
	PX	ePP		20	27
	P	ePP			32
	PX	eN			39
		e(S)(N)E			27.8
		eGN			42.0
		eREZ			45.2
			A		T
		PZ	0.1		1
		(pP)Z	$\frac{3}{4}$		$1\frac{1}{4}$
		(pP)H	0.2		$1\frac{1}{4}$
		ppZ	0.3		2
		ppH	$\frac{1}{2}$		3
		(S)H	$\frac{1}{2}$		4
		MH	12		20
	R	eP	10	16	56
		i(pP)		17	17
		e(PP)		20	19
		e			33
	Pr	eP		16	58
		i(pP)		17	19
		e(PP)		20	24
		i			56
	T	eP		16	54
		i(pP)		17	15
		i			24
		ePP		20	32
	USCGS: $4\frac{1}{2}$ S $153\frac{1}{2}$ E; 10;03:41				
	Pasadena: 10:03.9				
	Magnitude $6\frac{1}{2}$-$6\frac{3}{4}$;				
	Intermediate depth?				
9	P	eP	19	07	16
		e			33
	Pr	e			24
		i			43
	T	eP			03
		e			20
9	P	i(P)	19	21	42
	R	i(P)			44

Date	Sta.	Phase	h	m	s
March					
10	P	iP	06	11	51
	PX	eLEZ		39.2	
	R	iP		11	52
		e		12	22
	Pr	iP		11	54
		e		12	24
	T	eP		11	50
	USCGS: 18½ s 168 E;				
	05:58:55				
10	R	eP	12	47	13
	Pr	eP			12
	T	eP			04
11	P	iP	01	32	30
		i			37
	R	i(P)			33
	Pr	eP			30
	CL	eP			32
	T	eP			31
	USCGS: 6 S 151½ E				
	01:19:10				
11	T	e(P)	07	30	48
11	P	iPEZ	11	00	34
		i			49
	R	iP			38
		i			52
	Pr	iP			43
		e		01	05
	CL	eP		00	29
		e			43
	T	eP			23
	USCGS: 49 N 154½ E;				
	10:50:00				
11	Pr	e(P)	11	19	06
		i			15
	CL	eP		18	45
		e			52
		e			55
	T	eP			36
		e			43
11	Pr	e	17	08	10
		e			14
	CL	eP			25
		e			37
	T	eP			20
	CMO: 42.1 N 144.3 E;				
	16:57:02 60 km				
12	Pr	e	00	55	35
	CL	eP			34
	T	e			44
	BCIS: 00:43.2; Chile				
12	P	iPNEZ	01	05	02 c
	R	iP			04
	Pr	iP			05
		i			25
	CL	iP			02
	T	iP			01
12	CL	e(P)	04	01	52
12	P	eP?	12	04	22
	CL	eP			28
	T	eP			28
	USCGS: 11:51:42				
	Santa Cruz Islands				

Date	Sta.	Phase	h	m	s
March					
12	CL	eP	12	31	04
12	P	eP	13	44	32
	R	iP			36
	CL	eP			38
	T	eP			39
13	R	iP	03	11	20
	CL	eP			17
	T	iP			14
13	CL	eP	18	28	03
		e			58
	T	eP			05
	BCIS: Fiji Islands				
14	CL	eP	02	31	54
	T	i(P)		32	00
14	P	e	08	43	41
	R	e(P)			43
	Pr	e(P)			45
	CL	eP			47
	T	e			46
14	R	iP	10	31	32
		i			56
	Pr	iP			39
		i			54
	CL	eP			23
	T	iP			14
14	P	eP	11	20	10
		ipPEZ			22
		eN			25
		i			45
		iPP		22	00
		i			05
	PX	e(S)			30.5
	R	eP		20	14
		ipP			27
		i			45
	Pr	eP			20
		ipP			33
		e			55
		e		21	44
		ePP		22	09
	CL	eP		20	04
		ipP			17
		ePP		21	54
	T	eP		19	55
		ipP		20	09
		i			14
		iPP		22	01
	BCIS: 11:11.9				
	Andreanof Islands				
	(Aleutian Islands)				
14	P	e(PP)	17	19	04
	R	e(PP)			13
		e			31
	Pr	e(PP)			08
	CL	e		18	16
		e(PP)		19	10
	T	e(PP)			02
		e			26
	USCGS: 17:00:32				
	Manila 6.3 N 124.2 E;				
	V at Davao, etc.				

Date	Sta.	Phase	h	m	s
March					
15	P	iPEZ	21	09	34
	R	iP			38
	Pr	iP			44
		i		10	16
	CL	eP		09	27
	T	iP			18
		e			24
		ePP		11	23
	BCIS: 21:01.9				
	Fox Islands, Aleutian Is.				
16	P	iPNEZ	01	58	50
	R	eP			51
		i			55
	Pr	iP			52
		e		59	20
	CL	eP		58	57
	T	eP			57
		e		59	23
16	P	eP	05	18	28
		i(pP)NEZ			33
	PX	eSN		25.5	
		eLN		31.9	
			A		T
		PZ	o.3		1½
		SH	3		30
		MH	8		20
	R	eP	05	18	24
		e(pP)			30
		e			33
	Pr	e(pP)			21
		e			24
	CL	eP			37
		e(pP)			43
	T	iP			53
	Magnitude 6				
	BCIS: 14 S 112½ W				
	05:09:48				
16	P	eP	08	35	19
	R	eP			20
	Pr	eP			21
		e		36	00
	CL	eP		35	33
	T	eP			24
	USCGS: 18 S 168 E;				
	08:22:26				
16	P	iPNEZ	11	24	34 c
		i			51
	R	iP			37
	Pr	iP			43
		i		25	16
	CL	ip		24	29
		i		25	07
	T	ip		24	22
		i		25	04
	USCGS: 48 N 154 E;				
	11:13:55				
17	P	iPNEZ	06	43	04
		i			13
		i			22
	R	e			10
		e			43

(continued)

Date	Sta.	Phase	h	m	s
March (Continued)					
17	Pr	eP	06	43	21
		e		44	04
	CL	eP		42	57
		e		43	08
	T	ip		42	50
		i		43	00
		i .			20
	USCGS: 51 N 159 E;				
	06:32:52 Kamchatka				
17	R	e(P)	07	05	47
	CL	e(P)			51
		e			57
	T	e(P)			41
17	P	e	11	16	20
	R	e			23
	Pr	e			26
	CL	e			23
17	R	e	12	55	53
	Pr	e			50
	CL	e			57
	T	e			57
	BCIS: 12 N 122 E;				
	12:30;00				
17	P	iPNEZ	13	14	56 c
		i		15	06
		i(pP)			17
		i			24
		eSNE		23	19
		eNE		24	25
		eGN		32.4	
		eREZ		33.3	
			A		T
		PZ	1		1½
	R	iP	13	15	00 c
		i(pP)			17
	Pr	iP			05 c
		i(pP)			26
		iPP		17	27
	CL	iP		14	52
		i(pP)		15	02
		iPP		17	08
	T	iP		14	43 c
		i(pP)		15	02
		i			21
	Probably h = 80 km.				
	USCGS: 50½ N 156½ E;				
	13:04:33				
17	R	e	16	46	24
	P	e			38
	CL	e			16
	T	e			08
	BCIS: 16:36.2 Kamchatka				
18	P	iP	01	38	35
	R	iP			31
	Pr	e			32
	CL	eP			47
	T	e		39	06
18	P	eP	17	17	23
	R	e			16
	CL	e			35
	T	e			44

Date	Sta.	Phase	h	m	s
March					
18	P	ePNEZ	19	20	02
		i			15
		e		23	20
		e		24	07
	PX	e(S)E			31.3
		eLN			47.5
			A		T
		PZ	0.1		1
		PPZ	1		5
		MH	150		20
	R	iP	19	20	01
		i			13
	Pr	iP			04
	CL	eP		19	53
	T	eP			50
	Magnitude $7\frac{1}{4}$				
	USCGS: 40 N $27\frac{1}{2}$ E, 19:06:11				
	BCIS: 40.1 N 27.3 E, 19:06:13				
18	R	e	20	28	33
	CL	iP			27
	T	i			21
	BCIS: 20:20:38				
19	R	i	01	33	33
	Pr	i			35
	CL	i			39
19	P	iPNEZ!	08	37	11 d
		i			23
		iPP!			55
	PX	iSNE!		44	42
		iScSNE		45	33
		iSP		46	40
		iGN			50.2
		iR			54.0
	P	eP'P'	09	07	09
			A		T
		PZ	25		8
		PH	20		8
		SH	70		8
		MH	50		20
	R	iPNEZ	08	37	06 d
		iSNE		44	34
	Pr	iP		37	04 d
	CL	iP	08	37	10 d
	T	iP!			15 d
		iSNE		44	51
	Pasadena: 14 N $61\frac{1}{4}$ W, 08:27:50, 130 km, Magnitude 7.3				
19	P	eP	10	28	40
		i		29	26
	R	e(P)		28	45
	Pr	e(P)			50
	T	e(P)			36
	USCGS: $28\frac{1}{2}$ N $127\frac{1}{2}$ E 10:15:53				
	CMO: $28\frac{1}{2}$ N 128 E, 10:15:56				
19	Pr	e	12	23	03
	CL	e			06
	T	e			10
	BCIS: 12:13:20 Kurile Islands				

Date	Sta.	Phase	h	m	s
March					
19	P	iPNEZ	19	05	07
		iPPNEZ		07	14
		isP		08	41
	R	iP		05	09
		ipP		07	16
	Pr	iP		05	09
	CL	iP			13
		epP		07	20
	T	iP		05	15
		ipP		07	22
		isP		08	58
	USCGS 26 S $178\frac{1}{2}$ E; 18:53:29, 600 km				
19	R	iPNEZ	20	41	29
	R	iP			32
	Pr	iP			33
	CL	iP			36
	T	iP			37
	USCGS: 20:29:39				
19	R	e	23	58	04
	Pr	e			23
	CL	e			42
	Wellington $35\frac{1}{4}$ S $178\frac{1}{2}$ W; 23:45:02; Magnitude 5.7				
20	R	e	05	45	05
	CL	e			23
	T	e			35
20	R	eP	10	49	59
	Pr	e		50	00
	CL	eP			03
	T	eP			04
20	P	iP	19	34	39
	R	eP			34
	Pr	eP			29
	CL	eP			44
	T	eP			53
	BCIS: $5\frac{1}{2}$ N $83\frac{1}{2}$ W; 19;26:21				
20	Pr	i(P)	19	46	19
	CL	e(P)			24
	T	iP			16
21	Pr	iP	15	38	08
	CL	e			03
22	P	iPNEZ	05	20	16
		iSNEZ		21	27
	CL	iP		19	59
		iS		20	47
	H	iPNEZ		19	55
		iSNEZ		20	35
	T	iPEZ		19	39
		i(S)NEZ		20	08
	Magnitude 4.9; USCGS: 38.8 N 119.9 W; 05:19:01				
22	P	eP	19	45	36
	R	e(P)			34
		e		46	12
	Pr	eP		45	49
		e		46	35
	CL	eP		45	30
	T	eP			25
		e		46	19
	USCGS: $52\frac{1}{2}$ N $159\frac{1}{2}$ E; 19:35:35				

Date	Sta.	Phase	h	m	s
March					
22	CL	e	23	48	43
		e		49	17
	T	e		48	36
23	P	iP	02	19	08
	R	eP			12
		e			27
	Pr	iP			19
		e			55
	CL	iP			03
	T	iP		18	54
		e		19	19
	BCIS: 02:09.5, Kamchatka				
23	P	eP	04	51	38
		e			50
	Pr	e(P)			57
	CL	eP			38
	T	e			23
		e		52	20
23	R	e	08	26	03
	Pr	eP		25	58
		e		26	09
	CL	eP		25	35
		e			53
	BCIS: 08:15:43, Kamchatka				
23	P	ePNE	12	44	02
	PX	eLNE		54	04
		e		58	03
	R	eP		43	59
		e		44	14
		ePP		45	50
	Pr	iP		44	06
		i			31
		ePP		46	04
	CL	eP		43	49
		e		44	04
		eS		49	40
	T	eP		43	39
		e		44	10
		ePP		45	40
	USCGS: $52\frac{1}{2}$ N 169 W: 12:36:13				
23	Pr	eP	23	07	47
	CL	eP		08	05
24	R	eP	09	08	31
	Pr	eP			27
	CL	eP			45
	Tacubaya: 20°39' N 98°38' W: 09:03:42				
25	P	iPEZ	05	59	10
		i(pP)			27
		e(sP)N			34
		e			42
	PX	eSE	06	05	13
		eLN			08.5
	R	eP	05	59	14
		e			22
		ePP	06	00	46
	Pr	eP	05	59	14
		e			22
		e			46
		e	06	00	18

(continued)

Date	Sta.	Phase	h	m	s
March (continued)					
25	Pr	e(PcP)	06	01	07
	CL	eP	05	58	56
		e		59	03
	T	eP		58	47
		e		59	46
		e(PcP)	06	00	49
	USCGS: $52\frac{1}{2}$ N 169 W: 05:51:21				
25	R	e?	10	33	20
		e			29
		e			57
	Pr	e			27
		e			40
		e		34	11
	CL	e		33	29
		e			59
	T	e			31
		e			52
		e			01
26	P	eP	02	19	37
		e(pP)			48
	R	eP			40
		e		20	12
	Pr	eP		19	49
		e		20	11
	CL	eP		19	30
		e(pP)			42
		e			48
	T	e(P)			23
		e			39
		ePP		21	40
	USCGS: 52 N 161 E: 02:09:35				
26	P	IPNEZ	02	37	53
	R	iP			56
	Pr	iP			56
	CL	iP			59
	T	iP			59
		e		38	06
	BCIS: South Pacific				
26	Pr	eP	05	13	11
		eP			25
	CL	eP		12	55
		e		13	11
	T	eP		12	47
		ePcP		13	34
		e		15	39
	USCGS: 52 N 161 E; 05:02:57				
26	CL	e	10	20	48
	T	e			52
26	P	i	14	30	59
	R	e		31	01
	Pr	e			01
		e			15
	CL	e			03
26	Pr	eP	14	39	54
		e		40	10
	CL	eP		39	18
26	P	iP	15	16	28
		i(pP)			45
	R	eP			32

(continued)

Date	Sta.	Phase	h	m	s
March (continued)					
26	R	epP	15	16	50
	Pr	i(P)			37
		i(pP)			54
	CL	iP			23
	T	iP			15
		e		17	20
	Kamchatka?				
27	R	e(P)	20	21	14
	Pr	i			10
	CL	eP			23
27	R	e	22	26	47
	Pr	e			47
	CL	eP			48
28	P	e	03	17	41
		e		18	15
	R	e(P)		16	18
	Pr	e		17	26
	CL	eP		16	13
	T	e		18	10
28	R	e	11	32	41
	Pr	iP			25
	CL	eP			42
		e			52
	T	eP			53
	Tacubaya: 14° 26' N 94° 29' W; 11:26:52				
28	P	i(P)	16	30	00
	CL	i(P)			07
28	R	eP	23	57	37
	Pr	iP)			38
	CL	iP			44
29	R	e	06	00	15
		e			29
	CL	e			14
		e			19
		e			25
30	P	iPNEZ	16	56	59
	R	iP		57	03
	CL	iP		56	53
30	R	e(P)	23	00	29
		e			48
	CL	eP			42
	T	eP			53
	Tacubaya: 17° 56' N 98° 51' W: 22:55:25				
31	R	e	01	09	16
	CL	e			11
	BCIS: 40.7° N 20.1° E: 00:55:45				
31	CL	e	10	18	24
	T	e			25
31	R	e	11	50	03
	CL	e			03
	T	e			01
31	R	e(P)	15	12	02
	CL	e(P)		11	58
	T	e(P)			50
		e		12	00
		e			34
April					
1	CL	e	01	51	00
	T	e		50	51

Date	Sta.	Phase	h	m	s
April					
1	P	iP"NEZ	07	59	07
		i			16
		i	08	02	28
	R	eP"	07	59	08
	Pr	eP"			09
		e			23
	CL	eP"			07
		e	08	01	12
	T	eP"	07	59	05
		e			40
		e	08	01	51
	BCIS: 10 S 109 E; 07:39:47				
1	P	iPNEZ	10	58	34
		i			47
		iNZ		59	05
	PX	eL	11	14.5	
	R	eP	10	58	29
	Pr	iP			23
		i			36
		i		59	13
	T	eP		58	49.
	USCGS: 0 81 W; 10:49:41				
1	P	iPNEZ	11	30	19
		i			29
		i		31	07
	PX	eLE		48.7	
	R	iP		30	10
		e			24
	Pr	Ip			05
		e			18
		e			42
	T	eP			29
		i		31	01
	USCGS: 0 81 W: 11:21:23				
1	P	iPEZ	18	23	41
		i			48
	R	iP			44
	Pr	iP			48
	CL	iP			39
	T	iP			33
	CMO: 30.0° N 142.8° E: 18:11:55, 80 km				
1	R	i(P)	21	07	05
	Pr	i(P)			07
		i			18
	CL	i(P)			07
	T	i(P)			05
1	P	ePNEZ	22	46	11
		e			47
	R	eP			03
	Pr	eP			02
	CL	eP			14
		e			21
	T	eP			29
		e			42
	USCGS: 7½ N 78½ W: 22:37:51				
2	P	iPNEZ	04	09	19
		ipPNEZ!			36

(continued)

Date	Sta.	Phase	h	m	s
April (continued)					
2	PX	iSE	04	19	49
		iE		20	24
		iE		21	34
		eREZ		38.6	
			A		T
		PZ	½		1
		PH	¼		1
		pPZ	¾		1
		SH	1½		4
	R	iP	04	09	22
		ipP			39
	Pr	iP			25
		ipP			41
	CL	iP			21
		ipP			39
	T	iP			20
		ipP			36
		eN		19	50
	USCGS: 5 S 151½ E; 03:56:06, 60 km				
2	P	iP	04	51	45
	R	iP			46
		i		52	18
	Pr	iP		51	48
		i		52	08
	CL	iP		51	45
	T	iP			44
2	R	e	10	29	06
	Pr	e		28	59
	CL	e			48
2	P	i	10	36	41
	R	i			45
	Pr	e			50
	CL	e			26
		e			39
2	R	e	12	08	23
	Pr	e			28
	CL	e			17
		e			32
	CMO: 37.5° N 141.5° E; 11:56:28, 45 km				
2	Pr	eP	19	54	46
	CL	eP			51
3	R	eP	01	40	25
	Pr	eP			26
	CL	eP			28
3	Pr	iP	02	18	13
	CL	eP			14
	T	eP			15
3	P	iPNZ	04	29	39
		i			46
		e		31	12
	PX	eLZ		55.2	
	R	iP		29.43	
		e		30	24
	Pr	iP		29	41
		i		30	02
	CL	eP		29	48
		i			52
	T	iP			49

(continued)

Date	Sta.	Phase	h	m	s
April (continued)					
3	T	i	04	30	34
	USCGS: 15½ S 172 W: 04:18:15				
3	P	iP	16	37	16
		ipP			34
	R	iP			19
	Pr	iP			24
	CL	iP			09
		ipP			28
	USCGS: 53 N 160 E: 16:27:15				
3	CL	e	18	03	50
	CMO: 35.9° N 141.6° E 17:51:44, 20 km.				
3	P	iP	18	30	21
	R	eP			24
	CL	eP			24
	T	iP			23
3	Pr	e	09	42	52
	CL	e(P)			25
		e			36
	T	e(P)			16
3	P	eP	20	05	01
	R	iP		04	59
	Pr	iP		05	01
	CL	eP			02
	T	eP			02
4	R	eP	03	07	03
	Pr	iP			01
		i			16
	CL	e			18
		e			30
4	P	iP	06	04	16
		iNZ			27
		i			41
		e		05	28
	PX	eSE		14	05
		eLE		28.6	
	R	eP		04	17
		e		09	29
	Pr	eP		04	23
		i			34
		e		07	29
		e		09	51
	CL	eP		04	11
		e		09	33
	T	iP		04	06
		e			42
		e		10	20
	CMO: 35.8 N 141.9 E: 05:52:10, 40 km				
4	P	e(P)	07	16	54
	R	e(P)			57
	Pr	e(P)		17	05
	CL	e(P)		16	37
	T	e(P)			29
	BCIS: 07:06.9				
	Kamchatka				
4	R	eP	12	33	42
	Pr	eP			37
	CL	eP			51

Date	Sta.	Phase	h	m	s	
April						
4	R	e(P)	22	15	24	
	Pr	e(P)			24	
	CL	e(P)			28	
5	P	iPEZ	09	07	15	
		i			27	
	R	iP			17	
		i			32	
	Pr	iP			17	c
		i			40	
	CL	iP			22	
		e			38	
	T	eP			26	
	Wellington 32-2/3 S					
	179 W, 08:54:29					
5	P	e	14	39	43	
		e		40	19	
	R	iP		39	22	
	Pr	iP			15	
		i			55	
	CL	iP			31	
		e			47	
	T	iP			39	
		i		40	27	
	USCGS: 9 S 79 W;					
	14:29:48: 100 km					
5	CL	eP	17	07	14	
		e			24	
	T	eP			17	
6	P	eP	00	08	10	
		e			26	
		i			57	
	Re				59	
	Pr	e		09	02	
	CL	eP		08	09	
		e			56	
6	P	iPNZ		50	49	
		i		51	04	
		iP"		54	52	
		iPP		55	15	
		i			52	
	PX	e(PS)E	01	05	16	
		eGN			21.6	
		eREZ			26.3	
			A		T	
		PZ	0.1		1½	
		MH	15		25	
	R	eP	00	50	51	
		eP"		54	52	
		iPP		55	27	
		i			42	
		ePKKP	01	05	51	
	Pr	eP	00	50	57	
		e		55	19	
		iPP			30	
		i			45	
		i			51	
	CL	eP		50	49	
		e		54	42	
		iPP		55	24	
	T	iPP			19	
	Magnitude 6¾					
	Slightly deeper than normal?					
	USCGS: 7 S 132 E; 00:36:12					

Date	Sta.	Phase	h	m	s	
April						
6	P	eP	12	24	48	
		iPNEZ			53	
		i		25	04	
		i			16	
		i			32	
		e		26	16	
	R	eP		24	55	
		i		25	07	
		e			42	
	Pr	eP		24	59	
		i		25	02	
		e		27	37	
	CL	eP		24	39	
		e			47	
		i			58	
		i		25	09	
	T	eP		24	32	
		e			39	
		i			47	
		e		25	28	
	BCIS: 52½ N 160 E;					
	12:14:45					
7	P	iPNEZ	17	39	56	c
		ipP		41	58	
		i		43	16	
		i			22	
			A		T	
		PZ	0.4		1	
		iP		39	57	c
		epP		42	04	
		i		43	19	
		i			25	
	Pr	i			19	
		i			24	
	CL	iP		40	02	c
		epP		42	07	
	T	iP		40	04	c
		i			16	
		e			31	
		epP		42	09	
		e		43	36	
	Wellington: 24 S 179½ E,					
	17:28.5, 570 km					
7	P	iPEZ	20	45	11	
		i			16	
	R	iP			11	
		i			18	
	Pr	iP			13	
		i			22	
	CL	eP			17	
		e		46	45	
8	CL	eP	05	23	39	
	T	eP			32	
	USCGS: 05:13:39					
	Kamchatka					
8	P	i(pP)	08	25	57	
		i		26	15	
	R	iP		25	32	
		i(pP)			53	
		e		26	10	
	CL	eP		25	41	
		e(pP)		26	02	

(continued)

Date	Sta.	Phase	h	m	s	
April (continued)						
8	T	iP	08	25	49	
		e(pP)		26	09	
		e			20	
	BCIS: 34¾ S 71½ W;					
	08:13:23, 100 km					
9	R	i(P)	01	33	18	
	CL	e(P)			54	
9	P	i(P)	15	57	47	
	R	i(P)			50	
	Pr	e(P)			40	
		e			54	
	CL	i(P)			41	
		e		58	10	
	T	eP		57	35	
	BCIS: 15:47:23					
	Kamchatka					
9	R	iP	16:28:11			
	Pr	iP		27	42	
	CL	eP		28	14	
10	R	e	06	51	37	
	Pr	e			42	
	CL	e			57	
		e		52	13	
11	R	e	03	21	52	
	CL	e			49	
11	CL	e	10	45	30	
	New Zealand					
11	R	e(P)	12	14	23	
	CL	e(P)			31	
12	R	e	03	09	23	
	CL	e			29	
	Tacubaya 15°57' N					
	97°49' W; 03:04:03					
12	P	iPNEZ	06	17	48	
	R	iP			50	
	Pr	iP			51	
		i			55	
	CL	iP			55	
	T	iP			58	
12	P	eP	07	32	02	
		epP			13	
	R	eP			06	
	Pr	eP			12	
	CL	eP		31	58	
		epP		32	10	
	T	eP			01	
	USCGS: 53 N 160 E;					
	07:22:00					
12	P	iPNEZ	15	19	30	
		i			46	
		ipP		20	14	
	R	iP		19	27	
		ipP		20	12	
	Pr	iP		19	24	
		ipP		20	09	
		i			29	
	CL	eP		19	35	
		epP		20	19	
	T	iP		19	43	
		ipP		20	27	
	USCGS: 15:08:00, 200 km					

Date	Sta.	Phase	h	m	s	
April						
12	P	iPEZ	22	40	27	
		ipP			39	
		e		43	21	
	R	iP		40	31	
		e			47	
	Pr	iP			37	
		ipP			52	
	CL	iP			22	d
	T	iP			14	
		ipP			36	
	USCGS: 53 N 160 E					
	22:30;24					
12	P	e	23	10	13	
	R	e			23	
	Pr	e			30	
	Part of preceding?					
14	R	e	01	32	50	
	CL	eP			25	
		e			44	
	CMO: 42.4 N 144.1 E					
	01:21:05, 20 km					
14	R	e(P)	05	19	47	
	Pr	e(P)			55	
	CL	e(P)			35	
	T	e(P)			43	
14	P	iPNEZ!	13	38	44	d
		iPcP		39	18	
		ipP		40	45	
		iPP		41	13	
		i			35	
		i		42	22	
		i			34	
	PX	iSN(!)EZ		46	17	
		iScSE		47	30	
		esSN		49	40	
	P	i(pScS)NE			58	
	PX	eSSNE		50	39	
		eSSSN			53.8	
	P	iP'P'	14	07	18	
	PX	e			45	
		e(SKPP')		10	15	
				A	T	
		PZ		3	1	
		PH		3	2	
		SH	30		8	
	R	iP!	13	38	40	d
		iPcP		39	11	
		i			16	
		ipP		40	40	
		i		41	32	
		e		42	17	
		e			57	
		eP'P'	14	07	32	
		e			49	
		e(SKPP')		10	17	
	Pr	iP!	13	38	34	d
		iPcP		39	10	
		ipP		40	33	
		i		41	30	
		iS		46	03	
		ip'p'	14	07	25	
		e(SKPP')		10	18	

(continued)

Date	Sta.	Phase	h	m	s
April (continued)					
14	Bt	iP!	13	38	32 d
		i			51
		iPcP!		39	11
		ipP		40	30
		i		41	12
		i			26
		i		42	12
		iP'P'	14	07	25
		e		08	00
		e(SKPP')		10	15
	CL	iP!		38	47 d
		iPcP		39	20
		i		40	46
		i		41	37
		iP'P'	14	07	15
		e			43
		i			56
		e(SKPP')		10	07
	T	iPNEZ!	13	38	54 d
		iPcP		39	20
		i		41	02
		i		41	34
		i			41
		iSN!		46	38
		e			57
		iN		50	17
		iN		51	49
	Pasadena: 8 S 71 W, 13:29:25,. 630 km, Magnitude 6.6				
14	R	eP	14	15	36
	Pr	eP			33
	CL	eP			41
14	CL	eP	14	33	08
		e			17
	T	e			07
14	P	e	23	54	13
	R	eP			09
		e			47
	CL	eP			16
		e			55
	T	iP			34
		e		55	16
15	P	iPNEZ	01	27	26
		ipP			40
		i			58
	PX	eL		43.6	
	R	iP		27	30
		ipP			53
	CL	iP			21
		ipP			34
		i			54
	T	iP			13
		i			25
		e			58
	USCGS: 49 N 156 E; 01:16:57				
15	P	e	07	16	27
	R	e			30
	CL	e			04
	T	e			19

Date	Sta.	Phase	h	m	s
April					
15	P	iPNEZ	09	07	01
		i			12
		i			29
	R	iP			04
		i			14
	CL	iP			06
		i			17
	T	iP			11
15	P	iPNEZ	18	17	10
		i			17
		i			30
	R	eP			13
	Pr	iP			19
		i			45
	CL	iP			03
		i			29
	T	iP		16	56
		i		17	48
	USCGS: 53 N 159 E; 18 07 05; Kamchatka				
16	P	eP	05	47	04
		i			13
	R	eP			06
		e			14
	Pr	eP			08
	CL	eP			08
		e			17
	T	eP			11
		e			17
16	P	eP	08	04	48
		iNZ			54
		eE		05	02
	PX	eLNZ		18	40
	R	eP		04	52
		e			57
	Pr	iP			47
		e		05	07
		e			21
	CL	eP		04	58
		e		05	05
	T	eP			11
		e			16
		e			21
	Southeast Pacific				
16	P	eP	09	06	07
	R	e			08
	Pr	e			16
	CL	e(P)		05	55
		e		06	01
	BCIS: $49\frac{1}{2}$ N 157 E 08:55:40				
17	P	iPNEZ	00	12	25
		iPcP		13	26
		i		14	25
	PX	iS		20	10
				A	T
	PZ			$\frac{1}{2}$	$1\frac{1}{2}$
	Surface waves small				
	R	iP	00	12	19
		ePcP		13	25
	Pr	iP		12	14

(continued)

Date	Sta.	Phase	h	m	s
April (continued)					
17	Pr	iPcP	00	13	22
	CL	iP		12	28
		i		13	15
	T	iP		12	37
		iPcP		13	36
	Magnitude 6± USCGS: 5 S 77 W: 00:02:50				
17	R	e	07	40	13
	CL	e			26
	Tacubaya; 18° 34' N 102° 56' W; 07:36:48				
17	P	iP	11	23	29
		i			44
		i			51
	PX	eGN		48.0	
		eREZ		56.0	
	R	eP		23	28
		i			35
		i		24	30
		i			55
		e		26	08
	Pr	e		23	37
	CL	eP			27
		e			49
	T	e(P)			33
		e			53
	Wellington $3\frac{1}{2}$ S $151\frac{1}{2}$ E; 11:10;15, 90 km				
18	P	iPEZ	03	29	31
		i			39
	R	eP			29
		e			35
	CL	eP			32
		e			37
	T	iP			43
18	P	i(P)	04	10	51
	R	e(P)			52
	CL	e(P)			54
	T	i(P)			59
18	PX	eP	23	21	26
		eSN		36	20
		eLNE		38.1	
	R	eP		31	24
	Pr	eP			15
	CL	eP			38
	T	eP			50
	USCGS: 10 N 102 W; 23:25:40				
	BCIS: $8\frac{3}{4}$ N 103 W: 23:25:29				
19	P	iP	12	26	43
	R	eP			47
	Pr	eP			51
	CL	eP			47
	New Hebrides USCGS: 12:13:12				
19	R	e	19:29:27		
	Pr	iP			27
	CL	eP			32
19	R	eP	20	42	27
	CL	eP			35

Date	Sta.	Phase	h	m	s
April					
19	P	eP	22	56	10
		i			20
		i		57	44
	R	e(P)		56	18
	Pr	eP			22
		e			33
	CL	eP			08
		e			17
		e		57	12
	T	eP		55	59
		i		56	08
	USCGS: $50\frac{1}{2}$ N 179 W; 22:47:39				
20	P	iP	05	24	15
	R	eP			17
	Pr	iP			18
	CL	iP			22
20	PX	eLEZ	11	34	42
	R	eP		13	12
		e			33
		e		14	14
	Pr	eP		13	12
		e			32
	CL	eP			17
		e			39
	T	e			32
	USCGS: 11:00:31				
20	R	iP	12	30	19
	Pr	iP			36
	CL	iP			23
20	R	i	20	23	08
	CL	e			09
	BCIS: 3 N 32 W; 20:10:24				
21	CL	eP	08	59	33
		i	09	00	51
21	Pr	iP	20	21	31
	CL	iP			32
22	R	e	04	14	06
		e			25
	Pr	e			17
	CL	e			14
		e			32
		e		16	45
22	P	eP	10	15	30
	R	eP			30
	Pr	eP			34
		i			53
	CL	eP			35
		e			57
	T	e			39
	Wellington 33 S 178 W 10:02:55, 100 km Magnitude $5\frac{3}{4}$--6.				
22	R	i	11	00	29
	CL	eP			21
		e			34
23	Pr	e	04	09	27
	CL	e			19
		e			40
	T	e			29
	USCGS: 31 N $96\frac{1}{2}$ E; 03:50:58				

Date	Sta.	Phase	h	m	s
April					
23	P	i	12	53	57
	Pr	e		54	22
	CL	e		53	58
23	P	eP?	16	37	27
		e			36
		i			53
		i		38	10
	PX	ePP		41	13
		eSKSNE		48	20
		e(S)N		48.8	
		iPS		49	17
		iPPS		50	38
		iSS		44.9	
		iGN		17	02
		iR		06.4	
			A		T
		PZ	½		1
		PZ	12		18
		PPZ	8		10
		MH	2000		40
		MH	200		20
	R	e(P)	16	37	31
		e(P)			39
		i			52
		i		38	13
	Pr	e(P)	16	37	42
		e			45
		i			55
		i		38	28
	CL	eP		37	30
		e			38
		i			58
		i		38	09
	T	eEZ		37	38
		iNEZ			53
		i		38	11
		e(S)N		48.8	

Complex shock. At each station the P group consists of a succession of arrivals of increasing amplitude. The magnitude of the largest shocks is about 7½.
USCGS: 4 S 154 E; 16:24:17

Date	Sta.	Phase	h	m	s
23	Pr	eP	18	00	47
	CL	eP		01	02
23	P	iP	18	29	50
	R	eP			52
	Pr	eP			54
	CL	eP			52
	T	i(P)			46

BCIS: 18:16.7
Wellington; 4 S 149 E; 18:16:30

Date	Sta.	Phase	h	m	s
24	P	e	00	44	53
	R	e			56
	Pr	e		45	00
	T	e		44	54
24	P	iPEZ	02	20	22
		i		22	31
			A		T
		PZ	0.2		1

(continued)

Date	Sta.	Phase	h	m	s
April	(continued)				
24	R	iP	02	20	21
	Pr	eP			25
	CL	iP			10
	T	eP			00

BCIS: 77.5 N 6.5 E; 02:09:41

Date	Sta.	Phase	h	m	s
24	P	iPNEZ	05	51	38
	R	iP			42
	Pr	iP			49
		i			54
	CL	iP			31
	T	iP			24
		i			30

BCIS: 05:43.2, Aleutian Is.

