CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA, CALIFORNIA

SEISMOLOGICAL LABORATORY

BULLETIN

1951

(Pasadena and Auxiliary Stations)

PERMANENT STATIONS, 1951

Station	Lat.N	Long.W	h	Symbol	Ground
Pasadena	34°08.9'	118°10.3'	295m	P, PX	Granitic rock
Mt. Wilson	34 13.5	118 03.4	1742	MW	Granitic rock
Riverside	33 59.6	117 22.5	250	R	Granitic rock
Palomar	33 21.3	116 51.6	1700	Pr	Granitic rock
La Jolla	32 51.8	117 15.2	8	LJ	Beach Deposits
Sta. Barbara	34 26.5	119 42.9	100	SB	Alluvial with boulders
China Lake	35 49.0	117 35.8	766	CL	Granite with intrusions
Haiwee	36 08.2	117 57.9	1100	H	Tuff
Tinemaha	37 05.7	118 15.5	1180	T	Basalt

TEMPORARY STATIONS, 1951

Station	Lat.N	Long.W	h	Symbol	Ground
Perris	33 46.8	117 14.0	440	Pe	Thinly alluviated granitic rock
Dalton	34 10.2	117 48.6	523	D	Granitic rock
Big Bear	34 14.3	116 54.8	2060	BB	Coarse materials overlying granitic (?) rock

Perris installation dismantled Sept. 11, 1951. Recording begun at Big Bear (Big Bear Elementary School) June 21, 1951

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

In this bulletin components are indicated as N, E, Z; where no such letter appears the readings is for Z alone.
Instruments are as follows:

- Short-period Benioff Z ------------------------ one at each station
- Short-period Wood Anderson torsion, N, E ------ at P, R, LJ, SB, H, T
- Long-period Wood-Anderson torsion, N, E ------- at P
- Short-period Benioff N, E --------------------- at P, Pr, CL
- Long-period Benioff Z -- ---------------------- at P, Pr, CL, T
- Long-period Benioff horizontals --------------- at P (N,E); at T (N)
- Other special and experimental instruments are operated at Pasadena and Palomar.

The long-period instruments at Pr, CL, T were installed during 1951, T N in October.
Long-period Z at CL has been only partly effective because of drift.

Reading for long-period instruments are distinguished by X following the station symbol, as PX. 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 the maximum amplitude of computed earth displacement, and the period in 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 LJ, SB, H or the temporary stations, unless of exceptional interest or when other records are defective. Times are normally given for either P or MW, but not both. Some later readings at MW may be inserted among those for the same shock at P without distinction.

Earthquakes in Southern California are regularly reported here only if of magnitude 5 or over; smaller shocks are reported when of special interest.

October, 1951

Date	Sta.	Phase	h	m	s	
	January					
1	CL	iP	03	20	28	
	T	eP			31	
	USCGS: 0 = 03:07:40					
	BCIS: 46 N 110 E					
1	P	iPNEZ	03	34	57	d
		ipP		35	33	
			A		T	
		PZ	0.2		1	
	R	iP	03	35	00	d
		epP			33	
	CL	iP			00	d
		epP			34	
	T	iP		34	58	d
	USCGS: 5 S 151 E, 0 = 03:21:40					
1	CL	iP	17	51	55	
	T	eP		52	06	
	Mexico. Tacubaya gives 15°43' N 98°18' W, 0 = 17:46:28					
1	CL	iP	18	53	24	
1	P	iP	20	29	06	
		ipP			32	
		iPP		32	53	
	No clear surface waves					
			A		T	
		PZ	0.1		1	
		pPZ	0.2		1	
		PPZ	0.4		2	
	R	iP	20	29	10	
		ipP			36	
	CL	iP			12	d
		e			35	
		ipP			39	
		iPP		33	01	
	T	iPNEZ		29	14	
		ipP			39	
	h = 100 km.					
	USCGS: 18 S 169 E, 0 = 20:16:20					
2	R	iP	13	47	48	
	CL	iP			55	d
		i		48	10	
2	P	e	15	40	37	
		i			56	
	CL	iP			30	
		i			54	
2	CL	iP	20	42	39	
2	MW	eP	21	21	30	
		i			41	
	R	eP			27	
		e			38	
	CL	iP			36	
		i			46	
		i		22	28	
	T	e		21	46	
	Shallow depth?					
	USCGS: 11 S 79 W, 0 = 23:11:56, h = 200 km.					
	(continued)					
	January (continued)					
	BCIS: $9\frac{1}{2}$ S $79\frac{1}{2}$ W, 0 = 23:12:04, h = 200 km.					
	JSA: 10.3 S 79.8 W, 0 = 23:11:42, h = 65 km.					
3	PX	eLNE	02	57		
	MW	eP		24	04	
		e			15	
	R	eP			00	
		e			10	
	CL	iP			00	
		i			10	
	Tu	eP			11	
		e			22	
	Tu = Tucson. Data not compatible with an epicenter in the Fiji region.					
3	CL	eP	08	25	30	
3	CL	iP	08	30	56	
	T	eP			52	
3	CL	iP	08	52	06	
3	P	eP	12	25	40	
	CL	iP			51	
	Foreshock					
3	P	iPNEZ	12	25	59	
		i		26	20	
	PX	iSNE		29	44	
		iGN		30.8		
			A		T	
		PZ	1		$1\frac{1}{2}$	
		PH	$2\frac{1}{2}$		6	
		SH	7		10	
		MH	25		12	
	R	ePNEZ	12	25	54	
	CL	iP		26	09	
	H	iPNEZ			16	
	T	iPNEZ			25	
	Magnitude $6\frac{1}{4}$					
	USCGS: 18 N 106 W, 0 = 12:21:31					
3	P	iPNEZ	13	08	51	
	PX	eSNE		12	36	
		iGN		13.6		
			A		T	
		PZ	$1\frac{1}{2}$		2	
		PH	2		5	
		SH	7		10	
		MH	25		12	
	R	iPNEZ	13	08	47	
	CL	iP		09	03	d
	H	iPNEZ			09	
	T	iPNEZ			18	d
	Magnitude $6\frac{1}{4}$					
	USCGS: 18 N 106 W, 0 = 13:04:21					

Date	Sta.	Phase	h	m	s	
	January					
3	MW	e	16	05	00	
	CL	eP			05	
		i			20	
	Southwest Pacific					
3	P	i	17	39	49	
	R	i			45	
	CL	eP			50	
		i!			55	
	T	i		40	02	
	BCIS: 39 S 73 W,					
	0 = 17:27:13					
3	MW	eP	18	49	16	
	CL	iP			15	
3	MW	eP	23	28	54	
	R	eP			56	
	CL	iP			59	
	T	eP			59	
4	MW	iP	09	51	50	d
		epP		52	24	
	R	iP		51	46	
		epP		52	19	
	CL	iP		51	54	d
		ipP		52	28	
	T	iP		52	01	d
		epP			35	
	Andes, h = 130 km?					
4	MW	iP	12	58	30	
		e			39	
	R	iP			32	
	CL	iP			35	c
		i			44	
	T	eP			35	
		e			44	
	USCGS: New Hebrides,					
	0 = 12:45:40					
4	CL	iP	21	10	27	
4	CL	iP	21	33	41	
4	CL	iP	22	33	32	
		i			44	
5	CL	iP	00	13	44	
	T	iP			46	
5	P	ePEZ	01	00	41	d
		iNEZ			45	d
	PX	iNEZ		01	05	
		i			22	
		iSNE		07	14	
			A		T	
		PZ	2		3	
		PH	2½		4	
		SH	4		7	
		MH	10		20	
	R	ePEZ	01	00	37	
		i			41	
	Pr	iPNE			33	
	CL	eP			44	
		i			49	
		i		01	02	
	T	eP		00	54	
		iNEZ			58	
	Magnitude 6¾					
	USCGS: 7 N 81 W					
	0 = 00:52:40, h = 100 km.					

Date	Sta.	Phase	h	m	s	
	January					
5	P	iP	01	15	57	
	R	iP			59	
	CL	iP		16	04	
	T	iP			06	
	Pacific					
5	CL	iP	02	53	07	
	T	iP		52	59	
5	MW	iP	08	19	15	
	CL	iP			22	c
	T	iP			24	
	USCGS: Samoa region,					
	0 = 08:07:58					
5	MW	eP	09	42	25	
		i			35	
	CL	iP			08	
		i			18	
	T	eP			09	
		e			19	
5	R	eP	13	37	54	
	CL	eP			54	
		i		38	11	
		i			16	
	T	eP		37	55	
	USCGS: 12 S 165 E,					
	0 = 13:25:18					
	h = 100 km.					
5	CL	eP	18	48	28	
		i			34	
	USCGS: 0 = 18:45:10					
	BCIS: 24 N 110 W					
6	MW	eP	01	26	46	
	R	eP			40	
	CL	iP			50	
		i		27	07	
		i		29	13	
6	MW	e	02	17	57	
	Pr	i			45	
	CL	e			54	
6	P	e	05	32	29	
		eP"		35	32	
		iPP		36	02	
	PX	epPP			44	
		isPP		37	10	
		i		38	16	
		eSKS		41	12	
		e(sS)		44	55	
		iNZ		46	06	
		iNZ			34	
		i		47	25	
		e		51	33	
		i			54	
		eP"P"		55	20	
		eLN		59		

(continued)

Date	Sta.	Phase	h	m	s	
	January (continued)					
			A		T	
		PPZ	3		5	
	MW	eP	05	31	15	
		eP"		35	24	
		ePKKP		46	31	
	R	eP"		35	36	
		esPP		37	13	
		e		46	06	
		ePKKP			31	
		e		47	25	
	Pr	eP"		35	26	
		i		36	00	
		i		47	24	
	CL	eP		31	16	
		e		32	09	
		e		35	11	
		i		36	37	
		ePKKP		46	09	
		i		47	31	
		iP"P"		55	56	
	T	eP		31	11	
		eP"		35	06	
		e			29	
	Magnitude 6¾-7					
	Hindu Kush					
	USCGS and BCIS:					
	36½ N 70½ E,					
	0 = 05:17:19, h = 250 km.					
6	P	iPNEZ	07	59	31	
		i			47	
		iEZ	08	00	08	
		iPcP			56	
		i		01	15	
		iPP			26	
	PX	iScP		04	39	
		eSE		05	55	
		iSNE			59	
		iNE		06	57	
		e		09	19	
		iLNE		10.8		
			A		T	
		PZ	2½		2	
		PH	2		3	
		SH	30		20	
		MH	140		20	
	R	iPNEZ	07	59	25	
		i			48	
	Pr	iPNEZ			19	
	CL	iP			34	
		i			52	
		i			57	
	T	iPNEZ			42	
	Magnitude 7±					
	USCGS: 7½ N 81 W,					
	0 = 07:51:31, h = 100 km.					
6	P	eP	15	06	50	
	R	eP			48	
	Pr	iP			43	
	CL	eP			55	
	T	eP		07	05	
	Aftershock					

Date	Sta.	Phase	h	m	s	
	January					
7	MW	e	05	34	41	
	R	e			35	
	CL	iP			57	
	T	e		35	11	
	Mexico?					
7	P	e	18	41	33	
	R	e			35	
	CL	eP			10	
		i			28	
		i			38	
	T	eP			01	
		i			18	
		i			29	
	Atlantic?					
8	P	eP	12	08	00	
	R	eP			04	
		e			29	
	Pr	iP			00	
		i			21	
	CL	iP			07	
		i			12	
		i			24	
	T	eP			08	
	BCIS: 33.0 S 177¼ W,					
	0 = 11:55:15					
8	MW	eP	15	09	02	
	Pr	eP		08	59	
	CL	iP		09	05	
	T	eP			08	
	Aftershock?					
8	P	eP	18	11	22	
		e			35	
	CL	iP			22	
		i			34	
	T	eP			21	
8	P	iPNEZ	18	44	28	d
		ipPEZ			45	
		isPEZ			57	
	PX	iPP		47	45	
			A		T	
		PZ	½		1½	
		pPZ	½		1½	
		PPZ	¾		4	
	R	iPNEZ	18	44	31	d
		ipP			46	
	Pr	iPNEZ			36	d
		ipPNEZ			50	
		isP		45	01	
	CL	iP		44	25	d
		ipP			39	
		e			49	
	T	iPNEZ			19	d
	Magnitude 6½					
	USCGS: 35 N 140 E,					
	0 = 18:32:18					
	CMO: 35.4 N 140.1 E,					
	h = 40 km.					

Date	Sta.	Phase	h	m	s
	January				
8	P	eP	21	52	43
		iPNEZ!			47
			A		T
		PZ!	$\frac{3}{4}$		1
		PH	$\frac{1}{2}$		1
	R	eP	21	52	44
		iP!			50
	Pr	iP			44
		iPNEZ!			53
	CL	eP			49
		iP!			50
	T	iP			49
	Magnitude $6\frac{3}{4}$-7				
	USCGS: 5 S 151 E,				
	0 = 21:39:29				
9	CL	i(PP)	00	45	07
9	CL	iP	01	19	54
9	CL	iP	10	17	55
9	CL	eP	13	12	54
		i		13	04
9	P	eP	16	10	37
		i(pP)			46
			A		T
		PZ	0.2		$1\frac{1}{2}$
	Pr	e?	16	10	48
		i			53
		i			58
	CL	iP			28
		i(pP)			36
	T	eP			19
		e(pP)			28
	Magnitude 6+				
	USCGS: 81 N 122 E,				
	0 = 16:00:24				
9	P	i(P)	20	15	13
	CL	i(P)			35
	T	i(P)			37
9	CL	eP	22	58	14
	Mexico				
10	CL	e(P')	06	50	38
		i		51	06
	BCIS: 16 S 67 E,				
	0 = 06:30.4				
10	P	eP	08	38	56
	R	eP			56
	Pr	iP			59
	CL	iP		39	03
	T	iP			06
	USCGS: 23 S 176 W,				
	0 = 08:26:56, h = 100 km.				
10	P	eP	10	25	14
	R	eP			14
	Pr	iP			15
	CL	iP			20
		i			47
	USCGS: 28 S $177\frac{1}{2}$ W,				
	0 = 10:12:48, h = 50 km.				
10	CL	iP	14	18	09
		i			26
	CMO: 42.1 N 144.0 E,				
	h = 80 km.				