Date	Sta.	Phase	h	m	s
24	R	iP	07	02	44
		i		03	05
	Pr	iP		02	40
		i		03	00
	CL	iP		02	53
		i		03	13
24	Pr	iP	19	06	48
	CL	iP			52
24	R	e	22	27	13
		e			27
	Pr	e			21
	CL	e			11
25	P	eP	08	44	00
	R	iP			03
	Pr	iP			07
	CL	eP		43	59
25	P	iP	10	49	21
	R	eP			25
	Pr	iP			29
	CL	iP			20
	T	iP			17
25	P	iP	14	27	10
		e			24
	R	eP			14
	Pr	iP			19
	CL	iP			05
		i			18
25	CL	e	16	37	18

USCGS: 43½ N 86 W; 16:23:38

Date	Sta.	Phase	h	m	s
25	P	i(P)	21	09	29
	Pr	e(P)			31
	CL	i(P)			23

C. F. Richter
Violet M. Taylor
November 19, 1954

Date	Sta.	Phase	h	m	s
April					
26	P	ePNEZ	01	47	55
		e		48	09
	R	eP		47	57
		e		48	04
	Pr	iP		47	59
		e		48	27
	CL	eP			00
	T	iP		47	59
	USCGS: Solomon Is., 01:35:12, 60 km				
26	R	eP	08	51	24
	Pr	iP			26
	CL	eP			30
	Near Apia				
27	P	iP	05	33	11
	R	e			15
	Pr	iP			21
	CL	iP			03
27	P	e	11	28	55
	R	e			53
	CL	e			43
	T	e			43
	BCIS: Kurile Is., 11:18.3				
28	P	iP	04	53	57
	R	iP			42
		e		54	00
	CL	iP		53	51
		e			57
		e		54	06
	USCGS: 20 S 69 W 04:42:35, 100 km				
28	CL	iP	16	19	46
29	P	iPNEZ	03	44	16
		i			24
		i			42
	PX	eGN	04	08.0	
		eREZ		12.1	
			A		T
		MH	10		20
	R	eP	03	44	19
		e			28
		i			46
	Pr	eP			22
		i			29
		i			51
	CL	eP			21
		i			30
	T	iPNEZ			16
		i			24
		i			42
	BCIS: 10 S 159.5 E; 03:31:20				
29	P	eP	11	09	42
	R	iP			39
		e		10	13
	Pr	e		09	56
	CL	e			47
	T	iP			57
		e		10	31
	USCGS: Northern Chile, 10:58:13, 100 km				

Date	Sta.	Phase	h	m	s
April					
29	P	eP	20	32	43
		e		33	01
	R	eP		32	38
	CL	eP			32
	T	eP			26
	CMO 42.2 N 143.2 E; 20:21:05, 55 km				
29	P	iPNEZ	22	03	56
		ipP		04	09
	R	iP		03	59
		ipP		04	15
	CL	iP		03	50
		epP		04	06
	T	iP		03	42
		epP			59
	USCGS: $49\frac{1}{2}$ N 156 E; 21:53:30				
30	R	iP	01	19	32
	CL	iP			23
		e			34
	BCIS: 53 N 160 E; 01:09:23 Kamchatka				
30	R	e(P)	06:33:23		
	CL	e(P)			32
		e			48
	BCIS: $5\frac{3}{4}$ N 82 W; 06:25:23				
30	P	iPNEZ	06	39	33
		i			50
		iPPNZ		43	00
	PX	eSKSNE		49	57
		eSEZ		50	19
		iPSE		51	35
		eSS		55	51
		eGN	07	02.4	
		eREZ		06.8	
			A		T
		PZ	1		$1\frac{1}{2}$
		PH	$\frac{3}{4}$		$1\frac{1}{2}$
		SH	$1\frac{1}{2}$		5
		MH	20		20
	R	iPEZ	06	39	36
		i			46
	Pr	iP			37
		i			51
	CL	iP			39
	T	iPNEZ			41
	Magnitude $6\frac{3}{4}$ USCGS: $20\frac{1}{2}$ S 170 E; 06:26:40, 60 km				
30	P	iP	08	14	17
		iSNZ		15	28
	Pr	iP		13	52
	Mexico? Foreshock about $2\frac{1}{2}$ minutes earlier				
30	CL	iP	19	33	16
		e		34	21
May					
1	P	iPNZ	00	09	01
		i			22

(continued)

Date	Sta.	Phase	h	m	s	
May (continued)						
1	PX	eLZ	00	28.1		
	R	eP		08	59	
		e		09	46	
	Pr	iP		08	56	
		i		09	10	
	CL	eP			11	
		e			35	
	T	eP			20	
	Southeast Pacific					
	BCIS: 23:58.6					
2	Pr	i(P)	09	08	46	
	CL	i(P)			38	
	CMO: 29.0 N 127.8 E					
2	R	i(P)	09	29	34	
	Pr	iP			33	
	CL	iP			39	
		i		30	21	
2	R	eP	18	48	16	
	Pr	eP			21	
		i			33	
		i			51	
	CL	eP			07	
		e			17	
		e			38	
	T	eP		47	59	
		i		48	04	
	BCIS: 52½ N 159 E; 18:39:11 Kamchatka					
2	P	iP	23	13	52	
	R	iP			49	
	Pr	iP			45	
	CL	eP			54	
	T	iP		14	03	
	BCIS: 22 S 73 W; 23:02.5					
3	R	eP	03	55	13	
	Pr	iP			06	
		i			14	
	CL	eP			25	
	T	iP			38	
	Tacubaya: 16° 53' N 100° 20' W; 03:50:08					
4	P	iP	00	54	54	
	R	eP			57	
	CL	iP			49	
		e			58	
4	P	iP	04	13	58	
	R	eP		14	01	
	CL	eP		13	43	
		e			50	
		e		14	03	
	T	eP		13	41	
	USCGS: 53½ N 161 E; 04:03:53 Kamchatka					
4	P	ePEZ	11	39	08	
		ipPNEZ			18	
		i		40	00	
	R	eP		39	09	
		ipP			22	
	T	eP		38	54	
		ipP		39	04	

(continued)

Date	Sta.	Phase	h	m	s	
May (continued)						
4	T	i	11	39	22	
	USCGS: 53½ N 161 E; 11:29:08					
4	P	iP	14	03	41	
		i		04	11	
	R	eP		03	55	
	T	eP			32	
		e			42	
		e		04	05	
	BCIS: 53½ N 162 E; 13:53.8					
4	P	eP	14	56	26	
		i			42	
	PX	eS		57	38	
	R	eP		56	17	
	USCGS: 30½ N 114 W; 14:55:10					
4	P	iPNEZ	15	37	50	c
		i			57	
		ipP		39	51	
		i		41	04	
	PX	iSNE		47	11	
		eE			24	
			A		T	
		PZ	0.4		1½	
		PH	0.3		1½	
		SH	2		3	
	R	iP	15	37	46	c
		ipP		39	51	
	CL	iP		37	53	c
		i		38	10	
		ipP		39	55	
		i		41	02	
		e(P'P')	16	03	30	
		e		06	44	
	T	iP	15	38	00	
		ipP		40	02	
		iS		47	32	
		Magnitude 6½				
		USCGS: 28 S 62½ W; 15:26:30, 600 km				
4	P	iPNEZ	21	21	02	
		i			32	
	R	iP		20	58	
	CL	iP		21	06	
		i			13	
		e			36	
	USCGS: 20½ S 68 W; 21:09:45, 100 km					
4	P	iPNEZ	23	37	17	
		i			30	
	R	iP			20	
		e			33	
	CL	iP			12	
		i			25	
	T	iP			03	
		i			08	
	USCGS: 49½ N 157 E; 23:26:55					
5	CL	eP	14	42	45	
	T	e		43	00	

Date	Sta.	Phase	h	m	s	
May						
5	P	eP	18	19	52	
	R	iP			47	
	CL	eP			56	
	T	eP		20	03	
	South America					
	BCIS: 18:07.9					
5	P	ePEZ	20	46	55	
	R	eP			56	
	CL	eP			57	
	T	eP			55	
6	R	eP	06	28	55	
		e		29	11	
	CL	eP			00	
6	P	iP	17	29	04	c
		i(pP)			23	
	PX	ePP		32	32	
		iSNE		39	24	
		eNE		44	14	
		iNE		48	29	
		eNE		51.5		
	P	eP'P'		55	41	
	PX	eRNZ		55.7		
			A		T	
		PZ	3		2	
		PH	2		2	
		SH	70		20	
		MH	250		18	
		MZ	200		18	
	R	iP	17	29	02	
		i			22	
	Bt	iP			29	
		i(pP)			42	
		eP'P'		55	42	
	CL	iP		29	04	
		i			28	
		eP'P'		55	35	
	T	iP		29	17	
		i			35	
	Pasadena: 36½ S 72½ W, 17:16:49, 60 km, Magnitude 7.6					
6	P	iP	19	38	54	
	R	e			57	
	CL	iP		39	01	
	T	eP			04	
7	R	e	11	20	38	
		e			44	
	CL	e			30	
		e			44	
	T	e			46	
7	CL	e	12	19	52	
7	R	e	13	33	41	
	CL	eP			49	
		e		34	11	
	T	e		33	51	
		e		34	14	
7	R	e	15	39	05	
	CL	eP		38	40	
		e			57	
	BCIS: 52 N 161 E; 15:28.7					

Date	Sta.	Phase	h	m	s
May					
7	P	iP	18	09	40
		i			48
		i		10	11
	R	iP		09	40
		e			45
		e			59
	Bt	iP			34
		i			41
	CL	iP			47
		e			54
	T	iP			54
		i		10	22
	BCIS: 55 S 130 W; 17:56.6				
7	CL	e	18	41	26
	T	e			31
	Possibly P'P' of preceding				
7	P	iP	18	56	11
	R	iP			10
	Bt	iP			05
	CL	eP			19
		e			25
	T	iP			25
	BCIS: 55 S 130 W, 18:43.7				
7	CL	e(P)	19	52	17
	T	e(P)			21
7	CL	e	20	44	52
		e		45	12
	T	e			06
	CMO: 41.6 N 142.2 E; 20:33:20, 40 km				
8	P	eP	03	27	42
		i			48
	R	eP			34
		e			49
	CL	iP			39
		i			55
	T	eP			41
		i			56
8	R	eP	04	05	39
		e			47
	CL	eP			33
		e			35
	T	eP			34
	BCIS: 35 N 34¼ W; 03:54:33				
8	CL	eP	08	42	14
	T	eP			16
9	R	eP	17	24	32
	CL	eP			40
		e			58
9	R	iP	17	52	14
	CL	eP			13
10	P	iP	05	23	37
	R	eP			38
	Wellington 18 S 168 E; 05:10:50				
10	P	iP	15	51	19
	R	iP			21

Date	Sta.	Phase	h	m	s
May					
11	P	iP	04	30	49
	R	iP			50
11	P	iPNEZ	10	29	34 d
		i			41
		i			45
	PX	ePP		33	05
		iSE		40	03
		eGN		53.5	
		eREZ		57.2	
			A		T
		PZ	¾		1½
		PH	1		3
		PPZ	½		2½
		SH	2		5
		MH	12		17
		MZ	12		17
	R	iP	10	29	37 d
		i			44
		i			49
	Bt	iP			37
		i			46
	T	iP			42
		i			49
	Magnitude 6¾				
	USCGS: 21½ S 169 E 10:16:36				
11	CL	e	21	01	42
		e		02	20
11	CL	e	23	16	06
	T	e			11
12	CL	iP	01	22	22
	Tacubaya 16° 22'·N 97° 48' W; 01:16:38				
12	P	iP	01	49	17
	R	iP		48	59
	Bt	iP		49	06
	CL	iP		48	51
	CMO 43.5 N 141.9 E; 01:37:46, 240 km				
12	P	i(P)	12	47	05
		i			14
		e			26
	R	eP			18
		e			34
	Bt	iP			29
		e			46
	CL	iP			09
		e			25
	T	iP			00
		i			17
	Aleutian Islands USCGS: 12:39:02, 100 km				
12	R	eP	16	16	24
	CL	eP			31
13	P	eP	04	25	30
		iEZ			35
		iNZ			53
	PX	eLE		39.1	
	R	iP		25	35
		i		26	51
	Pr	iP		25	35
		i		26	27
	Bt	eP		25	39
		i			48
	CL	eP		25	20

(continued)

Date	Sta.	Phase	h	m	s
May	(continued)				
13	CL	i	04	25	30
		i		30	31
	T	iP		25	11
		e			38
		i			55
	USCGS: 52 N 174 E 04:16:28, 100 km				
13	R	e	11	15	14
	Pr	iP			05
	CL	eP			11
	T	eP			13
13	P	iPNZ	12	05	32
		i			45
		i			53
	PX	eR		31.8	
			A		T
		MH	7		20
	R	eP	12	05	29
		i			34
	Pr	iP			30
		i			33
	CL	eP			33
		i			39
	T	iP			37
		i			42
		i			54
13	R	e	22	46	42
	CL	e			22
	T	e			16
13	CL	eP	23	54	44
	T	iP			31
14	CL	eP	01	49	38
		e			40
	T	eP			26
		e			32
14	P	iPNEZ	02	22	32
		i			47
		i			56
	Pr	iP			39
	CL	iP			22
	T	iP			28
	BCIS: 17.0 N 147.0 E 02:09:57				
14	P	ePNZ	05	31	01
		e			13
	R	e			17
14	P	eP	07	45	57
		i		46	08
	R	eP			01
		i			08
		i			17
	Pr	i			12
	Bt	iP			18
		i			24
	CL	eP		45	41
		i			45
	T	eP			22
		i			28
	USCGS: 50 N 130 W 07:41:44				
14	R	e(P)	09	58	27
	CL	e(P)			44

Date	Sta.	Phase	h	m	s
May					
14	R	e	18	03	49
	Bt	iP			13
	CL	e			29
		e			59
		e		04	11
14	P	iP	18	31	51
		iNZ		32	01
	R	eP		31	55
		i		32	02
		i			20
	Pr	e			05
		i			28
	Bt	eP			02
		e			12
	CL	eP		31	35
	T	iP			26
		i			44
	USCGS: 50 N 130 W 18:27:41				
14	R	e	22	23	55
		e			58
	CL	e		24	03
		e			11
	BCIS: 22:17.6				
14	P	i(P)	23	02	38
	R	i(P)			42
	CL	e(P)			45
15	R	e	09	45	18
	Bt	eP			17
		i			28
	CL	e(P)		44	53
		i		45	07
		e		46	38
		e			53
	T	i		44	48
		i			58
	BCIS: 52¼ N 171¾ W 09:36:49, 100 km				
15	CL	eP	19	53	40
		i			50
	T	iP			58
	Central Chile, BCIS: 19:41.2				
16	CL	e(P)	08	51	30
	T	e(P)			26
16	P	iP	17	08	54
		i		09	03
		ipP			28
	Pr	iP			02
		ipP			36
		i			52
	CL	iP		08	54
		ipP		09	27
	T	iP		08	51
		i		09	00
		ipP			25
		i			49
	BCIS: Marianas, 16:56.5, 150 km				
17	CL	e	13	30	58
		e		34	17
	Sumatra. Compare May 18, 08h				
17	P	ePEZ	17	33	43
		e		34	03

(continued)

Date	Sta.	Phase	h	m	s
May	(continued)				
17	R	eP	17	33	36
		i			40
		i		34	10
	Pr	e(P)		33	29
		e			53
		e		34	30
		e			52
	CL	eP		33	31
		e			39
		e			48
	T	eP			28
		i			37
	BCIS: 52 N 159½ E; 17:23:31 Kamchatka				
17	P	e(P)	17	41	36
		e			50
	R	e			51
	Pr	e			47
	CL	e(P)			24
		e			33
		e			43
	T	e(P)			36
	BCIS: 17:31.4				
17	P	e(P)	18	41	57
	Pr	e			51
	CL	e(P)			55
		e			59
	USCGS: 18:31:54 Kamchatka				
17	P	iP	22	24	07 d
	Pr	iP			16
		i			46
		i		25	16
	CL	iP		24	05
		e			20
		e			38
	T	iPNZ		23	59
		i		24	25
		i		25	16
	CMO 34.7 N 139.7 E 22:12:10, 110 km				
17	Pr	iP	23	18	02
	CL	iP			06
18	P	iPNEZ	08	05	22
		ipP			37
	R	iP			27
		ipP			42
	Pr	iP			28
		ipP			43
		i		06	20
	Bt	iP		05	28
		ipP			43
	CL	iP			28 d
		ipP			43
	T	iP			27
		iNZ			39
		i		06	34
	USCGS: 10 S 161 E; 07:52:36, 60 km				
18	P	eP	08	22	40
		eNZ			44
	PX	eLEZ		43.0	
	R	eP		22	37
		e			41

(continued)

Date	Sta.	Phase	h	m	s
May	(continued)				
18	Pr	eP	08	22	35
		i			44
		i		23	00
		i			30
	Bt	eP		22	34
		i			39
	CL	eP			35
		e			38
	T	eP			34
		e			39
	USCGS: $28\frac{1}{2}$ N 44 W 08:12:12				
18	P	eP"	08	34	48
	PX	eSKPE		38	12
	R	eP"		34	42
	Bt	eP"			51
	CL	eP"			40
		e		37	01
	T	eP"		34	46
		e		38	02
	BCIS: $4\frac{3}{4}$ S 103 E 08:15:28				
19	P	eP	02	50	17
		i			21
	Pr	iP			34
		i			56
	Bt	iP			40
	CL	eP			03
	T	eP		49	45
		e		50	38
19	P	eP	03	21	16
		iEZ			24
		i			33
	PX	iSE		29	28
		eGN		36.8	
		eR		39.0	
	P	eP'P'		50	48
			A	T	
		PZ	1	3	
		SH	2	8	
		MZ	5	20	
	Pr	eP		21	26
		i			41
	Bt	eP			30
		i			39
		i			44
	CL	eP			11
		i			26
		eP'P'		51	07
	T	eP		21	03
		i			17
	Magnitude $6\frac{1}{2}$				
	USCGS: 51 N 159 E 03:11:06				
19	P	eP	06	02	42
		e			59
	CL	eP			48
	T	eP			45
	USCGS: $52\frac{1}{2}$ N $158\frac{1}{2}$ E 05:52:40				
19	CL	eP"	16	09	07
		ePP		12	29
	T	eP"		09	04
		ePP		12	43
	Shillong: 0 97 E 15:49:52				

Date	Sta.	Phase	h	m	s
May					
19	R	e	16	21	25
	Pr	e			35
	CL	e(P)			09
		e			14
	T	e(P)		20	54
20	P	eP	07	58	18
		iNEZ			32
	PX	iSE	08	09	13
		eSSE		15.1	
		eGE		22.0	
		eRNZ		25.3	
			A	T	
		PZ	$\frac{1}{4}$	1	
		SH	1	6	
		MH	15	20	
	Pr	eP	07	58	13
	Bt	eP			09
		i			19
		i			27
	T	eP			30
	Magnitude $6\frac{1}{4}$ - $6\frac{1}{2}$				
	USCGS: 53 S 134 W 07:45:26				
20	P	iP"	11	02	18
	R	eP"			18
	Pr	eP"			21
	Bt	eP"			21
		e		03	19
	CL	eP"		02	19
		e		03	13
		e			40
	T	eP"		02	17
		e		03	01
	BCIS: 0 125 E 10:43.9, 150-200 km				
20	R	e	13	04	51
	Pr	e			43
	CL	e		05	02
	T	e			05
	Tacubaya: 16° 53' N 100° 20' W, 12:59:49				
20	P	iPNEZ	13	20	34
		eN		21	02
	R	iP		20	25
		i			28
		i			46
	Pr	iP			20
		i			22
		i			33
	Bt	iP!		20	17
		e		21	46
	CL	iP		20	41
		i			54
	T	iP			54
		i		21	09
	Tacubaya: 16° 53' N 100° 20' W, 13:15:51				
20	P	e	18	17	27
	CL	e			03
	T	e		16	50
20	P	ePNEZ	23	18	49
	PX	eS		22	10
		eSN			21
		eL		23.7	
	Pr	eP		18	54
	Bt	iP			58

(continued)

Date	Sta.	Phase	h	m	s
May	(continued)				
20	CL	eP	23	18	24
	T	eP			06
		iNEZ			11
	USCGS: 50 N 130 W 23:14:23				
21	P	eP	02	02	30
		e		05	23
	Pr	iP		02	20
		i			29
		e		05	32
	Bt	eP		02	15
	CL	iP			37
		e			44
		e		05	28
	T	iP		02	48
		e		03	08
		e		05	28
	BCIS: 14 N 92 W, 01:56:26, 200 km				
	USCGS: 01:56:10, 100 km				
12	P	eP	10	21	19
		e			27
	R	e(P)			17
		e			24
	Pr	iP			24
		i			29
		i			59
	Bt	iP			27
		i			34
	CL	eP			07
		i			15
	T	eP			00
		e			05
		i			20
	BCIS: $51\frac{1}{4}$ N $179\frac{1}{2}$ E; 10:12:37				
21	P	eP	12	34	05
		i			11
		i			22
	PX	eE		37.6	
	Pr	eP		34	21
	Bt	eP			24
		i			27
	CL	eP		33	52
	T	eP			35
		i			39
	USCGS: 50 N 130 W 12:29:51				
21	P	e(P)	13	41	04
	R	e(P)			06
		i			10
	Pr	i(P)			02
		i			12
		i			17
	Bt	i(P)			22
	CL	i(P)		40	48
		i		41	06
22	P	i	05	33	37
	Pr	e			41
	CL	e			39
	T	i			38
22	P	e	05	49	35
	CL	i			16

Date	Sta.	Phase	h	m	s
May					
22	P	eP"	11	15	15
		e			21
	CL	eP"			16
	BCIS: $9\frac{1}{2}$ S 119 E 10:56.2				
22	P	iPEZ	15	38	46
	Pr	iP			50
		i			11
	CL	eP			48
		e			56
	T	eP			49
		e			58
22	P	iPNEZ	20	25	23
		ipP		27	25
		isP		28	21
	R	iP		25	27
		ipP		27	29
	Pr	iP		25	27 c
		i			47
		ipP		27	29
		isP		28	18
	Bt	iP		25	25
		epP		27	26
	CL	iP		25	31
		ipP		27	34
	T	iP		25	32
		ipP		27	35
		esP		28	40
	USCGS: 18 S $178\frac{1}{2}$ W; 20:14:26, 600 km				
23	CL	e	11	52	38
		e			50
	T	e			44
23	P	iP	19	28	32
	R	iP			40
	Pr	i(P)			37
	Bt	iP			31
	CL	eP			47
	T	iP			55
23	P	iPNEZ	20	00	27
	R	iP			29
		i(pP)			53
	Pr	iP			30
	CL	eP			34
		i(pP)			57
	T	i(pP)			58
	BCIS: Loyalty Island 19:47:44, 100 km				
24	P	iP"NZ	01	38	27
		e			42
		eNZ		39	38
		i			47
	PX	eL		02:16.6	
	Pr	iP"	01	38	45
		i		39	37
	Bt	eP"		38	22
		i		39	22
	CL	eP"		38	29
		i		39	43
	T	eP"		38	34
		e		39	54
	USCGS: 51 S 28 W; 01:19:55				

Date	Sta.	Phase	h	m	s
May					
24	CL	e	02	56	29
	T	i			20
	USCGS: 40½ N 111½ W				
	02:54:29				
24	Pr	iP	06	05	57
	CL	eP		06	11
		e		08	20
	USCGS: 10½ N 85½ W				
	05:58:40				
24	Pr	i	13	49	10
	CL	i			14
	T	e			14
25	CL	eP	02	41	16
		e			34
	T	eP			09
		e			17
	USCGS: 47 N 154½ E:				
	02:30:40				
25	P	iPNEZ	03	24	20 d
		iSNE			35
	CL	iPNEZ			26 c
	SB	iP			15
	FT	iP			04
		iS			12
	Kg	iP!			13
	W	iP!			13 d
	35° 00' N 119° 01' W;				
	03:24:01				
	Magnitude 4.8				
	Felt over a wide area.				
	Epicenter close to that of the major earthquake of 1952 July 21, 11:52				
25	P	iP"NZ	12	57	31
		i(pP")			45
		iSKPNZ	13	00	52
		i		01	11
	R	iP"	12	57	31
		e(pP")			43
		iSKP	13	00	52
		i		01	13
	Pr	iP"	12	57	34
		i(pP")			52
		i		58	13
		e	13	00	29
		iSKP			57
		i		01	14
		i			39
		i			55
	Bt	iP"	12	57	35
		eSKP	13	00	57
		i		01	15
	CL	iP"	12	57	30
		e(pP")			45
		e		58	12
		ePP		59	47
		iSKP	13	00	50
		i		01	10
	T	eP"	12	57	28
		e(pP")			42
		ePP		59	53
		iSKP	13	00	46
		iNZ		01	05
		e			36
		e			45
	Phases identified with some doubt. Depth probably 50± km.				

(continued)

Date	Sta.	Phase	h	m	s
May	(continued)				
25	USCGS: 3½ S 101 E;				
	12:38:13				
25	P	iPNEZ	17	50	41
		i		51	24
	Bt	iP		50	55
		i		51	07
	CL	eP		50	33
		i			50
	T	eP			26
		e			50
	USCGS: 51 N 159½ E;				
	17:40:30 Kamchatka				
25	CL	eP	22	10	20
25	P	iPEZ	01	54	45
		e			59
		i		55	07
	PX	iSE	02	04	15
		eLEZ			17.5
	Bt	i	01	55	00
	CL	iP		54	42
		i			55
	T	iPNEZ			35
		i			52
	CMO: 41.8 N 143.1 E				
	01:43:11, 40 km				
26	CL	eP	05	30	33
	T	eP			36
26	CL	eP	09	20	21
	T	eP			12
26	CL	e(P)	22	48	04
	T	e(P)			04
27	CL	e(P)	03	21	28
	T	e(P)			21
27	P	iPEZ	18	29	30
	PX	eL	19	04.0	
	R	iP	18	29	33
	CL	eP			37
		e			50
	T	eP			41
	Wellington: 32 S 175 W				
	18:17:00				
27	P	iPEZ	19	11	41
	R	eP			45
	CL	iP			41
	T	iP			37
	USCGS: 20½ N 146 E				
	18:59:12				
28	R	eP	00	09	29
		e			47
	CL	eP			34
	T	eP			34
28	P	e(P)	03	41	45
	R	e			48
	Bt	eP			35
		i			58
	CL	eP			16
		e			39
	T	eP			10
		e			31
	USCGS: 48½ N 157½ E;				
	03:31:00				
28	P	iP	18	14	45
		ipPNZ		15	09
	CL	eP		14	48
		epP		15	11
		e		18	28
	T	eP		14	47

(continued)

Date	Sta.	Phase	h	m	s
May	(continued)				
28	T	epP	18	15	11
	USCGS: 4½ S 152 E;				
	18:01:41, 100 km				
29	P	eP	02	59	39
		eNZ			56
	R	e			49
	CL	e			33
	T	eP			27
	USCGS: 48½ N 158 E;				
	02:49:18				
29	P	i(P)	05	11	06
	R	e(P)			08
	CL	e(P)			05
	T	e(P)			05
29	CL	e	06	54	46
	T	e			43
29	MW	e(P)	16	54	27
	Pr	e(P)			28
	CL	e(P)			33
30	P	eP	07	29	11
		e			25
	Pr	iP			17
		i			32
	Bt	iP			19
		i			34
	CL	eP			09
		e			25
	T	i(P)			06
	BCIS: Bonin Islands;				
	07:16.5				
30	MW	eP	20	50	09
	R	eP			09
	Pr	eP			09
	CL	eP			14
	Wellington: 37 S 175½ W				
	20:37:23, Magnitude 5.3±				
31	Bt	e(P)	04	20	58
	CL	e(P)			43
	T	e(P)			27
	CMO: 36.7 N 136.0 E;				
	04:08:30, 20 km				
31	P	iP"NZ	05	19	06
		iEZ			11
	PX	eLEZ			56.0
	Pr	iP"		19	08
		i			41
	Bt	iP"			09
		e		21	04
	CL	eP"		19	07
		e		20	55
	T	eP"		19	05
		e		20	12
	USCGS: 9 S 118 E;				
	05:00:15, 100 km				
31	P	e(P)	05	29	04
		e			33
		e		32	30
	Pr	i(P)		28	58
	Bt	e(P)			56
	CL	e(P)		29	03
		e		31	32
		e		32	19
	T	e(P)		29	07
		e			34
		e		30	28
	These readings may represent PKKP of the preceding shock.				

Date	Sta.	Phase	h	m	s
May					
31	MW	e	16	10	53
		e		11	02
	CL	e			04
	T	e			01
31	P	iPEZ	19	47	10 c
		iN			13
		i			32
	R	iP			12 C
		i			16
		e			50
		epP		49	13
	Pr	iP		47	13 c
		i			22
		i			33
		epP		49	14·
	Bt	iP		47	11 c
		i			19
	CL	iP			17 c
		i			24
		epP		49	19
	T	iPNEZ		47	18 c
		i			25
		i			31
		i			44
		epP		49	20
	Wellington: 17 S 180				
	19:36:13, 600 km				
31	P	iPNEZ	20	06	51 c
		i		07	13
	PX	iZ		10	15
		iSN			33
		eNEZ			39
		eSSNEZ		16.9	
		eGN		19.8	
			A		T
	PZ		2		3
	PH		1½		4
	SH		25		14
	MH		120		16
	R	iPNEZ	20	06	46 c
		i			51
		i			59
		i		07	50
		i		09	29
	Pr	iP		06	42 c
		i			48
	Bt	iP			40 c
		i			56
	CL	iP			50 c
	T	iPNEZ			56 c
		i		07	00
		i			09
		i			21
		i			47
		iSN		13	46
	Magnitude 6¾				
	USCGS: 20 N 70½ W;				
	19:58:35				
31	P	ePEZ	21	04	34
		e			48
	R	eP			28
	Pr	iP			25
		i			38
		i			57
	Bt	eP			22
	CL	eP			32
		e			58

(continued)

Date	Sta.	Phase	h	m	s	
May (continued)						
31	T	eP	21	04	36	
		i			41	
		i			50	
		i		05	17	
	USCGS: 20 N 70½ W; 20:56:18					
June						
1	CL	e	04	24	23	
		e			29	
		e		25	07	
2	P	iP	18	02	29	
	R	iP			32	
		e			50	
	Pr	iP			36	
		i		03	04	
	Bt	iP		02	39	
		e		03	29	
	T	iP		02	22	
		e			50	
	CMO: 30½ N 142 E; 17:50:20, 60 km					
2	MW	e(P)	22	24	15	
	R	e(P)			06	
	Pr	i			15	
	CL	e(P)			09	
	T	e			15	
		i			21	
	USCGS: 19½ N 70 W; 22:15:54					
3	MW	e	16	11	07	
	CL	iP			11	
	T	iP			06	
3	P	e	18	02	05	
		i			12	
	MW	eP		01	55	
	R	e(P)			58	
	CL	eP			48	
		i			50	
		e		02	01	
		e			06	
	T	i		01	42	
		e		02	07	
	USCGS: 52 N 159 E; 17:51:48					
4	CL	eP	05	13	02	
	T	eP			06	
5	MW	iP	00	28	45	
	Pr	iP			47	
	CL	eP			52	
	T	iP			53	
5	MW	eP	18	23	45	
		e		24	15	
	R	eP		23	59	
	Pr	iP			56	
	CL	eP		24	02	
	T	iP			09	
		i			13	
		i			17	
	USCGS: 18:15:50					
5	MW	e	23	53	25	
	Pr	i			30	
	Bt	e			22	

(continued)

Date	Sta.	Phase	h	m	s	
June (continued)						
5	CL	e	23	53	21	
		e			29	
	T	e			21	
		e			29	
	South Africa BCIS: 23:33.6					
6	MW	eP"	01	29	10	
	Pr	eP"			17	
	Bt	eP"			19	
	CL	eP"			15	
		e			34	
	T	eP"			11	
		e			31	
	BCIS: 10¾ N 93¼ E; 01:10:08					
6	MW	e	06	16	32	
	Pr	i			17	
		i			25	
	Bt	e			15	
	W	e			07	
	CL	e			04	
	T	e			00	
	USCGS: 56 N 35 W 06:06:15					
6	MW	e	12	16	14	
	Bt	e			19	
	W	e		15	55	
	CL	e		16	03	
	T	e		15	59	
	USCGS: 56 N 35 W 12:06:13					
6	P	iPNEZ	13	08	25	c
		ipP			47	
		isP			54	
		ePP		11	12	
	PX	i(S)N		19	13	
		iN			37	
				A	T	
		PZ		¼	1	
		SH		¾	2	
	R	iP	13	08	28	
		ipP			51	
	Pr	iP			31	
		ipP			51	
		isP			59	
	Bt	eP			32	
		ipP			55	
		isP		09	02	
	W	iP		08	21	
		ipP			43	
		isP			56	
	CL	iP			25	c
		ipP			47	
		isP			54	
	T	iP			21	
		i			27	
		ipP			44	
		isP			51	
		eS N		18	54	
	USCGS: 14 N 144½ E, 12:55:40, 100 km					

Date	Sta.	Phase	h	m	s	
June						
6	P	e(P)	17	17	27	
		e			40	
	Pr	e(P)			41	
	Bt	e(P)			46	
	W	e(P)			22	
	CL	e(P)			27	
		e			46	
	T	e(P)			20	
	BCIS: 49½ N 156½ E; 17:07:06					
7	P	eP	02	09	07	
	Bt	eP			18	
	CL	eP			01	
	T	eP		08	54	
	Sakhalin USCGS: 53 N 142½ E 01:58:00					
7	P	e(P)	05	09	04	
	Pr	i(P)			09	
	W	e(P)			05	
	CL	e(P)			10	
	T	e(P)			13	
	BCIS: 04:56.5 Wellington: 28 S 180; 04:56.7					
7	P	iP	12	32	13	
	PX	eSE		39	09	
	Pr	iP		32	04	
	Bt	eP			02	
	W	iP			20	
	CL	iP			11	
	T	iP			17	
	USCGS: 20 N 70 W; 12:23:56					
8	MW	e(P)	03	03	13	
		e			36	
	CL	e(P)			17	
	Wellington: 35 S 177½ W; 02:50:20					
8	P	iPEZ	11	50	31	
		iNEZ			39	
		i			58	
	PX	iSE		58	38	
		eN			55	
		eLEZ	12	08.4		
	Bt	eP	11	50	52	
	W	iP			21	
	CL	eP			28	
		i			33	
		i			52	
	T	eP			16	
	USCGS: 52 N 159½ E; 11:40:25 BCIS: 53.3 N 159.1 E, 11:40:34, 60 km					
8	MW	e(P)	14:33:11			
		e			29	
	CL	e(P)			14	
		e			58	
9	MW	e	01	13	36	
	CL	e			28	
	T	e			15	
		e			34	
	BCIS: Kamchatka, 01:03:37, 60 km					

Date	Sta.	Phase	h	m	s	
June						
9	P	ePNZ	01	49	02	
		i			06	
	PX	eN		56	28	
		iSNE		57	06	
		eLN	02	03.9		
	Pr	iP	01	49	11	
	Bt	eP			15	
		i			19	
		i			47	
	W	iP		48	50	
	CL	eP			56	
		i		49	01	
	T	ePNEZ		48	49	
	USCGS: 53 N 160 E 01:39:00					
9	P	iPNZ	05	46	24	c
	Pr	iP			30	c
	Bt	iP			33	c
	CL	iP			20	c
	T	iP			17	c
	BCIS: 30 N 37¾ E; 05:33:53 CMO: 30.9 N 139.8 E; 05:34:50, 400-450 km					
9	MW	e	07	10	36	
	CL	e			30	
	T	e			23	
9	P	eP	08	07	44	
		e		08	21	
		e		09	04	
	PX	eLZ		38.6		
	Pr	eP		07	45	
		e		08	10	
		e			31	
	Bt	eP		07	43	
	CL	eP			45	
	T	eP			54	
	Wellington 35½ S 177 W, 07:54:53					
9	T	e(P)	16	29	58	
		e		30	07	
	BCIS: 8 N 65 W, 16:19.7					
9	MW	e	21	12	28	
		e			49	
	R	e			28	
	Pr	i(P)			28	
		e			41	
	CL	e			33	
		e			46	
	BCIS: 33½ S 179 W 20:59:37					
10	MW	i	09	01	20	
	Bt	i			09	
	W	e			28	
	CL	e			24	
	T	i			36	
10	MW	e	11	15	45	
	W	e			45	
	CL	e			51	
10	P	eP"	18	42	26	
		e		43	07	
	PX	eLZ	19	15.9		
	R	e	18	43	06	
		e			13	

(continued)

Date	Sta.	Phase	h m s
June	(continued)		
10n	Pr	iP"	18 43 12
		i	34
	Bt	eP"	03
		e	12
	W	eP"	42.51
		e	43 10
	CL	eP"	42 22
		e	43 06
	USCGS: 4 S 128 E; 18:23:43		
11	MW	e	13 11 06
	W	e	07
	CL	e	14
11	MW	eP	13 37 27
	W	eP	28
	CL	eP	35
	Southwest Pacific BCIS: 13:25.9		
11	P	ePEZ	14 44 37
		eNZ	48
	R	eP	34
		e	39
	Pr	iP	27
		i	34
	Bt	eP	23
	W	eP	47
		e	50
	CL	eP	40
	BCIS: 3 N 79½ W; 14:35:57		
11	CL	e	21 05 29
		e	06 05
	Tonga Region BCIS: 20:53:40		
12	CL	e	09 04 55
	T	e	05 06
13	MW	e	06 11 36
		e	44
	CL	e	36
	T	iP	29
		e	12 16
	Kamchatka BCIS: 06:01:35		
13	MW	e(P)	12 21 00
	CL	•e(P)	02
	T	e(P)	01
13	P	eP	15 53 47
		e	56 43
	R	eP	53 39
		ePcP	56 21
		e	51
	Pr	iP	53 34
		ipP	52
		i	54 32
	CL	eP	53 51
		epP	54 08
		ePcP	56 35
		epPcP	54
	T	eP	54 02
		epP	18
		ePcP	56 38
		epPcP	58
	Tacubaya; 13° 19' N 90° 11' W: 15:47:18, 100 km		

Date	Sta.	Phase	h m s
June			
13	CL	e	18 52 41
	T	e	18 52 41
	BCIS: 38¼ N 22¾ E 18:38:58		
13	P	iPNEZ	23 01 22 c
		ipP	02 02
	Pr	iP	01 26 c
		i	32
		ipP	02 06
	W	iP	01 23
		epP	02 02
		e	05 24
	CL	iP	01 29 c
		epP	02 08
	T	iPNEZ	01 30 c
	BCIS: 18¾ S 169 E; 22:48:51, 150 km		
14	P	iPEZ	04 18 07
		iSE	43
	R	iPN	17 59
		iSN	18 23
	Pr	iPNEZ	17 48
	BB	iP!	58
	CL	iPNEZ	18 20
	H	eP	26
		iSE	19 31
	T	iP	18 39
		iSNE	20 01
	Magnitude 5.5 32° 50' N 115° 40' W; 04:17:28 Near Imperial, Calif. VII in a small area west of Brawley. VI at Imperial, Brawley, Calexico, Plaster City. Felt as far as Yuma, San Diego, San Jacinto. (Macroseismic data from USCGS) The principal event included at least three shocks of comparable magnitude in quick succession. Many small aftershocks.		
14	P	iPEZ	04 30 41
		iSNE	31 12
	R	iPN	30 34
		iSN	53
	Aftershock Magnitude 4.8		
14	P	iP	10 59 35
		e(pP)	11 00 09
	Pr	iP	10 59 37
	CL	iP	41
		e(pP)	11 00 17
	T	iP	10 59 44
		i(pP)	11 00 18
	BCIS: Tonga region, 10:47.9		
15	P	iPNEZ	17 53 53 d
		i	54 03
	PX	iSE	59 14
	P	iScP	18 00 20
	PX	iLNZ	02.9
			A T
		PZ	2½ 3
		PH	2 3
		SH	3½ 5

(continued)

Date	Sta.	Phase	h m s
June	(continued)		
15			A T
		MH	40 20
	R	iPNEZ	17 53 57 d
		i	54 04
		i	53
		i	55 56
		eSEZ	59 23
		iScP	18 00 21
	Pr	iP	17 54 04 d
		iScP	18 00 25
	CL	iP	17 53 43 d
		i	50
		i	54 49
		iPcP	56 42
		iScP	18 00 16
	T	iPNZ	17 53 33 d
		i	40
		iS	58 44
		iScP	18 00 12
	Magnitude 6½; USCGS: 56½ N 154 W, 17:47:14		
16	P	e	07 04 49
	Pr	i	05 00
	CL	e	01
	T	e	02
		e	04
16	R	e	04 39 54
	CL	e	37
	T	e	56
	BCIS: 52 N 160 E 09:29:40		
16	P	eP	10 05 23
		i	29
		i	41
	PX	eSNE	15 29
		eLNE	29.6
			A T
		MH	9 16
	R	eP	10 05 23
		i	29
	Pr	eP	30
		i	35
		i	41
	CL	eP	21
		i	26
		e	06 28
		e	08 30
	T	eP	05 16
		i	23
		i	40
	CMO: 31.5 N 142.0 E, 09:53:10, 40 km		
16	P	iPEZ	16 14 10
		i	16
		ipPNEZ	38
	R	iPNEZ	12
		i	16
		ipP	41
	Pr	iP	13 c
		i	23
		ipP	41
	W	e	24
	CL	iPNEZ	18
		i	23

(continued)

Date	Sta.	Phase	h m s
June	(continued)		
16	CL	ipP	16 14 46
		eP'P'	40 47
	T	iPNZ	14 20
		ipP	48
		e(S)NZ	24 37
	Wellington 25½ S 176¼ W 16:02:04, 110 km		
16	P	iPNEZ	19 55 32
		i	41
	PX	eSEZ	20 00 58
		iN	03.4
		eNEZ	03.6
		e(R)EZ	04.8
		iScSN	05 34
			A T
		PZ	½ 1½
		SE	2 3
		MH	6 20
	R	iP	19 55 27
		i	37
		i	56 40
		iPcP	57 49
	Pr	eP	55 33
		i	38
	W	i	19
	CL	iP	16
		i	25
		i	56 37
		iPcP	57 45
	T	eP	55 06
		i	14
		iPcP	57 42
		iSNZ	20 00 45
	USCGS: 55½ N 160 W; 19:43:25, 60 km.		
17	MW	e(P)	01 44 22
		e	27
	R	e(P)	27
	Pr	e(P)	31
		i	58
		i	46 15
	CL	e(P)	44 17
		e	21
	T	e(P)	07
	USCGS: 52 N 171 W; 01:36:31		
17	R	i(P)	03 25 03
	CL	i(P)	06
	T	e(P)	09
		i	59
17	MW	e	03 32 07
	Pr	i(P)	08
	CL	i(P)	11
17	P	iPNEZ	14 19 10 c
		ipP	23
	R	iP	06 c
		epP	16
	Pr	iP	01 c
		ipP	13
		i	28
	W	iP	19 C
		i	20 03
	CL	iP	19 15 c
		ipP	30

(continued)

Date	Sta.	Phase	h	m	s
June (continued)					
17	CL	i	14	19	48
	T	eP			23 c
	USCGS: $15\frac{1}{2}$ S 75 W; 14:08:33, 60 km				
17	MW	e	14	47	57
	CL	e			44
		e			53
	T	e			50
18	W	iP	03	54	38
	CL	iP			43
	T	iP			35
	USCGS: 03:44:40 Kamchatka				
18	P	iP	05	57	44
	R	iP			44
	CL	iP			36
	T	iP			34
	BCIS: 41.7 N 26.5 E; 05:44:06				
18	P	eP	09	52	10
	R	eP			13
	W	eP			08
	CL	eP			13
18	P	iPNEZ	10	17	56
		i		18	06
	PX	eE		30	15
		eLEZ			46.7
	R	iP		17	59
	W	eP			54
	CL	iP		17	59
		i		18	06
		e		21	03
	T	eP		17	58
		eN		18	01
	USCGS: $6\frac{1}{2}$ S 155 E; 10:04:48				
18	P	iP	18	39	28
		iNEZ			39
	R	eP			31
		i			42
	Pr	iP			48
		i		40	04
	W	iP		39	18
		i			29
	CL	eP			22
		i			33
	T	iP			15
		i			26
	BCIS: 50 N 157 E; 18:29:07 Depth greater than normal.				
18	MW	iP	19	04	05
	Pr	iP			09
	W	i			09
	CL	iP			12
	T	iP			14
19	P	iP	05	14	22
		e			32
	R	iP			23
	Pr	iP			29
	W	eP			12
	CL	iP			15
		e			23
	T	iP			08
	BCIS: 57.8 N 114 E; 05:02:17				

Date	Sta.	Phase	h	m	s
June					
19	P	e	07	23	18
	W	e			02
	CL	e			07
	T	e			01
	Kamchatka				
19	P	e(P)	18	43	59
	R	e(P)		44	02
	CL	i(P)		43	56
	T	e(P)			53
19	P	eP	22	37	07
		eNEZ			15
	R	eP			00
		e			24
	CL	eP			23
		e			34
		e		40	56
	T	eP		37	40
		e		38	00
		e		41	54
	USCGS: 26 N 110 W; 22:34:30				
20	R	eP	03	25	34
		e		26	07
	Pr	eP		25	39
	W	eP			21
		e			54
	CL	eP			26
		e			59
	T	eP			19
	BCIS: 47 N 149 E 03:14:29				
20	R	e	03	45	13
	Pr	i			13
		e			28
	W	e			13
	CL	e			19
	T	e			20
	BCIS: 03:33.6 Tonga Island region				
20	P	eP	11	04	17
	R	eP			16
	Pr	eP			14
	W	eP			20
	CL	eP			19
	T	eP			23
20	P	iPEZ	13	38	14
	R	iP			17
	Pr	iP			24
		i			31
	W	eP		37	45
		i		38	00
	CL	iP			04
	T	iP		37	54
21	P	iPNEZ	10	08	55
	R	iP			59
		e		09	13
	W	iP		08	51
	CL	iP			56
	T	iPNZ			53
21	P	iPEZ	13	58	20
	R	iP			24
	W	iP			10
	CL	e			15
	T	iP			08
		i			49
	USCGS: 47 N 154 E; 13:47:41				

Date	Sta.	Phase	h	m	s
June					
21	P	iPNEZ	16	14	52
	R	eP			55
	W	iP			55
	CL	iP			59
	T	i		15	24
	Tonga region BCIS: 16:02.7				
21	MW	e	18	08	17
	R	e(P)		07	44
		e		08	17
	W	e			34
	CL	e			19
21	P	eP	18	35	09
		e			25
	R	e			12
	CL	eP			17
		e			33
	T	eP			19
	Tonga region; BCIS: 18:23:20				
22	MW	e	06	11	27
	R	e			30
	W	eP			04
		i			18
	CL	eP			08
		i			22
	T	e			15
22	MW	e	06	32	24
		e			53
	R	e			34
	W	e			52
	CL	e			46
	Tacubaya 15° 57' N 99° 09' W; 06:27:19				
22	MW	e(P)	08	54	16
	W	e(P)			07
	CL	e(P)			11
22	P	e	12	00	18
	W	e	11	59	56
	CL	e	12	00	00
22	R	i	12	31	46
		i			53
	W	i(P)			40
	CL	i(P)			44
22	CL	eP	16	25	44
		e			50
	BCIS: Marianas, 16:13.1				
22	MW	i	18	30	19
	CL	e			09
	T	e			08
22	P	e(P)	23	40	32
	R	e(P)			35
	CL	e(P)			37
		e		41	07
	T	e(P)		40	41
23	CL	eP	02	06	55
	BCIS: 36 N 25 E; 01:53:12, 100 km				
23	MW	e	06	49	45
	CL	e			52
	T	e			51
	BCIS: 38 N $20\frac{1}{4}$ E; 06:34:31				

Date	Sta.	Phase	h	m	s
June					
23	P	iPEZ	14	03	45
		ipPNEZ			59 c
	PX	iSNEZ		12	01
		eGN			18.9
		eREZ			21.7
			A		T
		PZ	$\frac{3}{4}$		1
		SH	1		6
	R	eP	14	03	49
		epPNEZ		04	02
	Bt	eP		03	59
		ipP		04	12
	W	iP		03	34
		ipP			48
	T	iPNZ			32
		ipP			47
		eS		11	35
	Magnitude $6\frac{1}{2}$, USCGS: 51 N. $157\frac{1}{2}$ E; 13:53:28				
23	P	iPEZ	21	20	19
		e			46
	PX	eL			52.1
	R	eP		20	21
	CL	eP			22
	T	eP			20
	BCIS: $6\frac{1}{2}$ S 155 E; 21:07:10				
24	W	i	11	49	16
	CL	i			21
24	P	iPEZ	21	29	32
	R	iP			35
		i			41
	W	iP			23
		i			54
		i		30	37
	T	iPEZ		29	21
	BCIS: $47\frac{1}{4}$ N 151 E: 21:18:41				
25	P	e	16	17	13
		e			56
	W	e	16	42	
	BCIS: 8 S 123 E; 05:58.5				
25	P	e	06	42	03
	R	e			04
	W	e			01
	Same region as preceding BCIS: 06:23.3				
25	P	iPNEZ	07	20	30
	R	eP			31
	W	iP			28
	T	iP			32
	USCGS: 7 S 155 E; 07:07:19				
25	P	iPNEZ	08	33	17
		eNZ			57
	R	iP			20
	W	iP			19
	T	iP			25
	Possibly a deep shock BCIS: $21\frac{1}{2}$ S $171\frac{3}{4}$ E; 08:20:33				

Date	Sta.	Phase	h m s	
June				
25	P	iP"	11 02 40	
		iPKKP	13 10	
	R	eP"	02 48	
		ePKKP	13 11	
	W	iP"	02 46	
		ePKKP	13 11	
	T	iP"	02 46	
		iPKKP	13 14	

Magnitude less than 7.
Foreshock of next; 0=10:43:57
Laterphases mostly obscured.

Date	Sta.	Phase	h m s	
			A T	
		P"Z	0.2 1½	
25	P	iP"	11 03 51	
	PX	iPP	05 20	
		iN	12 54	
	P	i(PKKP)	14 14	
	PX	iN	14 45	
		i(SS)N	20.5	
		eGN	32	
			A T	
		P"Z	0.2 1	
		MH	25 20	
	R	eP"	11 03 53	
		e(PKKP)	14 14	
	W	iP"	03 50	
		i	04 48	
		i(PKKP)	14 21	
	T	iP"	o3 49	

Phases reported as (PKKP) may represent P" of a later shock:
Pasadena: 8½ S 124 E;
10:45:00, 50 km±,
Magnitude 7.1

Date	Sta.	Phase	h m s	
25	P	iPNEZ	18 08 08	
		i	35	
	R	iPNEZ	05	
		i	32	
		e	43	
	W	iP	17	
	T	iPNEZ	21	
		i	48	

USCGS: 22½ S 68½ W;
17:56:40, 100 km

Date	Sta.	Phase	h m s	
25	P	ePEZ	21 58 33	
		e	57	
	R	eP	28	
	T	iP	37	
		e	45	

USCGS: 10½ N 61 W;
21:48:55, 100 km

Date	Sta.	Phase	h m s	
26	P	e	04 01 43	
	W	e	39	

East Indies
BCIS: 03:43.7

Date	Sta.	Phase	h m s	
26	P	iP"EZ	06 01 39	
	PX	eN	10 48	
	P	ePKKP	12 05	
	PX	iE	46	
		eLN	30.1	
			A T	
		MH	20 20	
		MZ	20 20	

(continued)

Date	Sta.	Phase	h m s	
June	(continued)			
26	R	eP"	06 01 40	
		ePKKP	12 01	
		e	15 32	
	W	iP"	01 40	
		ePKKP	12 07	
	T	iP"	01 39	

8½ S 124½ E, 05 42 54,
50 km+, magnitude 6.9

Date	Sta.	Phase	h m s	
26	P	iPNEZ	07 46 34	
	R	iP	37	
	W	iP	38	
	T	iP	43	

Wellington 24 S 177 E;
07:35:00, 500 km

Date	Sta.	Phase	h m s	
26	P	iPEZ	13 40 54	
		e	42 14	
	R	eP	40 57	
	W	iP	57	
		e	41 47	

Tonga Region
BCIS: 13:29.0

Date	Sta.	Phase	h m s	
27	MW	e	02 04 58	
	R	e	05 01	
	CL	e	04 45	
		e	05 00	
	T	e	04 59	
27	P	iPNEZ	07 54 33	d
	R	iP	36	d
	W	iP	36	d
	CL	iP	40	d
	T	iPNEZ	42	d
		e	55 07	

USCGS: 24 S 178½ E;
07:43:01, 550 km

Date	Sta.	Phase	h m s	
27	P	ePNZ	10 01 08	
	PX	eLEZ	31.3	
	R	eP	01 11	
	W	eP	o5	
	CL	eP	12	
		e	33	
	T	eP	11	

USCGS: 4½ S 153 E;
09:47:58

Date	Sta.	Phase	h m s	
28	P	e	05 49 47	
	PX	eLEZ	06 17.8	
	MW	eP	05 49 22	
	R	e	56	
	W	eP	14	
	CL	eP	18	
	T	eP	13	

CMO: 31.4 N 142.1 E;
05:37:15, 40 km

Date	Sta.	Phase	h m s	
28	R	eP	14 55 55	
	W	iP	44	
	CL	eP	50	
	T	eP	43	

CMO: 36.1 N 137.3 E
14:43:09, 250 km

Date	Sta.	Phase	h m s	
29	P	e(P)	03 31 01	
29	P	e(P)	03 35 53	
	PX	eLNE	42.5	
	R	e(P)	35 42	
	CL	eP	47	
	T	eP	36 01	

USCGS: 7 N 82½ W: 03:27:43

Date	Sta.	Phase	h m s	
June				
29	MW	e(P)	12 00 52	
		e	01 01	
	R	e(P)	00 54	
		e	01 03	
	W	e(P)	00 51	
		e	01 01	
	CL	e(P)	00 57	
		e	01 06	
	T	e(P)	00 56	
		e	01 06	
29	MW	e	13 04 23	
	R	e	25	
	CL	e	27	
29	MW	e	13 36 30	
	CL	e	35	
30	P	iP	01 25 31	
	R	e	26	
	Pr	eP	20	
	W	eP	38	
	CL	eP	35	
	T	eP	44	

USCGS: 11½ S 75½ W;
01:15:10

Date	Sta.	Phase	h m s	
30	P	iP	03 14 43	
	R	iP	44	
	Pr	iP	47	
	W	iP	35	
	CL	iP	41	
	T	iP	36	

Marianas
USCGS: 03:02:05

Date	Sta.	Phase	h m s	
30	P	iPNEZ	07 47 45	
		i	59	
	R	eP	49	c
		e	48 03	
	Pr	iP	47 54	
		i	48 09	
	W	iP	47 34	c
		i	49	
	CL	iP	39	
		i	53	
	T	iPEZ	31	c
		e	44	

BCIS: 54¼ N 159½ E;
07:37:49, 60 km

Date	Sta.	Phase	h m s	
30	MW	iP	13 33 10	
	R	eP	06	
	W	eP	20	
	CL	eP	15	
	T	e	24	

USCGS: 8 S 76½ W;
13:23:14

Date	Sta.	Phase	h m s	
30	CL	e	16 55 05	

Mexico

Date	Sta.	Phase	h m s	
30	MW	e	22 52 39	
		e	53	
	CL	e	12	
		e	33	
	T	i	16	
		i	43	
		i	53 15	

Off Kamchatka
BCIS: 22:42.4, 60 km

Date	Sta.	Phase	h m s	
July				
1	P	iPEZ	03 09 49	c
		iEZ	58	
		ipPNEZ	10 05	
	PX	iSNEZ	18 09	
		eGN	25.4	
		eREZ	27.7	
	P	eP'P'	39 12	
			A T	
		PZ	1 3	
		PH	0.6 2	
		SH	2½ 6	
	R	iP	03 09 53	
		ipP	10 08	
		i	27	
		eP'P'	38 55	
	W	iP	09 38	c
		ipP	56	
		i	10 13	
		eP'P'	39 14	
	CL	iP	03 09 44	c
		ipP	58	
		i	10 17	
		eP'P'	39 00	
	T	iPNEZ	09 37	c
		ipP	51	
		i	10 23	
		eSEZ	17 47	
		eP'P'	38 50	
		e	39 10	

USCGS: 50½ N 157 E,
02:59:35, 60 km

Date	Sta.	Phase	h m s	
1	MW	iP	06 02 00	
	R	eP	02	
	W	iP	01 48	
		i	02 10	
	CL	iP	01 52	
		i	02 22	
	T	eP	01 46	
		i	02 15	
2	P	iPNEZ	07 09 18	c
		ipP	10 20	
		isP	39	
		iPPEZ	12 45	
	PX	iSKSNE	19 22	
		iSNE	39	
		ePSNE	21 08	
		eGN	32.1	
		iGN	33.0	
	P	iP'P'	35 16	
		i	36 23	
		eP'P'P'	55 52	
			A T	
		PZ	35 6	
		PH	14 5	
		PPZ	13 6	
		PPH	6 4	
		SH	9 7	
		MH	25 20	
	R	iPNEZ	07 09 19	c
		i	44	
		ipP	10 23	
		isP	48	
		iPPEZ	12 48	

(continued)

Date	Sta.	Phase	h	m	s	
July (continued)						
2	R	e	07	35	10	
		iP'P'			22	
		e		36	20	
		eP'P'P'		55	55	
	Pr	iP!	09	21		c
		iPP		12	54	
		iP'P'		35	24	
		i		36	21	
		iP'P'P'		56	08	
	Bt	iP	09	08		c
		iPP		12	38	
		eP'P'		36	10	
		eP'P'P'		55	44	
	W	iP	09	18		c
		ipP		10	22	
		iPP		12	47	
		eP'P'		35	23	
		i		36	21	
	CL	iPNE	09	23		
		iNE		10	13	
		iPPN		12	56	
	T	iPNEZ	09	24		c
		iNZ			56	
		ipP		10	26	
		isPNZ			46	
		iSKSN		19	46	
		eP'P'		35	17	
		e		36	21	
		eP'P'P'		56	02	
	Pasadena: 19½ S 169½ E, 06:56:51, 250 km, Magnitude 7½					
2	MW	e	09	00	06	
	R	e			11	
	Pr	e			22	
	W	e	08	59	48	
	CMO: 41½ N 144¾ E; 08:48:24, 60 km					
2	P	ePNEZ	13	42	00	
		i			06	
		i			13	
		e		43	10	
	R	eP		41	55	
		e		42	02	
	Pr	eP		41	49	
		i			56	
	W	eP		42	00	
		e			08	
		e			15	
	T	eP			13	
		iNEZ			20	
	BCIS: 15¾ S 75½ W; 13:31:21, 60 km					
2	Pr	eP	15	28	35	
	W	e			49	
	CL	eP			45	
	T	e			53	
	BCIS: 6¼ S 74¾ W; 15:17:58					
2	MW	e	19	35	22	
		e			27	
	Pr	e(P)			06	
		e			25	

(continued)

Date	Sta.	Phase	h	m	s
July (continued)					
2	W	e(P)	19	35	15
		e			31
	CL	i(P)			20
		i			35
	T	e(P)			21
		e			36
2	MW	iP	22	00	43
	R	eP			44
	Pr	iP			45
	W	eP			43
3	P	e(P)NEZ	05	44	40
	R	e(P)			43
	Pr	e(P)			46
	W	i(P)			34
	T	i(P)			33
	BCIS: 30 N 137¼ E; 05:31:00				
3	MW	eP	12	51	46
	R	eP			43
	Pr	iP			39
	W	iP			54
	T	eP			57
3	MW	i	16	40	05
	R	i			19
	Pr	i			11
		i			23
	CL	e		39	58
		e		40	10
	T	e		39	56
3	MW	eP"	18	48	08
		e		49	41
	R	eP"		48	06
	Pr	e		49	30
		e			44
	W	eP"		48	10
	CL	eP"			05
		e		49	56
	T	eP"		48	12
		e			39
	BCIS: 56¼ S 26¼ W; 18:29:20				
3	MW	i(P)	20	29	39
		i			41
	R	iP			36
	Pr	eP			32
	CL	eP			43
	T	iP			51
4	R	eP	01	51	59
	Pr	eP			50
	W	eP		52	03
	CL	eP			07
	T	eP			15
		e			32
	South America BCIS: 01:41.2				
4	P	e(P)	08	07	23
	CL	e(P)			23
	T	e(P)			20
4	MW	e	08	21	53
	CL	e			46
	T	e			39