Date	Sta.	Phase	h	m	s
	January				
10	P	iP	19	12	19
	PX	eLE	20	05.9	
	R	iP	19	12	23
		i(sP)			43
	Pr	iPEZ			29
		i(sP)			51
	CL	iP			14
		i(pP)			28
	T	iP			05
		i(pP)			20
	USCGS: 0 = 19:03:35, h = 100 km				
	BCIS: 53 N 176 E				
10	CL	e(P)	19	29	03
	Damage at Cheviot, N.Z.				
	Wellington: 42.8 S, 173.2 E,				
	0 = 19:15:18, magnitude 5.6				
10	CL	iP	22	35	13
	USCGS: off Peru,				
	0 = 22:25:14				
11	P	eP	00	02	11
	R	eP			13
	CL	iP			20
	T	eP			22
	Near Apia				
	USCGS: 0 = 23:51:00,				
	h = 100 km.				
11	P	iP	04	44	56
	R	iP			58
	CL	iP			54
	T	iP			49
11	P	iP	20	20	58
	R	iP			57
	T	iP		21	03
12	CL	iP	06	45	41
13	CL	eP	06	02	03
	Mexico				
13	P	iPNZ	20	33	34
		eSN		35	06
	R	eP		33	42
	CL	iP			23
		i			38
	H	iP			18
	T	iP			11
	Magnitude 5±				
	Felt at Eureka, California				
	USCGS: $40\frac{1}{2}$ N 125 W,				
	0 = 20:31:31				
14	P	iP	01	23	41
		ipP			57
	R	iP			44
		ipP			59
	Pr	iP			46
		ipP		24	00
	CL	iP		23	45
		ipP		24	01
	USCGS: 0 = 01:10:35				
	BCIS: 6 S 155 E				

Date	Sta.	Phase	h	m	s
	January				
14	R	e	06	56	27
	CL	e			32
14	P	eP	10	31	24
		ipP			49
	PX	eLNE		55	
	R	eP		31	28
		epP			51
	Pr	iP			28
		ipP			51
	CL	iP			33
		ipP			58
	T	eP			36
	USCGS: 23 S 176 W,				
	0 = 10:19:24, h = 100 km.				
14	P	iP	11	27	04
	Pr	iP			08
	CL	iP			10
	T	iP			10
	Southwest Pacific?				
14	P	iP	18	41	50
	R	iP			48
	Pr	iP			45
	CL	iP			56
	T	iP		42	02
	South America?				
15	MW	iP	00	26	06
	Pr	iP			08
	CL	iP			12
15	P	eP	01	59	21
		e			33
	Pr	iP			29
		i			45
	CL	eP			13
		e			22
	T	eP			09
		e			18
	USCGS: 51 N $178\frac{1}{2}$ E,				
	0 = 01:50:36				
15	P	eP	02	38	27
	Pr	iP			38
		i			51
	CL	eP			22
	T	eP			13
	USCGS: 51 N $178\frac{1}{2}$ E,				
	0 = 02:29:46				
15	MW	eP	02	45	50
		i		46	09
	Pr	iP		46	00
		i			10
		i			14
	CL	eP		45	44
	Same as the preceding?				
15	P	iPNEZ	04	24	44
		ipP		25	09
		isP			15
	PX	iPP		28	01
		isPP			30
		iSE		35	12
		isPN		36	01
		iEZ			26
		eLN		47.7	
				(continued)	

Date	Sta.	Phase	h	m	s
	January (continued)				
15			A		T
		PZ	$\frac{1}{4}$		1
		PPZ	$\frac{1}{2}$		4
		SH	$3\frac{1}{2}$		4
		MH	20		20
	R	iPNEZ	04	24	46
		ipP		25	08
	Pr	iP		24	47
		ipP		25	09
	CL	iP		24	48
		ipP		25	14
	T	iPNEZ		24	49
		e		25	20
	Depth 90 km.				
	Magnitude $6\frac{1}{2}$-$6\frac{3}{4}$				
	USCGS: 15 S 167 E,				
	0 = 04:12:14, n = 150 km.				
15	MW	eP	09	43	07
	Pr	eP			17
	CL	eP			01
	Aleutian Islands				
	USCGS: 0 = 09:35:08				
15	R	eP	21	43	41
	Pr	iP			35
		e(pP)		44	17
	CL	iP		43	47
		e(pP)		44	21
	T	eP		43	49
		e(pP)		44	22
	Near Apia				
	USCGS: 0 = 21:32:20,				
	h = 100 km.				
15	P	eP	22	44	21
	R	eP			23
		epP			36
	Pr	iP			25
		ipP			37
	CL	iP			26
		ipP			39
	T	eP			27
	USCGS: New Hebrides,				
	0 = 22:31:30				
15	CL	iP	22	52	22
		ipP			32
	T	eP			15
		epP			25
	USCGS: 0 = 22:42:36				
	BCIS: $55\frac{1}{4}$ N $161\frac{1}{4}$ E				
16	P	iP	13	26	35
	R	eP			38
	Pr	iP			39
	CL	iP			41
	T	eP			42
16	R	e	22	50	13
	CL	eP			16
	New Hebrides?				

Date	Sta.	Phase	h	m	s	
	January					
17	CL	iP	00	20	38	
17	R	eP	01	08	47	
	CL	eP			52	
17	CL	iP	16	04	40	
	T	eP			50	
	South America					
17	R	eP	16	11	44	
	Pr	iP			44	
	CL	iP			49	
	T	eP			51	
	Southwest Pacific					
17	CL	iP	16	21	18	
	Southwest Pacific?					
17	P	iP	19	22	31	
	R	iP			33	
	Pr	iP			36	
	CL	iP			30	
	T	iP			27	
17	R	eP	20	57	33	
	Pr	iP			30	
	CL	iP			42	
	Mexico					
18	P	iP	01	56	47	
	R	iP			51	
	Pr	iP			57	
	CL	iP			40	
	T	iP			43	
18	MW	iP	05	21	20	
	R	eP			25	
	CL	eP			15	
	T	eP			06	
18	P	iP	21	24	06	
		i(pP)			21	
		i			27	
	PX	eSE		30	43	
		eLE		34.2		
			A		T	
		PZ	0.2		1	
		SH	6		15	
		MH	15		20	
	R	iP	21	24	11	
		i(pP)			24	
	Pr	iPNEZ			17	c
		iSE		31	06	
	CL	iP		24	01	c
		i(pP)			15	
		i			22	
	T	iP		23	53	c
	Magnitude $6\frac{1}{4}$-$6\frac{1}{2}$					
	USCGS: 52 N 177 W,					
	0 = 21:15:50, h = 60 km.					
19	MW	eP	01	47	35	
	R	eP			29	
		iPcP		50	06	
		i			27	
		iScP		53	44	
	Pr	iP		47	23	
		iPcP		50	04	
		iScP		53	44	
			(continued)			

Date	Sta.	Phase	h	m	s	
	January (continued)					
19	CL	iP	01	47	39	
		iPcP		50	09	
		i			30	
		iScP		53	50	
	T	eP		47	48	
		iPcP		50	13	
	USCGS: 13 N 88 W,					
	0 = 01:40:48, h = 100 km.					
19	CL	iP	07	35	32	
20	PX	eLEZ	13	30		
	Pr	iP		18	27	
	CL	iP			41	
	T	iP			53	
	USCGS: 0 = 13:12:20					
	BCIS: $15\frac{1}{2}$ N $90\frac{1}{2}$ W,					
	0 = 13:12:18					
21	P	iP	07	38	26	c
	R	iP			28	
	Pr	iP			30	
	CL	iP			34	c
	T	iP			36	
	USCGS: 0 = 07:27:28,					
	h = 500 km.					
	BCIS: 16 S 179 W,					
	0 = 07:27.5, h = 500 km.					
21	P	iP	09	23	34	
	R	iP			36	
	Pr	iP			37	c
	CL	iP			41	c
	T	iP			44	
21	P	eP	12	51	01	
		i			14	
		iPcP		53	35	
		i			49	
		e		56	17	
	R	iP		50	54	
		iPcP		53	32	
		i			46	
	Pr	iP		50	50	
		i		51	03	
		iPcP		53	34	
		i			45	
	CL	iP		51	05	
		iPcP		53	36	
		i			50	
		e		57	58	
	T	e(P)		51	16	
		iPcP		53	40	
		i			55	
	Central America					
21	P	iP	19	56	23	
	R	eP			26	
	CL	iP			16	
	T	eP			08	
21	CL	e?	22	48	12	
		e			26	

Date	Sta.	Phase	h	m	s	
	January					
22	P	eP	04	31	41	
		epP			54	
	Pr	iP			42	
		epP			54	
	CL	iP			46	
		epP			58	
	T	eP			58	
		epP		32	10	
	h = 60 km.					
	Tacubaya: 14°15' N 88°					
	35' W, 0 = 04:25:08,					
	h = 100 km.					
22	CL	iP	04	54	10	
22	P	e	10	43	29	
	PX	eLE	11	16.0		
			A		T	
		MH	12		20	
	R	e	10	43	38	
	Pr	e			36	
	CL	iP			42	
	T	eP			45	
	Magnitude $6\frac{1}{4}$					
	USCGS: 33 S 178 W,					
	0 = 10:30:45					
22	P	iP'NEZ	12	36	02	d
		i			10	
		i			13	
		i			21	
		e(PP)		40	09	
		iPP			20	
	PX	eLEZ	13	40.0		
			A		T	
		P'Z	0.3		2	
		MH	7		20	
	R	iP'	12	36	01	d
		i			09	
		i			24	
		ePP		40	00	
	Pr	iP'		36	01	
		i			11	
		i			27	
	CL	iP'			00	d
		i			07	
		i			19	
		i			48	
		ePP		39	53	
	H	iP'		36	01	
		i			08	
		i			20	
		ePP		40	05	
	T	iP'		36	00	
		i			07	
		i			19	
		i			34	
		ePP		40	02	
	Magnitude $6\frac{1}{2}$					
	USCGS: $17\frac{1}{2}$ S 41 E,					
	0 = 12:16:02					

Date	Sta.	Phase	h	m	s	
	January					
22	P	i?	13	12	23	
	Pr	i(P)			10	
	CL	e(P)			13	
		i		14	45	
		i		15	01	
	T	i		14	48	
		i		15	05	
22	P	iP	13	58	19	
		epP			53	
	R	iP			21	
		epP			53	
	Pr	iP			22	
		ipP			53	
	CL	iP			28	c
		epP			58	
	T	iP			29	
		epP		59	02	
	h = 140 km.					
	USCGS: 0 = 13:46:30,					
	h = 100 km.					
	BCIS: $21\frac{1}{2}$ S 175 W					
22	P	eP	15	16	12	
		i			25	
		iSN		17	29	
	R	eP		16	17	
	SB	eP			14	
		iSNE		17	14	
	CL	eP		15	53	
		i		16	02	
		iS			52	
	H	eP		15	52	
		iSNEZ		16	38	
	T	eP		15	34	
		iEZ!			39	
		iSNE		16	13	
	Felt in Nevada and California, at Reno, Carson City, Tahoe City, etc.					
	Magnitude 4.9					
22	R	i	23	27	34	
	CL	i			36	
		e		41	35	
23	Pr	iP	05	01	33	
	CL	eP			24	
	T	eP			24	
23	P	eP	07	05	46	
		i			55	
	PX	ePP?		09	19	
		i			41	
		eSSNE		22	35	
		eLE		30		
		eLNZ		32.5		
			A		T	
		PZ	1		2	
		MH	25		20	
	R	eP	07	05	44	
	Pr	iP			44	
		e			55	
			(continued)			

Date	Sta.	Phase	h	m	s	
	January (continued)					
23	CL	eP	07	05	51	
	T	eP			56	
	Magnitude $6\frac{3}{4}$					
	USCGS: 55 S 136 W,					
	0 = 06:52:42					
23	P	iP	07	07	15	
		ipP			35	
	R	iP			20	
		ipP			40	
	Pr	iP			27	
		ipP			46	
	CL	iP			04	
		e			20	
		ipP			26	
	USCGS: southwest Alaska,					
	0 = 07:00:10, h = 100 km.					
	Superposed on the preceding.					
24	P	iP	00	58	28	
		ipP		59	22	
	R	iP		58	31	
		ipP		59	25	
	Pr	iP		58	33	
		ipP		59	29	
	CL	iP!		58	34	
		ipP		59	26	
	T	iP		58	34	
		ipP		59	27	
	h = 220 km.					
	USCGS: 12 S 167 E,					
	0 = 00:46:02, h = 100 km.					
24	P	iP"	05	08	21	
	R	iP"			20	
	Pr	iP"			19	
	CL	iP"			22	
		i(PP)		10	01	
		iPKKP		18	20	
	T	iP"		08	27	
	USCGS: 0 = 04:49:28					
	BCIS: $60\frac{1}{2}$ S 22 W					
24	P	eP	06	18	26	
	R	eP			28	
	CL	eP			21	
	T	eP			15	
	CMO: 41.2 N 143.0 E,					
	h = 40 km.					
24	P	iPNEZ	07	17	39	c
		i!			45	
		iSNE		18	15	
	R	iPNZ!		17	31	c
		iSN!			59	
	Pr	iP!			21	c
	Pe	iP!			28	
	LJ	iPNE			26	
		iSE			42	
	Magnitude 5.6					
	Near Calipatria					
	Felt as far as Needles, San Diego, and Corona					
	33°07' N 115°34' W,					
	0 = 07:17:01. Many aftershocks, the largest (magnitude 4.0)at 0 = 07:33:07					

Date	Sta.	Phase	h	m	s	
	January					
24	CL	iP	18	56	21	
		i			37	
24	P	iP	19	54	10	
	R	iP			03	
	Pr	iP		53	54	
	CL	iP		54	10	
	T	iP			21	
25	CL	iP	05	19	23	
25	P	eP	12	34	22	
		epP			57	
	R	iP			19	
		ipP			51	
	CL	eP			28	
		ipP			59	
	T	eP			35	
		epP		35	07	
	USCGS: N. Chile,					
	0 = 12:22:40					
25	P	iP	15	06	37	d
		epP		08	50	
	R	iP		06	40	d
	Pr	iP!			41	d
	CL	iP			44	d
		ipP		08	58	
	T	iP		06	46	d
		epP		08	58	
	USCGS: 18 S 179 W,					
	0 = 14:55:33, h = 600 km.					
25	P	eP'	16	55	06	
		e			20	
	R	eP'			05	
		e			24	
	Pr	iP'			09	
		i			24	
	CL	eP'			01	
		e			17	
		e		58	58	
	BCIS: 2 S 82 E,					
	0 = 16:35:30					
25	MW	eP	17	43	02	
	R	eP			03	
	CL	eP			05	
25	P	eP	20	10	05	
	R	iP			07	
	CL	iP			11	c
26	MW	iP	03	00	41	
		e		01	08	
	R	iP		00	36	
	Pr	iP			31	
	CL	iP			46	
		e		01	13	
	South America?					
26	P	e	03	43	48	
	PX	eLEZ	04	20.1		
	R	e	03	44	31	
	Pr	e			44	
	CL	e(P)		39	40	
		e(PP)		44	32	
		e(PKKP)		54	48	
	East Indies?					

Date	Sta.	Phase	h	m	s	
	January					
26	Pr	iP	04	57	02	
	CL	iP			15	
26	MW	iP	15	21	12	
	R	iP			15	
	Pr	eP			24	
	CL	eP		20	55	
	T	eP			42	
26	MW	e	17	09	12	
	Pr	e			18	
	CL	e			16	
27	P	iPNEZ	00	47	47	d
		ipP		49	47	
	R	iP		47	44	d
		ipP		49	42	
	Pr	iP		47	41	d
		epP		49	39	
	CL	iP		47	51	d
		epP		49	50	
	T	iP		47	58	d
		epP		49	58	
	USCGS: 0 = 00:36:12,					
	h = 500 km.					
	BCIS: 31 S $63\frac{3}{4}$ W					
27	CL	eP	10	50	18	
27	P	eP	11	30	15	
	R	eP			18	
	Pr	eP			23	
	CL	eP			16	
	T	eP			12	
27	Pr	e	20	27	27	
	CL	iP			33	c
		e			50	
	T	eP			34	
28	MW	eP	03	49	00	
	R	eP			04	
	CL	eP			03	
	T	eP		48	58	
28	P	iP	08	10	34	
	R	iP			37	
	CL	iP			42	d
	T	iP			44	
28	CL	e(P)	13	40	01	
		e(PP)		44	53	
	T	eP		39	57	
	Very distant?					
29	P	iP	03	54	37	
		i(pP)		55	18	
	R	iP		54	41	
		e(pP)		55	20	
	CL	iP		54	41	
		i(pP)		55	17	
	T	iP		54	40	
		e(pP)		55	21	
29	P	iP	04	41	04	
	CL	iP			05	
		e		44	23	
29	P	eP	05	05	07	
	R	eP			15	
	CL	eP		04	55	
	T	eP			39	
	USCGS: 0 = 05:02:03,					
	foreshock of next					

Date	Sta.	Phase	h	m	s	
	January					
29	P	eP	05	46	35	
		i			46	
	R	eP			42	
	CL	eP			23	
	T	eP			09	
	USCGS: 43 N 128 W,					
	0 = 05:43:47					
29	P	eP	10	33	59	
		ipP		34	20	
		i			34	
	R	eP		33	55	
		ipP		34	15	
		i		35	58	
		i		36	24	
	Pr	iP?		33	55	
		i		34	10	
		i			20	
		i			32	
	CL	iP		34	05	
		ipP			26	
		i			39	
		iPcP		37	02	
		eScP		40	38	
	T	iP		34	15	
		ipP			36	
		ePcP		37	05	
		eScP		40	41	
	USCGS: $15\frac{1}{2}$ N 92 W,					
	0 = 10:27:59, h = 100 km.					
30	P	eP	11	22	14	
	PX	eLNE		30.9		
	R	eP		22	07	
	CL	iP			19	
		i			26	
	T	eP			31	
	USCGS: $15\frac{1}{2}$ N 99 W,					
	0 = 11:16:43					
30	R	eP	12	45	47	
	CL	iP			42	c
30	P	iPNEZ	19	06	01	
	PX	iSNEZ		10	39	
		eLNE		12.5		
			A		T	
		PZ	$1\frac{1}{2}$		3	
		PH	$1\frac{1}{4}$		3	
		SH	5		9	
		MH	20		14	
	R	iP	19	05	57	
	CL	iP		06	06	
	T	eP			20	
	Magnitude $6\frac{1}{4}$ - $6\frac{1}{2}$					
	USCGS: $15\frac{1}{2}$ N 99 W,					
	0 = 19:00:30					
30	MW	iP	19	11	29	
	CL	iP			31	
	Aftershock					
31	CL	eP	09	07	50	
31	MW	eP	11	03	29	
	CL	iP			35	
	T	iP			34	
31	R	e	12	02	22	
	CL	e			22	

Date	Sta.	Phase	h m s
	February		
1	P	iP	17 01 33
		i(pP)	52
	R	iP	38
	Pr	iP	32
	CL	iPNE	41
	H	iP	42
	T	iP	44
		i(pP)	02 03
	USCGS: 17 S 173 W,		
	0 = 16:50:02		
2	MW	eP	11 33 17
		epP	28
		e	40
	CL	iP	11
		ipP	24
		i	36
	T	iP	02
		ipP	13
		e	22
	USCGS: Aleutian Islands,		
	0 = 11:25:10, h = 100 km.		
2	P	eP	16 55 54
	R	eP	59
	Pr	iP	56 04
	CL	ePNE	55 50
		iNE	56 00
	H	iP	55 49
	T	i	55 45
	USCGS: 0 = 16:44:32		
	BCIS: 48 N 142 E		
2	MW	eP	18 37 36
	CL	ePNE	32
2	P	eP	21 14 50
		i(pP)	15 02
	R	eP	14 56
		e(pP)	15 06
	Pr	iP	03
	CL	iPNE	14 45
		e(pP)E	58
	H	eP	45
	T	eP	44
	BCIS: 0 = 21:02.9		
	CMO: 37.1 N 141.5 E		
3	MW	iP	04 26 38
	CL	iPNE	43
3	CL	i	22 35 10
4	P	iP	15 48 45 c
	R	iP	48 c
	Pr	iP	49 c
	CL	iP	53 c
		i	49 16
		e	47
	T	iP	48 55 c
		i	49 22
	USCGS: 19 S 176 W,		
	0 = 15:37:18, h = 250 km.		
4	MW	iP	19 19 19
	CL	iP	24
	USCGS: 18 S 169 E,		
	0 = 19:06:35		

Date	Sta.	Phase	h m s
	February		
4	MW	e	22 08 31
	R	e	25
	CL	i	34
5	CL	e	05 50 29
	T	e	31
	Near Apia		
5	CL	eP	13 50 35
5	T	eP	18 45 00
6	MW	eP	06 12 52
	R	eP	56
	Pr	eP	13 03
		e	13
	CL	ePNE	12 42
	T	eP	33
	USCGS: 0 = 06:06:04		
6	MW	eP	16 35 25
	CL	iP	17 c
	USCGS: Off Cape Mendocino,		
	0 = 16:33:10		
6	CL	eP	17 08 40
	T	iP	29
	USCGS: off Cape Mendocino,		
	0 = 17:06:33		
7	Pr	eP	00 20 07
	CL	eP	07
	T	eP	10
7	MW	e	00 38 29
	R	e	31
	Pr	e	49
	CL	e	21
	T	e	42
7	R	eP	01 35 10
	Pr	eP	34 41
	CL	eP	35 23
	Mexico		
7	P	iPNEZ	03 50 54 c
			A T
		PZ	$\frac{1}{3}$ 1
	MW	iP	03 50 55 c
		i(pP)	51 20
	R	iP	50 58 c
		i(pP)	51 24
	Pr	iP	51 02 c
	CL	iP!	50 53 c
	T	iP	50 47 c
		i(pP)	51 16
	USCGS: 0 = 03:38:37, h = 100 km.		
	CMO: 31.2 N 140.4 E, h = 100 km.		
	BCIS: 30 N 139½ E,		
	h = 100 km.		
7	MW	iP	10 30 48
	R	iP	52
	Pr	iP	57
	CL	iP	44 c
	T	iP	36
	Japan?		
7	R	iP	22 46 54
	CL	iP	40
8	P	iP	00 31 06
	R	iP	07
	CL	iP	06
	T	iP	04

Date	Sta.	Phase	h m s
	February		
8	P	iP	10 50 07
	PX	eLNE	11 14
	R	eP	10 50 08
	Pr	iP	09
	CL	iP	13
	T	eP	16
	USCGS: 23 S 176 W,		
	0 = 10:38:05, h = 60 km.		
8	MW	eP	11 16 05
	R	eP	06
	Pr	iP	09
		i	22
	CL	iP	12
		i	27
	T	eP	14
8	P	eP	12 40 21
	Pr	iP	22
		e	41
	CL	iP	28
		i	45
	T	iP	30
8	MW	i	18 20 15
	R	eP	19 57
		i	20 12
	CL	iP	06
		e	21
	T	eP	14
		e	26
	South America?		
9	P	iPNEZ	01 31 23 d
			A T
		PZ	$\frac{1}{4}$ 1
	MW	iP	01 31 24 d
		epP	33 22
	R	iP	31 26 d
		epP	33 25
	Pr	iPNEZ!	31 26 d
		epP	33 26
	CL	iP!	31 31 d
		epP	33 30
	T	iP	31 32 d
	USCGS: 22 S 179 W,		
	0 ≐ 01:20:10, h = 650 km.		
9	MW	eP	03 31 37
	CL	eP	26
	T	eP	10
9	P	iP	04 46 37 d
		ipP	58
	R	iP	34 d
		epP	54
	Pr	iP	31 d
		ipP	51
	CL	iP	44 d
		ipP	47 03
	T	iP	46 49 d
		ipP	47 09
	Andes, h = 80 km±		
9	P	iPNZ	22 22 06
	R	iP	08
	Pr	iP	10 c
	CL	iP	12 c
	T	iP	12
10	P	iP	03 41 23
		i	30
			(continued)

Date	Sta.	Phase	h m s
	February (continued)		
10	PX	iPP	03 45 38
		eSKSNE	51 54
		iSN	52 46
		eN	53 00
		eSSN	59.0
		eLE	04 07
			A T
		PZ	0.1 1½
		SH	1½ 5
		MH	10 20
	R	iP	03 41 24
	Pr	iP	27
		i	38
	CL	iP	30
	T	eP	37
	VI, North Island New Zealand		
	Wellington: 40.2 S 177.0 E,		
	0 = 03:27:56, mag. 6¼-6½		
10	P	iPEZ	08 49 23 d
		epP	49
	R	iP	25 d
	Pr	iP	31 d
		epP	50 00
	CL	iP	49 19 d
		ipP	48
	T	iP	13 d
		ipP	40
	USCGS: 43½ N 146 E,		
	0 = 08:38:09, h = 100 km.		
10	MW	eP	10 55 40
		i(pP)	53
	R	iP	34
		e	53
	Pr	iP	28
		i(pP)	45
	CL	eP	45
	T	eP	56
	Mexico		
10	P	iPEZ	11 29 29
		ipP	39
		isPEZ!	47
	PX	eLNZ	56
	R	iP	29 32
		ipP	42
		isP	50
	Pr	iP	35
		ipP	46
		isP	52
	CL	iP	31
		epP	41
		isP	58
	T	eP	26
		isP	44
	h = 40 km - 50 km		
	USCGS: 0 = 11:16:30		
	BCIS: 13¾ N 143 E,		
	0 = 11:16:33		
10	P	iPNEZ	14 56 21 d
	R	iP	23
	Pr	iP	24 d
	CL	iP	29
	T	iP	31
	Near Apia. USCGS: 0 = 14:45:02, h = 500 km.		

Date	Sta.	Phase	h	m	s	
	February					
10	MW	eP	15	20	35	
	R	eP			38	
	Pr	eP			37	
	CL	eP			34	
	T	eP			40	
	West Indies					
	USCGS: O = 15:12:14					
10	P	iP"NEZ	15	35	02	
		e(PP)		37	23	
	R	iP"		35	03	
	Pr	iP"			02	
		i			26	
		e		37	12	
		i(PP)			32	
	CL	eP"		35	01	
		e		37	11	
		i(PP)			28	
	T	iP"		35	01	
	BCIS: 5 S 112 E,					
	O = 15:16.0, h = 100 km.					
10	R	eP	22	06	27	
		e		10	27	
	CL	eP		06	27	
	USCGS: off New Guinea,					
	O = 21:52:19					
11	R	e	22	04	04	
	CL	e			06	
	T	e			07	
12	P	iPEZ	03	40	12	
		i(pP)			25	
	PX	eLEZ		54		
	R	iP		40	16	
		e(pP)			30	
	Pr	iP			23	c
		i(pP)			36	
	CL	iP			07	
		i(pP)			20	
	T	iP		39	59	
	Depth 60 km±?					
	USCGS: 52 N 179 E,					
	O = 03:31:50, h = 200 km.					
12	P	iPEZ	17	32	48	
	PX	eSNE		41	32	
	P	eP'P'	18	01	24	
			A		T	
		PZ	½		2	
		SH	5		12	
		MH	15		20	
	R	iP	17	32	50	
		eP'P'	18	01	23	
	Pr	iPNEZ!	17	32	56	
	CL	iP			38	
		eP'P'	18	01	23	
	T	ePNEZ	17	32	32	
		eSNE		41	05	
	Magnitude 6½					
	USCGS: 66 N 136 E,					
	O = 17:22:02					
	BCIS: 65.6 N 137.0 E, O = 17:22:01					
	CMO: 64 N 135 E					
	Unusual epicenter; Verkhoyansk region					

Date	Sta.	Phase	h	m	s	
	February					
12	R	iP	19	57	08	
	CL	iP			11	
13	CL	e	01	05	28	
		e		08	51	
	Very distant					
	O = 00:46.4?					
13	P	i	06	19	57	
	PX	eLNE			22.6	
	R	e		19	47	
	Pr	i(P)			30	
		i			44	
	CL	eP			55	
		i		20	08	
	T	eP			15	
	USCGS: O = 06:16:30					
	BCIS: 24 N 109½ W,					
	O = 06:16:38					
13	MW	eP	08	24	05	
	R	eP		23	59	
	Pr	iP			54	
	CL	eP		24	08	
	T	eP			17	
13	MW	i	08	56	38	
	R	eP			32	
		ipP			47	
		iPcP		59	28	
	Pr	iP		56	26	c
		ipP			42	
	CL	iP			42	
		ipP			58	
		iPcP		59	31	
	T	iP		56	53	
		i		57	10	
		iPcP		59	35	
	USCGS: 13 N 91 W,					
	O = 08:50:10, h = 100 km.					
13	P	iPNEZ	12	06	56	d
		iNEZ		07	00	c
		iPcP			14	
		ipP!			55	
		isPE		08	27	
	PX	i			50	
		i		09	42	
		eS		16	01	
		iSNEZ			05	
		eGNE			25.6	
		eP'P'		34	35	
			A		T	
		PZ	5		3	
		PH	2½		3	
		pPZ	0.2		1	
		PPZ	1		2	
		SH	6		6	
		MH	20		40	
		MH	8		20	
			(continued)			

Date	Sta.	Phase	h	m	s	
	February (continued)					
13	R	iP	12	06	58	d
		i(pP)		08	09	
		eSNEZ		16	08	
		eP'P'		34	34	
	Pr	iPNEZ!		06	58	d
		ipP		08	00	
		iSNEZ		16	11	
	CL	iPNEZ		07	03	d
		ipP		08	06	
		isP		08	38	
		eSEZ		16	18	
		e		34	27	
		eP'P'			38	
		e		35	36	
	T	iPNEZ		07	06	d
		iSNE		16	22	
		eP'P'		34	33	
		e		35	42	
	Large dilatations preceded by very small compressions					
	Magnitude 7					
	USCGS: 15 S 175 W,					
	O = 11:55:50, h = 250 km.					
13	Pr	eP	16	34	21	
	CL	eP			36	
	T	eP			48	
	USCGS: 14 N 91 W,					
	O = 16:28:00					
13	P	iPNE	17	16	43	
		iSNE		17	12	
	R	iP		16	28	
	Pr	iPNEZ!			19	c
	LJ	iP			23	c
		iSNEZ			40	
	Magnitude 4.2					
	32°58' N 115°32' W,					
	O = 17:16:00					
	Felt in Imperial Valley. Shocks from same source with O = 17:45:52 and O = 17:46:34, magnitudes 3.3 and 4.1					
13	P	eP?	22	19	40	
		iPNEZ!			42	d
		iPP		21	03	
		iPcP		22	11	
	PX	iSNEZ		25	10	
		eScP		26	00	
		iGNE		27	13	
	P	eScSN		30	04	
	R	iPNEZ		19	46	d
	Pr	iPNEZ			51	d
	CL	iPNEZ			31	d
		iNEZ!			33	d
		i		20	07	
		e(S)		24	58	
		iScP		25	57	
		i		26	13	
	T	iPNEZ		19	22	d
		i		20	02	
	Magnitude 7±. USCGS: 56 N 155½ W, O = 22:12:58					