Date	Sta.	Phase	h	m	s
July					
4	MW	e	10	03	38
	R	e			42
	Pr	e			59
	CL	e			23
	T	e			10
		e			18
4	P	iPNZ	19	54	39
	R	iP			41
	CL	iP			46
	T	iP			48
	BCIS: 30¾ S 179¾ W; 19:41:52				
5	P	e	02	26	42
	R	e			50
	T	eP			21
		i			31
		i		27	01
	BCIS: 51½ N 179 W; 02:18:18, 100 km				
5	P	eP	10	38	46
		e		39	15
	R	eP		38	42
		e		39	11
	T	eP		38	59
		e		39	29
	Chile - Argentina BCIS: 10:26.6				
5	P	e(P)NEZ	13	06	45
	R	e(P)			46
	T	e(P)			40
5	P	ePNEZ	13	15	24
	R	eP			28
	T	eP			13
	USCGS: 47½ N 157 E; 13:04:58				
5	P	e(P)	14	16	14
	R	e(P)			07
	T	e		15	57
6	P	iP	01	08	40
	R	iP			43
	Pr	iP			43
	CL	iP			47
	T	iP			48
6	MW	iP	19	35	40
		i			54
	R	eP			44
	Pr	iP			49
		i		36	02
6	P	iPNEZ	22	09	17
	PX	eLE			38.4
	R	iP		09	19
		i			28
	Pr	iP			21
		i			28
		i			48
	Bt	iP			20
	W	iP			13
	CL	iPNEZ			06
	T	eP			16
	BCIS: 6.4 S 147.3 E; 21:55:37				
	Wellington: 8½ S 147 E; 21:55:40				
7	P	eP"	04	26	33
		iNEZ			36

(continued)

Date	Sta.	Phase	h	m	s	
July (continued)						
7	PX	ePPN	04	28	32	
		iSKPE		29	33	
		iNE		30	04	
	R	eP"		26	36	
		ePP		28	47	
		eSKP		29	33	
	Pr	e		26	24	
		iP"			38	
		ePP		28	57	
		iSKP		29	39	
		i		31	56	
	Bt	eP"		26	36	
		i			40	
		ePP		29	09	
		iSKP			38	
	CL	eP"N		26	33	
		eSKPE		29	30	
	T	eP"		26	31	
		ePP		28	26	
	BCIS: 1 N 100 E; 04:07:48, 250 km					
	Shillong: 3 N 99 E; 04:07:55					
7	P	eP	13	54	34	
	R	iP			37	
	Pr	iP			42	
		i			45	
	Bt	iP			45	
	W	iP			23	
	T	iP			21	
		i			25	
	USCGS: 47½ N 156 E; 13:44:03					
7	MW	e(P)	17	40	38	
		i			51	
	R	e(P)			41	
	Pr	e(P)			46	
		i			58	
	Bt	i			57	
	W	e(P)			31	
	CL	e(P)			38	
	T	e(P)			27	
		i			44	
	CMO: 31.2 N 142.1 E; 17:28:30, 60 km					
8	R	eP	03	35	34	
		e			39	
	Pr	eP			30	
		i			34	
	USCGS: 03:26:37					
	Bogota: 4°55' N 73° 40' W					
8	P	ePNEZ	13	13	35	
	R	eP			39	
		e			59	
	Pr	iP			46	c
		i		14	12	
	Bt	iP		13	50	
	T	iP			20	
	BCIS: 53½ N 168 W, 13:05:52					
8	MW	e	15	30	15	
	R	e			18	
	Pr	e			16	
		e			21	
	Bt	e			26	
	W	e			10	
	CL	e			11	

Date	Sta.	Phase	h	m	s
July					
8	MW	iP	15	48	02
	Pr	iP			04
	CL	iP			08
8	MW	e	16	16	31
	Pr	e			25
		e			30
	Bt	e			21
	CL	e			42
8	Pr	eP	16	34	47
	Bt	eP			50
	W	eP?			50
9	P	iP	08	13	35
		ipP		14	02
	Pr	eP		13	28
		epP			55
	Bt	iP			23
		ipP			50
	USCGS: Northern Chile, 08:02:17, 100 km				
9	P	eP	12	44	50
		e		45	07
	Pr	eP		44	59
	Bt	eP		45	04
9	T	eP	19	16	10
	Sinkiang				
9	PX	eL	19	58.0	
	Pr	e		33	10
	Bt	e			15
	CMO: 35.7 N 140.8 E 19:21:03, 30 km				
9	P	eP	21	34	15
	PX	eSE		42	47
		eLN		52.0	
			A		T
		PZ	½		1½
		MH	25		20
	R	iP	21	34	13
	Pr	iP			12
	Bt	eP			12
	CL	eP			10
	T	iPNEZ			11
		eS		42	46
	Magnitude 6½				
	USCGS: 30 N 42½ W; 21:23:48				
9	MW	e	22	03	21
	R	e			29
	Bt	e			22
	CL	e			27
	T	e			28
	P'P' of preceding?				
10	MW	e(P)	07	30	58
		e		31	33
	R	e(P)		30	55
	Pr	e(P)			51
		i		31	04
		i			12
	Bt	e(P)		30	47
	W	e(P)		31	10
	CL	e(P)			03
	T	e(P)			10
	USCGS: 16 S 76 W; 07:20:18				

Date	Sta.	Phase	h	m	s
July					
10	P	iPNEZ	08	19	41
	R	iP			44
	Pr	iP			46
	Bt	e			46
	W	iP			39
	CL	iP			43
	T	iP			41
10	P	ePNZ	12	53	44
		eSNEZ		55	15
	R	eP		53	35
		e(S)		55	02
	Pr	eP		53	09
		i			22
		iS		54	40
	Bt	eP		52	57
		e		53	10
		iS		54	18
	Magnitude 5.4				
	Gulf of California?				
10	P	iP"NEZ	15	28	42
		i		30	52
	MW	iP"		28	43
		e(PP)		30	41
		i			54
		i(pP")		31	06
		e?		42	32
	R	iP"		28	42
	Pr	iP"			44
		i		29	03
		e(PP)		30	34
		i		31	00
		ePKKP		38	16
		e		42	10
	Bt	eP"		28	46
		e		30	47
		ePKKP		38	15
		e		41	58
	W	iP"		28	40
		i		30	12
		i			31
		i			40
		e		34	14
		iPKKP		38	27
		e		42	08
	CL	iP"		28	42
		e		30	30
		iPKKP		38	22
		e		41	48
	T	eP"NEZ		28	40
		ePKKP		38	28
		e		41	56
	BCIS: 6½ S 113½ E; 15:10:41, 600 km				
11	P	i(P)	13	11	13
	Bt	e(P)			13
	W	i(P)			16
	CL	e(P)			20
	Too early for the shock in Japan at 13 h 03 m.				
12	P	eP	06	57	09
		iPPEZ	07	01	18
	PX	iSKSE		07	46
		iE		08	04

(continued)

Date	Sta.	Phase	h	m	s
July (continued)					
12	PX	eSSE	07	16.0	
		eGN		24.5	
		eREZ		28	54
			A		T
		MH	12		20
	R	eP	06	57	09
		ePP	07	01	19
	Bt	eP	06	57	10
	T	eP			09
	Magnitude 6½				
	USCGS: 2 S 139½ E; 06:43:05				
12	Pr	e	08	41	45
12	R	e	22	45	59
	Pr	e			49
		e		46	19
	CMO: 42.5 N 144.6 E; 22:34:05, 60 km				
13	P	iPNEZ	19	31	42 c
		i			59
	R	iPNEZ			44 c
	Pr	iP			45 c
		i		32	05
	Bt	iP		31	43 c
		i			46
	T	iP			56 c
	Wellington: 25 S 168 E 19:19:57				
13	P	iPNEZ	21	41	16 c
		e		42	19
	R	iPEZ		41	19 c
		e		42	17
	Pr	iP		41	20 c
	Bt	iP			19 c
	T	iP			23
	USCGS: 18 S 169½ E; 21:28:35				
15	P	iP	02	45	52
		i		46	05
	Pr	iP			01
		i			13
	Bt	eP			05
		e			18
	USCGS: 48½ N 154½ E; 02:35:25, 60 km				
15	P	e(P)	13	47	02
	Bt	e(P)			04
	T	e(P)			01
16	R	e	01	11	26
	Pr	e		10	58
16	Pr	eP	14	20	48
	Wellington: Fiji Islands? 14:07:44				
16	MW	e	14	44	16
		e			37
	Pr	e			14
		e			25
	Bt	e			16
		i			30
	T	e			02
		e			48
	CMO: 36.3 N 141.2 E, 14:32:09, 35 km.				

Date	Sta.	Phase	h	m	s
July					
17	P	iPNEZ	07	30	31
	CL	eP			19
		i			27
	T	iP			14
		eSN		31	53
	Northwestern California				
	Felt at Westport.				
17	PX	eLNE	13	15.9	
	MW	e(P)		13	06
	Pr	iP		12	50
	Northern Mexico?				
17	MW	eP	13	40	19
		i			36
	R	eP			21
	Pr	iP			22
		i			37
	CL	eP			27
	T	iP			29
		i			46
	Wellington: 17 S 173 E; 13:28:50±				
18	R	iP	02	48	26
	Pr	iP			33
		i			41
		i			55
	Bt	iP			38
		i			46
	CL	iP			15
18	R	eP	21	18	20
		e			36
	Pr	iP			21
	CL	iP			25
	T	eP			26
19	R	eP	09	42	13
	Pr	eP			09
	T	eP			12
	Mexico				
19	R	e(pP)	13	12	16
	Pr	iP		10	43
		i(pP)		12	14
	T	eP		10	50
		e(pP)		12	22
	Wellington: 20 S 176½ W; 12:59:00, 200 km				
19	R	iP	14	57	11
	Pr	iP			11
	CL	iP			15
	T	iP			17
	Wellington: 24 S 180, 14:45:30, 500				
20	P	ePNEZ	08	20	15
		iNZ			44
		e(sP)			56
		i		21	02
	PX	i		24	04
		eN		29	38
		iSNE		30	20
		i(sS)NE		31	02
		eN		35	38
		eN		38	58
		eLNE		40.8	

(continued)

Date	Sta.	Phase	h	m	s	
July (continued)						
20			A		T	
		PZ	½		2	
		PH	0.2		1	
		SH	4		20	
		MH	8		18	
	R	iP	08	20	17	
		i		21	05	
	Pr	iP		20	17	
		i		21	03	
	Bt	eP		20	15	
		i		21	03	
	CL	iP		20	24	
		i		21	11	
	T	iPNEZ		20	25	
		i		21	10	
		eSNZ		30	39	
	Magnitude 6½					
	USCGS: 21 S 177 W;					
	08:08:20, 100 km					
21	R	e	06	06	38	
	Pr	e			45	
	W	i			29	
	CL	e			24	
		i			33	
21	R	eP	08	55	22	
	Pr	eP			32	
	Bt	e			48	
	W	iP		54	55	
	CL	eP		55	06	
		e			11	
	T	e		54	47	
21	MW	iP	12	49	11	
	R	eP			14	
	Pr	iP			20	
	Bt	iP			24	
	W	iP			00	
	CL	iP			05	
	T	iP		48	56	
21	P	iP	17	35	53	c
		i(pP)		36	05	
	R	iP		35	54	c
		i(pP)		36	06	
		i			17	
	Pr	iP		35	59	c
	Bt	iP		36	01	c
		i(pP)			14	
	W	iP		35	46	c
	CL	iP		35	50	c
		i(pP)		36	02	
	T	iPNEZ		35	45	c
	USCGS: 27½ N 128 E;					
	17:22:39					
22	P	iPNEZ	05	21	27	c
		ipP			42	
		isP			50	
		iPcP		22	00	
		ePP		23	58	
	PX	iSE		29	46	
		isSNE		30	10	
		eSSNE		33.8		
		iGN		36.7		
		eREZ		39.5		

(continued)

Date	Sta.	Phase	h	m	s	
July (continued)						
22	P	eP'P'	05	50	43	
			A		T	
		PZ	3½		4	
		PH	1½		3	
		pPZ	10		4	
		SH	7		7	
		MH	40		30	
		MH	7		20	
	R	iP	05	21	31	c
		ipP			45	
		eP'P'		50	26	
		iP'P'			45	
	Pr	iP		21	36	c
		ipP			51	c
		i		22	00	
		i			15	
		i		23	02	
		iS		30	04	
		e			38	
		e		50	32	
	Bt	iP		21	40	c
		ipP			55	
		e		50	35	
	W	iP		21	17	c
		ipP			33	
		eP'P'		50	27	
		i			55	
	CL	iP		21	22	c
		ipP			37	
		i			45	
		i			52	
		i		22	08	
		i			40	
		eP'P'		50	28	
	T	iP		21	14	c
		ipPNZ			29	
		eS		29	23	
	Magnitude 6½ --6¾					
	USCGS: 51 N 157 E;					
	05:11:15, 60 km					
22	R	e(P)	09	01	32	
		e		02	20	
	Pr	e(P)		01	28	
		e		02	03	
		e			15	
	Bt	e(P)		01	24	
	W	e(P)			46	
	CL	e(P)			40	
		e		02	07	
	T	e(P)		01	28	
		e			49	
22	R	e	10	21	34	
	Pr	e			33	
	W	e			07	
	CL	e			12	
		e			16	
	USCGS: 48½ N 128 W;					
	10:17:39					
22	P	ePNZ	10:41:11			
	R	e(P)			17	
	Pr	iP			23	
		i			28	

(continued)

Date	Sta.	Phase	h	m	s
July (continued)					
22	Bt	e	10	41	31
		e			42
	W	eP		40	46
	CL	eP			52
	T	i(P)			36
	USCGS: 48½ N 128 W				
	10;37:20				
22	MW	e	11	38	28
	Pr	e			17
	CL	e			34
22	P	eP	13	03	39
		eNEZ			54
	R	e(P)			47
		e			57
	Pr	eP			56
		i		04	02
		i			12
	Bt	eP		03	57
		e		04	05
	W	eP		03	36
		i			46
	CL	eP			41
		i			51
	T	eP			44
		e			47
		e			54
	CMO: 41.6 N 144.0 E;				
	12:52:11, 50 km				
22	Pr	e	18	00	45
		e			56
	T	e			57
	USCGS: 26½ N 44½ W;				
	17:50:22				
22	Pr	e	18	14	54
	Bt	e			53
	T	e			57
	USCGS: 26½ N 44½ W;				
	18:04:30				
23	R	e	05	07	47
	Pr	i			53
	W	iP			32
		i			45
	CL	iP			37
	T	iP			29
23	MW	eP	07	42	03
	R	iP			06
	Pr	iP			12
	Bt	iP			15
	W	iP		41	53
	CL	iP			58
		e		42	32
	T	iP		41	50
23	R	e	09	17	51
	Bt	e			43
23	R	e	11	03	23
	Pr	e			15
		i			28
	Bt	e			22
	W	eP		02	52
		i		03	07
		i			13
	CL	eP		02	57
		i		04	43
		e			58

(continued)

Date	Sta.	Phase	h	m	s
July (continued)					
23	T	eP	11	02	50
		i		03	03
	Aleutian Islands				
	USCGS: 10:54:55, 60 km				
23	R	e	18	34	32
	Pr	e			33
		e			39
	Bt	e			42
		e			55
	W	e(P)			46
		i			52
		i		35	09
	CL	e(P)		34	24
	T	e(P)			16
	BCIS: 52 N. 160 E;				
	18:24:16				
24	P	e	11	04	24
	R	eP			10
		e			23
	Pr	iP			13
		i			29
	Bt	e			12
	W	iP			08
		e			19
	CL	iP			13
		e			25
		e			32
	T	eP			12
	USCGS: 11 S 166 E;				
	10:51:34				
25	P	iP	07	53	43
	R	iP			45
	Pr	iP			50
	Bt	iP			51
	W	iP			37
	CL	iP			42
	T	iP			33
	Marianas Islands;				
	BCIS: 07:43.3, 200 km				
25	P	eP	17	38	58
		i		39	32
	PX	eL	18	04.7	
	R	eP	17	39	00
	Pr	iP		38	59
		i		39	06
		i			24
	Bt	eP			01
	W	eP			00
		i			12
	CL	eP			05
		e			07
	T	iP			07
		i			20
	Wellington: 20 S 175 W;				
	17:27:03				
26	P	ePNEZ	13	15	50
		ipP		16	06
	R	iP		15	46
		ipP		16	02
		i			20
	Pr	iP		15	42
		ipP			57
	Bt	eP			37
		epP			52

(continued)

Date	Sta.	Phase	h	m	s	
July (continued)						
26	W	iP	13	16	00	
		i			32	
	CL	eP		15	55	
		epP		16	10	
		i			30	
	T	eP		15	49	
		epP		16	05	

BCIS: 15 S 75 W;
13:05:22, 60 km

Date	Sta.	Phase	h	m	s	
26	MW	eP	13	50	14	
	R	eP			10	
	Pr	eP			05	
	CL	eP			18	
26	P	iPNEZ	17	05	34	c
		eNE		06	10	
		ipP			24	
		e			59	
	PX	e(SKS)		15	34	
		iSNEZ			38	
		iN			47	
		eSSNE		21.4		
		isSSNE		22	32	
	P	iSKPP'		34	48	
		e		50	52	
		iP'P'P'		52	18	
			A		T	
		PZ	3		2	
		PH	1		2	
		SH	6		4	
		sSH	11		5	
		MH	35		26	
	R	iPNEZ	17	05	38	c
		ipP		06	28	
		e		14	34	
		eSNEZ		15	41	
		eP'P'		31	50	
		eSKPP"		34	46	
		e		50	58	
	Pr	iP!		05	42	c
		i			54	
		i		06	16	
		ipP			31	
		iPP		09	06	
		i			45	
		i		14	39	
		iS		15	49	
		eP'P'		32	06	
		eSKPP'		34	43	
		e		51	04	
		eP'P'P'			55	
	Bt	iP		05	43	c
		ipP		06	28	
		eS		15	50	
		eP'P'P'		52	20	
	W	iP		05	30	c
		ipP		06	16	
		e			49	
		e		14	26	
		eS		15	32	
		eSKPP'		35	00	
		eP'P'P'		50	34	

(continued)

Date	Sta.	Phase	h	m	s	
July (continued)						
26	CL	iP	17	05	34	c
		ipP		06	18	
		eS		15	34	
		eSKPP'		34	47	
		i		50	39	
		eP'P'P'		52	06	
	T	iPNEZ		05	31	c
		ipP		06	16	
		iSNZ		15	34	
		eSKPP'		34	50	
		e		50	24	
		eP'P'P'		52	14	

Readings at 14 m and 50 m may refer to other earthquakes.
Pasadena: 18 N 146 E;
16:53:17, 190 km,
Magnitude $6\frac{3}{4}$-7.

Date	Sta.	Phase	h	m	s	
26	P	e	19	07	36	
	R	e			38	
	Pr	i			39	
	W	i			38	
	CL	e			42	

Kamchatka
BCIS: 18:50.6

Date	Sta.	Phase	h	m	s	
27	P	iP	09	13	15	
	Pr	iP			18	
	Bt	i(P)			16	
	CL	iP			22	c
27	P	eP	15	23	07	
		e			16	
	R	eP			10	
		e			18	
	Pr	iP			15	
		i			23	
	Bt	eP			17	
		i			28	
	CL	eP			04	
		e			13	
	T	e(P)		22	59	

CMO: 35.3 N 140.4 E;
15:11:02, 40 km

Date	Sta.	Phase	h	m	s	
28	MW	e	01	15	31	
		e		16	16	
	Pr	i(P)		16	36	
		e			47	
		e		29	15	
	CL	i(P)		16	39	
	T	e(P)			41	
		e		29	55	
28	R	eP	01	35	59	
		e		36	01	
		e			11	
	Pr	eP		35	54	
		e		36	10	
	Bt	eP		35	49	
		e		36	01	
	CL	eP			09	
		e			20	
	T	e(P)			29	
28	P	iPNEZ	05	49	34	
		epP			46	

(continued)

Date	Sta.	Phase	h	m	s	
July (continued)						
28	R	eP	05	49	29	
	Pr	iP			22	
		ipP			35	
	Bt	eP			17	
	W	iP			41	
	CL	iP			38	d
		e			51	
	T	iP			42	d

Tacubaya 13° 04' N
88° 29' W; 05:42:50,
100 km

Date	Sta.	Phase	h	m	s	
28	P	e	07	12	36	
		e			48	
	Pr	e			45	
	CL	e			29	

BCIS: $48\frac{1}{2}$ N $155\frac{1}{2}$ E;
07:02:06

Date	Sta.	Phase	h	m	s	
28	P	iPNEZ	07	50	53	d
		epP		52	51	
		iSNE	08	00	14	
				A	T	
		PZ		0.6	1	
		SH		1	5	
	R	iP	07	50	57	d
		epP		53	00	
		eSNZ	08	00	19	
		e		17	44	
		i		20	18	
		i			26	
		i			46	
	Pr	iP!	07	50	57	d
		ipP		52	55	
		e	08	17	50	
		i		20	16	
		i			24	
	Bt	iP	07	50	55	d
		epP		52	54	
	W	iP		50	56	d
		ipP		52	55	
		i	08	20	24	
		i			32	
	CL	iP	07	51	00	d
		epP		52	57	
		i	08	17	47	
		e		20	23	
	T	iPNEZ	07	51	04	d
		i			30	
		iSNZ	08	00	32	
		e		17	50	
		e		20	22	

Magnitude $6\frac{1}{2}$
USCGS: 21 S $178\frac{1}{2}$ W;
07:39:41, 550 km

Date	Sta.	Phase	h	m	s	
28	P	ePNZ	09	48	04	
		epP			20	
	R	eP		47	59	
		epP		48	16	
	Pr	iP		47	54	
	Bt	eP			50	
		epP		48	07	
	W	eP		48	13	
		e			31	
	CL	eP			09	

(continued)

Date	Sta.	Phase	h	m	s	
July (continued)						
28	CL	e	09	48	25	
	T	iP			19	

Peru;
BCIS: 09:38.1, 60 km

Date	Sta.	Phase	h	m	s	
28	P	e(P)	18	10	59	
		e		11	19	
	PX	eLZ		38.4		
	R	e(P)		11	01	
		e		13	04	
		e			11	
	Pr	e(P)		10	55	
		i		11	15	
	Bt	e		10	57	
	W	e			53	
	CL	e(P)			59	
		e		11	05	
		e			16	
	T	e(P)		10	48	
		e			55	
28	MW	eP	18	52	15	
	R	eP			30	
	Pr	eP			30	
	W	eP		51	59	
	CL	eP		52	01	
	T	eP		51	47	
29	P	iPNEZ	18	22	15	c
		ePcP		24	58	
	PX	iSNE		27	38	
		eScP		28	49	
		eLN		30.5		
		iScSNE		32	45	
			A		T	
		PZ	$\frac{3}{4}$		3	
		SH	$1\frac{1}{4}$		8	
		MH	35		7	
	R	eP	18	22	09	
		ePcP		24	54	
		eScP		28	45	
	Pr	iP		22	02	
		eScP		28	44	
	Bt	eP		21	58	
		eScP		28	46	
	W	eP		22	27	
		ePcP		25	03	
		eScP		28	53	
	CL	eP		22	19	
		eScP		28	51	
	T	iPNZ		22	30	
		eScP		28	57	
		iScSN		33	00	

Magnitude 6
USCGS: 13 N $90\frac{1}{2}$ W;
18:15:34

Date	Sta.	Phase	h	m	s	
29	P	iPNEZ	23	29	30	c
		i			36	
		i			46	
	PX	iSNE		38	25	
		eLNEZ		50.3		
			A		T	
		PZ	$\frac{1}{2}$		2	
		SH	$1\frac{1}{2}$		6	
		MH	5		20	
		MZ	4		20	

(continued)

Date	Sta.	Phase	h	m	s
July (continued)					
29	R	iP	23	29	31 c
	Pr	iP			32 c
		i			49
	Bt	eP			31 c
		e			47
	W	iP			32 c
		i			43
	CL	iP			37 c
	T	iP			40 c
		i			46
		eSNZ		39	08
	Magnitude 6½				
	USCGS: 16 S 173 W;				
	23:18:02				
30	R	eP	03	43	26
	Pr	iP			22
	W	eP			44
	CL	iP			37
		e			51
	T	eP			49
30	P	ePEZ	05	37	00
		eSEZ		39	03
	R	eP		36	57
		eS		38	54
	Pr	eP		37	06
		iS		38	54
	Bt	eP		37	03
	W	eP		36	53
		eS		39	06
	CL	eP		36	40
		i		37	00
		eS		38	31
	T	eP		36	41
		i		37	01
		iS		38	24
	USCGS: North central Utah				
	05:35:06				
30	P	iPNZ	06	14	56
	R	iP			58
	Pr	iP			57
	Bt	iP			55
	W	iP			58
	T	iP?		15	08
	Overlaps the next.				
	Wellington: 23 S 176 W;				
	06:02:50				
30	P	e(S)N	06	16	21
	CL	e(P)		14	53
	T	eP			40
		i			55
		iS		16	20
	USCGS: North Central Utah;				
	06:13:00				
30	P	e	06	39	01
	R	e			12
	Pr	e			16
	Bt	e(P)			13
		e			25
	W	eP		38	46
		e		39	00
		ePP		41	01
	CL	eP		38	50
	USCGS: 52 N 160 E;				
	06:28:53				

Date	Sta.	Phase	h	m	s
July					
30	P	iP	07	02	13
	R	eP			17
	Pr	iP			17
	Bt	eP			16
	W	iP			17
	CL	eP			21
	T	eP			25
	Wellington: 23 S 176 W;				
	06:50:10±				
30	Pr	iP	08	37	32
	Bt	iP			34
	W	iP			17
	CL	iP			23
	CMO: 34.1 N 132.8 E;				
	08:24:49, 10-20 km				
30	R	e(P)	09	45	24
	Pr	eP			20
		e			24
		e			35
	W	iP			21
		e			26
		e			36
	CL	eP			26
		e			31
		e			39
	T	e(P)			28
30	P	iPNEZ	21	14	17 d
		i			50
	R	iP			14 d
		i			46
	Pr	iP			10 d
		i			25
		i			42
	Bt	iP			07 d
	W	iP			26 d
		i			33
		i			56
	CL	iP			22 d
	T	iP			30 d
		e			56
	At all these stations, a small initial dilatation followed by a large compression.				
	USCGS: 22 S 69 W;				
	21:02:54, 100 km				
30	P	iPEZ	23	57	01
		epP			57
		isP		58	23
		iSNEZ	24	07	08
		eNE		08	16
			A		T
		PZ	½		2
		SH	3		7
	R	iP	23	57	04
	Pr	iP			08
	Bt	iP			10
	W	iP		56	56
		ipP		57	52
		isP		58	17
	CL	iP		57	01
	T	iP		56	56
		ipP		57	52
		iSN	24	06	54
	USCGS: 19 N 145 E;				
	23:44:44, 200 km				

Date	Sta.	Phase	h	m	s
July					
31	P	iP	10	20	19
		ipP			49
	R	iP			15
		ipP			44
	Pr	iP			10
		ipP			39
		isP			54
	Bt	iP			06
		ipP			35
	CL	eP			23
		epP			53
	T	iP			33
		ipP		21	02
	South America				
	Depth 110± km.				
31	Pr	iP	15	24	29
31	Pr	eP	19	39	59
31	Pr	e	22	47	47
	CL	e		48	18
31	P	iPNEZ	23	09	54
	PX	eLN	24	00.1	
	CL	iP	23	09	58
	T	iP		10	00
	BCIS: 34 S 69½ W;				
	22:57:33				
August					
	P	eP	00	41	46
	Small surface waves recorded				
	Pr	iP	00	41	49
		i		42	07
		i			22
	Bt	eP		41	49
	CL	eP			55
	T	e(P)			58
	USCGS: 18½ S 174 W;				
	00:30:07				
1	Pr	eP	04	21	45
	Bt	eP			46
	CL	eP			37
	T	eP			36
	BCIS: 49 N 27 W;				
	04:10:58				
1	Pr	iP	10	26	06
	W	iP		25	43
	CL	eP			46
	T	eP			37
1	P	eP	12	20	38
	Pr	iP			41
	W	iP			41
	CL	iP			46
	T	iP			48
1	P	i	16	15	31
	Pr	eP			22
		i			37
	Bt	e			42
	W	iP			06
		i			21
	CL	iP			11
		i			25
	T	iP			04
		i			18
	BCIS: Off Kamchatka;				
	16:04.8				

Date	Sta.	Phase	h	m	s
August					
2	Pr	eP	08	57	47
	CL	eP			49
	T	eP			51
		e		58	27
	USCGS: 21 S 170 E;				
	08:44:51				
2	P	iP	17	28	31
		i(pP)			57
	PX	e(S)E		39	03
	Pr	iP		28	38
		e(pP)		29	02
	Bt	eP		28	39
		e(pP)		29	03
	CL	eP		28	29
		i(pP)			55
	T	iP			29
	Marianas Is. Depth 100 km?				
	BCIS: 19 N 146 E;				
	17:16.0 Overlaps the next.				
2	P	iP	17	32	55
	PX	eSE?		44.7	
			A		T
		MH	2½		20
	Pr	iP		32	52
	CL	iP			59
	T	iP		33	01
	Wellington: 21 S 170 E;				
	17:19:58				
2	P	eP	21	11	47
	Pr	iP			53 c
		i			59
	CL	iP			46 c
		e		13	07
	T	iP		11	41 c
	CMO: 21¾ N. 144 E;				
	20:59:34, 250 km				
3	MW	i	04	45	36
	Pr	i			22
	W	e			44
	T	i			50
3	P	eP	14	29	02
	MW	iP			02
		i			21
	Pr	iP			34 c
		i			44
	Bt	eP			02
		e			13
	CL	eP			09
		e			19
	T	iP			12
		i			23
	USCGS: 17½ S 173 W;				
	14:17:35, 60 km				
4	Pr	iP	07	54	34
	Bt	eP			32
	CL	eP			50
	T	eP		55	01
4	P	ePNEZ	10	30	21
		e			30
	Pr	eP			34
		i			36
		i			41
	Bt	eP			47
	CL	eP			04

(continued)

Date	Sta.	Phase	h	m	s	
August (continued)						
4	CL	e	10	30	08	
		e			24	
	T	eP		29	47	
Off British Columbia						
USCGS: 10:26:22						
4	P	eP	11	39	25	
	Pr	eP			38	
		i			42	
	CL	eP			11	
	T	eP		38	52	
Off British Columbia						
USCGS: 11:35:27						
4	P	ePNZ	14	05	40	
		epP		06	27	
	PX	e(S)N		15	59	
		eN		17	27	
		eLN			28.1	
	Pr	iP		05	46	
		ipP		06	33	
		i			37	
	Bt	eP		05	45	
		epP		06	33	
	CL	iP		05	47	
		ipP		06	35	
	T	iP		05	47	
		epP		06	35	
BCIS: 16¼ S 167½ E;						
13:53:16, 200 km						
5	P	eP	12	04	46	
		i			53	
	Pr	iP			48	
		e		06	04	
	Bt	eP		04	58	
	CL	iP			59	
	T	iP			59	
		e		05	29	
6	P	eP	06	28	43	
		e			51	
		epP			58	
	Pr	eP			53	
		ipP		29	05	
		e			49	
	Bt	eP		28	57	
		epP		29	11	
	W	eP		28	33	
		ipP			48	
	CL	eP			38	
		epP			52	
	T	eP			32	
		epP			46	
USCGS: 51½ N 156½ E;						
06:18:32, 60 km						
Kamchatka						
6	P	eP	09	10	54	
		i(pP)		11	06	
		eE			12	
	PX	eSE		18	59	
		eLEZ			27.6	
	Pr	iP		11	03	
		i(pP)			15	
	Bt	e(P)			08	
		i(pP)			19	
	W	iP		10	44	
		i(pP)			55	
		i		11	27	

(continued)