Date	Sta.	Phase	h	m	s	
	February					
14	P	iPNEZ	00	54	35	
		iNEZ			43	
	R	iP			42	
	Pr	iP			53	
	CL	iP			23	
	T	eP			05	
	USCGS: 44 N 127 W,					
	O = 00:51:48					
14	P	eP	04	58	10	
	R	eP			09	
	CL	eP			21	
	T	eP			28	
14	P	eP	10	04	42	
	R	eP			43	
	CL	eP			24	
	T	e			21	
15	P	iPNEZ	05	24	49	
	PX	eLEZ			28.7	
	R	iP		24	42	
	Pr	iPNEZ			34	
	CL	iP			59	d
	T	iP		25	15	
	USCGS: O = 05:20:20					
	BCIS: 19 N 104¾ W,					
	O = 05:20:25					
15	R	eP	07	24	11	
	CL	eP			09	
	T	eP			04	
15	P	eP	10	48	24	
		iNEZ!			27	c
		iSNE			46	
	R	iPNZ!			15	c
		iSN!			26	
	Pe	iP!			12	
	Pr	iPNEZ!			06	c
	LJ	iPNEZ!			15	c
		iSNE!			27	
	Magnitude 4.8					
	33°29' N 116°30' W,					
	O = 10:47:59					
	Felt to distances of about 100 km.					
15	P	iPNEZ!	10	50	25	c
		iSNE			45	
	R	iPNZ			14	
		iSN			26	
	LJ	iPNEZ			13	
		iSN			25	
	Magnitude 4.8					
	33°29' N 116°30' W,					
	O = 10:49:57					
	Similar to the preceding					
15	R	e	20	17	39	
	Pr	i			42	
	CL	iP			44	
	Central Atlantic?					
16	MW	e	05	17	18	
	R	e			16	
	Pr	e			29	
	CL	e(P)		16	59	
	T	e			44	

Date	Sta.	Phase	h	m	s	
	February					
16	MW	eP	09	52	18	
	CL	eP			12	
16	R	eP	19	20	47	
	Pr	iP			47	
	CL	eP			43	
	T	eP			49	
	USCGS: 17½ S 167 E,					
	0 = 19:07:53					
16	CL	eP	21	09	09	
	T	eP			14	
17	CL	iP	11	06	05	
	T	eP		05	57	
17	P	iPNEZ!	21	20	30	d
		ipP		21	17	
	PX	esP			46	
	P	iPPEZ		24	28	
	PX	iPPNEZ!			32	
		iSKSNE!		30	50	
		eEZ		33	06	
	P	eP'P'		45	10	
	PX	eLN		48.3		
			A		T	
		PZ	5		2	
		PH	2		2	
		pPZ	½		1	
		PPZ	2½		2	
		PPH	1½		2	
		SKSH	15		10	
		MH	12		20	
		MZ	12		20	
	R	iPNEZ!	21	20	33	d
		ipP		21	23	
		eSKSE		30	54	
		eP'P'		45	02	
	Pr	iPNEZ!		20	35	d
		ipP!		21	24	
		iPPEZ		24	36	
		iSKSE!		30	58	
	CL	iP!		20	31	d
		ipP		21	16	
		isP			41	
		iPP		24	28	
		iSKSE		30	54	
		eP'P'		44	57	
	T	iPNEZ		20	31	d
		ipP		21	20	
		eSKSE		30	52	
	Magnitude 7¼					
	h = 180 km.					
	USCGS: 7 S 146 E,					
	0 = 21:06:58, h = 100 km.					
	BCIS: 0 = 21:07:09,					
	h = 200 km.					
17	PX	iSKSE	21	47	48	
	MW	eP		37	25	
	R	iP			22	
	Pr	iP			22	
		iSKSE		47	48	
	CL	iP		37	21	
		iSKSE		47	47	
		Aftershock				

Date	Sta.	Phase	h	m	s	
	February					
18	P	eP	07	18	19	
	R	eP			13	
	CL	eP			21	
	USCGS: 1½ N 82 W,					
	0 = 07:09:48					
18	CL	iP	11	04	01	
		i			13	
19	MW	eP?	03	28	57	
		e(pP)		30	03	
	CL	ePN		29	04	
		e(pP)NE		30	11	
	T	eP		29	05	
		e(pP)		30	12	
	Near Apia					
	Depth 280 km?					
19	T	e	09	46	58	
	Mexico					
19	MW	eP	10	19	26	
	CL	iPNE			24	
	T	eP			24	
	Region of New Zealand?					
19	T	eP	12	32	34	
	USCGS: Near Adak,					
	0 = 12:24:34					
19	P	iP	17	54	52	c
		epP		56	52	
	R	iP		54	54	
		epP		56	53	
	Pr	iPNEZ!		54	55	c
		ipP		56	53	
	CL	iP		55	00	c
		ipP		56	59	
	T	eP		55	02	
		epP		57	03	
	USCGS: 17½ S 179 W,					
	0 = 17:43:55, h = 600 km.					
19	P	iPNZ	22	21	54	
		i		22	10	
	PX	eSN		30	03	
		eRNZ		39.3		
			A		T	
		PZ	0.4		2	
		SH	7		20	
		MH	35		20	
		MZ	40		20	
	Azimuth almost directly south					
	R	iP	22	21	54	
	Pr	iP			49	
	CL	eP		22	05	
	T	eP			16	
	Magnitude 6½					
	USCGS: 25 S 117 W,					
	0 = 22:11:54					
20	PX	eL	01	01		
20	CL	eP	02	50	18	
20	CL	e	10	31	47	
20	CL	iP	13	25	17	
		i			29	
	T	eP			16	
20	P	eP	13	34	23	
	Pr	eP			22	
	CL	eP			32	

Date	Sta.	Phase	h	m	s	
	February					
20	P	iPNZ	15	33	58	c
	PX	eSE		41	46	
		eGE		47.8		
			A		T	
		PZ	0.2		2	
		SH	2		8	
		MH	5		7	
		MH	10		15	
	R	eP	15	33	56	
	Pr	iPNZ			51	
		iSE		41	37	
	CL	iP		34	08	
	Magnitude 6±					
	USCGS: 22 S 114 W,					
	0 = 15:24:18					
20	P	eP	15	52	35	
	R	eP			48	
	CL	iP!			31	
	T	iP			25	
	USCGS: Off Hokkaido,					
	0 = 15:41:20					
21	P	eP	07	32	21	
		e			34	
		i			45	
	R	eP			24	
		e			37	
		i			48	
	Pr	iPNEZ			23	
		e			39	
		iNEZ!			47	
	CL	iP			27	
		e			40	
		i			52	
	T	eP			34	
		i			57	
	USCGS: 0 = 07:19:23					
	BCIS: 36 S 179 W					
	Wellington: 36 S 179 W,					
	0 = 07:19.5, mag. 6.3					
21	CL	eP	17	12	14	
		eSN		14	48	
		i			55	
	H	iP		12	14	
		e		14	56	
	T	iP		12	08	
		i(S)		14	31	
	USCGS: 43 N 110 W,					
	0 = 17:09:56					
21	P	iP	20	49	01	
	R	iP			02	c
	CL	iP			00	c
	T	iP			06	
		i			19	
	USCGS: 18½ N 69 W,					
	0 = 20:40:39, h = 100 km.					
22	PX	eLEZ	02	31		
	MW	eP	01	59	35	
	R	eP			39	
	CL	eP			32	
		ePP	02	03	42	
	BCIS: 3½ S 143 E,					
	0 = 01:45:46					

Date	Sta.	Phase	h	m	s	
	February					
22	P	iP	18	08	20	
	R	iP			18	
		i(pP)			54	
		i		09	08	
	Pr	iP		08	08	
	CL	iP			27	d
		i(pP)		09	03	
	T	iP		08	33	d
		i(pP)		09	07	
	USCGS: 0 = 17:56:42,					
	h = 100 km.					
	BCIS: 24½ S 67 W,					
	0 = 17:56.8, h = 150 km.					
22	R	e	21	29	49	
	CL	e			33	
	Mexico					
23	P	e	00	04	33	
	R	e			31	
	CL	e			23	
	USCGS: off Oregon,					
	0 = 00:01:09					
23	R	e	00	16	55	
	CL	e			37	
	T	e			21	
	Off Oregon?					
23	MW	e	02	09	48	
	R	e			48	
	Pr	e		10	02	
	CL	e		09	31	
		e			36	
	T	e			14	
	USCGS: Off Oregon					
	0 = 02:06:26					
23	P	eP	02	59	57	
		i	03	00	07	
	PX	eLE		02.6		
		i(S)E		02	59	
	R	eP	03	00	04	
	Pr	iP			14	
		iNZ			20	
	CL	iP	02	59	46	
		i			53	
		i			57	
	T	eP			28	
	USCGS: Off Oregon,					
	44½ N 129½ W, 0 = 02:56:42					
23	CL	e(P)	04	19	35	
	USCGS: Off Oregon,					
	0 = 04:16:34					
24	R	eP	03	26	11	
	Pr	eP			12	
	CL	eP			28	
	T	eP			36	
24	CL	eP	06	13	46	
	Mexico?					
25	P	iP	13	03	06	
	R	iP			09	
	Pr	iP			13	
	CL	iP			03	
		i			13	
	T	iP		02	58	
	BCIS: 37 N 142 E, 0 = 12:51:11					
	CMO: 37.0 N 141.9 E,					
	h = 40-50 km.					

Date	Sta.	Phase	h	m	s	
	February					
26	CL	iP	14	58	55	
28	R	i	01	10	48	
	CL	iP			30	
		ipP			46	
	T	eP			41	
		epP			57	
	March					
1	Pr	eP	01	53	15	
	CL	eP			00	
1	CL	e	18	32	55	
2	R	e	00	40	45	
	CL	eP			56	
		i		41	07	
	T	eP			07	
		e			18	
	Tacubaya: 15°51' N, 91°36' W, 0 = 00:34:24, h = 100 km.					
2	MW	iP	01	10	22	
	R	iP			19	d
	CL	iP			26	d
	T	iP			33	d
	South America					
2	MW	iP	01	42	46	
	R	eP			42	
	CL	iP			33	
	T	eP			29	
	USCGS: 53 N 35 W, 0 = 01:32:39					
	BCIS: 53½ N 35 W, 0 = 01:32:27					
3	CL	iP	13	10	35	
3	PX	eLNZ	18	41.1		
	CL	e		12	58	
	T	e		13	07	
4	P	iPNEZ	11	28	01	d
		i			14	
	PX	ipPNEZ			18	
		isPEZ			25	
		iPP		30	23	
		eSE		36	41	
		iSNE		37	13	
		eRNZ		49.5		
	P	eP'P'		56	50	
			A		T	
		PZ	2½		2	
		PH	2		2	
		PPZ	1		4	
		SH	4		6	
		MH	2		20	
	R	iP	11	27	57	d
		epP		28	12	
		isP			22	
	Pr	iPNEZ!		27	53	d
		ipPNZ		28	11	
		isP			20	
		i			45	
		eP'P'		56	52	
	CL	iPNEZ		28	06	d
		ipP			24	
		isP			31	
		i		30	00	
		eP'P'		56	55	

(continued)

Date	Sta.	Phase	h	m	s	
	March (continued)					
4	T	iPNEZ	11	28	13	d
		ipP			32	
		isP			40	
		eP'P'		56	25	
	Depth 60-70 km.					
	Magnitude 7					
	USCGS: 16 S 74 W, 0 = 11:17:33, h = 150 km.					
5	CL	eP	00	57	21	
	USCGS: 0 = 00:50:35					
	BCIS: 14½ N 91 W					
5	MW	iP	11	01	40	
	CL	iP			46	
5	MW	eP	11	27	54	
	Pr	iP			50	
	CL	eP			52	
	USCGS: 0 = 11:14:39					
	BCIS: 0.0,27.4 W					
5	MW	eP	14	53	11	
		e(pP)			23	
		e			30	
	Pr	iP			21	d
		i(pP)			33	
		i			40	
	CL	iP			04	d
		i(pP)			15	
		i			23	
		iPcP		55	28	
	T	iP		53	40	
		e(pP)			50	
		e			58	
	h = 50 km.±					
	USCGS: 53 N 163 W, 0 = 14:46:00					
5	P	iPEZ	20	24	38	d
		e			53	
		i			58	
		i		25	05	
	PX	i(pP)EZ			25	
		iE		26	03	
		e(PP)		27	47	
		iPP		28	15	
		i			41	
		i		29	22	
		e		30	05	
		eSKSNE		34	56	
		iSNE		35	22	
		iE		36	06	
		iSPNEZ			26	
		i			55	
		iNEZ		37	37	
		eSSNE		40	50	
		eGNE		48.6		
		eRNZ		49.8		
			A		T	
		PZ	1¾		2	
		PH	1		2	
		PPZ	¾		3	
		SH	6		12	
		MH	30		30	
		MZ	5		20	

(continued)

Date	Sta.	Phase	h	m	s	
	March (continued)					
5	R	iP	20	24	40	
	Pr	iPNEZ			43	d
		i		25	46	
		iPP		28	27	
		iSKSNE		35	05	
		iSNE			33	
	CL	iPNEZ		24	36	d
		i		25	09	
		i			18	
		e		26	03	
		iPP		28	13	
		iSKSE		34	54	
		iSN		35	21	
		eN		36	08	
	T	iPNEZ	20	24	32	d
		i		25	15	
		eSKSNE		34	46	
		eSNE		35	10	
	Magnitude 7±					
	USCGS: 29 N 128 E, 0 = 20:11:45, h = 150 km.					
5	P	eP	22	55	37	
		i			47	
		eSEZ		56	56	
	R	eP		55	28	
		i			38	
		iSNEZ		56	44	
	Pr	iP		55	30	c
		iNEZ		56	26	
		iSNE			45	
	CL	iPEZ		55	18	
		iEZ			24	
		iSEZ		56	14	
	H	eP		55	21	
	T	eP			23	
		eSN		56	32	
	Magnitude 4.7					
6	MW	iP	01	36	19	
	R	iP			20	
	Pr	iP			20	
	CL	iP			26	
6	P	iP	08	57	38	d
	R	iP			35	d
	Pr	iP			31	d
	CL	iP			43	d
	T	iP			51	d
	South America					
6	MW	epP?	09	49	42	
		e		50	05	
	Pr	iP		49	32	
		i(pP)			55	
		i		50	06	
6	CL	e	19	17	12	
	Assam					
7	P	eP	06	32	24	
	R	iP			21	
	Pr	iP			12	
	CL	iP			28	
	T	eP			37	
7	CL	iP	15	50	17	
7	P	iP	17	35	17	
	R	iP			20	
	CL	iP			07	

Date	Sta.	Phase	h	m	s	
	March					
7	CL	e(P)	18	43	55	
		e		44	02	
	USCGS: Off Honshu 0 = 18:31:56					
8	CL	e(P)	13	36	51	
		e		37	11	
8	P	iPNEZ	15	25	14	
		i(pP)			29	
	PX	eLNZ		54		
			A		T	
		PZ	½		1	
		PH	¼		1	
	MW	iP	15	25	15	
		ePKKP		42	39	
	R	iP		25	17	
		i(pP)			31	
		e			38	
		ePKKP		42	36	
	Pr	iPNEZ		25	19	
		i(pP)			33	
		i			47	
		iPKKP		42	36	
	CL	iPNEZ		25	17	
		i			38	
		ePKKP		42	38	
	T	iP		25	16	
	PKKP small and short-period at these stations.					
	Magnitude 6½?					
	USCGS: 6 S 154 E, 0 = 15:12:11, h = 60 km.					
9	CL	e	07	23	09	
		e			26	
9	MW	e	10	25	17	
	R	e			13	
	Pr	e			12	
	CL	eP			17	
		i			30	
		i			48	
	T	e			33	
	BCIS: off Peru, 0 = 10:14.7					
9	MW	iP	16	21	04	d
		e		23	04	
	R	iP		21	06	d
	Pr	iPNEZ			06	d
		epP		23	16	
	CL	iP		21	10	d
		ipP		23	20	
	T	iP		21	12	d
	USCGS: 20 S 179 W, 0 = 16:09:57, h = 600 km.					
9	P	iP"	20	03	06	
		i			25	
	PX	ePP		05	02	
	P	ePKKP		13	35	
	PX	ePSNEZ		14	06	
		iSSE		20	54	
		eLNE		33.6		
			A		T	
		P"Z	0.2		1	
		PPZ	0.2		2	
		MH	25		20	
		MZ	25		20	

(continued)

March (continued)

Date	Sta.	Phase	h	m	s	
9	R	eP"	20	03	09	
		ePKKP		13	24	
	Pr	eP"		03	08	
		iPKKP		13	29	
	CL	iP"		03	08	
		ePKKP		13	20	
	T	eP"		03	10	

Magnitude 6¾
USCGS: 8 S 124½ E,
0 = 19:44:16

Date	Sta.	Phase	h	m	s	
9	P	eP	20	42	57	
		e		43	30	
	R	eP		42	59	
		e		43	28	
		e			47	
	Pr	iP		43	02	
		e			29	
		i			49	
	CL	eP			03	
		e			32	
	T	eP			02	
		i			36	
		i			50	
10	P	iP	02	15	34	d
	R	iP			37	d
	Pr	iPNEZ			37	d
		i			51	
	CL	iP			42	d
	T	iP			44	d

USCGS: 0 = 02:04: 28,
h = 600 km.
BCIS: 20½ S 178 W

Date	Sta.	Phase	h	m	s	
10	P	iPNEZ	08	12	12	
		iSN		13	52	
	R	iP		12	19	
	CL	iP			02	
	T	iP		11	50	
		iS		13	19	

Magnitude 4¼±
Felt in Humboldt County, California

Date	Sta.	Phase	h	m	s	
10	R	iP	10	51	08	
	Pe	iP			09	
	CL	iP			04	
	T	eP			03	

Spain. BCIS: 38.2 N 4.3 W, 0 = 10:38:36

Date	Sta.	Phase	h	m	s	
10	P	eP	12	30	54	
		ipP		31	08	
	R	eP		30	58	
		ipP		31	13	
	Pr	eP		31	02	
		ipP			16	
	CL	iP			00	
		ipP			13	
	T	iP		30	58	
		ipP		31	15	

0 = 12:17:50
BCIS: 6 S 155 E

March

Date	Sta.	Phase	h	m	s	
10	P	iPNEZ	15	52	44	c
		iSNZ			48	
	R	iPEZ!			33	c
		iSNEZ!			39	
	Pe	iP!			39	
	CL	iP			55	

Felt at Fawnskin, Hemet, Riverside (USCGS)
34°04' N 116°52' W,
0 = 15:52:25. Mag. 3.9

Date	Sta.	Phase	h	m	s	
10	P	iPNEZ!	22	09	59	c
		ipP		10	29	
		isP			41	
	PX	iPPNEZ		13	19	
		eSKSE		20	01	
		eS			31	
		iSPE!		21	14	
		iE		22	12	
		ePKKP		28	01	
		iGN		32.5		
		eP'P'		36	01	
		iRE		36.7		
				A	T	
		PZ		7	3	
		PH		5	4	
		PPZ		3	2½	
		PPH		2	3	
		SKSH		40	20	
		SPH		20	8	
		GN		75	30	
		MH		25	19	
	R	iPEZ	22	10	02	c
		ipP			33	
		iPP		13	20	
		iPKKP		28	01	
		eP'P'		36	00	
		i			13	
	Pr	iPNEZ!		10	03	c
		ipP			35	
		iPPNEZ		13	27	
		iNE		20	31	
		iNE		21	21	
		iPKKP		28	01	
		iP'P'		36	03	
	CL	iPNE		10	03	
	H	iPNEZ			04	c
		ePKKP		27	57	
		eP'P'		35	58	
	T	iPNEZ		10	04	c
		ipP			34	
		i			45	
		eNEZ		20	36	
		eN		21	33	
		iPKKP		27	59	
		eP'P'		36	05	

Depth 110 km.
Magnitude 7¼-7½
USCGS: 15½ S 167½ E,
0 = 21:57:37, h = 200 km.

March

Date	Sta.	Phase	h	m	s	
10	P	iP	22	15	27	
	PX	eN		25	45	
				A	T	
		PZ		¾	1½	
	R	iP	22	15	27	
	Pr	iP			33	
	H	iP			22	
	T	iP			20	

Magnitude 7?
Confused by the preceding, P nearly coincides with PPP of the earlier shock, and the second reading at Pasadena may be S of this shock or a phase of the other.
CMO: 41.5 N 142.3 E, h = 80 km.
USCGS: 0 = 22:03:37
BCIS: 41.0 N 138.9 E,
0 = 22:03:41, h = 100 km.

Date	Sta.	Phase	h	m	s	
11	MW	eP	09	18	45	
	R	eP			42	
	CL	eP			51	
	T	eP			59	

USCGS: 0 = 09:08:14,
h = 200 km.
BCIS: 14 S 70 W

Date	Sta.	Phase	h	m	s	
11	CL	iP	16	02	11	
12	P	eP	06	12	16	
	R	e			19	
	CL	iP			24	
	T	eP			27	
12	PX	iPP	15	11	29	
	R	ePP			32	
	Pr	iPP			37	
	CL	e		10	04	
		e		11	06	
		iPP			22	
	T	e		10	57	

Assam
USCGS: 0 = 14:52:16

Date	Sta.	Phase	h	m	s	
13	P	iP	00	31	05	
		e(pP)			36	
	R	iP			02	
		e(pP)			32	
	Pr	iP		30	58	
	CL	iP		31	10	d
		i(sP)			52	
	T	iP			21	d

USCGS: Peru, 0 = 00:20:50
BCIS: 10 S 74.5 W,
0 = 00:21:04, h = 100 km.

Date	Sta.	Phase	h	m	s	
13	MW	eP	04	14	22	
		ipP			58	
	R	eP			19	
		ipP			54	
	Pr	ipP			50	
	CL	iP			26	
		ipP		15	01	
	T	eP		14	36	
		ipP		15	10	

Andes, h = 140± km.
BCIS: 0 = 04:02.8,
h = 100± km.

March

Date	Sta.	Phase	h	m	s	
13	MW	eP	09	34	18	
	R	iP			11	
		i			23	
	Pr	iP			05	
		i			15	
	CL	iP			24	
		i			35	
	T	eP			34	

Mexico

Date	Sta.	Phase	h	m	s	
13	P	iP	17	56	11	c
		i			32	
	PX	iSNE	18	05	35	
	R	iP	17	56	14	c
		epP		58	22	
	Pr	iPNEZ		56	14	c
		ipP		58	23	
		iSNE!	18	05	48	
	CL	iPNEZ	17	56	19	c
		iSNE	18	05	40	
	T	iP	17	56	22	c
		i			38	
		eSNZ	18	05	53	

USCGS: 20½ S 180,
0 = 17:45:00, h = 600 km.

Date	Sta.	Phase	h	m	s	
14	P	eP	09	59	22	
				A	T	
		PZ		0.1	1½	
	R	eP	09	59	23	
	Pr	iP			24	
		i			39	
	CL	eP			14	
	T	eP			10	

BCIS: 50°40' N, 6°50' E,
0 = 09:46:58

Date	Sta.	Phase	h	m	s	
14	P	iP	12	34	16	
	R	iP			19	
	CL	iP			15	
	T	iP			11	

To the northwest

Date	Sta.	Phase	h	m	s	
14	P	iP	12	34	29	
	R	iP			25	
	CL	iP			33	
	T	iP			40	

South America

Date	Sta.	Phase	h	m	s	
14	MW	eP	21	51	27	
		i(pP)			58	
	R	i(pP)			54	
	Pr	iP			19	
		i(pP)			54	
	CL	iP			32	
		i(pP)		52	02	
		e			11	
	T	iP		51	38	
		i(pP)		52	10	
15	R	iP	18	31	30	
	Pr	iP			36	
	CL	iP			16	
15	P	eP	20	41	46	
	R	eP			44	
	Pr	iP			36	
	CL	eP			56	
		i		42	04	
	T	iP			08	

Mexico

Date	Sta.	Phase	h	m	s	
	March					
16	P	iP	17	46	10	
	R	iP			08	d
	CL	iP			15	d
	T	iP			22	
	South America?					
16	P	iPNEZ	19	43	06	
		i(pP)			18	
	R	iP			09	
	Pr	iPNEZ			16	
		i(pP)			29	
	CL	iP		42	58	c
		i(pP)		43	11	
		iPcP		45	08	
	T	iPNEZ		42	50	c
		i(pP)		43	04	
	USCGS: $52\frac{1}{2}$ N $167\frac{1}{2}$ W,					
	0 = 19:35:31					
16	CL	iP	22	23	32	
		i		24	00	
17	R	e	03	58	42	
	CL	e			50	
17	P	i	04	46	18	
	Small surfaces waves recorded.					
	CL	e	04	45.7		
		i		46	08	
	T	e		45	49	
		i		46	03	
	USCGS: 32 N 97 E,					
	0 = 04:27:35					
	Poona: 32 N 96.5 E,					
	0 = 04:27:26					
17	CL	eP	08	34	32	
17	P	e?	10	04	23	
	PX	eLE		20		
	CL	eP		04	32	
17	MW	iP?	19	36	59	
	CL	iP		37	04	
	T	eP			12	
18	R	eP	06	58	31	
	CL	eP			40	
18	CL	iP	09	19	39	
18	P	eP	12	32	56	
	CL	iP			59	
	T	eP			58	
19	MW	eP	03	18	19	
	R	eP			18	
	CL	eP			16	
	T	eP			16	
	USCGS: $35\frac{1}{2}$ N 35 W,					
	0 = 03:07:31					
19	P	iP	07	34	32	
	R	eP			30	
	CL	iP			43	
	T	iP			42	
19	P	eP'	09	49	34	
	R	eP'			32	
	Pr	iP'EZ			33	
		i			43	
	CL	eP'			29	
		i			34	
	T	eP'			29	
		i			33	

(continued)

Date	Sta.	Phase	h	m	s	
	March (continued)					
19	USCGS: $21\frac{1}{2}$ S 33 E,					
	0 = 09:29:35					
	G.R.I. (Johannesburg):					
	20°20' S 33°48' E,					
	0 = 09:29:32					
19	P	eP	20	19	53	
	CL	eP		20	04	
	T	eP			16	
19	P	iPNEZ	20	38	48	d
		i			58	
		eP'P'	21	08	38	
			A		T	
		PZ	0.4		1	
	R	iP	20	38	51	d
		eP'P'	21	08	37	
	Pr	iPNEZ	20	38	57	d
		i		39	08	
	CL	iPNZ!		38	42	d
		eSNE		46	38	
	T	iPNEZ!		38	33	d
		i			43	
		i			51	
	Magnitude $6\frac{1}{2}$-$6\frac{3}{4}$					
	USCGS: 57 N 160 E,					
	0 = 20:28:55					
20	PX	eLNZ	00	43.0		
	Pr	i(P)		26	58	
	CL	eP		27	05	
		i			12	
	T	e			16	
20	P	iP	20	20	20	
	R	eP			22	
	Pr	iP			23	c
	CL	iP			27	
	T	eP			28	
21	Pr	iP	05	03	06	
	CL	iP			10	
21	P	iP	14	22	32	
	R	eP			28	
	Pr	iP			26	
	CL	iP			39	
	T	eP			46	
21	MW	eP	16	28	33	
		epP			43	
	Pr	iP			42	
		ipP			52	
	CL	iP			23	
		i			33	
	T	iP			15	
		ipP			25	
		e			34	
	Depth about 50 km.					
	USCGS: Fox Island, Aleutians,					
	0 = 16:21:10					
22	P	e	04	59	30	
	R	e			30	
	Pr	i			34	
	CL	e			32	
		i			37	
22	P	ePP	10	57	32	
	Pr	iP2'		53	40	
		iPP		57	34	
	CL	eP'		52	11	
	T	eP'			19	
	BCIS: 36 S 56 E,					
	0 = 10:31.7					

Date	Sta.	Phase	h	m	s	
	March					
22	P	iP	19	48	04	d
	R	iP			06	d
	Pr	iPNEZ			06	d
	CL	iPNEZ			11	d
	T	iP			14	d
	USCGS: 13 S $172\frac{1}{2}$ W,					
	0 = 19:36:52					
23	CL	iP	00	45	39	
23	P	iP	05	09	38	
	R	iP			41	
	Pr	iP			45	
	CL	iP			35	
	T	iP			30	
23	Pr	e	09	08	32	
		i			48	
	CL	e			36	
23	P	iPNEZ	21	51	11	
		i			32	
		ipP		52	06	
	PX	isP			44	
		e		54	09	
		iPP			41	
		eSNE	22	01	19	
		iNE			37	
		eGNE		14.3		
			A		T	
		PZ	2		1	
		PH	$\frac{3}{4}$		1	
		PPZ	2		5	
		SH	18		9	
	R	iPNEZ	21	51	12	
		ipP		52	07	
		i			12	
		isP			48	
		iPP		54	48	
	Pr	iPNZ		51	09	d
		iSNE	22	01	21	
	CL	iPNEZ	21	51	17	c
		ipP		52	12	
		isP			44	
		iNE	22	01	28	
		eE			50	
		iN		02	02	
		iPKKP		08	57	
		eP'P'		17	09	
		eSKPP'		20	17	
	T	iPNEZ	21	51	19	
		eEZ	22	01	32	
		eN			55	
	Magnitude 7.2					
	h = 240 km.					
	USCGS: 31 S 180,					
	0 = 21:38:54, h = 300 km.					
24	P	iPNEZ	00	29	58	c
		e(pP)			34	
		ePP		33	13	
	PX	eSN		40	11	
			A		T	
		PZ	2		$2\frac{1}{2}$	

(continued)