Date	Sta.	Phase	h	m	s	
August (continued)						
6	CL	eP	09	10	49	
		i(pP)		11	01	
	T	eP		10	42	
		e(pP)			53	
		eS		18	36	
USCGS: 52½ N 159½ E;						
09:00:49						
6	P	eP	20	52	59	
		i(pP)EZ		53	11	
	PX	eL	21		08.4	
	Pr	iP	20	53	17	
	Bt	eP			19	
	CL	eP		52	47	
		e(pP)			59	
BCIS: 52 N 159¼ E;						
20:42:48, 60 km						
7	Pr	eP	06	30	10	
		i			23	
		i			33	
		i		31	02	
	Bt	eP		30	17	
		e			26	
	W	eP		29	45	
		e			51	
	CL	eP		29	51	
		e		30	09	
USCGS: 54 N 163½ W;						
06:22:43						
7	Bt	e(P)	10	15	27	
	W	e(P)			05	
	CL	e(P)			01	
		e			10	
8	Pr	e	09	43	24	
	CL	e			37	
Peru						
BCIS: 16½ S 74¾ W;						
09:32:39						
8	Pr	iP	11	51	26	
	Bt	eP			26	
	W	eP			21	
	CL	eP			26	
8	Pr	eP	13	25	24	
	Bt	eP			26	
	W	eP			07	
	CL	eP			12	
CMO: 42.2 N 143.2 E;						
13:13:44, 60-70 km						
8	P	iPEZ	18	49	35	d
		ipP			45	
	Pr	iP			45	d
		ipP			55	
		i		50	11	
		i			26	
		e			34	
	Bt	e		49	44	
		e			58	
	W	iP			25	
		ipP			34	
		i			49	
	CL	iP			19	
		ipP			40	
USCGS: 52½ N 159½ E;						
18:39:30						

Date	Sta.	Phase	h	m	s	
August						
9	Pr	eP	00	34	37	
		i			42	
		i			57	
	W	eP			37	
	CL	eP			41	
Wellington: 19 S 175 E						
00:22:12						
9	PX	eLE	06		01.7	
(L overlaps P of the next shock.)						
	Pr	e	05	52	11	
		e			21	
	Bt	e			11	
	W	e			44	
	CL	e			45	
9	P	iPNEZ	06	04	47	d
		ipPNEZ		05	17	
		isPNEZ			30	
	PX	iSNZ		14	10	
			A		T	
		PZ	0.3		1½	
		PH	0.1		1½	
		SH	¾		4	
	Pr	iP	06	04	40	
		ipP		05	10	
		isP			24	
	Bt	iP		04	36	d
		ipP		05	06	
		isP			19	
	W	iP		04	56	d
		ipP		05	27	
		isP			40	
	CL	iP		04	51	d
		ipP		05	21	
		isP			35	
	T	iP			01	
		ipPNZ			30	
Initial dilatations all small.						
USCGS: 22 S 68½ W;						
05:53:24, 150 km						
9	P	ePNZ	07	54	47	
		e			52	
		ePPNZ		58	45	
	PX	eSNZ	08	07	49	
		eLNEZ			21	
			A		T	
		MH	4		20	
	Pr	eP	07	54	49	
		e			53	
	Bt	e(P)			52	
	CL	eP			41	
USCGS: 38½ N 21 E;						
07:41:05						
9	P	iPNEZ	16	24	02	
		ipP			22	
	Pr	iP			08	
	Bt	iP			11	
	W	iP		23	56	
		ipP		24	18	
	CL	iP			00	
		epP			22	

(continued)

Date	Sta.	Phase	h	m	s	
August (continued)						
9	T	iP	16	23	48	
		e		24	07	
CMO: 26 N 144 E;						
16:11:47, 150 km						
9	P	ePNEZ	22	01	09	c
		iNEZ			15	
		iNEZ			24	
		iSNE		02	21	
	CL	iP		00	47	
		i			56	
		i		01	05	
		iS			36	
	H	e(P)NEZ			00	
		iSE			39	
	T	eP		00	50	
		i			58	
		iS		01	40	
	W	iP		01	03	
		i			15	
		iS		02	08	
	BB	iP		00	58	
		i		01	09	
		iS			57	
Pasadena: Magnitude 4.5						
37° 30' N 114° 20' W;						
22:00:00						
Lincoln County, Nevada						
10	Pr	e	00	51	47	
	W	e			47	
	CL	e			52	
10	P	iP	01	24	57	
		iNZ		25	05	
	Pr	eP		24	55	
		i			58	
		i		25	06	
	Bt	eP		24	54	
	W	eP			58	
		i		25	07	
	CL	eP			00	
		e			11	
	T	eP			03	
		e			15	
Wellington: Tonga Region						
01:13:28						
10	Pr	e(P)	07	18	28	
		e			41	
	Bt	e			31	
	CL	e(P)			12	
		e			26	
10	P	iPNEZ	12	08	52	
	Pr	iP			40	
	Bt	eP			36	
	W	eP		09	02	
	CL	eP		08	56	
USCGS: 6 N 82½ W;						
12:00:50						
10	P	iPNEZ	10	51	39	d
		i		52	15	
	Pr	iP		51	43	d
		i		52	09	
		i			38	
	Bt	iP		51	42	

(continued)

Date	Sta.	Phase	h	m	s
August (continued)					
10	W	iP	10	51	37 d
		i		52	03
	CL	iP		51	44 d
		e		52	07
		e		55	12
	T	iP		51	41
Solomon Islands					
USCGS: 10:38:48					
11	P	eP	03	46	06
		iPPNZ		50	03
	PX	iSKSN		56	47
		eSN		57	10
		iPS		59	04
		eGN	04	11.4	
			A		T
		PZ	¼		2
		PPZ	2½		5
		PPH	1		5
		MH	25		20
	Bt	eP	03	46	06
		i			13
		ePP		50	10
		ePKKP	04	02	49
	W	eP	03	45	58
		i		46	05
		ePP		49	59
		ePKKP	04	02	36
		i		03	14
		e		10	51
	CL	iP	03	45	56
		i		46	03
		ePP		49	55
		ePKKP	04	02	37
		eSKKP		06	49
	T	iP	03	45	55
		ePP		49	47
		eSKSN		56	39
Magnitude 6¾					
Ionian Islands, west coast of Greece.					
USCGS: 38 N 21 E; 03:32:24					
11	P	iPEZ	12	17	35
	Pr	iP			46
	Bt	iP			50
	W	iP			25
		e			35
	CL	eP			30
BCIS: 51 N 178½ W; 12:09:07					
11	Pr	e	13	24	47
	CL	e			40
USCGS: 13:11:06					
Greece Aftershock					
11	R	eP	20	17	05
	Pr	iP			06
		epP		19	01
	Bt	eP		17	02
	W	eP			05
		epP		18	54
	CL	eP		17	10
		epP		19	00
Wellington: Tonga Region 20:05:57, 500 km					

Date	Sta.	Phase	h	m	s
August					
11	Pr	eP	20	34	37
	CL	eP			56
12	P	iP	06	51	14
		epP		53	14
	R	eP		51	15
		epP		53	17
	Pr	iP		51	16
		epP		53	18
	W	eP		51	15
		ipP		53	15
	CL	iP		51	19
		epP		53	21
BCIS: 18½ S 177¾ W; 06:40:16: 600 km					
12	P	ePNZ	09	37	35
		e		40	29
		i			47
		iPPNEZ		41	35
	PX	iSKSNE		48	11
		eSE		49	13
		iPSNE		50	32
		eLNE	10	02	.
	P	iP'P'		02	24
			A		T
		PZ	¼		1½
		PPZ	2		3
		PPH	1		3
		MH	60		20
	R	eP	09	37	32
		iPP		42	36
		iPKKP		54	04
	Pr	iP	09	37	36 c
		e		40	44
		iPP		41	37
		iPKKP		54	07
		e			36
		eP'P'	10	02	22
	Bt	eP	09	37	36
		i			49
		ePP		41	38
		eP'P'	10	02	23
	W	eP	09	37	30
		iPP		41	30
		e		43	28
		iPKKP		54	06
		eP'P'	10	02	17
	CL	eP	09	37	27
		i			31
		e		40	28
		iPP		41	26
		IPKKP		54	06
		eP'P'	10	02	27
	T	iP	09	37	23
		ePP		41	09
		eSKSN		48	01
		i(S)NZ		50	03
Magnitude 7.1±					
BCIS: 38.1 N 20.8 E; 09:23:49					
Disastrous, Ionian Islands					
12	CL	e	11	47	20
Aftershcok					

Date	Sta.	Phase	h	m	s
August					
12	P	iP	12	19	04
		e		22	34
		iPP		23	07
	R	eP		19	02
		ePP		22	57
	Pr	iP		19	05
		e		22	01
		ePP		23	07
	Bt	eP		19	06
		ePP		23	10
	W	eP		19	00
		ePP		22	58
	CL	eP		18	57
		ePP		22	54
	T	ePP		22	54
Aftershock, Magnitude 6					
USCGS: 38 N 21 E; 21:05:22					
12	R	eP	12	35	31
	Pr	eP			30
	W	eP			33
	CL	eP			35
These times would fit well for PKKP of the preceding; but the motion looks too large.					
12	P	eP	14	22	26
		ePP		26	20
	R	eP		22	19
	Pr	eP			23
		ePP		26	23
	CL	eP'		22	14
		ePP		26	07
USCGS: 38 N 21 E; 14:08:38					
12	CL	eP	16	22	06
USCGS: 38½ N 21 E; 16:08:32					
12	P	eP	17	05	40
		i			45
	PX	e(PP)		08	51
		iSNE		15	35
		e		16	27
			A		T
		PZ	½		3
		PPZ	½		5
		SH	4		9
		MH	12		20
	R	eP	17	05	41
	Pr	eP			43
	W	eP			44
	CL	eP			48
	T	iP			52
		iSN		15	54
Magnitude 6¼;					
USCGS: 22 S 175 W; 16:53:42					
12	P	e	20	48	15
	R	eP			00
		e(pP)			15
	Pr	eP			24
		i			30
	W	eP		47	49
		i(pP)		48	01
		i			03
	CL	eP		47	55
		i(pP)		48	09

Date	Sta.	Phase	h	m	s
August					
13	P	eP	01	37	14
		e			43
	R	eP			11
		e			17
	Pr	eP			07
		i			13
	Bt	eP			03
	W	eP			21
	CL	eP			21
		e			27
	T	e			27
13	R	eP?	04	26	52
		e		27	12
	W	e			28
		e			39
	CL	e			21
		e			45
BCIS: 04:17.5					
Kamchatka					
13	Pr	i(P)	05	57	44
	Bt	i(P)			47
	W	i(P)			27
13	P	e	06	09	38
		e			46
	Pr	i(P)			53
		i		10	07
	Bt	e(P)		09	58
	W	e(P)			29
		i			43
	CL	e(P)			35
		i			48
		e		11	48
	T	e		09	34
USCGS: 53 N 167 W; 06:02:12					
13	Pr	eP	07	48	34
	W	eP			33
	CL	eP			38
13	P	eP	09	36	00
		i			05
		iPP		39	35
		i			53
	PX	eSKSE		46	26
		iSN			39
		iNE		47	25
		iSPE			27
		eGNE			59.6
		eRNEZ	10	03.5	
			A		T
	PZ	PZ	1		3
		PH	½		3
		PPZ	1		3
		SH	6		10
		MH	20		20
	R	eP	09	36	02
		i			09
		i			26
		eSKSE		46	28
	Pr	iP	09	36	04
		i			10
		i			28
		i			39
		i		37	18
	Bt	iP		36	05

(continued)

Date	Sta.	Phase	h	m	s
August (continued)					
13	Bt	i	09	36	11
		e			25
		i			39
	W	eP			02
		i			08
		ePP		39	34
		e			54
	CL	eP		36	06
		i			12
		i			23
		e			27
		i			39
	T	eP		36	08
		iN		46	57
		iN		47	43
	Magnitude 6¾-7				
	USCGS: 21½ S 170 E; 09:23:23, 150 km				
13	P	iPEZ	10	14	11
	R	iP			06 c
		ePcP		16	51
	Pr	iP		14	00 c
		i			10
	Bt	iP		13	57 c
		e		14	05
	W	iP			22 c
		ePcP		16	57
	CL	eP		14	15 c
		ePcP		16	54
	T	iP			27
	Tacubaya: 12° 05' N 90° 40' W; 10:07:34				
13	R	iP	21	02	47
	Pr	iP			52
	CL	iP			40
15	Pr	eP	19	15	08
	CL	eP			11
	South America; BCIS: 19:03.3				
16	P	iPNEZ	03	19	36 d
		ipPNZ		20	13
		isP			29
	PX	eSN		27	29
	R	iP		19	31 d
		isP		20	21
	Pr	iP		19	26 d
		ipP		20	05
		isP			18
	Bt	iP		19	22 d
		isP		20	16
	CL	iP		19	40 d
		epP		20	17
	T	iPNEZ		19	48
	USCGS: 7 S 74 W; 03:09:50, 150 km				
17	P	iP"	03	33	37
		ePP		35	18
	R	eP"		33	38
	Pr	eP"			39
		ePP		35	28
	Bt	iP"		33	41
		ePP		35	31
	CL	iP"		33	37
		ePP		35	19
	T	eP"		33	35
	USCGS: 7½ S 115 E; 03:14:33				
August					
17	P	iP	18	27	02 d
	R	iP			05
		i			20
	Pr	iP			12 d
		i			20
		e			28
		e			43
	Bt	iP			16 d
		e			23
		i			42
	W	iP		26	52 d
		i		27	22
		i			26
	CL	iP		26	56 d
		e		27	28
	T	iP		26	48
		i		27	17
	Intermediate depth, or more than one shock. USCGS: 53 N 159 E; 18:16:55				
17	PX	eLEZ	22	10.8	
	Pr	eP	21	55	38
	CL	iP			20
	USCGS: 76½ N 92 W; 21:47:22				
18	W	eP	04	45	13
		i(pP)			27
	CL	e(pP)			33
	USCGS: Andreanof Is. Aleutians; felt at Adak. 04:37:15, 60 km				
18	CL	e(P)	14	35	20
18	Pr	iP	18	56	55 c
	W	iP			55
	CL	iP			58
19	W	eP	07	05	23
	CL	eP			30
19	R	eP?	08	30	25
		epP		31	11
	Pr	eP		30	21
		epP		31	05
	W	iP		30	35
		e(pP)		31	16
	CL	eP		30	26
	USCGS: 14½ N 59½ W; 08:21:00, 100 km				
19	Pr	iP	08	46	01
	W	iP			02
	CL	eP			07
	Southwest Pacific?				
19	R	iP	08	54	43
	Pr	iP			48
	Bt	iP			58
	W	iP			21
		i			32
	CL	eP			26
		e			37
	BCIS: Northwest Pacific				
19	W	iP	10	23	44
		i			55
	CL	i			48
	BCIS: Near east coast of Kamchatka, 10:13:44.				

December 15, 1954
C. F. Richter
Violet Taylor

Date	Sta.	Phase	h	m	s	
August						
20	R	iP	01	37	24	
	Pr	iP			25	
	W	iP			24	
	CL	iP			28	
20	R	e(P)	04	33	02	
	W	e			15	
	CL	e			10	
		e			30	
	South America					
21	R	iP	03	44	27	
	Pr	iP			22	
	W	eP			41	
	CL	iP			36	
21	P	iPNEZ	13	40	13	
		e		41	01	
	PX	eLZ	14	04.4		
	R	iP	13	40	08	c
	Pr	iP			04	c
		i			17	
		i			44	
	Bt	eP			03	
	W	iP			19	
		i			28	
	CL	iP			11	
	T	iP			17	
	USCGS: 18 N 67 W; 13:31:30					
21	R	e(P)	14	40	56	
	Pr	e(P)			56	
	W	e		39	38	
		i			57	
		i		40	05	
	CL	e			56	
21	P	ePNZ	16	54	34	
		ipPNEZ		55	01	
		i			56	
	R	eP		54	29	
		ipP			56	
	Pr	iP			24	
		ipP			51	
	Bt	epP			47	
	CL	eP			37	
		ipP		55	04	
	T	iP		54	46	
		ipP		55	13	
	USCGS: 4 N 76½ W; 16:45:57, 150 km					
22	P	iP	00	34	43	
	R	iP			46	
	Pr	iP			48	
		e		35	24	
	W	iP		34	41	
		i		35	27	
	CL	eP		34	47	
		e		35	22	
		e			32	
	T	eP		34	44	
		e		35	29	
		e		36	09	
	Intermediate depth? USCGS: 6 S 147 E; 00:21:06					
22	Pr	i(P)	05	53	39	
	CL	e			38	
	T	e			38	

Date	Sta.	Phase	h	m	s	
August						
22	R	e(P)	09	17	22	
		e			35	
	CL	e		16	39	
		e			43	
	T	i			37	
	USCGS: 09:06:26 Kamchatka					
23	PX	ePP	07	36	27	
		eSSE		51	09	
		eLEZ	08	06.3		
	R	ePP	07	36	32	
	Pr	ePP			02	
		e			16	
	W	ePP			40	
	CL	e		37	06	
	T	ePP		36	22	
		e			32	
	BCIS: 1¼ S 13¾ W; 07:18:05					
23	Pr	iP	11	00	34	
		i			38	
	W	iP			25	
	CL	iP			32	
	T	iP			33	
24	P	ePNEZ	04	46	41	
	R	eP			36	
	Pr	iP			33	
	W	iP			50	
	CL	iP			44	
	T	eP			51	
	USCGS: 5 N 72 W; 04:37:36					
24	P	iPNEZ	13	27	15	d
		ipP			30	
		i			48	
		iPcP		30	08	
	PX	eSNEZ		32	24	
	P	iScP		33	51	
		e		34	24	
	PX	eGN		35.3		
		eREZ		37.3		
		iScSNE		37	46	
				A	T	
		PZ		¾	1½	
		PH		¾	1½	
		MH		3	20	
	R	iP	13	27	10	
		ipP			27	
		iPcP		30	07	
		iScP		33	47	
	Pr	iP!	13	27	03	d
		i			11	
		ipP!			20	
		i			30	
		i		28	05	
		iPcP		30	04	
		iScP		33	45	
	Bt	eP		27	00	d
		epP			15	
		iPcP		30	04	
	W	iP		27	28	d
		ipP			41	
		iPcP		30	12	
		ipPcP			28	
		eScP		33	55	

(continued)

Date	Sta.	Phase	h	m	s
August (continued)					
24	CL	iP	13	27	21 d
		ipP			35
		iPcP		30	10
		ipPcP			27
		eScP		33	30
		eScS		37	56
	T	iPEZ		27	32 d
		i			39
		ipP			47
		iPcP		30	14
		iScP		33	56
		e		34	30
		eScSE		37	55
	Magnitude 6½				
	USCGS: 14½ N 91 W;				
	13:21:00, 100 km				
24	W	iP	15	12	56
	CL	eP		13	00
	T	eP		12	54
	CMO: 37.9 N 141.9 E;				
	15:01:19, 55-60 km				
25	P	ePZ	02	17	28
		iNEZ			33
		i			42
	PX	e(S)N			28.3
		ePSEZ			29 51
		eGN			41.9
		eREZ			46.0
			A		T
		PZ	¼		1
		SH	2		16
		MH	20		20
	R	eP	02	17	32
		i			36
	W	iP			26
	CL	eP			31
		i			45
	T	eP			30
		i			51
	Magnitude 6½-6¾				
	USCGS: 5 S 152 E;				
	02:04:13				
25	MW	eP	11	49	49
	R	eP			53
		e		50	10
		e			18
		iPcP		51	30
	W	iP		49	38 d
		i			51
		i		50	04
	CL	iP		49	44 d
		iPcP		51	26
		eScP		55	12
	T	iP		49	34
		i			51
		iPcP		51	22
	USCGS: Andreanof Is.				
	(Aleutian Is.) 11:41:30				
25	W	e	13	16	55
	CL	e			59
	T	e			59

Date	Sta.	Phase	h	m	s
August					
25	P	eP	14	04	35
	CL	eP			37
	T	e			32
26	P	i(P)	19	15	31
		i			42
	R	e(P)			32
	Pr	i(P)			25
		i			40
	CL	e(P)			39
	T	e(P)			46
	BCIS: 36 S 100 W;				
	19:03:58				
27	P	iP	12	38	40
	Pr	iP			42
	CL	eP			49
	T	eP			52
27	P	eP	12	44	49
	Pr	iP			52
	CL	eP			57
	T	eP			59
27	Pr	e	13	34	31
		e			41
	CL	e			53
	T	e			15
27	P	eP"	21	05	29
		i			36
	Bt	i			48
	CL	iP"			18
		ePP		08	38
	T	eP"		05	15
	BCIS: 2.4 N 97.5 E;				
	20:46:10				
27	P	eP	22	27	57
		i		28	00
	PX	iSNE		37	09
			A		T
		PZ	0.1		1
		SH	½		3
	R	eP	22	27	58
	Pr	eP		28	02
		i			09
	CL	eP		27	50
	T	ePEZ			44
	CMO: 43.2 N 142.5 E;				
	22:16:40; 150-160 km				
27	CL	e	23	52	45
	T	e		51	10
	BCIS: 58 S 28 W;				
	23:32:10				
28	P	eP	10	56	48
	CL	eP			31
	T	eP			23
	BCIS: 64 N 142 W;				
	10:50:05				
28	Pr	e(P)	11	57	08
	Bt	e(P)			07
	CL	e(P)			21
		e			35
	T	e(P)			31
		e			42
	BCIS: 7¾ N 83 W;				
	11:49:29				

Date	Sta.	Phase	h	m	s
August					
29	Bt	e	02	16	47
		e		17	27
	CL	e		16	54
	T	e		17	21
	BCIS: 28 N 82 E;				
	01:58:26				
29	P	eP	13	46	43
		e		47	04
		e			19
	Pr	e		46	59
	CL	eP		47	02
	T	e		46	59
	BCIS: 27½ N 124 E;				
	13:33:53				
31	P	iP	04	15	07
	Pr	e(P)			21
		i			33
	CL	eP			01
		e			17
	T	eP		14	52
		e		15	09
	USCGS: 52½ N 161 E;				
	04:05:08				
31	P	eP	06	59	09
	CL	e			13
	USCGS: Off New Guinea				
	06:45:37				
31	P	iP	08	02	42
		i(pP)			57
		i		03	07
	PX	iSNE		10	42
		eR		20	31
	P	eP'P'		32	29
		e			45
			A		T
		PZ	0.2		1½
		SH	0.9		4
	Pr	iP	08	02	51
	Bt	eP			57
		e		03	13
	CL	eP		02	35
		eP'P'		32	25
	T	iP		02	18
		iEZ			44
		i		03	14
	Magnitude 6½				
	USCGS: 53½ N 160 E;				
	07:52:46, 60 km				
31	P	ePEZ	17	20	12
		iNZ			17
	Pr	eP			21
		i			28
	Bt	e			31
	CL	eP			02
		i			12
	T	eP		19	53
		i		20	04
	USCGS: 53 N 160 E;				
	17:10:06				
31	P	eP	17	25	23
		iEZ			28
	Pr	eP			34
		i			39

(continued)

Date	Sta.	Phase	h	m	s
August (continued)					
31	Bt	e	17	25	42
	CL	eP			20
		i			24
	T	i			16
	USCGS: 53 N 160 E;				
	17:15:20				
31	MW	eP	18	23	45
		i			55
	Pr	iP			54
	Bt	eP		24	08
	CL	eP		23	38
		i			48
	T	eP			41
September					
1	P	ePNEZ	12	06	37
	Bt	eP			49
	T	eP			27
	CMO: 41.6 N 136.9 E;				
	11:54:51, 10 km				
1	P	iPNEZ	17	50	18
	Bt	eP			21
	T	iP			25
	Wellington: 20½ S 176 E;				
	17:37:32				
2	P	e	07	55	42
		e		59	05
	T	e		55	39
2	P	eP	13	40	03
	Bt	eP		39	50
		e			53
	T	eP		40	17
2	P	iP	18	36	27
	R	eP			29
	Bt	eP			28
	T	eP			27
	Wellington: 16 S 172 W;				
	18:25.2				
3	R	eP	01	13	57
	Bt	eP		14	04
	T	e			02
	CMO: 36.1 N 139.9 E;				
	01:01:54, 40 km				
3	R	e(P)	17	54	47
	Bt	e		55	12
	T	e(P)		54	15
4	P	iPNEZ	07	33	22 c
		ipP			38
		i			54
	PX	iSEZ		41	42
		isSN		42	09
		eSSEZ			45.6
		eGNE			48.8
		eRNEZ			51.1
	P	eP'P'	08	02	21
		i			33
			A		T
		PZ	4		6
		PH	½		5
		pPZ	6		6
		SH	10		7
		P'P'Z	1½		5
		MH	100		30
		MH	30		20

(continued)

Date	Sta.	Phase	h	m	s	
September (continued)						
4	R	iP	07	33	25	
		ipP			40	
	Bt	iP			35	c
		ipP			51	
		eP'P'	08	02	27	
	W	iP	07	33	12	c
		ipP			28	
		i			57	
	T	iP			09	c
		i			25	
		eSNE		41	16	
		eP'P'	08	02	44	
	Magnitude $6\frac{3}{4}$					
	USCGS: 50 N $156\frac{1}{2}$ E;					
	07:23:05, 60 km					
4	P	iP	08	00	25	
	R	iP			29	
	Bt	iP			27	
	W	iP			29	
	T	iP			24	
	pP confused by P'P' of preceding?					
	Wellington: 20 S 175 W;					
	07:49:30, 500 km					
4	P	iPNEZ	14	19	21	c
		ipP			34	
		i			46	
	PX	iSNE		29	22	
		i(sS)N			43	
	P	eRNEZ			45.2	
		e(P'P')		46	28	
			A		T	
		PZ	4		5	
		PH	$1\frac{1}{2}$		5	
		SH	4		8	
		MH	15		20	
	R	iP	14	19	18	c
		ipP			33	
		i(P'P')		46	23	
	Bt	iP		19	10	c
		ipP			25	
	W	iPEZ			29	c
		ipP			43	
		e(P'P')		46	11	
	T	iPNEZ		19	34	c
		ipP			49	
		iSNE		29	47	
	Depth 50 km ±, Magnitude $6\frac{3}{4}$					
	USCGS: 32 S 71 W;					
	14:07:13					
4	P	e(P)EZ	21	04	09	
		eE			14	
		eSNEZ		05	28	
	R	eP		03	42	
		e			59	
		e(S)		05	05	
	Bt	eP		03	39	
		eS		05	09	
	Magnitude 4.5					
	34.8 N 111.1 W; 21:02:17					
	Near Winslow Arizona					
5	P	e	14	42	11	
	PX	eLNZ	15	15.4		
	BCIS: 37.8 N 23 E;					
	14:18:41					

Date	Sta.	Phase	h	m	s	
September						
5	P	iPEZ	19	08	26	c
		i(pP)			41	
	PX	iSEZ		16	44	
		eGN		23.3		
		eREZ		26.1		
	P	eP'P'		37	47	
			A		T	
		PZ	0.3		2	
		SH	$1\frac{1}{2}$		6	
		MH	10		20	
	R	eP	19	08	29	c
		e(pP)			44	
	Bt	eP			41	
	T	iPNEZ			13	c
		eS		16	15	
	Magnitude $6\frac{1}{2}$, h = 50 km?					
	USCGS: 51 N 157 E;					
	18:58:09					
6	P	eP	07	50	52	
	R	eP			55	
	W	eP			49	
	T	eP			52	
	USCGS: $5\frac{1}{2}$ S 149 E;					
	07:37:24					
6	P	iPNEZ	08	22	47	d
		e		24	05	
	PX	eSE		28	10	
	P	eScP			28	
	R	iP		22	51	d
		eScP		28	30	
	Bt	iP		23	04	d
		e(pP)			53	
		eScP		28	36	
	W	iP		22	34	d
		i		23	25	
		eS		27	56	
		iScP		28	22	
	T	iPNEZ		22	30	d
		e		23	54	
		eSNEZ		27	51	
		iScP		28	22	
	USCGS: 56 N 162 W;					
	08:15:50, 200 km					
7	P	e(PP)	04	17	07	
		e			20	
	PX	eLNE		42.5		
			A		T	
		MH	8		20	
	T	e(P)		12	52	
		e(PP)		16	53	
	Magnitude 6±					
	BCIS: $41\frac{1}{4}$ N $32\frac{3}{4}$ E;					
	03:58:57					
7	P	eP	05	11	26	
		i(pP)			40	
	R	eP			28	
	Bt	eP			34	
	W	eP			20	
		e(pP)			34	
		e(PP)		14	02	
	T	eP		11	22	
	BCIS: 14.0 N $146\frac{1}{4}$ E;					
	04:58:39					

Date	Sta.	Phase	h	m	s	
September						
9	P	e	00	18	52	
	Bt	e			59	
	W	i			48	
	T	e			52	
		e		19	18	
	USCGS: 00:06:08					
	Marianas Islands					
10	P	iP	02	41	24	
	W	iP			26	
	T	iP			33	
10	PX	iPP	04	24	38	
		eN?		30	02	
		eN		31	03	
		ePSN		34.0		
		eSSN		39.9		
		eLNE		53		
			A		T	
		PPZ	2		3	
		MH	12		20	
	T	eP	04	20	04	
		e		23	34	
		ePP		24	20	
	Magnitude $6\frac{1}{2}$					
	USCGS: 35 N 32 E;					
	04:06:00					
11	R	iP	18	05	15	
	Bt	iP			18	
	W	iP			.01	
	CMO: 32.2 N 137.8 E					
	17:53:25, 320 km					
12	P	iP	15	14	30	
	R	iP			33	
	T	iP			32	
	USCGS: 15:01:09					
	New Britain					
13	P	eP	14	11	24	
	R	eP			27	
13	P	iPNEZ	21	20	43	
	R	iP			46	
	Bt	iP			46	
	BCIS: 21:07.8					
	New Hebrides Region					
14	P	iPNEZ	00	38	43	
		i		39	07	
		i			14	
	PX	i			32	
		iPP		41	46	
		eSE		48	45	
		iSN			54	
		eSSN		53.7		
		iGNE		59.3		
		eREZ	01	03.0		
			A		T	
		PZ	2		4	
		PH	1		4	
		PPZ	1		4	
		SH	7		15	
		MH	15		20	
	R	eP	00	38	47	
		i		39	09	
		i			17	
		iPP		41	49	
		eP'P'	01	05	36	

(continued)

Date	Sta.	Phase	h	m	s	
September (continued)						
14	Bt	eP	00	38	47	
		e			07	
		i			16	
	T	iPNZ			52	
		i		39	42	
		eSN		49	16	
		e			42	
	Magnitude $6\frac{3}{4}$					
	USCGS: $18\frac{1}{2}$ S $178\frac{1}{2}$ E;					
	00:26:36, 60 km.					
	Damage in the Fiji Islands;					
	Seismic Sea Wave.					
14	P	eP	09	08	11	
	R	e			28	
	Bt	eP			28	
		e			37	
	T	eP			01	
	USCGS: 52 N $161\frac{1}{2}$ E;					
	08:58:12					
14	P	eP'EZ	10	33	42	
		i			55	
		i		34	08	
	R	iP'		33	39	
		i			45	
	Bt	eP'			37	
	W	e			59	
	T	eP'			48	
		e			52	
	BCIS: Foreshock of next,					
	10:14:00					
14	P	eP'	11	31	46	
		iNEZ			48	
		i		32	06	
		i			12	
		i			37	
	Small surface waves recorded.					
	Distance 148°					
	R	eP'	11	31	45	
		i			50	
	Bt	eP'			43	
		i			47	
	W	eP'		32	01	
	T	eP'		31	56	
	USCGS: $52\frac{1}{2}$ S 26 E;					
	11:12:06					
14	P	eP	14	26	12	
	R	eP			13	
	T	eP			00	
	BCIS: 50 N $157\frac{1}{4}$ E;					
	14:15:59, 60 km					
15	P	ePNZ	11	14	40	
	R	eP			43	
	T	eP			46	
	USCGS: 9 S $156\frac{1}{2}$ E;					
	11:01:34					
16	P	eP	01	18	29	
	R	eP			24	
16	P	ePNEZ	02	00	13	
	PX	eSNZ		09	38	
		eR		21.5		
			A		T	
		PZ	$\frac{1}{4}$		2	
		SH	5		24	
		MH	8		18	
	R	eP	02	00	17	

(continued)