Date	Sta.	Phase	h	m	s	
	March (continued)					
24	R	iP	00	30	01	c
		i			15	
		ipP			42	
		esP		31	00	
	Pr	iPNEZ		30	03	c
		ipP			42	
		iSN		40	21	
	CL	~~iPNEZ!~~		30	04	c
		iNEZ			14	
		ipP			43	
		ePPEZ		33	21	
		iSNE		40	22	
	T	iPNEZ		30	02	c
		ipP			43	
		eSN		40	20	
	h = 160 km.					
	Magnitude 7 - $7\frac{1}{4}$					
	USCGS: 11 S 166 E,					
	0 = 00:17:38, h = 150 km.					
24	P	ePNZ	20	59	19	
		ipP			33	
		iPP	21	00	27	
		i		02	10	
		e			22	
		iScP		05	35	
	PX	eLNE		08		
		iScSNE		09	38	
			A		T	
		PZ	0.05±		1	
		pPZ	0.1		$1\frac{1}{2}$	
	R	iP	20	59	13	
		ipP			31	
		iPP	21	00	09	
		ePcP		01	45	
		i		02	08	
		e			19	
		iScP		05	32	
		iScSE		09	34	
	Pr	iPNEZ	20	59	07	c
		ipP!			21	
		i	21	00	00	
		iNZ			20	
		iPcP		01	40	
		i			51	
		iScPNZ		05	30	
		e		06	04	
		iScSN		09	29	
		iN			59	
	CL	iPN	20	59	22	c
		ipPNZ			38	
		i(sP)NZ			49	
		iPcP	21	01	55	
		eSN		05	19	
		iScPEZ			34	
		eE		06	12	
		iScSNE		09	40	
		eNE		10	12	
	T	eP	20	59	35	
		epP			50	

(continued)

Date	Sta.	Phase	h	m	s	
March (continued)						
24	T	i	21	00	07	
		iPcP		01	59	
		e		02	16	
		iScP		05	40	
		eScS		09	48	
Magnitude $5\frac{1}{2}$?						
USCGS: 13 N 88 W,						
0 = 20:52:36, h = 100 km.						
25	CL	iP	07	05	52	
25	CL	i	08	54	58	
25	P	eP	15	40	18	
	R	eP		39	56	
		e		40	13	
		ePcP		42	36	
	Pr	iP		39	52	
		ipP		40	07	
	CL	iP			07	
		ipP			23	
		i			33	
		iPcP		42	39	
		i			56	
		eScP		46	22	
	T	eP		40	18	
		ePcP		42	43	
Aftershock of March 24,20h						
25	MW	iP	20	21	01	
	R	eP			02	
	Pr	iP			03	
	CL	iP			05	d
	T	iP			09	
USCGS: Fiji region,						
0 = 20:09:52, h = 600 km.						
26	MW	e?	00	15	39	
	Pr	iP			37	
	CL	iP			53	
26	CL	eP	00	47	21	
26	P	iP	19	35	10	
	R	iP			12	
	CL	iP!			18	c
	T	eP			19	
27	P	eP	12	03	36	
	PX	eLNE		05	16	
		eSNEZ			41	
	R	e(P)		03	35	
		iSNEZ		05	28	
	Pr	eP		03	22	
		i			30	
		iN		05	03	
		i(S)NE			07	
	LJ	e(P)		03	30	
		iS		04	57	
	CL	eP		03	51	
		e		04	05	
		iSNE		06	22	
27	R	eP	13	58	16	
	Pr	iP			17	
	CL	iP			17	
		i(pP)			33	
		i(sP)			41	
BCIS: 17 S $166\frac{1}{2}$ E,						
0 = 13:45:26						

Date	Sta.	Phase	h	m	s	
March						
27	P	iP	19	38	38	
	R	iP			41	
	CL	iP			34	c
		i(pP)		39	05	
28	P	iPNEZ	02	07	50	
		iPPNEZ		11	38	
	PX	iSN		18	32	
			A		T	
		PZ	0.15		1	
		PH	0.1		1	
		PPZ	0.2		$1\frac{1}{4}$	
		PPH	0.2		$1\frac{1}{2}$	
		SH	$1\frac{1}{2}$		5	
No surface waves						
	R	iP	02	07	51	c
		e(pP)		09	14	
		iPP		11	42	
	Pr	iPNEZ		07	52	c
		e(pP)		09	12	
		iPPNZ		11	41	
		iSKSE		17	54	
		iE		18	15	
		iSNE			36	
	CL	iPNEZ		07	57	c
		i(pP)		09	20	
		ePPNZ		11	41	
		eNEZ			50	
		eSKSNE		17	57	
		eSN		18	45	
	T	eP		07	59	
Magnitude $6\frac{1}{4}$						
Wellington: 36.9 S 177.1 E						
0 = 01:55.2, h = 370 km.						
Felt from East Cape and Whakatane to Cook Strait						
USCGS: 35 S 178 E						
0 = 01:54:44, this requires shallow depth and does not suit all the data.						
28	R	iP	09	00	49	
	Pr	iP			50	
	CL	iP			55	
	T	eP			56	
Small aftershock?						
28	P	iPNEZ	10	16	02	d
	PX	iPP		20	16	
		eLE		40.8		
			A		T	
		PZ	0.2		1	
	R	iP	10	16	05	d
	Pr	iPNEZ			06	d
		i			23	
	CL	iPNEZ			08	d
		eNZ			22	
	T	iPNEZ			08	d
USCGS: $17\frac{1}{2}$ S 167 E,						
0 = 10:03:11						

C. F. Richter
October 12, 1951

Date	Sta.	Phase	h	m	s	
	March					
29	P	iP	06	07	41	
		epP		08	05	
	R	iP		07	39	c
		epP		08	05	
	Pr	iPNEZ		07	35	c
		ipP		08	00	
	CL	iP		07	46	c
		ipP		08	11	
		i			27	
	T	iP		07	54	
		epP		08	18	
	USCGS: 41 S 73 W,					
	0 = 05:55:10, h = 100 km.					
	BCIS: $42\frac{1}{2}$ S $72\frac{1}{2}$ W,					
	0 = 05:55:06, h = 100 km.					
29	P	eP	06	23	12	
	R	eP			15	
	Pr	eP			21	
	CL	eP			04	
	T	eP		22	57	
	Aftershock of Feb. 12,17h					
	(Siberia, 66 N 136 E)					
	USCGS: 0 = 06:12:27					
29	P	iPNEZ	23	40	03	
		iSNE			27	
	R	iPNEZ!		39	52	
		iSNE		40	09	
	Pr	iPNEZ!		39	41	c
	Magnitude 4.4					
	Felt in San Diego County.					
	33°17' N 116°02' W,					
	0 = 23:39:29					
31	MW	iP	01	51	17	
	R	iP			17	
	Pr	iP			19	
	CL	iP			24	c
		i			52	
	T	iP			26	c
	Kermadec Islands					
	USCGS: 0 = 01:38:40					
31	MW	iP	02	18	24	
	R	eP			26	
	Pr	eP			26	
	CL	iP			31	d
	T	eP			34	
	Aftershock?					
31	P	iP	06	33	07	d
	R	iP			11	
		e(pP)		35	14	
	Pr	iP		33	10	
	CL	iP			13	d
		e(pP)		35	17	
	Depth 600 km?					
	USCGS: 0 = 06:21:04,					
	h = 100 km.					
	BCIS: 19 S 179 W					
31	P	iPNEZ!	09	27	06	d
		ipP			49	
		iPcP		29	33	
		iScP		32	59	
			A		T	
		PZ	0.3		1	

(continued)

Date	Sta.	Phase	h	m	s	
	March (continued)					
31	R	iP	09	27	10	d
		ipP			52	
		iPcP		29	34	
		iScP		32	59	
	CL	iP!NZ		26	55	
		ipP		27	36	
		iPcP!		29	28	
		iScP!NZ		32	54	
		iScSN		36	57	
	T	iP		26	46	d
		ipP		27	26	
		iPcP		29	27	
		iScP!		32	51	
	USCGS: $60\frac{1}{2}$ N 154 W,					
	0 = 09:20:34, h = 250 km.					
31	MW	iP	22	07	53	
	Pr	iP			54	
	CL	iP		08	00	
	T	eP			02	
	April					
1	P	eP	19	23	13	
		iNEZ			15	
		iSNZ		24	45	
		eLNE		25.5		
			A		T	
		PZ	0.1		1	
		MH	12		20	
	R	eP	19	23	21	
	Pr	eP			34	
	SB	ePNEZ			02	
	CL	iP			02	
		i(S)N		24	47	
	H	iPNEZ		22	58	
		i(S)NEZ		24	38	
	T	iPNEZ		22	48	
	Magnitude 5.0					
	Felt in Humboldt County,					
	California.					
	USCGS: $40\frac{1}{2}$ N 125 W,					
	0 = 19:21:10					
1	P	iP	20	58	04	c
			A		T	
		PZ	$\frac{3}{4}$		3	
	R	iP	20	58	02	c
	Pr	iPNEZ		57	59	c
	CL	iP		58	10	c
	T	iP			18	c
	USCGS: 42 S $76\frac{1}{2}$ W,					
	0 = 20:45:28					
2	P	iPNEZ	00	20	11	c
	PX	iPP		21	33	
		iSE		25	36	
		eLN		28.0		
			A		T	
		PZ	$1\frac{1}{4}$		4	
		PH	1		4	
		PPZ	$\frac{1}{2}$		3	
		SH	$\frac{1}{4}$		8	
		MH	20		13	
	R	iP	00	20	06	c
	Pr	iPNEZ			00	c
		eSE		25	18	

(continued)

Date	Sta.	Phase	h	m	s	
	April (continued)					
2	CL	iPNEZ	00	20	16	c
		eSE		25	53	
		iScP		26	47	
		eScSNE		30	48	
	T	iPNEZ		20	26	c
	Magnitude 6¼ - 6½					
	USCGS: 13 N 90 W, 0 = 00:13:34					
2	P	eP	01	35	29	
	R	eP			28	
	Pr	eP			20	
	CL	eP			33	
	T	eP			42	
	USCGS: 0 = 01:27:34					
	BCIS: 5¾ N 82¼ W					
2	MW	e	11	44	44	
	R	e			47	
	Pr	e			48	
	CL	e			48	
	T	e			50	
2	P	e	14	53	03	
	R	e		52	53	
	Pr	e		53	03	
	CL	eP		52	57	
	T	e			57	
	BCIS: 31½ N 37½ W,					
	0 = 14:42.2					
2	P	iP	17	20	28	d
	R	iP			26	d
	CL	iP			34	d
	T	iP			41	d
	South America					
2	P	iP	18	07	39	
	R	iP			34	
		ePcP		10	00	
	CL	iP		07	44	
		iPcP		10	03	
	T	iP		07	53	
		ePcP		10	08	
	USCGS: 12 N 87 W,					
	0 = 18:00:34					
2	P	iP	22	22	58	d
		i(pP)		23	35	
	PX	eLN		49.4		
		eR		53.6		
			A		T	
		PZ	0.1		1	
	R	iP	22	23	02	d
		i(pP)			39	
	Pr	iP			04	
		i(S)NE		33	37	
		iNE		34	14	
	CL	iP		23	00	d
		e			43	
		e(S)NE		33	33	
		eNE		34	15	
		ePKKP		39	48	
	T	iP		22	59	d
		ePKKP		39	50	
	Magnitude 6½±					
	BCIS: 6 S 149 E,					
	0 = 22:09:49, h = 150 km.					

Date	Sta.	Phase	h	m	s	
	April					
3	P	eP	03	24	57	
	R	eP		25	00	
	Pr	eP			00	
	CL	eP			05	
	T	eP			08	
	USCGS: 0 = 03:13:25					
	BCIS: 17 S 173¾ W					
3	MW	eP	04	50	31	
		i			44	
	R	eP			27	
		i			40	
		e			53	
	Pr	e			36	
		e			45	
	CL	eP			35	
		i			49	
		e		51	03	
	T	eP		50	42	
		e			56	
	South America?					
3	MW	iP	05	09	15	
	R	eP			10	
		epP			37	
	Pr	eP			06	
	CL	iP			18	
	T	iP			27	
	BCIS: 7.0 S 74.9 W,					
	0 = 04:59:34, h = 150 km.					
3	R	e	09	20	14	
	CL	e			29	
3	P	iP	22	08	09	
	R	iP			05	c
		i			37	
	Pr	iP			00	c
	CL	iP			14	c
		i			44	
		i		09	00	
	T	iP		08	21	
	BCIS: 22 S 73 ½ W,					
	0 = 21:56:55					
4	R	eP	02	31	40	
	CL	iP			53	
	Mexico					
4	P	iP	17	25	26	
	R	iP			28	d
	Pr	iP			29	d
	CL	iP			34	d
		epP		27	45	
	T	iP		25	34	d
		epP		27	45	
	USCGS: 21 S 179 E,					
	0 = 17:14:09, h = 600 km.					
4	P	iP	19	07	37	
	R	eP			40	
	Pr	iP			45	
	CL	iP			35	d
	T	iP			29	
	USCGS: 0 = 18:55:40					
	BCIS: 37.5 N 141.2 E					
	CMO: 37.9 N 142.0 E,					
	h = 70 km.					

Date	Sta.	Phase	h	m	s	
	April					
4	R	eP	19	13	02	
	Pr	eP		12	59	
	CL	eP		13	16	
	T	eP			30	
	Mexico					
5	CL	iP?	04	06	06	
	H	iP?			05	
	T	iP		05	56	
	Obscured by a local shock					
	at our other stations					
	Tucson iP = 04 06 22					
5	MW	iP	10	28	51	
	R	iP			55	
	CL	iP			50	
		e		29	30	
	T	iP		28	47	
6	P	iP	01	34	29	
	R	eP			32	
	CL	eP			22	
6	MW	iP	09	54	24	
	R	eP			26	
	Pr	iP			27	
	CL	iP			29	
6	CL	iP	11	02	40	
6	MW	iP	14	00	56	
	R	iP			53	
	CL	eP		01	02	
6	P	e	20	40	48	
	Pr	e			46	
	CL	eP			39	
	T	e			43	
	BCIS: 40 N 27½ W,					
	0 = 20:29:53					
6	P	iP	23	04	58	c
	R	iP		05	02	c
	Pr	iP			06	c
	CL	iPNEZ!		04	54	c
		iSNE		13	42	
	T	iP		04	47	c
	USCGS: 46 N 142 E,					
	0 = 22:53:30					
	CMO: 46.6 N 142.4 E,					
	h = 320 Km.					
7	P	iPNEZ	09	40	19	
	R	iP			22	
	Pr	iPNZ			23	
	CL	iP			26	
	T	iP			24	
	USCGS: 11 S 163 E,					
	0 = 09:27:35					
7	P	eP	22	03	22	
	R	iP			18	
	Pr	eP			08	
	CL	eP			35	
	T	eP			52	
8	P	eP	02	30	38	
	Pr	iP			43	
	CL	iP			47	
	T	iP			48	

Date	Sta.	Phase	h	m	s	
	April					
8	P	iPNZ	04	49	16	c
	R	iP			20	c
	Pr	iP			21	c
	CL	iP			21	c
	T	eP			22	
	USCGS: 10 S 163 E,					
	0 = 04:36:52, h = 200 km.					
8	CL	e	06	40	08	
8	P	eP	13	13	24	
	R	eP			25	
	Pr	eP			25	
	CL	eP			27	
		e			43	
	T	eP			29	
8	P	iPP	21	56	40	
		ePKKP	22	09	32	
	PX	eLEZ	22	37.3		
			A		T	
		PPZ	½		3	
	R	ePP	21	56	39	
	Pr	iPP			44	
	CL	eP		52	11	
		ePP		56	16	
		ePKKP	22	08	20	
	T	ePP	21	56	22	
		ePKKP	22	08	25	
	USCGS: 37 N 35 E,					
	0 = 21:38:20					
	BCIS: 36.4 N 37.5 E,					
	0 = 21:38.0, h = 100 km.±					
9	MW	e	17	08	48	
	R	e			50	
	CL	eP			45	
	T	eP			38	
9	R	eP	20	46	46	
	Pr	iP			41	
	CL	eP			54	
	T	eP		47	04	
10	R	eP	04	05	54	
	CL	eP			49	
10	CL	eP	07	32	20	
	T	eP			25	
10	P	eP	11	07	04	
		iNEZ!			08	d
		iPP		09	43	
	PX	iSE		16	28	
		eRNEZ		27.9		
			A		T	
		PZ	1		2	
		PH	0.3		1	
		PPZ	0.3		2	
		SH	2		6	
		MH	10		20	
		MZ	15		20	
	R	eP	11	07	06	
		iNEZ			11	
	Pr	ePNZ			07	
		iEZ			11	d
		eSN		16	36	

(continued)

Date	Sta.	Phase	h	m	s	
	April (continued)					
10	CL	eP	11	07	12	
		iEZ			16	d
		eSE		16	47	
	T	iPNEZ		07	18	
	Magnitude $6\frac{3}{4}$					
	USCGS: 15 S $173\frac{1}{2}$ W,					
	0 = 10:55:41					
11	P	eP	07	57	32	
	Pr	eP			24	
	CL	eP			36	
		e			47	
	BCIS: 34.9 S 70.0 W,					
	0 = 07:45:20, h = 150 km.					
11	P	iP	19	00	14	
	R	iP			12	
	CL	iP			18	
	T	iP			27	
11	P	iP	21	30	17	
		iSNEZ		31	17	
	Pr	eP		29	40	
		iS		30	35	
	Magnitude 4±					
	Northern Mexico.					
	First of a numerous swarm.					
11	P	iPNZ	22	47	08	
		iSNZ		48	05	
	R	iPNZ		46	57	
		iSEZ		47	59	
	Pr	eP		46	27	
		i			38	
		iSZ		47	28	
	LJ	iPEZ		46	36	
		iSEZ		47	35	
	Magnitude 4.5±					
	Northern Mexico					
12	P	iP	03	55	19	
	R	eP			22	
	Pr	eP			25	
	CL	iP			17	
12	P	eP?	04	45	46	
		iPNZ			56	
		iSNZ		46	58	
	R	eP		45	42	
		iSNEZ		46	46	
	Pr	eP		45	21	
		iS		46	18	
	Magnitude 4.3±					
	Northern Mexico					
12	MW	e	05	23	38	
	R	e			37	
	CL	e			35	
12	P	iPNZ	06	21	25	
		iSNZ		22	20	
	R	eP		21	08	
		eSN		22	06	
		iSNEZ			11	
	Pr	iP		20	58	
		iS		21	57	
	LJ	iP			54	
	Magnitude 4.2±					
	Northern Mexico					

Date	Sta.	Phase	h	m	s	
	April					
13	CL	i?	01	48	38	
		i			58	
	T	e			36	
13	P	iP	08	23	58	
	R	iP		24	01	
	Pr	iP			01	d
	CL	iP			05	d
	T	iP			06	
	Deep					
	Wellington: 27 S $172\frac{1}{2}$ W,					
	0 = 08:12:30, h = 500 km.±					
13	P	eP"	10	33	39	
		i			50	
	PX	ePP		35	15	
		eLNEZ	11	10		
			A		T	
		MH	6		20	
	R	eP"	10	33	40	
	CL	eP"		33	41	
		i			50	
		iPP		35	21	
	USCGS: 10 S 119 E,					
	0 = 10:14:38					
13	P	iPEZ	13	02	32	c
		iEZ			46	
	R	iP			35	
	Pr	iP			42	
	CL	iP			26	c
		i			41	
		i			55	
		i		03	56	
		iScPNEZ		07	43	
		iSN		09	16	
	T	iP			17	c
13	Pr	e	15	39	20	
	CL	e			04	
	T	e			03	
14	P	iPNEZ!	00	56	49	d
	PX	i		57	00	
		iNE			08	
		ipP			38	
		isP!			58	
		ePP		59	38	
		iSNEZ!	01	06	16	
		iNE			40	
		iNE		07	08	
		iNE			38	
		iNE		08	12	
		iNE			46	
		eLN		15.0		
		eP'P'		24	09	
		eSKPP'		27	27	
			A		T	
		PZ	8		3	
		PH	3		3	
		PPZ	1		3	
		PPH	1		2	
		SH	10		6	

(continued)

Date	Sta.	Phase	h	m	s	
	April (continued)					
14	R	iPNEZ	00	56	46	d
		iSN	01	06	10	
	Pr	iPNEZ	00	56	42	d
		iSNE	01	06	02	
	CL	iPNEZ	00	56	53	d
		i		57	11	
		ipP			30	
		isP			49	
		iSE	01	06	24	
		iPKKP		14	27	
		eP'P'		24	09	
		eSKPP'		27	25	
		i		28	28	
	T	iPNEZ	00	57	01	d
		iSNE	01	06	38	
		iPKKP		14	34	
	Depth 200 km.					
	Magnitude 7±					
	USCGS: 24 S $66\frac{1}{2}$ W,					
	0 = 00:45:28, h = 250 km.					
14	PX	eLNE	05	15.0		
			A		T	
		MH	5		20	
	Pr	eP	04	24	36	
		ePP		29	00	
	CL	eP		24	15	
		ePP		28	28	
	T	eP		24	11	
	Poona: 40 N 74 E,					
	0 = 04:10:00					
	BCIS: $39\frac{1}{4}$ N 72 E,					
	0 = 04:10:04					
14	Pr	e	05	54	18	
		e		55	10	
	CL	eP		53	58	
		e		54	28	
		i		57	38	
	T	eP		53	47	
14	MW	eP	06	03	56	
	Pr	iP			48	
	CL	iP		04	03	
	T	iP			11	
	South America?					
14	Pr	iP	08	49	20	
	CL	iP			24	
14	Pr	eP	12	02	23	
	CL	eP			27	
14	P	iPNEZ	13	43	57	c
	PX	iPP		46	59	
		iSNE		52	55	
		eGNE	14	01		
		iP'P'		12	19	
		i			34	
			A		T	
		PZ	$\frac{1}{2}$		2	
		PPZ	1		4	
		SH	4		10	
		MH	25		20	
		MZ	15		20	
	R	iP	13	44	00	c
	Pr	iPNEZ			05	c
		iSNE		53	12	
		eP'P'	14	12	15	

(continued)

Date	Sta.	Phase	h	m	s	
	April (continued)					
14	CL	iPNEZ	13	43	50	c
		i			55	
		iSNE		52	43	
	T	iPNEZ		43	43	c
	Magnitude $6\frac{3}{4}$±					
	USCGS: 61 N 136 E,					
	0 = 13:32:59					
	BCIS: $62\frac{1}{4}$ N $136\frac{1}{2}$ E,					
	0 = 13:33:01					
	CMO: 61 N 137 E					
14	PX	eL		24	39	
	MW	e		00	41	
	R	e			34	
	Pr	e			16	
	T	e	23	59	55	
	USCGS: $28\frac{1}{2}$ N 94 E,					
	0 = 23:40:51					
	Poona: 29 N 94 E,					
	0 = 23:40:41					
15	MW	iP	05	07	14	
		ipP			46	
	R	i(pP)			50	
	Pr	iP			05	
	CL	iP			10	
		epP			39	
		i			42	
	USCGS: 0 = 04:56:43,					
	h = 100 km.					
	BCIS: $47\frac{1}{2}$ N $152\frac{1}{2}$ E,					
	0 = 04:56.7, h = 130 km.					
15	P	iP	05	50	03	
		ipP			19	
		iPcP		52	38	
	R	iP		49	59	
		iPcP		52	37	
	Pr	iP		49	53	
		ipP		50	09	
		iPcP		52	36	
	CL	iP		50	08	
		ipP			24	
		iPcP		52	41	
		i		53	01	
	Central America					
15	P	iP	12	50	26	
	R	iP			29	
	Pr	iP			27	d
	CL	iP			34	d
	T	iP			36	
	USCGS: 0 = 12:59:24,					
	h = 500 km.					
	BCIS: 17 S $178\frac{1}{2}$ W					
15	P	e	20	17	44	
	Pr	eP		16	14	
		eS		17	31	
15	MW	e(P)	22	18	15	
		e			33	
	Pr	e			43	
	CL	eP			13	
		e			26	
	T	eP			09	
		e			17	
16	CL	iP	05	10	11	
	T	iP			17	

Date	Sta.	Phase	h	m	s	
	April					
16	CL	eP	05	18	05	
16	MW	eP	07	12	35	
	Pr	eP			40	
	CL	eP			44	
16	CL	iP	08	21	21	
16	P	iPNEZ!	20	04	34	c
	PX	epP		06	19	
		i			25	
		iPP		07	53	
		iSE		14	10	
		eE			43	
		eSP		15	27	
		iE		16	15	
		e(SKPP')		33	26	
			A		T	
		PZ	2		1	
		PH	$1\frac{1}{2}$		1	
		PPZ	$\frac{1}{2}$		2	
		SH	$1\frac{1}{2}$		5	
		SKPP'Z	$\frac{1}{4}$		3	
	R	iPNEZ	20	04	37	
		i			48	
		i			57	
		iPP		07	59	
	Pr	iP		04	40	c
		i			56	
		ipP		06	33	
		iPPNEZ		08	03	
		iSNE		14	23	
		e(SKPP')		33	18	
	CL	iPNEZ!		04	31	c
		iPP		07	50	
		iSE		14	09	
		e(SKPP')		33	32	
	Magnitude 7±					
	USCGS: 31 N 137 E					
	0 = 19:52:56, h = 500 km.					
	CMO: 31.2 N 138.0 E,					
	h = 470 km.					
16	P	iP	20	43	02	
			A		T	
		PZ	$\frac{1}{4}$		1	
	R	iP	20	43	06	
	Pr	iPNEZ			12	
	CL	iPNEZ		42	57	
		eSN		51	05	
	T	iP		42	51	
	USCGS: 0 = 20:32:40					
	BCIS: $51\frac{1}{2}$ N 156 E					
16	P	iP	21	03	35	
	R	eP			38	
	Pr	e			40	
	CL	iP			39	
16	CL	iP	21	44	50	
18	MW	eP	12	33	40	
	R	eP			44	
	Pr	eP			50	
	CL	eP			33	
	USCGS: 0 = 12:26:00					
	BCIS: $51\frac{1}{2}$ N $168\frac{1}{2}$ W					

Date	Sta.	Phase	h	m	s	
	April					
19	MW	iP	15	37	57	
	R	eP			56	
	Pr	iP			57	
	CL	iP		38	02	
	T	iP			05	
19	P	eP	19	33	43	
	R	eP			46	
	Pr	eP			46	
	CL	eP			43	
20	P	iP	00	10	53	
	R	iP			56	
	Pr	iP			57	
	CL	iP			56	
	T	eP			54	
	USCGS: 2 S $151\frac{1}{2}$ E,					
	0 = 23:57:44 (April 19)					
20	P	iP	05	56	31	c
	R	iP			34	c
	Pr	iPNEZ			34	c
	CL	iP			34	c
	T	iP			40	c
	Near Apia					
20	MW	eP	20	33	26	
	Pr	iP			36	c
	CL	iP			19	
	T	iP			10	
	USCGS: $51\frac{1}{2}$ N 175 W,					
	0 = 20:25:14					
20	P	iPNEZ	21	15	27	d
			A		T	
		PZ	$\frac{1}{4}$		$1\frac{1}{2}$	
	R	iP′	21	15	29	d
	Pr	iPNEZ			30	d
	CL	iP			34	d
	T	iPNEZ			36	d
	USCGS: 17 S 177 W,					
	0 = 21:03:50, h = 100 km.					
20	R	e	23	04	31	
	Pr	i			05	
		e			26	
	CL	e		05	11	
	T	e		04	43	
	USCGS: 10 N 62 W,					
	0 = 22:54:30					
21	Pr	eP	06	44	15	
	CL	eP			17	
	T	eP			17	
21	P	iPNEZ	17	13	51	c
	R	iP			53	c
	Pr	iP			56	d
	CL	iP			54	c
	T	iP			53	
	USCGS: 7 S 155 E,					
	0 = 17:00:43					
22	MW	e	03	56	39	
	R	e			48	
	CL	e			14	
		e			33	
	BCIS: 29 N $94\frac{3}{4}$ E,					
	0 = 03:37·39					

Date	Sta.	Phase	h	m	s	
	April					
22	P	iP	12	44	49	c
	PX	eLNE	13	00		
			A		T	
		PZ	$\frac{1}{4}$		1	
		MH	20		20	
	R	iP	12	44	47	c
	Pr	iP			53	c
	CL	iP			35	c
	T	iP			21	
	USCGS: 76 N 73 W,					
	0 = 12:36:16					
22	P	iP	17	27	45	d
	R	iP			47	
	Pr	iP			53	
	CL	iP			38	d
		i			46	
	T	iP			30	d
		e			39	
	USCGS: near coast of					
	Kamchatka, 0 = 17:18:12,					
	h = 100 km.					
23	P	iPNEZ	00	59	29	d
		iPPNEZ	01	00	46	
		iPcP		01	54	
	PX	eLNE			07.5	
			A		T	
		PZ	0.8		2	
		PH	1		2	
		PPZ	0.6		3	
		PPH	2		5	
		MH	7		8	
	R	iPNEZ	00	59	34	d
		iPcP	01	01	57	
	Pr	iPNZ	00	59	36	d
		iPPEZ	01	00	57	
	CL	iPNEZ	00	59	36	d
		iPcP	01	01	55	
	T	iPNEZ	00	59	36	
	Dilatations small, followed					
	by sharp compressions.					
	Magnitude $6\frac{1}{2}$±					
	Felt on Hawaii					
	USCGS: 19 N $155\frac{1}{2}$ W,					
	0 = 00:52:21					
23	P	eP	07	03	26	
		i			50	
		i		04	02	
	PX	eSKSNE		13	54	
		iSNE		14	32	
		iSPNE		15	08	
		eE			45	
		eLZ			32.5	
			A		T	
		PZ	$\frac{1}{4}$		2	
		MH	5		20	
	R	eP	07	03	29	
		i		04	02	
	Pr	iPNZ		03	28	
		iEZ			42	
		i			49	
		i		04	02	

(continued)