Date	Sta.	Phase	h	m	s
September (continued)					
16	Bt	eP	02	00	06
	T	eP			08
Magnitude 6¼+					
BCIS: 14¾ S 174½ W;					
01:48:43					
16	P	iP	04	26	35
	R	eP			37
	Bt	eP			37
	T	eP			18
Tonga Region.					
BCIS: 04:15.4					
16	P	e	12	27	19
	PX	eLN			56.9
16	P	ePNZ	17	56	54
	PX	eLN	18	01	
			A		T
		PZ	0.2		2
		MH	4		10
	R	iP	17	56	49
	Bt	eP			27
	T	ePNZ		57	26
16	P	iP	21	52	17
		i			32
	R	eP			20
	T	eP			06
		e			20
USCGS: 47½ N 152½ E;					
21:41:37, 60 km.					
17	P	ePNZ	09	19	51
	PX	eLN			26.7
			A		T
		MH	1		10
	R	iP	09	19	46
	T	ePNZ		20	14
		eNZ		26	08
Mexico					
17	P	eP	21	23	30
		iNEZ			33
		ipP			54
		isP		24	04
	PX	iSNE		33	12
		eGN			43.0
			A		T
		PZ	2		3
		PH	1		3
		SH	3		8
		MH	10		15
	R	eP	21	23	33
	Pr	iP			33
		i!			36
		ipP			55
	T	iPNEZ			43
		epP		24	09
		eSN		33	35
Magnitude 6¾					
USCGS: 20½ S 174 W;					
21:11:48, 100 km					
18	Pr	iP	02	49	33
18	P	iP	04	28	43
	Pr	iP			47
Near Apia					

Date	Sta.	Phase	h	m	s
September					
18	R	eP	10	30	11
		epP		32	08
	Pr	iP		30	10
		epP		32	.08
Tonga Kermadec Region					
18	Pr	e	11	37	00
18	Pr	iP	12	24	15
18	P	eP	15	20	00
	Pr	iP			01
Wellington: 20½ S 174 W;					
15:08:25					
18	P	ePEZ	22	33	28
	Pr	iP			31
		i			44
		i		34	09
	W	iP		33	30
		i			43
Wellington: 20½ S 174 W;					
22:21:54, 100 km					
18	Pr	eP	23	29	02
	W	eP			02
19	Pr	iP	18	35	49
		i		36	04
	W	eP		35	49
Wellington: 20 S 174 W;					
18:24.3					
20	P	eP	09	22	41
	Pr	iP			55
		i		23	02
	W	i		22	40
USCGS: 51 N 179 W;					
09:14:22, 100± km					
20	Pr	i(P)	13	39	23
		i			33
20	P	eP"	19	14	51
	Pr	iP"			49
	T	eP"			56
BCIS: 55¾ S 1½ E;					
18:55:26					
21	MW	eP	23	06	33
	Pr	iP			37
	W	eP		05	51
		e		06	33
22	P	eP"NEZ	11	02	24
	Pr	iP"			21
South Atlantic					
BCIS: 10:43.5					
23	MW	eP	00	46	35
		e		47	39
	R	eP		46	37
	Pr	iP			37
		i		47	39
	W	iP		46	34
		e		47	38
	CL	iP		46	39
		i		47	42
	T	eP		46	39
23	P	iPEZ	02	24	54 c
		i		25	05
		ipPEZ!			09
		i			35

(continued)

Date	Sta.	Phase	h	m	s
September (continued)					
23	PX	ePP	02	27	27
		iSE		33	12
		isSN			45
		eSSNE			37.2
		eGN			40.3
		eREZ			42.9
	P	eP'P'		54	01
	PX	eW2	03		42.3
			A		T
		PZ	4		8
		PH	2½		8
		PPZ	3		10
		SH	6		6
		MH	200		50
		MH	30		20
		MZ	35		20
	R	iP	02	24	56 c
		ipP		25	12
		i			26
		eP'P'		53	58
		e		54	06
	Pr	iP		25	02 c
		i			11
		ipP			16
	W	iP		24	44 c
		ipP		25	00
		iPP		27	09
	CL	iP		24	49 c
		ipP		25	00
		i			17
		i			33
		iPP		27	18
	T	iPNZ		24	42 c
		ipPNZ			57
		i		25	17
		i			29
		eSE		32	52
Pasadena: 50¾ N 157 E;					
02:14:35, 60 km,					
Magnitude 6¾					
23	P	eP"	09	22	38
	CL	eP"			38
Djakarta gives 9½ S 112½ E;					
09:03:44					
24	Pr	e	10	50	15
	CL	e		49	55
24	Pr	i(P)	11	18	31
		e		21	12
	CL	e(P)		18	33
Mexico					
24	P	i	16	17	10
	R	e			13
	CL	eP		16	53
		e		17	07
BCIS: 26¼ N 127¾ E;					
16:03:34					
25	P	ePEZ	00	57	38
		e		58	45
	R	e		57	43
	W	eP		57	32
	T	e			32
USCGS: 28½ N 140½ E;					
00:45:13					

Date	Sta.	Phase	h	m	s
September					
25	P	e(P)	03	07	53
	R	e(P)			55
	W	e(P)			53
	T	e(P)		08	02
South Pacific					
25	PX	eL	12	35.8	
Surface waves also recorded					
at european stations.					
Epicentral region unknown					
25	P	iPNEZ	13	53	35 d
		i		54	04
	PX	iSNE	14	03	54
		eLEZ			19.1
	R	eP	13	53	38
	Pr	iP			41 d
	T	iPNEZ			28 d
USCGS: 28 N 140 E;					
13:41:08					
(CMO adds h = 100 km).					
25	P	iP	20	58	14
	R	eP			18
		epP			33
	Pr	iP			24
		ipP			38
	T	ePEZ			01
USCGS: 54 N 160 E;					
20:48:20, 60 km					
26	P	iPEZ	01	12	43
		ipPNZ			58
	PX	eSE		21	02
		eGN			27.9
		eREZ			29.6
	R	iP		12	43
		epP		13	01
	Pr	iP		12	53
		ipP		13	07
	W	iP		12	33
		ipP			58
	T	iPNEZ			32
		ipPEZ			45
		eSE		20	39
		eSNZ			45
USCGS: 50 N 157½ E;					
01:02:30, 60 km					
26	P	iPNZ	03	35	55
		i			57
		iSNEZ		37	23
	R	eP		36	00
		i			03
	W	eP		35	32
		i			36
	H	iNEZ			39
	T	ePE			18
		i			22
		iSE		36	04
Magnitude 5.2					
VI at and near Reno					
USCGS: 39.6 N 119.8 W;					
03:34:29.5					
26	R	e	03	50	48
	Pr	e			54
	W	e			27
		e			30
USCGS: 03:44:35					
Yukon (Canada)					

Date	Sta.	Phase	h	m	s	
September						
26	MW	iP	11	48	22	
	R	iP			25	
	Pr	iP			31	
	W	iP			12	
		i			44	
	T	e		47	51	
26	P	eP	19	48	24	
		iNEZ			26	
		i			31	
		e		49	00	
	PX	e		56	39	
		e		58	44	
		eLEZ	20	17.8		
	R	eP	19	48	25	
		i			28	
	Pr	iP			28	
		i			34	
	T	iPNZ			26	

BCIS: 3.5 S 150 E;
19:35:04

27	P	iPNEZ	06	15	22	c
		i			26	
		i			32	
		i!			36	
		ePP		18	32	
	PX	e(ScP)		20	19	
		eSNE		23	22	
		eLN		29.8		
		eL		33.1		
				A	T	
		PZ		½	1½	
		MH		5	20	

(Long-period surface waves larger)

	R	iP	06	15	17	c
		i			29	
		i			32	
	Pr	iP			15	c
		i			23	
		i			27	
		i		16	55	
	W	iP		15	27	d
		i!			28	c
		i			38	
		e		17	36	
	T	iP		15	25	c
		e		17	36	
		eSN		23	29	

All these stations show some evidence of small initial dilatation preceding large compression. This is clearly recorded only at Woody. Depth 40 km?
USCGS: 14 N 58 W;
06:05:37

27	P	eP	07	45	47	
	W	e(P)			41	

USCGS: 29 N 140 E;
07:33:25

27	P	iP	10	05	00	
	R	iP			02	d
	Pr	iP			02	d
	T	eP			09	

Wellington: 30 S 180
09:53:00, 400± km

Date	Sta.	Phase	h	m	s	
September						
28	P	iPNEZ	06	01	42	d
		iPcP			48	
	PX	ipPNEZ		02	47	
		esP		03	10	
		iSN		10	57	
		iScSNE		11	26	
		esS		12	31	
				A	T	
		PZ		¾	1	
		PH		½	1	
		SH		2½	8	
	R	iPNEZ	06	01	38	d
		ipP		02	44	
	Pr	iP		01	35	d
		ipP		02	37	
	T	iPNEZ		01	54	d
		ipP		03	00	
		eSNE		11	19	

Magnitude 6.4±
USCGS: 22½ S 65 W;
05:50:21, 250 km

28	MW	eP	06	44	46	
	R	e			48	
	Pr	eP			59	
		i		45	03	
	T	eP		44	17	

USCGS: 44½ N 128 W;
06:41:41

28	MW	iP	13	23	54	
		e		24	04	
	R	e			07	
	Pr	eP			04	
		e			11	
		i		25	10	
		i			16	
	T	eP		23	41	

USCGS: 52½ N 160 E;
13:13:50

28	P	iP	23	46	27	
	PX	eLEZ	24	08.4		
	Pr	eP	23	46	27	
		i			30	
	T	eP			33	

Wellington: 15 S 178 W;
23:34.7

29	P	iPNEZ	01	49	29	c
		ipPEZ		50	43	
		isP		51	23	
	PX	iPP		53	17	
		ipPP		54	22	
		esPP			47	
		iSKSE		59	33	
		iSNE	02	00	16	
		iEZ		01	33	
		iPSEZ		02	09	
		iSSNE		06.5		
		ePKKP		06	36	
		e(L)NE		13		
	R	iP	01	49	30	c
		i			39	
		ipP		50	43	
		iPP		53	22	
		ePKKP	02	06	36	
	Pr	iP	01	49	31	c
		i			42	

(continued)

Date	Sta.	Phase	h	m	s	
September (continued)						
29	Pr	i	01	49	56	
		ipP		50	47	
		isP		51	28	
		iPP		53	19	
		iPKKP	02	06	36	
	Bt	iP	01	49	30	c
		ipP		50	43	
		iPP		53	22	
		esP		54	39	
		ePKKP	02	06	34	
	T	iPNEZ	01	49	38	c
		isPN		51	36	
		iPP		53	35	
		eSNE	02	00	35	
		iN		02	50	

Magnitude 6.8
USCGS: 36½ S 177 E;
01:36:45, 300 km

29	R	e	03	29	11	
	Pr	e(P)			59	
		i		30	07	

Central America
USCGS: 03:22:20

29	MW	eP	13	24	25	
	Pr	iP			25	

Wellington: Kermadec Region
13:12:36, 300 km

30	P	eP"	05	13	37	
		i			43	
		ipP"EZ			59	
		i(SKP)		16	57	
	PX	eNZ		17	19	
		i			30	
		iNEZ			34	
	R	eP"		13	35	
		epP"		14	01	
		i(SKP)		16	58	
		e		17	30	
	Pr	eP"		13	43	
		ipP"		14	04	
		e(PP)		16	46	
		i(SKP)		17	03	
		i			34	
		i			40	
	W	eP"		13	34	
		ipP"			56	
		i(SKP)		16	51	
		e		17	23	
		i			30	
	T	e(P")		13	44	
		epP"NEZ			57	
		i(SKP)EZ		16	51	
		eE		17	32	

Depth 80 km±
BCIS: 4 S 102¼ E;
04:54:21
Djakarta: 5 S 102½ E;
04:54:37

30	P	eP	07	01	31	
		epP			46	
	R	eP			35	
		epP			55	

(continued)

Date	Sta.	Phase	h	m	s	
September (continued)						
30	Pr	eP	07	01	41	
		ipP			55	
	W	eP			22	
		ipP			36	
	T	eP			19	
		epP			34	

USCGS: 50½ N 156 E;
06:51:15, 60 km

30	PX	iPNEZ!	23	07	50	d
		iGNE		10.7		
		iR		11.6		
				A	T	
		PZ		25	6	
		PH		20	8	
		MH		240	17	
		MZ		170	8	
	R	iP	23	07	44	d
	Pr	iP			33	d
	Bt	iP			24	d
	T	iPNEZ!			20	d
		i(S)N		11	49	

Magnitude 6½-6¾
USCGS: 22 N 107½ W;
23:04:08

October						
1	P	iPNZ	00	57	46	
		i			55	
		i		58	05	
	R	eP		57	42	
		e			50	
	Pr	iP			36	
		i			44	
	W	e(P)			58	
	T	eP		58	02	
1	P	iPNZ	05	42	52	
	R	iP			49	
	Pr	eP			46	
		e		43	04	
	T	eP			05	

South America

1	MW	eP	10	25	16	
	R	e			19	
	Pr	iP			26	
		e			40	
	T	eP			00	
1	MW	eP	14	08	48	
	R	eP			50	
	Pr	iP			51	

BCIS: 10 S 163 E;
13:56.1

1	MW	iP	16	11	30	
	Pr	iP			24	
	Bt	iP			21	
	T	e			41	

South America

2	PX	eLZ	02	00.5		

Wellington: Macquarie Islands Region; 01:04.2
Magnitude 6±

3	P	iP	09	30	27	
	Pr	iP			29	

Date	Sta.	Phase	h	m	s	
October						
3	P	iP"NEZ	16	03	58	c
		i		04	06	
	Pr	iP"		03	54	c
		i		04	01	
South Atlantic						
BCIS: 15:44.1						
3	P	iPNEZ	23	14	11	
	Pr	iP			16	
	Bt	iP			18	
	T	eP			08	
USCGS: 15 N 144½ E;						
23:01:22						
4	MW	i(P)	07	46	26	
	Pr	iP			29	
5	Pr	e(P)	01	01	30	
5	P	iPNEZ	04	41	39	c
		i(pP)			57	
		i		42	20	
	PX	iSNEZ		49	38	
		iNE		51	22	
		eSSNE			53.7	
		eGNE			56.0	
	P	eP'P'	05	11	00	
		iP'P'			28	
			A		T	
		PZ	1		1	
		PH	1		3	
		SH	6		6	
		P'P'Z	1¼		3	
		MH	12		20	
iP'P' notably large and sharp						
	Pr	iP	04	41	49	c
		i(pP)		42	07	
		i			16	
		eP'P'	05	11	05	
		i			21	
	Bt	iP	04	41	53	c
		i		42	48	
		eP'P'	05	11	03	
		e			24	
	W	iP	04	41	30	c
		i		42	21	
		e		49	18	
		e		54	06	
		eP'P'	05	11	21	
	CL	iPNE	04	41	36	
		iSNE		49	30	
	T	iPNEZ	04	41	25	c
		iN			39	
		iNZ		42	23	
		iSNEZ		49	12	
		iN		51	11	
Magnitude 6¾±						
USCGS: 53½ N 160½ E;						
04:31:40 Depth 80 km?						
5	MW	eP	05	19	03	
	Pr	eP		18	48	
	W	eP		19	15	
Small short-period motion.						
Tacubaya: 17°11' N 100°43' W; 05(13:54)						
5	P	iP	10	06	30	
		ipP			42	
	Pr	iP			39	
		ipP			51	
	Bt	eP			46	

(continued)

Date	Sta.	Phase	h	m	s	
October (continued)						
5	CL	iPNE	10	06	25	
	T	ePNEZ			17	
Depth 60 km?						
USCGS: 53½ N 162 E;						
09:56:40						
5	P	iP	14	23	39	
		i		24	05	
	Pr	iP		23	32	
		i			52	
		i		24	01	
	Bt	iP		23	28	
	CL	iPNE			44	
		iN			50	
	T	ePNEZ			51	
South America: Deep?						
BCIS: 14:12.3						
5	P	e	15	59	09	
	T	e			08	
BCIS: 15:49.3						
Kamchatka						
5	P	eP	23	29	48	
	PX	eN		43	36	
		eGN			55.1	
		eREZ			58.8	
			A		T	
		MH	5		20	
	Pr	eP	23	29	54	
		ePP		33	42	
	W	eP		29	48	
	T	eP			53	
USCGS: 9 S 152½ E;						
23:16:22						
Somewhat unusual epicenter						
6	P	e(P)	03	15	22	
	Pr	e(P)			30	
	W	e(P)			10	
	T	e			07	
6	Pr	iP	07	30	39	
	W	iP			41	
Later motion lost in the following shock.						
6	P	iPNEZ	07	31	17	c
		i			26	
		i(pP)			35	
	Pr	iP			26	c
		i(pP)			42	
	Bt	iP			31	c
		i(pP)			48	
	W	iP			07	c
		i(pP)			25	
		i			37	
	CL	iPNE			12	
	T	iP			04	
		e			17	
		i(pP)			23	
USCGS: 51½ N 158 E;						
07:21:10, 60 km						
6	MW	e	16	47	24	
	Pr	iP			13	
Central America?						
6	MW	iP	20	47	56	
	Pr	iP			48	
6	P	iP	21	51	32	
		i			39	
		i			48	
	PX	ePP		55	37	
		eSKSNE	22	02	07	

(continued)

Date	Sta.	Phase	h	m	s	
October (continued)						
6	PX	ePSNE	22		03.8	
		eGN			16.8	
		eREZ			20.1	
			A		T	
		PZ	0.6		2	
		PPZ	½		3	
		PSH	2		5	
		MH	40		20	
	R	eP	21	51	37	
		i			50	
	Pr	iP			39	
		i			53	
	W	iP			26	
		i			42	
	CL	ePNE			37	
	T	ePNEZ			34	
		e(S)E	22	02	21	
Magnitude 6¾±						
USCGS: 3½ S 151 E;						
21:38:16						
6	P	iP	23	06	29	
		i			43	
	R	eP			31	
	Pr	iP			31	
		i			46	
	W	eP			30	
		i			41	
		i			46	
	CL	ePNE			35	
	T	iP			36	
		eSNEZ		17	32	
USCGS: 23 S 171 E;						
22:53:34						
7	Pr	iP	07	35	16	
BCIS: 6 N 75½ W;						
07:26:45						
7	P	iPNEZ	14	59	39.6	d
		iSN			52.8	
	MW	iP			39.8	d
	R	iPNEZ			47.8	c
	Pr	iP			58.0	
	SB	iPNEZ			38.1	
	CL	iPNE			44.1	
	H	iPEZ			46.5	
	T	ePNEZ			57.1	
	-	iNEZ			58.1	
	FT	iP!			24.4	
Magnitude 4.9						
35 02 N 118 51 W;						
14:59:21.3						
IV at Bakersfield. Felt as far as Los Angeles.						
8	P	iPNEZ	04	27	32	d
		i			36	
	R	iP			35	d
	Pr	iP			39	d
		i		28	13	
	Bt	iP		27	41	d
	W	iP			25	d
	T	iP			26	d
USCGS: 25½ N 143½ E;						
04:15:10						
8	P	eP	17	16	24	
	R	eP			27	
	Pr	iP			30	
	T	eP			20	

Date	Sta.	Phase	h	m	s	
October						
8	MW	eP	20	21	11	
		e			31	
		e		22	32	
		e(S)			46	
	R	eP		21	05	
		i			21	
		i		22	17	
		i(S)			31	
	Pr	eP		21	00	
		i			15	
		eNEZ			57	
		e(S)		22	17	
	Bt	eP		20	50	
		e		21	00	
		e			57	
		e(S)		22	12	
	T	e(?)		20	56	
		e		23	10	
Arizona: 34.8 N 111.0 W						
20:19:46						
10	MW	e	00	43	48	
	R	eP			40	
		e			51	
	Pr	eP			41	
		i			52	
10	MW	eP	02	06	40	
	R	eP			43	
	Pr	iP			51	c
	W	iP			26	
	T	e			20	
10	P	iPEZ	16	22	03	
	R	eP			07	
	Pr	iP			13	
	Bt	eP			17	
	T	iP		21	50	
10	P	iPNZ	18	50	46	
		i		51	16	
		iS			28	
	R	iP		50	38	
		iSNE		51	14	
	Pr	iP		50	27	d
	Bt	iP			17	d
	BB	iP			40	
		i(S)		51	17	
	T	eP			22	
		iNEZ			43	
		iSEZ		53	02	
Magnitude 5.0						
31°49' N 116°06' W						
18:49.0						
Baja California						
10	P	iPNZ	22	08	31	d
		i			38	
	R	iP			34	
		e			42	
	Pr	iP			35	
		i			45	
	Bt	eP			35	
	T	iP			34	
		i			42	
USCGS: 8 S 158 E;						
21:55:32						
11	P	iPNEZ	13	18	55	
		i(pP)		19	12	
	PX	iSE		27	20	

(continued)

Date Sta. Phase h m s
October (continued)
11 PX iN 13 28 46
iN 29 26
iSSN 31 40
eGN 34.2
eRNZ 37.0
P iP'P' 47 55
A T—
PZ 1 4
PH 1/4 1
SH 3 5
MH 14 20
R iPNEZ 13 19 00
Pr iP 01
eP'P' 48 05
CL ePNE 18 51
T iPNEZ 45
eS 27 00
eP'P' 48 13
Magnitude 6½-6¾
USCGS: 50 N 155½ E;
13:08:34, 60 km
11 PX eLNE 18 01.0
R e 17 26 31
USCGS: 31½ N 83 E;
17:08:00
11 MW eP 22 12 52
eS 13 57
R eP 12 44
Pr eP 31
iS 13 17
11 P ePNEZ 22 34 33
i(S)NEZ 35.41
R eP 33 21
e(S) 34 27
i 35 35
Pr eP 33 08
i 54
i(S) 34 59
12 MW iP 14 39 59
Pr iP 40 00
i(pP) 41 59
Wellington: Possibly
25 S 173 W; 14:28:32,
600± km.
13 MW e 05 36 09
R iP 03
Pr iP 04
13 P ePNEZ 08 55 14
PX iGNE 56 17
P i(Lg)E! 32
A T
MH 500 12
R eP 08 55 06
Pr iP 54 53
W ePE 55 42
T ePNE 57
Magnitude 6
USCGS: 30 N 113½ W;
08:53:45
14 P iPEZ 14 58 37
iNEZ! 39
ipP 59 04
isP 17
ePP 15 01 44
(continued)

Date Sta. Phase h m s
October (continued)
14 PX iSNEZ 15 07 54
iNE 08 33
A T
PZ ¾ 1½
PH 1½ 1½
SH 2½ 5
R iP 14 58 40
isP 59 18
Pr iP 45
i 47
ipP 59 04
CL iPNE 58 34
isPN 59 04
iSNE 15 07 36
T iPNZ 14 58 27
iSN 15 07 37
Magnitude 6¾±
USCGS: 43 N 144½ E;
14:47:17, 100 km
CMO: 42.8 N 144.6 E;
14:47:23, 90 km.
14 MW i(P) 17 21 54
R i(P) 49
Pr e(P) 54
Bt i 44
Near Apia
14 P eP 21 59 23
R eP 25
Near Apia
15 P eP 20 42 57
R eP 43 01
16 R eP 08 57 29
BCIS: 15 N 45.1 W;
08:46:30
16 P iPNEZ 09 58 54 c
PX iSNZ 10 03 46
eLN 05.5
A T
PZ 1 3
SH 5 10
MH 25 15
R iPEZ 09 58 48 c
i 59 00
Pr iP 58 42 c
Bt iP 34 c
T ePNZ 59 10
Magnitude 6¼-6½
USCGS: 16 N 96½ W;
09:53:15
17 R e(P) 01 32 12
e 33
Pr i(P) 08
i 18
Bt e(P) 04
P iP"NZ 01 44 21
eSKP 47 35
R eP" 44 23
eSKP 47 38
Pr iP" 44 25
iSKP 47 42
Bt eP" 44 25
eSKP 47 40
T eP" 44 21
Djakarta: 9 S 109 E;
01:25.1
BCIS: 9 S 109 E; 01:25:06

Date Sta. Phase h m s
October
17 P i(P) 21 17 29
i(P)NEZ 39
i 55
i 18 18
PX e(S) 26 17
eL 35.2
R e(P) 17 37
e 42
Pr e(P) 41
i 46
Bt e(P) 52
T e(P) 21
Complex shock?
BCIS: 52 N 159 E;
21:07:22
17 MW i 21 39 29
R i 32
Bt i 42
17 MW e 23 53 49
USCGS: 52 N 159 E;
23:43:20
18 MW eP 03 17 03
R eP 16 48
18 Pr eP 08 01 30
Wellington: Northeast of
North Island; 07:48:30
19 P iPEZ 13 45 18
R iP 20
BCIS: 5 S 155 E;
13:32.2
Wellington: 5 S 150 E;
13:32.3, 200 km?
19 R e(P) 18 33 57
USCGS: 19½ N 65½ W;
18:25:18, 60 km
21 P iP 18 53 39
ePP 57 47
PX eL 19 36.6
A T
PZ 0.1 1½
MH 6 20
MZ 6 20
R eP 18 53 35
e 39
Pr iP 40
i 54 13
iPP 57 41
Bt eP 53 43
Magnitude 6¼
BCIS: 38.3 N 20.8 E;
18:39:51.
21 P i 22 02 29
Pr i(P) 33
22 Pr iP 01 55 39
22 R eP 08 21 00
Pr iP 01
Bt iP 20 59
22 P i(P) 13 12 52
ipP 13 08
R e(P) 12 56
Pr i(P) 13 17
Bt e 14
BCIS: 50.3 N 156 E;
13:02:33, 60 km

Date Sta. Phase h m s
October
24 P ePNZ 23 32 44
iEZ 48
i 55
PX ePPN 36 03
eLEZ 24 00.5
R eP 23 32 44
i 50
i 58
ePP 36 26
Pr i(P)NE 32 16
Bt eP 43
e 49
i 55
CL ePNE 32 51
iNE 33 05
Wellington: 35.4 S 179.1 W;
23:19:42, Magnitude 6½
25 P iPNEZ 01 05 35
R iP 30
i 40
Pr e(P)NE 04 54
Bt e 05 20
CL e(P)NE 40
BCIS: 9 N 85½ W;
00:58:05
25 P ePNZ 07 31 30
PX eLNZ 50.9
R eP 31 28
Bt eP 17
e 33 06
CL eN 31 40
BCIS: 28 S 111 W;
07:21.2
26 P ePEZ 09 10 50
e 11 02
R eP 10 54
Bt eP 11 03
CL ePNE 10 45
BCIS: 09:00.6
Kamchatka
26 P ePEZ 11 00 35
i 54
R eP 30
Bt eP 21
e 01 23
CL eNE 00 38
USCGS: 10:53:50, 100 km
27 P iP 03 52 12
i 24
PX eL 04 14.1
R eP 03 52 15
i 27
Pr e(P)N 16
Bt eP 24
i 36
CL ePNE 09
i 20
e(S) 04 01 24
CMO: 42.7 N 145.6 E;
03:40:50, 30 km
27 P ePNEZ 10 55 09
R eP 12
Bt iP 16
e 23
CL e(P)NE 00
BCIS: 5.5 S 147 E;
10:41:36

Date Sta. Phase h m s

October

27 Bt e(P) 15 46 54
27 P iPNEZ! 18 31 45 d
iPcP 57
i 32 00
ipPNEZ 50
i 54
isP 33 14
iSNEZ 40 49
ipPSNEZ 41 25
PX eN 50
esSNE 42 38
A T
PZ 2½ 2
PH 1¾ 2
SH 4½ 4
R iPNEZ! 18 31 43 d
ipP 32 48
eSNEZ 40 45
Pr iPNE 31 37
eSNE 40 35
Bt iP! 31 34 d
ipP 32 39
eS 40 30
eP'P' 59 26
CL iPNE 31 49
eSNE 40 57
Magnitude 6¾-7
19½ S 66½ W; 18:20:45,
275 km.
27 P eP 20 43 35
R eP 38
Bt e 36
CL eN 44
Wellington: 15 S 175 W;
20:32.2
27 R e(P) 21 11 55
e 12 11
Bt e 09
CL eN 00
27 R e 23 08 05
Bt e 12
CMO: 42.2 N 143.1 E;
22:56:33, 70 km
28 R e(P) 05 13 36
Bt e 52
T e(P) 03
28 P iPNEZ 08 52 35
i 46
i 54 51
PX eLNE 59.5
A T
PZ 0.3 2
MH 5 16
R iP 08 52 30
Pr iPN 23
Bt iP 17
T ipNZ 54
Magnitude 5¾
USCGS: 16½ N 98 W;
08:47:06
28 P iPNZ 12 20 04
R iP 08
Pr ePN 13
(continued)

Date Sta. Phase h m s

October (continued)

28 Bt eP 12 20 16
T eP 19 52
BCIS: 50½ N 155 E;
12:09:38
28 P eP 13 54 58
R eP 55 03
Pr eP 04
Bt eP 01
T eP 08
USCGS: 19 S 178 W;
13:43:40, 400 km
29 Bt eP 10 34 21
CL eP 32
e 39
T eP 39
e 44
29 P eP 14 55 18
epP 35
Bt e 29
CL iP 11
T eP 02
BCIS: 52¾ N 159 E;
14:45:07
29 R eP 17 24 21
CL iP 22
e 29
e 28 07
T eP 24 21
e 40
30 P e 18 56 53
R e 54
Bt e 57 18
CL e(P) 56 34
T e(P) 21
31 R e(P) 07 07 16
Bt e(P) 07
CL e(P) 22
T e(P) 32
31 P eP 19 48 29
e 48
R eP 33
Bt eP 43
CL iP 23
i 35
i 43
T eP 16
Kamchatka

November

1 P iPNEZ 00 26 36
e 46
R iP 40
Pr eN 48
Bt eP 50
CL iP 31 d
i 42
T iPNZ 24
i 27 14
BCIS: 50½ N 158¾ E;
00:16:24
1 CL e 18 34 22
e 43
BCIS: 23¾ N 122¼ E;
18:16:52

Date Sta. Phase h m s

November

1 P eP 21 06 15
e 23
R eP 19
Pr eN 41
Bt eP 29
CL iP 11
T e 31
BCIS: 48¼ N 153¾ E;
20:55:39
2 R e 04 33 19
Bt e 28
CL eP 10
i 21
T iP 15
BCIS: 04:22:38
2 Bt e 07 32 02
CL eP 19
T e 25
3 R e 19 43 47
CL e 45
T e 51
BCIS: Off Norway 19:29:12
(Not the same shock?)
4 CL e 00 33 50
T e 45
BCIS: Off Norway,
00:23:36
4 CL e 01 47 09
T e .01
BCIS: Off Norway;
71¼ N 9 E; 01:35:57
4 P iPNZ 02 33 26
R iP 28
Bt iP 28
CL iP 33 c
T iPNZ 34
USCGS: 16 S 179 W;
02:21:35
4 P iP 04 01 45 c
i 56
PX ePPE 05 51
iSKSNE 12 08
iSNE! 13 33
eGN 23.7
eREZ 27.4
A T
PZ 3 4
PH 3 4
PPH 2 3
MH 90 20
MZ 200 20
R eP 04 01 49 c
Bt eP 50 c
i 59
e(P'P') 28 03
CL iP 01 51
i 02 07
T iPNEZ 01 50 c
Magnitude 7.4
Pasadena: 13 S 166½ E;
03:49:08
USCGS: 12½ S 166½ E;
03:49:04

Date Sta. Phase h m s

November

4 P iP 04 17 26
R eP 20
i 31
Bt eP 28
i 32
CL iP 29
T eP 24
i 32
USCGS: 12½ S 166½ E;
04:04:44
4 P iP 06 16 44
epP 18 54
A T
PZ 0.1 1
R eP 06 16 48
epP 18 58
Bt iP 16 54
epP 19 05
CL iP 16 41 c
ipP 18 51
T iPNZ 16 35
ipP 18 45
Pasadena: 39½ N 129¾ E
06:05:15, 610 km.
Magnitude 5¾
4 R e 08 59 58
CL e(P) 59
e 09 00 10
e 36
T e 00
BCIS: 12½ S 165½ E;
08:47:19, 60 km
Wellington: 15 S 167 E;
08:47.4
4 R e 09 44 57
CL e 58
T e 45 08
Solomon Islands
USCGS: 09:32:10
4 CL e(P) 11 55 02
e 33
4 P eP 12 40 21
i 37
PX eSE 51.3
e 59.9
eGN 13 02.0
eR 05.6
A T
MH 13 20
R eP 12 40 22
Bt iP 26
CL iP 24
T eP 23
Aftershock of 04h
Magnitude 6½
USCGS: 12 S 166½ E;
12:27:41
5 P e(P") 08 39 55
R e(P") 48
e 40 20
Bt eP" 39 44
CL eP"N 41
T eP" 37
e 40 03
Hindu Kush.
BCIS: 36.5 N 70 E
08:21:39, 220 km

Date	Sta.	Phase	h	m	s	
November						
6	T	e?	04	48	47	
		e			56	
		e		49	02	
	BCIS: 17½ S 175 W;					
	04:36:52					
6	Bt	eP	17	31	16	
	T	e			43	
	South America					
7	MW	e(P)	07	38	06	
	Bt	e(P)			14	
	T	e(P)			03	
7	P	iP"	13	22	26	
		e(PP)		24	45	
		i(SKP)		25	48	
		i		26	04	
	R	eP"		22	26	
	Bt	e			59	
	T	e			23	
	BCIS: ½ S 98½ E;					
	13:03:07					
7	MW	e	16	13	39	
	R	e			41	
	Bt	e			44	
	T	e			55	
	BCIS: 16:01.1,					
	New Hebrides Region					
9	P	iP	02	07	11	
	T	iP			03	
9	MW	eP	04	31	39	
	T	iP			18	
9	MW	eP	06	57	07	
		e			13	
	T	eP			21	
		e			26	
9	MW	e	15	56	47	
	T	e			37	
	Djakarta: Banda Sea Region					
9	P	iPEZ	17	35	42	
		i			49	
	PX	iSNE		43	50	
		eSSE		48	04	
		eLEZ			52.7	
			A		T	
		PZ	1		4	
		SH	2½		6	
		MH	12		20	
	R	eP	17	35	45	
	T	ePNZ			29	
		eSNZ		43	30	
	Magnitude 6½					
	USCGS: 52½ N 159 E;					
	17:25:42, 60 km.					
10	R	e	08	04	35	
	Pr	e(P)			32	
10	R	e	10	07	07	
	Pr	eP		06	48	
10	Pr	eP	11	20	25	
		e			34	
10	R	e	11	50	08	
	Pr	e(P)			17	
	T	e		49	44	
10	Pr	e	13	42	50	

Date	Sta.	Phase	h	m	s	
November						
10	P	iP	23	50	33	c
		i(sP)			56	
		iPcP		51	14	
	PX	ISNE		58	49	
		i(sS)E		59	17	
		iSS	24	03	05	
		iG			05.7	
		iREZ			08	
	P	iP'P'		19	47	
			A		T	
		PZ	7		6	
		PH	1¼		3	
		pPZ	7		2½	
		SH	7		6	
		MH	50		20	
		MZ	300		30	
	R	iP	23	50	37	c
		i(pP)			53	
		i(sP)			58	
		iPcP		51	09	
		eP'P'	24	19	50	
	Pr	iP	23	50	42	c
		i(sP)		51	02	
		eS		59	09	
		eP'P'	24	19	48	
	CL	iP	23	50	29	c
		ipP			44	
		i			56	
		eP'P'	24	19	52	
	T	iP	23	50	20	c
		ipP			36	
		isPNZ			43	
		eSNZ		58	29	
	Magnitude 6.8					
	USCGS: 50½ N 157 E;					
	23:40:20, 60 km					
11	MW	iP	07	11	51	
	R	iP			48	
11	CL	eP	07	41	06	
	T	eP			02	
	BCIS: 23 N 126 E					
	07:27:53					
11	MW	iP	16	49	19	
	Pr	iP			21	
	CL	iP			25	
	T	eP			26	
12	MW	iP	03	18	03	
	R	iP			05	
		e			28	
	Pr	iP			07	
	CL	iP			07	
	T	iP			05	
	USCGS: 10 S 160½ E;					
	03:05:17, 100 km					
12	MW	e	15	46	12	
		e			23	
		e			32	
	R	e			23	
		i			34	
		e		47	12	
	Pr	iP		46	36	
		i			53	

(continued)

Date	Sta.	Phase	h	m	s	
November (continued)						
12	T	i	15	46	37	
	BCIS: 15:33.3					
	Loyalty Islands Region					
13	P	ePNEZ-	11	24	13	
		e		26	42	
	R	eP		24	08	
	Pr	iP			19	
	CL	eP			05	
	T	eP			02	
	BCIS: 11¾ N 138¾ E					
	11:10:45					
13	MW	e	16	17	52	
		e		18	01	
	R	e		17	56	
	Pr	eP			55	
		i		18	06	
	CL	eP			01	
		i			06	
	T	eP			06	
	Wellington: 31 S 180					
	16:05.7					
13	P	iP"	16	36	16	d
		ipP"			36	
		isP"			47	
		ePP		38	38	
		iSKP		39	25	
		i			57	
	R	e		36	11	
		iP"			18	
		ipP"			36	
		ePP		38	46	
		e			57	
		e		39	43	
	Pr	e		36	13	
		iP"			21	
		ipP"			38	
		i		39	40	
		i		40	08	
		i			27	
	CL	e		36	15	
		iP"			18	
		ipP"			36	
		isP			45	
		ePP		38	26	
		eSKP		39	32	
		i			58	
	T	iP"		36	14	
		ipP"			29	
	Depth 100 km					
	USCGS: 3½ N 96 W					
	16:17:02					
13	P	e(P)	19	28	23	
		i			47	
	PX	iSE		38	57	
		iSP		39	47	
		eSSE			44.9	
		iREZ		54	50	
			A		T	
		PZ	¾		3	
		SH	5		12	
		MH	30		18	
	R	eP	19	28	20	
		e			41	

(continued)

Date	Sta.	Phase	h	m	s	
November (continued)						
13	Pr	iP	19	28	25	
		i			45	
	CL	eP			26	
	T	eP			27	
	Magnitude 6¾					
	USCGS: 13 S 166 E					
	19:15:37					
14	MW	e(P)	07	36	54	
	Pr	i(P)		37	03	
		e		38	33	
	CL	i(P)		36	46	
	T	i(P)			37	
14	Pr	e(P)	16	30	15	
	CL	e(P)			30	
	Near Apia					
14	P	iPNEZ	20	13	39	
		i			44	
		i			50	
		i		14	01	
		i			06	
	R	eP		13	35	
		e			43	
		i			48	
	Pr	iP			49	
		i			54	
		i		14	21	
		i		16	01	
	CL	iP		13	27	
		i			34	
		i			55	
		i		14	22	
	T	eP		13	19	
		i			30	
	BCIS: 52¾ N 160¼ E					
	20:03:30					
15	MW	e(P)	13	40	10	
		e			20	
	R	e(P)			04	
	Pr	iP		39	59	
		i		40	09	
	CL	iP			16	
	T	iP			27	
	Tacubaya: 14°43' N					
	93°20' W; 13:34:19					
15	MW	eP	17	33	57	
	R	e(P)			59	
	Pr	iP		34	01	
	CL	iP			04	
	T	iP			07	
	Near Apia					
	BCIS: 17:22:40					
16	MW	e	09	54	52	
	R	e			37	
		e		55	09	
	Pr	e(P)		54	31	
		e			51	
	CL	e(P)			36	
	T	e			37	
16	MW	eP	16	13	50	
	R	iP			52	
		e		14	31	
	Pr	iP		13	52	
		ipP		14	09	

(continued)

November (continued)

Date	Sta.	Phase	h	m	s
16	CL	iP	16	13	55
	T	eP			55
	Loyalty Islands				
	BCIS: 16:00:52				
16	MW	eP	16	29	43
	R	eP			45
	Pr	iP			46
	Bt	e			56
	CL	iP			47
	T	eP			48
	BCIS: 20½ S 167½ E				
	16:16:50				
16	MW	eP	17	27	52
	R	eP			49
		e		28	23
	Pr	eP		27	45
		e			51
	Bt	eP			41
	CL	eP			56
		e		28	30
	South America				
16	P	iP	17	30	25
	R	eP			27
		e			42
		e		33	10
	Pr	iP		30	27
		i			42
	Bt	eP			27
	CL	iP			30
		i			41
	T	eP			30
		i			37
		i			55
	USCGS: 21½ S 169 E;				
	17:17:27				
16	R	eP	17	52	53
		e		53	11
	Pr	eP			11
	CL	eP		52	57
16	Pr	e	17	58	42
		e		59	11
	CL	eP		58	17
16	MW	eP	19	07	12
	R	eP			14
	Pr	iP			15
		i			24
	CL	iP			18
	T	eP			19
16	MW	eP	19	40	43
	R	e			57
	Pr	e		41	04
	Bt	e			08
	CL	eP		40	38
	T	eP			30
	BCIS: 19:30.6				
	Kamchatka				
16	CL	e	20	26	43
	T	eP			26
16	CL	e	21	35	12
	T	eP			02
16	Bt	e	22	16	04
	CL	eP		15	55
	T	eP			49
		e			58

November

Date	Sta.	Phase	h	m	s
17	MW	eP	04	24	36
	Bt	e(P)			15
	CL	eP			09
	T	e			00
	CMO: 36.1 N 140.0 E				
	04:12:07, 80 km				
17	P	iP	04	32	31
	R	iP			34
	Pr	iP			36
		i		35	46
	Bt	eP		32	33
	CL	iP			36
		e		35	47
	T	eP		32	37
	USCGS: 20 S 168 E				
	04:19:35				
17	Pr	iP	05	37	16
	Bt	eP			08
	CL	eP			23
	T	e			31
17	P	iP	05	41	28
	R	iP			31
	Pr	eP			34
	Bt	eP			34
	CL	iP			30
	T	eP			29
	USCGS: 5½ S 147 E				
	05:27:53				
17	MW	e(P)	07	36	42
	R	e(P)			44
	Pr	e(P)			46
		e		37	05
	CL	iP		36	47
	Wellington: 20 S 166 E				
	07:23.8±				
17	MW	e	09	20	03
	R	e			06
	Pr	iP			06
		i			25
	CL	eP			08
	T	e			27
	Wellington: 20 S 170 E				
	09:06.7				
17	P	iP	09	58	19
	MW	iP			21
		e			58
	R	iP			22
		i			43
	Pr	iP			24
		i			32
	Bt	eP			22
	CL	iP			26
		i			34
	T	iP			27
	Wellington: 20 S 168 E;				
	09:45.3				
17	P	iPNEZ!	13	36	13 d
		iPP		37	28
		iPcP		39	06
	PX	iSNE		41	25
		iGNE			44.3
		iR			45.4
		iScSN		46	59

(continued)

November (continued)

Date	Sta.	Phase	h	m	s
17			A		T
		PZ	14		5
		PH	10		5
		PPZ	12		5
		PPH	11		5
		SH	80		15
		MH	400		12
	R	iP	13	36	07 d
		iPcP		39	05
		eScP		43	07
	Pr	iP!		36	02 d
	Bt	iP		35	56 d
		iPcP		39	03
	CL	iP		36	18 d
	T	iPNEZ			30
		iPP		37	51
		iPcP		39	12
		iSN		42	01
		eScP		43	13
		iScSNE		47	23
	Pasadena: 13¾ N 92 W				
	13:29:53; 40± km,				
	Magnitude 7.1				
17	MW	e	16	10	42
	R	eP			46
	Pr	iP			39
	W	e			49
	CL	eP			57
		i		11	12
	T	e			07
17	MW	eP	20	13	52
	R	eP			52
	CL	iP			44
		i			55
	T	eP			45
	BCIS: 32½ N 40¼ W				
	20:03:16				
17	MW	e	22	53	38
		e			44
	R	i			54
	CL	iP			30
		i			42
	T	eP			21
	BCIS: 53 N 159¼ E				
	22:43:30				
17	MW	e	23	24	44
	CL	e(P)			41
		e			49
	T	e(P)			51
18	MW	eP	03	10	39
		epP		11	23
	R	iP		10	41
		epP		11	22
		i			32
	Pr	iP		10	42
	CL	iP			42
		ipP		11	26
	T	iP		10	43
		ipP		11	29
	BCIS: 14 S 167 E;				
	02:58:21, 200 km				
	Wellington: 15 S 170 E,				
	02:58.2, 200 km				

November

Date	Sta.	Phase	h	m	s
18	CL	iP	04	44	23
	BCIS: 45 N 15½ E;				
	04:31.9				
18	R	e	10	20	13
	W	iP			12
	CL	eP			17
	T	eP			17
	Probably New Hebrides				
18	R	e(P)	13	38	25
		e		41	03
	Bt	e		38	08
	CL	e(P)			34
	T	e(P)			44
18	MW	iP	14	33	10
		e			31
	R	eP			04
	Pr	iP		32	59
		i		33	18
		i			30
	Bt	iP		32	58
	CL	iP		33	15
		i		34	20
	T	iP		33	26
	USCGS: 16 N 94 W;				
	14:27:15, 60 km				
19	W	iP	03	47	48
	CL	iP			53
	T	eP			49
19	R	e(P)	16	59	46
	CL	iP	17	00	02
	T	e			15
19	MW	i	17	37	00
	R	e		36	53
	CL	i(P)			53
	T	iP			44
19	MW	iP	18	37	04
	Pr	iP			06
	CL	iP			10
	T	iP			12
20	P	iPNZ	02	39	06
		epP			28
		i			39
	R	iP			03
		ipP			25
		i			37
	Pr	iP		38	59
	Bt	iP			54 d
		ipP		39	28
	W	iP			13 d
	CL	iP			10
		ipP			33
	T	iP			18
		ipP			42
	USCGS: 20 ½ S 69½ W				
	02:47:46, 60 km				
20	P	iP	21	16	25
	R	iP			27
		e			34
		e			51
	Pr	iP			27
	CL	iP			32 d
		i			40
		i			53

(continued)

Date	Sta.	Phase	h	m	s	
November (continued)						
20	T	iP	21	16	34	
		i			43	
		e			55	
	BCIS: 22½ S 176¾ W					
	21:04:16					
21	MW	iP	01	14	06	
	R	iP			08	
	Pr	iP			08	
	CL	iP			11	
	T	iP			14	
	Aftershock of the preceding					
	BCIS: 01:01.9					
21	MW	iP	08	19	03	
	R	eP			05	
	CL	iP		18	57	c
	T	iP		19	00	
21	R	e	08	33	35	
	Pr	i			32	
	CL	e			33	
	T	eP			45	
		i			58	
		i			10	
	BCIS: 17 N 92¼ W					
	08:27:36					
21	MW	e	20	19	34	
	Pr	iP			22	
	CL	iP			39	
	Mexico?					
21	MW	i	21	46	23	
		i			49	
	R	i			45	
	Pr	i			41	
	CL	eP			27	
		i			53	
	T	iP			37	
		e			57	
		i		47	02	
	Chile					
22	P	iP	08	19	40	
	Pr	eP			46	
	CL	iP			25	
	T	iP			25	
22	CL	iP	11	20	30	
		i			56	
	T	iP			26	
		i			53	
23	P	eP	03	54	41	
		i			46	
	R	eP			44	
		i			49	
	Pr	iP			46	
		i			52	
	Bt	eP			48	
		i			52	
	CL	eP			40	
		i			46	
	T	eP			36	
		i			42	
	USCGS: 13 N 145 E					
	03:41:45					
23	MW	eP	05	41	36	
		e			46	
	Pr	iP			24	
		i			36	

Date	Sta.	Phase	h	m	s	
November						
24	MW	eP	03	02	54	
	R	eP			59	
	Pr	eP		03	01	
	W	iP		02	51	
	CL	iP			57	
	T	eP			57	
24	P	iPNEZ!	05	46	39.2	d
		iSNE		47	03.7	
	R	iPNEZ!		46	38.0	d
		iSE		47	06.6	
	SB	iP		46	49.3	
	KgR	eP			44.1	
	W	ePEZ			32.6	
		i			35.0	
		iSEZ			55.5	
	CL	iPNEZ!			15.1	c
	H	iP			21.9	c
		iSEZ			34.6	
	T	iPNEZ!			33.9	c
		iSNE			56.9	
	35° 53' N 116° 58' W;					
	05:46:06 Magnitude 4.9					
24	P	iPNEZ	09	14	30	c
	R	eP			24	
	Pr	iP			19	
		i			30	
	Bt	iP			13	
	CL	iP			35	
	T	iP			46	
	USCGS: 14 N 92 W;					
	09:08:18, 100 km					
24	P	iPNEZ	10	11	24	c
	R	iP			26	c
		e			48	
		e(pP)		12	51	
	Pr	iP		11	32	c
	Bt	iP			35	c
	CL	iP			20	c
		i(pP)		12	45	
	T	iP		11	13	c
	CMO: 46½ N 143 E					
	10:01 - 200-300 km					
24	R	i(P")	12	14	22	
	CL	e(P")			09	
	BCIS: 18.5 S 65 E					
	11:54:06					
25	P	iPNEZ	10	51	12	
	R	iP			16	
	Pr	iP			17	
	Bt	eP			15	
		i			27	
	CL	iP			19	
	T	iP			19	
25	R	e(P)	17	35	10	
	Pr	i(P)			34	
	Bt	e			51	
	CL	i(P)			14	
	T	e(P)			15	
	Wellington: 23 S 171 E					
	17:22.5					
25	P	iP	17	48	14	
	R	iP			19	d
		i			27	
		i			45	

(continued)

Date	Sta.	Phase	h	m	s	
November (continued)						
25	Pr	iP	17	48	19	
	Bt	iP			19	d
	CL	iP			22	
	T	eP			23	
	BCIS: 18¼ S 176½ E					
	17:36:00					
25	P	iPNEZ!	18	00	57	d
	PX	iPP		03	54	
		iSE		10	54	
		iSSNE			16.3	
		iGNE			21.4	
		iR			24.3	
			A		T	
		PZ	100		10	
		PH	50		10	
		PPZ	60		15	
		SH	150		10	
		GH	600		60	
		MH	900		20	
	R	iP	18	01	00	d
		eSN		11	11	
	Pr	iP!		01	04	d
	Bt	iP!			07	d
	W	ePE		00	51	
	CL	iP			56	
	T	iPNEZ			50	d
		eSE		10	38	
	Magnitude 8.0					
	USCGS: 34 N 141 E					
	17:48:09					
	CMO: 34.3 N 141.8 E					
	17:48:55					
	Recorded aftershocks very numerous. For the smaller of these, readings at only two of our stations are given in this Bulletin. Shocks from this hour until the end of November are believed to be such aftershocks unless otherwise noted.					
25	MW	eP	19	14	31	
	R	eP			33	
	Pr	iP			38	
		i			47	
		i		15	02	
	Bt	eP		14	36	
	CL	eP			27	
	T	eP			22	
	CMO: 34.3 N 141.8 E					
	19:02:30, 60 km					
25	R	eP	20	33	38	
	CL	eP			32	
25	MW	eP	22	00	00	
	CL	eP	21	59	56	
25	R	eP	23	48	14	
	CL	iP			08	
		i			26	
25	P	eP	23	51	45	
	CL	iP			46	

Date	Sta.	Phase	h	m	s	
November						
26	P	iP	00	15	34	
	PX	eSNE		25	35	
			A		T	
		PZ	1¼		2	
		MH	30		20	
	R	eP	00	15	38	
	Pr	eP			42	
	Bt	iP			45	
	W	eP			26	
	CL	iP			33	
	T	iP			28	
	Magnitude 6.5					
26	Pr	eP	01	07	21	
	W	iP			05	
26	MW	eP	01	31	52	
	CL	eP			50	
26	P	iPEZ	01	59	34	d
		i			53	
			A		T	
		PZ	½		2	
	CL	iP	01	59	33	d
26	Bt	eP	02	09	14	
		e			56	
	CL	eP			04	
26	R	eP	03	36	35	
	CL	iP			29	
26	Bt	eP	03	45	17	
	CL	e(P)			04	
26	Bt	e	03	57	49	
	W	eP			34	
26	P	e	04	33	42	
		e			56	
	CL	iP			39	
26	P	eP	05	16	06	
	CL	iP			03	
		e			48	
26	R	eP	05	20	15	
	CL	eP			09	
26	R	eP	07	26	15	
	CL	iP			17	
	Southwest Pacific?					
26	P	iPNEZ	08	26	30	d
	PX	eSNE			36.4	
			A		T	
		PZ	2½		3	
		PH	1½		3	
		SH	3½		6	
		MH	30		18	
	R	iP	08	26	24	
	Pr	iP			28	d
	Bt	eP			29	
	CL	iP			17	d
		i			36	
		eP'P'		53	17	
	T	iPNZ		26	12	
		iSNZ		36	12	
	Magnitude 6.8					
26	P	iPEZ	08	31	56	c
		i		32	10	
	R	iP		31	59	
	Pr	iP		32	03	

(continued)

November (continued)

Date	Sta.	Phase	h	m	s	
26	Bt	iP	08	32	06	
	W	iP		31	48	
	CL	iP			53	c
	T	iP			48	c
26	P	iPNEZ	08	38	41	c
	CL	iP			38	
26	P	eP	08	43	19	
	CL	iP			18	
26	MW	e(P)	08	51	32	
		e			43	
	Pr	e(P)			37	
	Bt	e(P)			40	
	W	e(P)			21	
	CL	e(P)			25	
26	P	eP	11	03	24	
		iNEZ			29	
	R	e(P)			36	
	Pr	eP			26	
		i			39	
	Bt	e			43	
	CL	eP			12	
		i			20	
		i			23	
	T	eP			04	
		i			14	
26	P	iPNEZ	11	48	26	
	CL	iP			24	
26	P	e(P)	11	53	39	
		i			54	
	CL	e(P)			34	
		i			51	
		e		54	04	
26	P	ePEZ	11	56	11	d
		i			14	
		iNZ			27	
	CL	iP			09	d
		i			24	
26	MW	eP	12	05	13	
	CL	eP			09	
26	MW	e	12	22	40	
	CL	eP			35	
26	R	eP	14	41	28	
	Pr	eP			32	
26	R	eP	14	56	16	
	Bt	eP			24	
	T	eP			06	
26	MW	eP	19	38	38	
	CL	eP			35	
		e			48	
	T	iP			31	
CMO: 32.0 N 132.1 E; 19:25:55						
26	MW	iP	23	39	43	
	CL	iP			38	
		i			55	
27	P	iPNEZ	00	13	29	
	CL	iP			25	
27	Pr	iP	00	16	45	
		i		17	00	
	CL	eP		16	35	
27	P	eP	01	36	54	
	CL	iP			50	

November

Date	Sta.	Phase	h	m	s	
27	MW	e(P)	02	00	42	
	CL	eP			31	
27	Pr	iP	03	04	53	
	CL	e(P)			58	
Possibly not Japan						
27	P	iP	05	17	07	
		i			21	
	CL	iP			03	
		i			19	
27	MW	eP	07	01	37	
	CL	eP			34	
27	P	iPNEZ	11	42	10	
		i			23	
			A		T	
		PZ	0.4		1½	
		PH	0.4		2	
	R	iP	11	42	13	d
	Pr	iP			17	d
	Bt	iP			20	d
	W	iP			02	d
	CL	iP			07	d
		i			23	
	T	iP			02	
27	MW	iP	12	14	00	
	R	eP			02	
	Pr	eP			02	
	Bt	eP			02	
	W	iP			03	
	CL	iP			07	
	T	iP			09	
Southwest Pacific?						
27	MW	eP	13	42	58	
	CL	eP			54	
		i		43	07	
27	P	e	18	43	44	
	R	eP			45	
	Pr	iP			49	
	W	iP			34	
	CL	eP			39	
27	P	e	18	44	10	
		i(P)			21	
	R	i(P)			25	
	Pr	i(P)			29	
		i			48	
	W	i			03	
		i(P)			14	
	CL	i			09	
		i(P)			19	
	T	i			13	
Confused by the preceding.						
27	P	e	22	57	36	
	Pr	iP			52	
	CL	eP			39	
27	P	eP	23	13	39	
	PX	eSN		23	56	
		eGN			34.3	
		eREZ			38.3	
	R	eP		13	41	
	Pr	iP			44	
	Bt	ePNE			45	
	W	iP			40	
	CL	iP			44	

(continued)

November (continued)

Date	Sta.	Phase	h	m	s	
27	T	iPNZ	23	13	49	
		iSN		24	16	
USCGS: 17½ S 176 E 23:01:22						
27	MW	eP	23	40	08	
	R	eP			12	
	Pr	eP			15	
	W	eP			05	
	CL	eP			10	
	T	eP			10	
Southwest Pacific						
28	P	iP	02	22	45	
	CL	iP			44	d
		e		25	41	
28	P	iP	02	55	06	
	CL	iP			05	
28	MW	eP	03	11	37	
	CL	eP			34	
28	MW	eP	04	37	27	
	CL	iP			25	
28	P	iP	05	23	21	d
		e			56	
	CL	iP			20	d
28	P	eP	07	08	23	
		e			58	
	CL	eP			21	
28	Pr	eP	07	35	38	
	W	eP			25	
	CL	eP			29	
	T	e			24	
28	MW	e	10	03	01	
	W	e		02	48	
	CL	e			54	
	T	e			55	
USCGS: 53 N 161 E; 09:53:02						
28	P	eP	14	25	32	
		e			47	
	CL	iP			30	
		i			45	
28	P	eP	19	41	00	
	CL	eP		40	56	
28	P	eP'	23	30	54	
		iP'NZ			55	c
		i		31	03	
	R	iP'		30	56	c
		i		31	05	
		i			21	
	Pr	eP'		30	55	
		iP'			58	c
		i		31	06	
	Bt	iP'		30	59	c
		i		31	05	
	W	iP'		30	50	c
		i			59	
		i		31	04	
		i			10	
		iPP		34	09	
		i			17	
	CL	eP'		30	51	
		iP'			54	c
		i		31	02	
		i			08	

(continued)

November (continued)

Date	Sta.	Phase	h	m	s	
28	T	iP'NZ	23	30	51	c
		i		31	00	
		i			05	
Indian Ocean						
Pasadena: distant 147°±						
USCGS: 17 S 93 E; 23:11:07						
29	Pr	eP	03	05	32	
	CL	eP			34	
	T	eP			33	
Southwest Pacific						
29	PX	eLNE	04	44.9		
	Pr	e		19	34	
	CL	e			21	
29	Pr	e(P)	13	45	18	
	Bt	e			13	
	CL	e(P)			19	
	T	e(P)			20	
29	P	eP	18	33	14	
		e			23	
	T	eP			09	
30	R	eP	03	52	31	
	CL	e			15	
30	P	eP	05	55	00	
	R	eP			04	
	Pr	eP			04	
		e			18	
	CL	eP			07	
	T	eP			09	
BCIS: 17¾ S 176½ E 05:42:45						
Wellington: 18 S 177 E 05:42.6						
30	P	eP	06	09	19	
		e			32	
	CL	eP			17	
30	P	eP	13	55	35	
	CL	eP			31	
30	Bt	e	14	47	28	
	CL	eP			13	
30	P	eP	18	00	24	
	CL	iP			23	
30	MW	e(P)	18	10	35	
	CL	iP			28	

December

Date	Sta.	Phase	h	m	s	
1	P	iPNZ	04	23	43	
		i(sP)NZ		24	36	
	PX	iSN		30	28	
	R	iP		23	47	
	Pr	iP			54	
		i(sP)		24	53	
		iScP		28	56	
	Bt	iP		23	59	
		i(pP)		24	54	
		iScP		29	01	
	CL	iP		23	39	
		e(pP)		24	11	
		e(sP)			31	
		iPcP		25	11	
		iPP			31	
		iScP		28	48	
		iS		30	25	

(continued)

Date	Sta.	Phase	h	m	s	
December (continued)						
1	T	iPNEZ	04	23	29	
		e			49	
		i(pP)		24	00	
		iScP		28	43	
		iSN		30	03	
	USCGS: 52 N 179½ E;					
	04:15:15, 100 km					
1	P	iPNEZ	05	21	31	c
		i			51	
		epP		22	27	
		iPPNEZ		25	06	
	PX	iSKSNE		31	39	
		iSNE		32	06	
		iSPNE		33	22	
		eSSN			38.3	
		e(G)N			45.2	
				A	T	
		PZ		1	1½	
		PH		1¼	3	
		PPH		½	3	
		SH		2	5	
	R	iP	05	21	32	
		ePP		25	12	
	Pr	iP			37	c
		i			50	
		ipP		22	33	
		i		25	18	
	Bt	iP		21	40	(d)
		i			57	
		ipP		22	37	
		iPP		25	21	
	T	iPNEZ		21	24	c
		i			30	
		i			50	
		ipP		22	21	
		iPP		24	53	
		eSKSNEZ		31	23	
		iSNE			53	
		eSPN		32	46	
	Previously assigned to a depth of about 60 km because of (unidentified) sharp phases earlier than pP.					
	Revised determination: 29 N 128 E; 05:08:45, 210 km; Magnitude 6.9					
1	Pr	eP	05	38	28	
	Bt	iP			31	
	T	eP			12	
	CMO: 34 N 141½ E;					
	05:26:16, 60 km					
1	MW	iP	16	17	23	c
	R	iP			26	c
		e			42	
	Pr	iP!			31	c
	Bt	iP			35	c
	CL	iP!			18	
		e(pcP)		19	16	
	T	iP		17	11	c
	Aleutians? (BCIS)					
1	Pr	eP	16	30	34	
	CL	eP			22	
	CMO: 33.9 N 141.4 E;					
	16:18:20					

Date	Sta.	Phase	h	m	s	
December						
1	P	iPNEZ	20	42	30	
	R	iP			23	
		eScP		48	51	
	Pr	iP		42	18	c
	Bt	iP			16	
	W	iP			39	
		ePcP		45	11	
	CL	iP		42	33	c
		ePcP		45	09	
		eScP		48	57	
	T	iP		42	44	
		ePcP		45	11	
	BCIS: 12.0 N 89.0 W					
	20:35:36					
1	P	iPNEZ	21	34	04	
		ipP		35	51	
	PX	iSN		43	49	
	R	iP		34	05	c
		ipP		35	54	
	Pr	iP!		34	07	c
		ipP		35	55	
	Bt	iP		34	05	c
	W	iP		33	57	c
		epP		35	54	
	CL	iP!		34	10	
		ipP		35	59	
	T	iP		34	13	
		ipP		36	04	
		iSN		44	06	
	USCGS: 25 S 180					
	21:22:27, 500 km					
2	Bt	eP	04	26	06	
	CL	eP		25	56	
	CMO: 34 N 141½ E;					
	04:13:56					
2	P	iP	04	38	41	
		iNEZ			45	
		e		42	08	
	PX	ePP			41	
		iSKSE		49	09	
		iPSE		51	50	
		iSSE		57	20	
		eGN	05		06.8	
		eREZ			10.2	
				A	T	
		PZ		¼	1½	
		PH		0.2	1½	
		PPZ		½	1½	
		PPZ		1½	5	
		PPH		0.6	2	
		MH		25	20	
	R	eP	04	38	39	
		i			45	
		e		41	25	
		ePP		42	49	
	Pr	iP		38	50	
		iPP		42	54	
	Bt	eP		38	51	
		ePP		42	55	
	W	eP		38	36	
		i			44	
		ePP		42	39	
		i			48	
	CL	eP		38	43	
		iPP		42	50	

(continued)

Date	Sta.	Phase	h	m	s	
December (continued)						
2	T	ePNZ	04	38	42	
		i		40	30	
		e		41	55	
		ePPNE		42	38	
		iPP			51	
		eSKSN		49	08	
	Magnitude 6¾					
	USCGS: 3½ S 141½ E;					
	04:24:50					
	BCIS: 2¾ S 141½ E;					
	04:24:51					
2	Pr	iP	06	22	23	
	Bt	eP			26	
	W	iP			08	
		i			25	
	CL	eP			13	
	T	eP			07	
		e			15	
	CMO: 34.1 N 141 E;					
	06:10:13, 40 km					
2	P	iP	09	59	24	
		i			39	
		i	10	00	24	
	R	iP	09	59	30	
	Bt	iP			36	
	W	iP			18	
	CL	iP			23	
	T	iP			19	
	CMO: 33.7 N 141.1 E					
	09:47:23, 40 km					
2	R	i(P)	10	42	54	
		i		43	09	
	Bt	eP		42	46	
		i		43	15	
	W	i(P)		42	42	
	CL	i(P)			33	
		i			48	
		i		43	04	
	T	iP		42	28	
		i			43	
	CMO: 24¼ N 141¼ E;					
	10:30:38					
2	Pr	i	21	10	37	
	Bt	i			38	
	CL	i			10	
2	MW	eP	21	35	46	
	Pr	eP			50	
	CL	iP			53	
	T	eP			55	
3	P	iPEZ	12	20	08	c
		i			27	
	R	eP			12	
	Pr	iP			18	c
		i			25	
	Bt	iP			21	c
	CL	iP			03	c
	T	iP		19	54	c
	BCIS: 53¼ N 159½ E					
	12:10:06					
3	P	iP	15	33	09	c
	R	iP			07	
	Pr	iP			02	c
	Bt	iP		32	59	
	CL	iP		33	14	c
	T	iPNZ			23	
	BCIS: 33 S 71½ W;					
	15:20:56					

Date	Sta.	Phase	h	m	s	
December						
3	PX	eGNE	15		45.9	
		eR			53	
	USCGS: 31 N 85½ E;					
	14:54:03					
3	MW	eP	21	01	58	
	Pr	e		02	11	
		e			20	
	CL	iP			05	
	T	iP		01	58	
	BCIS: 19:50.8					
	Near Apia					
3	R	eP	20	51	22	
	Pr	iP			17	
	CL	iP			33	
	T	eP			44	
	Tacubaya: 15°20' N					
	92°36' W;					
	20:45:40, 100 km					
4	P	iP	08	36	39	
	R	iP			41	
		i			56	
	Pr	iP			45	
		i			55	
		i		37	01	
	Bt	iP		36	48	
	CL	iP			35	
	T	iP			30	
	CMO: 34.0 N 141.1 E					
	08:24:36, 20-30 km					
4	P	iPNEZ	14	58	52	d
		i(PP)EZ		59	01	
	PX	iGN	15	02	00	
		iNEZ			08	
	P	iE			36	
				A	T	
		PZ		2	3	
		PH		½	3½	
		MH		11	5	
		MH		130	16	
	R	iP	14	58	57	d
	Pr	iP		59	07	
	Bt	iP			16	
	CL	iP		58	36	
	T	iPNZ			19	
		i(S)NZ	15	01	13	
	Magntiude 6±					
	USCGS: 49½ N 129 W;					
	14:54:46					
4	P	iPNEZ	21	58	35	c
	R	iP			37	c
	Pr	iP			39	c
	Bt	iP			37	c
	CL	iP			42	c
	T	iP			44	c
	BCIS: 21 S 179 W;					
	21:46.5					
5	P	ePEZ	09	53	26	
		e			49	
	R	iP			29	
	Pr	iP			33	d
	Bt	iP			34	d
	CL	iP			20	
		i			45	
	T	iP			17	d
	CMO: 34.3 N 141.4 E;					
	09:41:24, 60 km					

Date	Sta.	Phase	h	m	s	
December						
5	P	iP	18	51	32	
	R	iP			36	d
	Pr	iP			40	d
	Bt	iP			42	d
	CL	iP			30	d
		i			59	
	T	iP			24	d
	CMO: 34.2 N 141.6 E; 18:39:29, 50 km					
5	P	iP	22	58	23	
	R	iP			19	
	Bt	iP			11	
		e			45	
	W	e			31	
	CL	iP			27	
	T	eP			35	
	BCIS: 22:47.3					
	South America					
6	P	e	04	16	04	
	R	e			20	
		e			58	
	Bt	e			29	
	CL	i			00	
	T	e			51	
	BCIS: 52½ N 160¾ E; 04:06:03					
6	P	iPNZ	08	52	11	
		epP		53	19	
	R	eP		52	13	
		ipP		53	23	
	CL	iP		52	13	
		ipP		53	23	
	T	eP		52	12	
	USCGS: 4½ S 153 E; 08:39:29, 250 km					
6	P	eP"	17	42	27	
		e		43	10	
	Bt	eP"		42	31	
	CL	eP"			27	
		e		43	23	
	T	eP"		42	26	
	USCGS: 0° 123½ E 17:23:54, 100 km					
6	R	e(P)	21	32	38	
		e			47	
	CL	e(P)			47	
		e			57	
6	W	e	23	28	38	
	CL	e			34	
7	P	iPNEZ!	02	17	00	d
		iPcP			18	
		ipP			27	
		isP			34	
		i			43	
	PX	isPPNZ		20	21	
		iSNE		26	18	
		i			58	
		iPSN		27	12	
		eSSN		31.1		
		eGN		36.1		
	P	iP'P'		44	42	
		eSKPP'		48	18	

(continued)

Date	Sta.	Phase	h	m	s	
December (continued)						
7			A		T	
		PZ	6		2	
		PH	3		3	
		sPZ	18		16	
		PPZ	9		7	
		PPH	2½		3	
		SH	20		11	
		(SP)H	100		14	
		MH	80		40	
	R	iPNEZ	02	16	57	d
		eSNE		26	19	
		eNE		27	10	
		eP'P'		44	39	
	Pr	iP!		16	43	d
	Bt	iP!			49	d
		i		17	16	
	W	iPEZ			09	d
		i			51	
		isPP		20	35	
		eSE		26	41	
		e(P'P')		44	40	
		e		48	29	
	CL	iP		17	06	d
		i		19	48	
		eP'P'		45	07	
		eSKPP'		48	08	
	T	iPNEZ		17	13	d
		i			55	
		iSN		26	47	
		i		27	25	
		eP'P'		44	40	
		eSKPP'		48	32	
	Magnitude 7.1					
	Pasadena: 22 S 68 W; 02:05:37, 110 km					
7	MW	e	05	04	00	
	R	e			03	
	CL	i			07	
7	P	eP	14	23	21	
		i			35	
	R	eP			23	
	Pr	iP			28	
	Bt	iP			31	
	CL	iP			17	
		i			28	
	T	eP			10	
		i			30	
	CMO: 38.7 N 142.2 E; 14:11:33, 20-40 km					
7	P	eP	18	56	02	
		i			11	
	PX	eL	19	19.2		
	R	eP	18	56	04	
	Pr	iP			05	
		i			14	
	Bt	eP			08	
	CL	iP			10	c
		i			19	
		i			34	
		i		57	10	
	T	iP		56	12	
		i			21	
	USCGS: 20½ S 174 W; 18:44:10					

Date	Sta.	Phase	h	m	s	
December						
7	CL	eP	19	21	46	
	T	eP			40	
	CMO: 34.3 N 141.5 E; 19:09:48, 40 km					
7	P	eP	21	01	06	
		i			43	
	R	iP			02	
		i			28	
		i			39	
	Bt	eP		00	55	
		i		01	20	
		i			31	
	CL	iP			10	
		i			36	
		i			47	
	T	iP			18	
	South America?					
8	P	iP	02	23	07	
	PX	eL		48.6		
	R	iP		23	09	
	Pr	i			15	
	Bt	iP			18	
		i			30	
	CL	iP		22	59	
	T	eP		23	00	
	CMO: 29½ N 142 E; 02:10:55					
8	MW	iP	04	36	12	
	R	eP			14	
		e			38	
	Pr	iP			16	
		i			39	
	CL	iP			17	
		i			41	
		i		37	01	
	T	eP		36	14	
	USCGS: 11 S 166 E; 04:23:44, 100 km					
8	MW	i	11	44	31	
	Pr	i			28	
	Bt	e			39	
	CL	i			35	
	T	e			37	
		e		45	00	
8	CL	eP	13	11	08	
	T	eP			21	
	Tacubaya: 20°30' N 101°40' W; 13:06:25					
8	P	eP	13	49	34	
		e			41	
	CL	eP			30	
	T	eP			22	
	BCIS: 13:39.4					
	Kamchatka					
8	MW	e	18	45	36	
	CL	e			32	
	T	e			27	
9	MW	i(P)	04	04	13	
		i			52	
	R	i(P)			09	
		e			48	
	Bt	i(P)			02	
		e			30	
		i			41	
	W	i(P)			21	
	CL	i(P)			16	
		i			55	

(continued)

Date	Sta.	Phase	h	m	s	
December (continued)						
9	T	e(P)	04	04	24	
		e		05	03	
	Region of 22 S 68 W					
	BCIS: 03:52.8, 100 km					
10	P	eP	01	43	26	
		i		44	05	
	PX	eL	02	12.3		
	R	eP	01	43	29	
	Pr	iP			31	
	Bt	eP			32	
	W	iP			25	
	CL	iP			30	
	T	eP			29	
		i			59	
	USCGS: 9½ S 159 E; 01:30:36, 100 km					
10	P	iP"NZ	13	26	09	
	R	iP"			08	
	Pr	iP"			07	
	Bt	iP"			06	
	CL	iP"			12	
	T	iP"			15	
	BCIS: 59 S 26 W; 13:07:16					
11	W	iP	12	48	24	c
	CL	iP			28	c
	T	eP			30	
	BCIS: 30 S 179 W; 12:35:39					
12	P	iPNEZ	05	42	45	
		epP		43	56	
	R	eP		42	47	
	Bt	iP			53	
		epP		44	06	
	CL	iP		42	44	
		ipP		43	56	
	T	iP		42	40	
		ipP		43	52	
	BCIS: 21¼ N 143.0 E; 05:30:40, 300 km					
	CMO: 21½ N 141½ E, 300 km					
12	P	eP	08	08	50	
	R	eP			54	
	Pr	iP		09	03	
	CL	iP		08	33	
	T	e(P)			19	
	Foreshock of next					
	BCIS: 08:04:44					
12	P	eP	08	32	42	
		iNEZ			44	
	PX	i(S)		36	07	
		eL		37.7		
	R	iP		32	48	
	Pr	iP			58	
	Bt	eP		33	05	
	CL	iP		32	27	d
	T	iPNZ			11	d
		eSNZ		35	04	
	USCGS: 49 N 139½ W; 08:28:38					
12	Pr	i	16	44	20	
	Bt	e			15	
	T	e			35	
	USCGS: 3½ S 81 W; 16:35:10					

Date	Sta.	Phase	h	m	s	
December						
12	P	iP	17	40	33	
		iNEZ			38	
		i!			47	
		iPPE		42	44	
	PX	iSNE		47	52	
		iScSE		50	45	
		iSS		51	28	
		iGNE			53.7	
		iR			56.6	
	P	e(P'P')	18	11	30	
	R	eP	17	40	28	
		i			34	
		eSNE		47	49	
	Pr	iP		40	24	
	Bt	iP			19	
		i			25	
		i			35	
	CL	iP			37	
	T	ePEZ			47	
		i			51	
		i		41	01	
		eSNE		48	21	
Magnitude 7.4 (See P. 97)						
USCGS: 3½ S 81 W;						
17:31:22						
13	P	iPNEZ	07	06	15	d
	R	iP			19	d
	Pr	iP			26	d
		i			30	
		i		07	04	
	Bt	iP		06	28	d
	CL	iP			11	d
	T	iP			03	d
BCIS: 50.5 N 158 E;						
06:55:59						
13	P	iPNEZ	08	29	26	
	R	iP			28	
	Pr	iP			29	
	Bt	iP			27	
	CL	iP			35	
	T	eP			35	
Apia: 26 S 174 W;						
18:17.5, 100 km						
13	MW	e(P)	22	48	53	
	W	e(P)			44	
	T	e(P)			37	
13	P	iP"	23	22	31	
		iSKP		25	35	
	Bt	eP"		22	35	
		iSKP		25	41	
	W	iP"		22	29	
		iSKP		25	30	
	T	eP"		22	29	
		iSKP		25	30	
Djakarta: 7 S 106½ E;						
23:03:42, 160 km±						
14	PX	eL	00		52.8	
	MW	e(P)		24	59	
	W	i(P)			57	
	CL	i(P)		25	03	
	T	e(P)			02	
BCIS: 18¼ S 167¾ E;						
00:12:08						

Date	Sta.	Phase	h	m	s	
December						
14	P	ePNZ	08	51	07	
	PX	eLE	09		00.4	
	R	eP	08	51	01	
	Pr	iP		50	56	
	Bt	eP			50	
	CL	iP		51	14	
	T	ePNZ			23	
Off Guatamala?						
14	P	iP	21	03	03	
	R	iP		02	58	
		i		03	00	d
	Pr	iP		02	51	d
	Bt	eP			52	
		i			53	d
	W	iP		03	10	
		i			12	d!
	CL	iP			08	
	T	eP			13	
		i			15	d
BCIS: 25 S 66½ W;						
20:51:10						
15	P	iPNEZ	03	57	25	d
		e			56	
	R	iP			28	d
		e			43	
	Pr	iP			32	d
		e			47	
	Bt	iP			35	d
	W	iP			20	d
	CL	iP			25	
	T	iP			21	
BCIS: 03:44.8						
15	P	iPNEZ!	12	44	57.3	c
		iSE		45	13.3	
	MW	iP		44	56.7	c
	SB	iP			54.6	
		iSN		45	12.4	
	FT	iP!		44	41.5	c
	KgR	iP!			49.6	c
	W	iPEZ!			44.0	
		iSE			51.0	
	CL	iPNEZ!			56.5	
	H	iPNZ			57.5	
	T	iPNEZ		45	09.4	
Magnitude 4.6						
35°13' N 118°49' W,						
12:44:35.7						
Felt sharply at Arvin						
15	MW	e(P)	18	07	01	
	R	e(P)			03	
	Pr	e(P)			09	
	W	i(P)		06	50	
		i		07	02	
		i			12	
	T	e(P)		06	49	
16	MW	eP	00	36	55	
		e		37	11	
	R	eP		36	58	
	Pr	eP		37	04	
	W	iP		36	44	
16	P	eP"	02	59	20	
		.ePP	03	01	56	
	R	eP"	02	59	19	

(continued)

Date	Sta.	Phase	h	m	s	
December (continued)						
16	Pr	eP"	02	59	27	
	Bt	ePP	03	01	44	
	W	eP"	02	59	30	
	T	eP"			25	
BCIS: 54 S 5 E;						
02:39:53						
16	Bt	e	04	35	19	
	W	i(P)		34	28	
	T	e(P)			17	
Felt in Oregon and Washington.						
Maximum intensity VI, at Portland, Ore. and Vancouver Wash. (USCGS)						
16	MW	iP	06	24	29	
	Pr	iP			19	
	Bt	iP			15	
	W	iP			41	
	T	eP			44	
17	MW	eP	06	33	14	
	Pr	iP			02	
		i			10	
	T	eP			29	
Central America						
17	MW	iP	16	33	38	
	R	eP			40	
	Pr	iP			42	
	Bt	eP			41	
		e			57	
	W	iP			35	
		e			52	
	CL	iP			41	
	T	eP			39	
17	P	iPNEZ	23	01	05	
		iNEZ			16	
	PX	eLNE			07.9	
	R	eP		01	01	
	Bt	eP		00	48	
	W	iP		01	19	
	CL	iP			16	
	T	eP			29	
Tacubaya: 10 N 105 W;						
22:55:17						
18	P	ePNEZ	07	54	14	
	R	eP			17	
	Bt	eP			29	
	W	iP			58	
	T	eP			52	
18	MW	iP	08	16	32	
	R	eP			29	
	Bt	iP			21	
	W	iP			40	
	CL	iP			37	
	T	iP			45	
South America						
18	MW	eP	08	25	41	
	Bt	i			48	
	W	iP			44	
		i			54	
	CL	iP			49	
	T	iP			51	
Near Apia.						
BCIS: 08:14:09						

Date	Sta.	Phase	h	m	s	
December						
18	MW	eP	11	49	44	
		i			55	
	R	eP			40	
		e			52	
	Bt	iP			33	
		e			45	
	W	iP			51	
		i			58	
	CL	iP			49	
	T	i			56	
South America						
18	MW	iP	12	15	03	
		i			15	
	R	e			07	
	Bt	eP		14	52	
	W	iP		15	10	
		i			22	
	CL	iP			09	
	T	eP			16	
19	PX	eLN	13		52.3	
	Pr	iP		42	15	
	CL	iP			30	
19	P	ePNZ	23	46	53	
	R	iP			54	
	Pr	iP			54	
	T	iP		47	03	
Wellington: 32 S 180;						
23:34.5						
20	P	iPNEZ	00	32	55	c
				A	T	
		PZ		0.4	1½	
	R	iP	00	32	57	c
	Pr	iP		33	02	c
	Bt	iP			06	c
		i(pP)		34	23	
	T	iPNEZ		32	45	
USCGS: 39½ N 136½ E;						
00:21:19, 300 km						
CMO: 39.5 N 137.0 E;						
00:21:23, 360 km						
20	P	iP	05	29	28	
	Pr	iP			32	c
	Bt	iP			32	
	W	iP			30	
	T	eP			36	
USCGS: 24 S 176 E;						
05:16:50						
20	R	eP	08	29	16	
	Pr	iP			16	
	W	iP			14	
20	P	ePNZ	09	31	49	
		i			57	
		i		32	09	
	PX	iSNZ		41	49	
		eLN			57.7	
	R	eP		31	47	c
		i			57	
		i		32	07	
	Pr	iP		31	44	
		i		32	03	
	Bt	iP		31	39	c
		i			48	
		i			53	

(continued)

Date	Sta.	Phase	h	m	s	
December (continued)						
20	W	iP	09	31	58	c
	T	iP		32	02	c
		i			12	
		eSN		42	11	
	Central Chile. Damage at Illapel					
	BCIS: $34\frac{1}{4}$ S $70\frac{1}{4}$ W; 09:19:46					
20	P	iPEZ	21	32	21	
		i			32	
	PX	eLEZ			56.5	
	R	iP		32	25	
	Bt	iP			33	
	W	iP			13	
	T	ePNZ			13	
	CMO: 34.3 N 141.0 E 21:20:14, 40 km					
21	Bt	i(P)	07	17	50	
	W	iP		18	10	
		i			19	
	T	iP			14	
		i			24	
		i			31	
	South America					
21	P	eP	17	47	54	
		iEZ		48	11	
	R	iP		47	52	
		i		48	15	
	Pr	eP			01	
		i			19	
	Bt	iP			04	
		i			22	
	W	iP		47	44	
		i			53	
		i!		48	03	
	T	iP		47	42	
		i			50	
		i		48	01	
	CMO: 41.4 N 142.2 E; 17:36:18, 40 km					
21	W	eP	22	58	54	
		i		59	08	
22	MW	eP?	01	12	31	
	P_1	iP			33	
		i		13	06	
	W	iP		12	30	
		i		13	04	
	T	eP		12	36	
		i		13	01	
22	Bt	iP	04	43	03	
	W	iP			04	c
	T	iP			08	
	Apia gives 22 S 177 E; 04:33.6, 180 km					
22	W	iP	04	49	15	d
	T	iP			21	
22	P	eP"	08	08	46	
	W	iP"			43	
	T	eP"			44	
	BCIS: 8 S 108 E; 07:49:32					
22	P	iP	08	15	40	
	Pr	i			48	
	W	iP			28	c
		i			51	
	T	iP			25	

Date	Sta.	Phase	h	m	s	
December						
22	P	iPNEZ	21	08	26	c
	R	i(P)			29	
	Pr	iP			30	c
	Bt	iP			29	
	W	iP			28	c
	CL	iP			34	
	T	iP			35	c
	Southwest Pacific					
22	W	iP	23	22	49	
		i			33	
	T	iP			34	
23	P	iP	00	52	44	
	R	iP			46	d
	Pr	i			46	
	Bt	i			44	d
	W	iP			45	d
	CL	iP			52	
	T	iP			53	d
	BCIS: 15 S 173 W; 00:41:21					
23	P	eP	04	54	25	
	R	eP			20	
	Bt	e			20	
	W	iP			33	
	CL	iP			29	
	T	eP			36	
		i			38	
	USCGS: 1 N 77 W; 04:45:23					
23	P	iPNEZ	18	40	56	
	R	iP			59	d
	Bt	iP		41	08	d
	W	iP		40	45	d
	CL	iP			50	d
		i		41	18	
	T	iP		40	43	d
		i		41	28	
	BCIS: $49\frac{1}{4}$ N 157 E; 18:30:30					
23	W	iP	19	11	54	
	CL	eP		12	00	
	T	e			03	
	Kermadec Region BCIS: 18:58.9					
24	P	iP	02	43	47	
		iEZ			54	
	PX	iS		51	53	
		eL	03	01.4		
	R	eP	02	43	50	
	Pr	iP			46	
		i		44	03	
	Bt	i		43	59	
	W	iP			33	
		i			37	
		i			43	
	CL	eP			38	
		i			42	
	T	eP			30	
		i			35	
	USCGS: $51\frac{1}{2}$ N $159\frac{1}{2}$ E; 02:33:39					
24	MW	iP	21	02	07	
	Pr	eP			04	
	W	iP			09	
	CL	iP			13	
	T	eP			15	
	Southwest Pacific					

Date	Sta.	Phase	h	m	s	
December						
24	P	eP	23	31	15	
		i			22	
		i			32	
	PX	eSNE			39.5	
		eLN			46.6	
		eRE			49.0	
			A		T	
		PZ	0.2		1	
		MH	6		25	
	R	eP	23	31	18	
		i			26	
	Pr	eP			24	
	Bt	iP			28	
		i			35	
		i			39	
	W	iP			03	
		i			11	
		i			21	
	CL	iP			08	
		i			16	
		i			25	
	T	eP	23	31	01	
		i			09	
		i			20	
	Magnitude 6 USCGS: 52 N $159\frac{1}{2}$ E; 23:21:09					
25	P	eP	02	01	33	
		i			50	
		i		02	10	
	PX	iSNEZ		09	38	
		iSSNE		13	43	
		iGN			16.1	
		iREZ			19.2	
	P	eP'P'		30	50	
		e		31	08	
			A		T	
		PZ	$2\frac{1}{2}$		5	
		PH	$\frac{1}{4}$		$1\frac{1}{2}$	
		SH	50		25	
		MH	50		20	
	R	eP	02	01	37	
		i			55	
		eP'P'		31	06	
	Pr	eP		01	41	
		i		02	01	
		iP'P'		31	04	
	Bt	eP		01	47	
		i			53	
	W	iP			21	
		i			37	
		i			52	
	CL	eP			26	
		i			33	
		eP'P'		30	51	
	T	eP		01	12	c
		i			20	
		i			38	
	Magnitude $6\frac{3}{4}$ USCGS: 52 N $159\frac{1}{2}$ E; 01:51:26					
25	P	i(P)	02	25	09	
	R	e(P)			13	
	Pr	i(P)			17	

(continued)

Date	Sta.	Phase	h	m	s	
December (continued)						
25	W	i(P)	02	24	45	
		i			51	
		i			57	
	CL	i			51	
	T	e			43	
		i			55	
	Aftershock of preceding BCIS: 02:14:53					
25	P	iP	02	28	48	
	R	iP			44	
	Pr	iP			40	
	Bt	iP			39	
	W	iP			54	c
	CL	eP			43	
	T	iP			51	c
	Leeward Islands USCGS: $17\frac{1}{2}$ N 62 W; 02:19:30					
25	P	iP	02	34	48	
	R	iP			43	
	Pr	iP			40	
	Bt	iP			39	
	W	iP			53	
	CL	iP			46	
	T	iP			51	
	USCGS: Aftershock, Leeward Islands; 02:25:29					
25	P	iP	02	44	51	c
	R	iP			47	c
	Pr	iP			43	c
	Bt	iP			40	c
	W	iP		45	00	c
	CL	iP		44	54	c
	T	eP		45	03	c
	USCGS: Southern Peru; 02:34:03					
25	P	iP	06	55	04	
	R	iP			00	
	Pr	iP		54	55	
	Bt	iP			52	
		i		55	30	
	W	iP			13	
	CL	iP			07	
	T	iP			16	
	USCGS: Southern Peru; 06:44:05					
25	CL	e	08	32	03	
	T	e			06	
	BCIS: Kamchatka, aftershock; 08:22:07					
25	P	e	16	25	20	
	R	e			20	
	Pr	i			23	
	Bt	e			27	
	W	iP			12	
	CL	eP			13	
	T	eP			08	
	CMO: 34 N 141 E; 16:13:07					
25	W	iP	23	23	29	
	CL	eP			34	
	T	eP			26	
26	P	eP	01	56	24	
	R	iP			24	

(continued)

Date	Sta.	Phase	h	m	s
December (continued)					
26	Pr	eP	01	56	24
		i			29
		i			37
	Bt.	i			29
	W	eP			17
		i			23
	CL	eP			29
	T	eP			26
	Southwest Pacific				
26	Pr	i	09	42	52
	W	i			48
	CL	eP			55
	T	e		43	04
	BCIS: Kamchatka; 09:32:53				
26	W	iP	09	50	25
	CL	iP			29
	T	iP			22
	BCIS: Kamchatka 09:40:30				
26	P	e(P)	10	15	24
	W	eP			06
	CL	iP			11
	T	e			12
	Kamchatka; USCGS: 10:05:20				
26	P	iP	13	22	43
		i			50
		i			58
		i		23	10
	R	eP		22	44
	Pr	iP			51
		i			58
		i		23	02
		i			23
	Bt	e		22	59
		i		23	04
		i			14
	W	iP		22	31
		i			39
		i			49
	CL	iP			36
		i			43
		i			52
		i		23	05
	T	eP		22	28
		i			36
		i			46
	Two shocks? USCGS: 51½ N 160 E; 13:12:35				
26	P	eP	18	24	05
	W	iP		23	46
	CL	e			47
	T	eP			38
	USCGS: Off Kamchatka; 18:13:45				
27	CL	iP	11	30	59
	T	eP			53
	CMO: 41.5 N 142.5 E; 11:19:09, 60 km				

Date	Sta.	Phase	h	m	s
December					
27	P	iP	23	38	20
	Pr	iP			23
	CL	iP			30
	T	iP			30
	Near Apia				
28	P	eP	01	17	44
	W	iP			41
	Near Rabaul				
29	W	iP	05	36	50
		i		37	13
	CL	eP		36	55
	T	eP			57
	Near Apia				
29	MW	i	19	46	30
	W	iP			19
		i			29
	CL	iP			24
		i			34
	T	eP			16
30	P	iP	02	35	04
	R	eP			06
	Pr	iP			08
		i			46
	CL	iP			11
	T	iP			12
	USCGS: 18 S 174 W; 02:23:20				
30	P	ePNZ	08	30	27
	PX	eL			58.0
	R	eP		30	28
	Pr	iP			30
	Bt	eP			28
	CL	iP			34
		i		31	09
	T	eP		30	34
	BCIS: 15 S 173 W; 08:19:01				
30	P	eP	16	18	18
		i			28
	R	eP			23
	Bt	eP			31
	CL	iP			11
		i			20
	T	eP			05
	BCIS: 51 N 161 E; 16:08:13				
30	MW	eP	18	25	05
	R	eP			11
	Pr	iP			18
	CL	eP		24	48
	T	eP			31
31	P	eP	04	45	52
		e		46	05
	R	iP		45	54
	W	iP			50
	CL	eP			54
		e		46	05
	Near Rabaul				
31	P	eP	09	31	51
	R	eP			53
	Pr	eP			53
	Bt	eP			53

(continued)

Date	Sta.	Phase	h	m	s
December (continued)					
31	W	iP	09	31	52
	CL	iP			56
	T	eP			59
	USCGS: 23 S 172½ E; 09:19:01				

Addendum to Page 92
December 12 17h

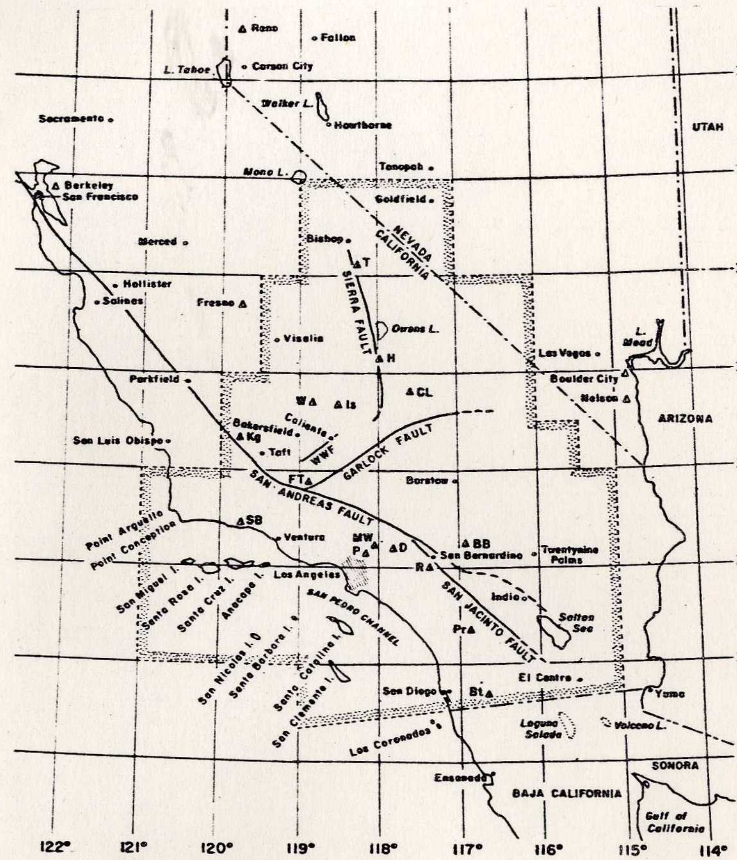
	A	T
PZ	30	10
PH	15	7
SH	200	20
GH	200	48
MH	600	20
MZ	150	20

February 21, 1955
C. F. Richter
Violet Taylor

Larger shocks of 1953

Epicenters, origin times, depths and magnitudes revised by B. Gutenberg

Date	Time	Lat.	Long.	Depth (km)	Magnitude
Jan. 5	07 48 22	54 N	$170\frac{1}{2}$ E	normal	7.1
Jan. 5	10 06 30	49 N	$155\frac{1}{2}$ E	40±	7.0
Jan. 12	17 23 40	50 N	156 E	70	6.9
Feb. 26	11 42 28	11 S	$164\frac{1}{4}$ E	normal	7.0
Mar. 18	19 06 14	40 N	$27\frac{1}{4}$ E	normal	$7\frac{1}{4}\pm$
Mar. 19	08 27 50	14 N	$61\frac{1}{4}$ W	130	7.3
Apr. 23	16 24 17	4 S	154 E	normal	$7\frac{1}{2}$ Complicated shock
May 6	17 16 49	$36\frac{1}{2}$ S	$72\frac{1}{2}$ W	60	7.6
June 25	10 45 00	$8\frac{1}{2}$ S	124 E	50±	7.1
June 26	05 42 54	$8\frac{1}{2}$ S	$124\frac{1}{2}$ E	50±	6.9
July 2	06 56 58	$19\frac{1}{2}$ S	$169\frac{1}{2}$ E	250	$7\frac{1}{2}$
July 26	16 53 17	18 N	146 E	190	$6\frac{3}{4}$-7
Aug. 12	09 23 53	$38\frac{1}{4}$ N	$20\frac{1}{4}$ E	normal	7.1±
Oct. 27	18 20 45	$19\frac{1}{2}$ S	$66\frac{1}{2}$ W	275	$6\frac{3}{4}$-7
Nov. 4	03 49 08	13 S	$166\frac{1}{2}$ E	normal	7.4
Nov. 17	13 29 53	$13\frac{3}{4}$ N	92 W	40±	7.1
Nov. 25	17 48 52	34 N	$141\frac{1}{2}$ E	normal	8.0
Dec. 1	05 08 45	29 N	128 E	210	6.9
Dec. 7	02 05 37	22 S	68 W	110	7.1
Dec. 12	17 31 25	4 S	81 W	normal	7.4



STATIONS OF C.I.T. NETWORK

Barrett Bt	Dalton D	Isabella Is	Palomar Pr	Santa Barbara SB
Big Bear BB	Fort Tejon FT	King Ranch Kg	Pasadena P	Tinemaha T
China Lake CL	Haiwee H	Mount Wilson MW	Riverside R	Woody W

WWF - White Wolf Fault (earthquake of July 21, 1952)