Date	Sta.	Phase	h	m	s	
	April (continued)					
23	Pr	iSKSNE	07	13	57	
		iSE		14	28	
		iN			33	
		iSPNE		15	10	
		iE			44	
	CL	iP	07	03	34	
		i			57	
		i		04	08	
	T	eP		03	36	
	Magnitude $6\frac{1}{4}$-$6\frac{1}{2}$					
	USCGS: 0 = 06:50:15					
	BCIS: $37\frac{1}{2}$ S $177\frac{3}{4}$ E,					
	Wellington: 37.8 S 178.2 E,					
	0 = 06:50:20					
23	CL	e	08	12	0ↄ	
23	P	eP	12	00	22	
	Pr	iP			06	
	CL	iP			29	
	T	eP			42	
	Mexico					
23	P	e	12	16	23	
	Pr	ePKKP		27	03	
	CL	e		16	16	
		ePKKP		27	17	
	BCIS: 4 S 127 E,					
	0 = 11:57.4					
23	P	eP	13	28	06	
		iNEZ			09	
		e			24	
		ipP		29	07	
	PX	iSNE		37	13	
		ipSNE			50	
		esSNE		38	54	
			A		T	
		PZ	1		2	
		PH	$\frac{3}{4}$		2	
		SH	$1\frac{1}{2}$		4	
	R	ePNEZ	13	28	03	
		ipP		29	04	
	Pr	ePNEZ		27	58	
		i		28	01	
		ipPNEZ			59	
		eSE		37	02	
		iSNE			42	
	CL	eP		28	10	d
		i			15	
		ipP		29	12	
	T	ePNEZ		28	17	
		ipP		29	24	
	Magnitude $6\frac{1}{4}$ - $6\frac{1}{2}$					
	USCGS: $20\frac{1}{2}$ S 67 W,					
	0 = 13:17:00, h = 250 km.					
24	P	iP	10	24	48	
	R	iP			51	
	CL	iP			56	
		epP		26	52	
	T	iP		24	59	
	USCGS: 0 = 10:13:54,					
	h = 600 km.					
	BCIS: 17 S $179\frac{1}{2}$ W					

Date	Sta.	Phase	h	m	s	
	April					
25	MW	iP	02	51	31	
	R	iP			33	
	Pr	iP			32	
	CL	iP			38	
	T	eP			40	
25	P	eP	05	01	36	
	R	eP			41	
	CL	eP			39	
	USCGS: 0 = 04:48:15					
	BCIS: 5 S $151\frac{1}{2}$ E					
25	P	iP	15	24	07	c
	R	iP			10	c
	Pr	iP			11	c
	CL	iP			15	c
	T	iP			16	c
	USCGS: Fiji Islands,					
	0 = 15:13:18, h = 600 km.					
25	CL	eP	18	43	12	
	T	eP			08	
	CMO: 30.8 N 130.7 E,					
	h = 130 km.					
25	MW	eP	23	16	25	
	R	eP			27	
	CL	eP			16	
	T	eP			08	
	BCIS: 76 N 0					
	0 = 23:05.8					
26	CL	iP	02	53	07	
	T	iP			07	
26	P	iPEZ	18	07	39	
		i		08	17	
	R	iP		07	42	
		i			51	
	Pr	iP			49	
	CL	iP			33	
		i			44	
		i		08	10	
	T	i		07	25	
		i		08	03	
	USCGS: 0 = 17:57:30					
	BCIS: 54 N $156\frac{1}{2}$ E					
26	MW	e	20	49	50	
	CL	eP			19	
		e			49	
	T	e			55	
	BCIS: 18 N $63\frac{1}{2}$ W,					
	0 = 20:40.2					
27	CL	e	22	18	41	
28	CL	e	08	54	39	
28	MW	e	14	45	28	
	R	e			32	
	Pr	i			40	
	CL	e			22	
28	MW	eP	17	06	39	
	CL	eP			46	
28	P	iP	21	32	57	
		i		34	55	
	PX	eLEZ	22	03		
	R	iP	21	33	00	
		i		34	58	
	CL	iP		32	58	
		i		33	11	
		i		34	57	
	T	eP		33	00	
		e		34	56	
					(continued)	

Date	Sta.	Phase	h	m	s	
	April (continued)					
28	Surface waves small.					
	Intermediate depth?					
	or two shocks?					
	USCGS: $5\frac{1}{2}$ S 151 E,					
	0 = 21:19:38					
29	CL	eP	07	45	52	
	T	eP			40	
	USCGS: $80\frac{1}{2}$ N 121 E,					
	0 = 07:35:46					
29	P	iP	10	25	23	
	R	iP			24	
	CL	iP			30	
		epP		27	44	
	T	iP		25	31	
	USCGS: 21 S 179 W,					
	0 = 10:14:11, h = 600 km.					
30	CL	eP	01	21	16	
	Mexico					
30	P	iP	15	41	22	
		i			38	
	PX	i(S)N		52	23	
		eLN	16	05.2		
			A		T	
		PZ	$\frac{1}{4}$		$1\frac{1}{2}$	
		MH	15		20	
	R	iP	15	41	23	
	CL	eP			21	
		i			31	
	T	i			24	
	Magnitude $6\frac{1}{4}$ - $6\frac{1}{2}$					
	USCGS: 8 S 153 E,					
	0 = 15:28:00					
	BCIS: $8\frac{1}{4}$ S $154\frac{1}{4}$ E,					
	0 = 15:28:00					
	May					
1	P	iP"	05	21	27	
	PX	iPP		22	39	
		iSSNEZ		38.4		
		eLN		50.0		
			A		T	
		P"Z	0.1		1	
		PPZ	$\frac{1}{2}$		2	
		MH	30		20	
	R	iP"	05	21	27	
		iPP		22	42	
	CL	iP"		21	30	
		iPP		22	52	
		i		23	09	
		ePKKP		31	50	
		e		35	13	
		e			44	
	T	iP"		21	31	
	Magnitude 7+					
	USCGS: $50\frac{1}{2}$ S 149 E,					
	0 = 05:02:41					
1	MW	iP	11	57	53	
	R	iP			50	
	CL	iP			57	
	South America					
1	MW	iP	13	10	56	
	R	iP			53	
	CL	iP		11	01	
	T	iP			07	
2	R	eP	07	44	21	
		iS		45	45	
	Pr	eP		44	14	

Date	Sta.	Phase	h	m	s	
	May					
2	Pr	iP	12	05	48	
		iS		06	54	
2	P	eP'	16	37	13	
	PX	eL	17	32.8		
	R	eP'	16	37	21	
		e		38	25	
	Pr	eP'		37	09	
	CL	eP'			10	
		e		38	10	
	USCGS: 42 S 80 E,					
	0 ≐ 16:17:01					
2	R	iP	19	56	36	
	Pr	iP			30	
		i(pP)		57	15	
	CL	iP		56	46	d
		e(pP)		57	27	
	T	iP		56	58	
	Mexico					
2	P	e	20	02	59	
	R	e			59	
	Pr	e			52	
	CL	e		03	03	
3	P	iPNEZ	04	18	03	c
			A		T	
		PZ	$\frac{1}{2}$		$1\frac{1}{2}$	
	R	iP		17	58	
	Pr	iP			56	
		e(pP)		18	28	
	CL	iP			01	c
		e			14	
		e(pP)			34	
	T	iP			06	
	USCGS: $15\frac{1}{2}$ N 61 W,					
	0 = 04:08:49, h = 150 km.					
	BCIS: 15.1 N 61.0 W,					
	0 = 04:08:48, h = 150 km.					
3	R	iP	09	24	32	
	Pr	iP			34	
	CL	iP			36	
3	CL	iP	15	50	10	
3	Pr	iP	22	50	47	
		i		51	38	
4	MW	eP	09	49	03	
	R	eP		48	53	
	CL	eP		49	06	
	Mexico					
4	P	iPNEZ	12	04	18	c
		i		05	02	
		i(pP)			16	
			A		T	
		PZ	0.2		1	
	R	iP	12	04	21	c
	Pr	iPNEZ			26	c
		eSN		13	42	
		eNE		14	17	
	CL	iPNEZ		04	13	d
		iEZ			19	
		eNEZ			58	
		i(pP)NZ		05	08	
		eSNE		13	15	
		eNE			56	
					(continued)	

Date	Sta.	Phase	h	m	s	
	May (continued)					
4	T	iP	12	04	06	
		i(pP)		05	01	
	Magnitude 6					
	USCGS: 44 N 142 E,					
	0 = 11:53:05, h = 200 km.					
	BCIS: 44.8 N 142.5 E,					
	0 = 11:53:09, h = 200 km.					
	CMO: 44.4 N 142.2 E,					
	h = 240 km.					
4	MW	e	19	39	36	
	R	eP			31	
	Pr	eP			30	
		e			37	
	CL	eP			32	
		i			38	
	USCGS: 7 N 34 W,					
	0 = 19:27:15					
4	P	iP	19	56	27	
	R	eP			30	
	Pr	iP			36	
	CL	iP			21	
5	MW	iP	03	43	14	
	R	iP			14	
	CL	iP			14	
	USCGS: 6 S $145\frac{1}{2}$ E,					
	0 = 03:29:41, h = 100 km.					
5	MW	iP	04	47	41	
	R	iP			42	
	CL	iP			43	
	Pacific?					
6	P	iP	21	49	42	
	R	iP			37	
	Pr	iP			31	
	CL	iP			46	
		i			54	
	T	iP			55	
		iPcP		51	59	
	USCGS: 11 N $85\frac{1}{2}$ W,					
	0 = 21:42:20					
6	Pr	iP	22	35	00	
	CL	iP			04	
6	P	eP	23	10	12	
		i			29	
	PX	iSE		15	06	
			A		T	
		PZ	0.1		1	
	R	eP	23	10	03	
	Pr	eP		09	58	
		i		10	17	
	CL	eP		10	13	
	T	eP			26	
	Magnitude 6±; h = 100 km.?					
	USCGS: $13\frac{1}{2}$ N 88 W,					
	0 = 23:03:35, h = 150 km.					
	BCIS: 13.5 N 88.4 W,					
	0 = 23:03:36, h = 150 km.					
6	P	eP	23	14	40	
		i			58	
		eL		19		
			A		T	
		PZ	0.2		$1\frac{1}{2}$	
		MH	50		20	
					(continued)	

Date	Sta.	Phase	h	m	s	
	May (continued)					
6	R	eP	23	14	37	
		e			51	
	Pr	eP			28	
		i			48	
	CL	eP			42	
		i			46	
	T	eP			55	
	Magnitude $6\frac{1}{4}\pm$, h = 100 km?					
	Destructive in El Salvador					
	USCGS: $13\frac{1}{2}$ N 88W,					
	0 = 23:08:04, h = 150 km.					
6	MW	eP	23	44	40	
	R	eP			42	
	Pr	eP			40	
	CL	eP			44	
	T	eP			48	
	Pacific?					
7	CL	eP	10	11	02	
	USCGS: 17 S 174 W,					
	0 = 09:59:25, h = 100 km±					
7	CL	eP	11	20	51	
		e		21	09	
7	CL	iP	11	30	44	
	USCGS: 20 S $179\frac{1}{2}$ W,					
	0 = 11:19:29, h = 600 km.					
7	MW	i	19	39	05	
	Pr	e			08	
	CL	i			10	
	T	e			07	
7	P	eP	20	29	12	
		eLNE	21	08.7		
			A		T	
		PZ	0.15		1	
	R	eP	20	29	06	
	Pr	eP			00	
	CL	eP			15	
	T	eP			26	
	USCGS: aftershock of May 6					
	(23h); 0 = 20:22:37					
8	MW	eP	04	49	01	
	R	eP			03	
	CL	eP			03	
8	MW	iP	07	54	15	
	R	iP			17	
	Pr	iP			17	
	CL	iP			19	
	USCGS: $17\frac{1}{2}$ S 178 W,					
	0 = 07:43:20, h = 600 km.					
8	MW	eP	20	10	23	
		i			32	
	R	eP			18	
	Pr	eP			11	
		i			22	
	CL	eP			27	
		i			37	
		i			48	
	h = 40 km?					
	USCGS: $7\frac{1}{2}$ S 80 W,					
	0 = 20:01:08, h = 200 km.					
9	P	iP	15	15	19	
	R	iP			22	
	Pr	iP			22	
	CL	iP			27	
	USCGS: Fiji region,					
	0 = 15:04:13, h = 600 km.					
	May					
10	P	iP'	09	38	23	d
		iNEZ			32	
	PX	eLE	10	40.2		
			A		T	
		P'Z	0.4		$1\frac{1}{2}$	
		MH	1		20	
	R	iP'	09	38	21	
	Pr	iP'			27	
		iNEZ			35	
	CL	iP'NEZ			20	d
		i			25	
	T	iP'NEZ			27	
	Magnitude 6					
	BCIS: 19.7 S 34.0 E,					
	0 = 09:18:35					
	GRI (Johannesburg):					
	$19^\circ 52'$ S $33^\circ 48'$ E,					
	0 = 09:18:30					
10	Pr	eP	11	49	21	
	CL	eP			18	
10	P	eP	19	53	23	
		ipP			36	
	R	eP			27	
		epP			40	
	Pr	iP			34	
		ipP			47	
	CL	iP			18	
		i			27	
		ipP			33	
	T	iP			10	
		ipP			23	
	USCGS: 51 N 180,					
	0 = 19:44:22, h = 60 km.					
10	P	eP	19	55	44	
		ipP			58	
	PX	eLNE	20	12.3		
	Pr	iP	19	55	55	
		ipP		56	09	
	CL	iP		55	39	
		ipP			53	
	T	i			46	
	USCGS: 51 N 180					
	0 = 19:47:14, h = 60 km.					
10	P	iP	20	37	01	
	R	iP			06	
	Pr	iP		36	58	
		ipP		37	13	
	CL	iP		36	42	
		ipP			57	
	T	iP			34	
		ipP			48	
	USCGS: 51 N 180,					
	0 = 20:28:17, h = 60 km.					
10	P	iP	21	45	07	
		i			59	
	R	iP			04	c
		i			56	
	CL	iPNEZ			11	c
		i(pP)			23	
		eSNE		55	24	
	T	iP		45	20	c
		i			26	
		i			30	
	USCGS: 34 S 72 W,					
	0 = 21:33:02, h = 100 km.					

Date	Sta.	Phase	h	m	s
May					
15	P	iPEZ	10	00	33
		iPP		01	25
			A		T
		PZ	½		2
	R	iPNEZ	10	00	36 c
	Pr	iPNEZ			40 c
		iPP		01	33
		i			53
	CL	iPNEZ		00	33 c
		iPP		01	25
	T	iPNEZ		00	30 c
		iPP		01	21
USCGS: 19 N 146 E, 0 = 09:48:20, h = 200 km. CMO: 20 N 145 E.					
15	R	e	11	36	02
		e			21
	CL	e			04
		e			22
	T	e			04
		e			20
15	R	e	13	18	28
	CL	eP			17
		i			33
	T	e			29
15	P	eP	23	07	15
		e			28
		ePP		10	17
		e			26
			A		T
		PZ	0.03		1
		PPZ	0.04		1
	R	iP	23	07	13
	Pr	iP			16
		e			28
		ePP		10	22
	CL	iP		07	08
		ePP		10	20
	T	iPNZ		07	05
		i			19
Strong in North Italy BCIS: 45.5 N 9.6 E, 0 = 22:54:31 Roma: 45.3 N 9.5 E, 0 = 22:54.6, mag. 5.5					
16	P	iPNEZ	00	14	43 d
		i		15	05
	PX	eLEZ			36.0
	R	iP		14	42 d
	Pr	iP			46 d
	CL	iPNEZ			50 d
	T	iP			52 d
Felt at Apia USCGS: 15 S 172½ W, 0 = 00:03:30, h = 100 km.					
16	MW	eP	02	31	00
	R	eP			01
		e			21
		e			37
	Pr	eP			01
		i			21
		i			35

(continued)

Date	Sta.	Phase	h	m	s
May (continued)					
16	CL	eP	02	31	05
		e			17
USCGS: 24 S 177 W, 0 = 02:18:45					
16	R	eP	02	39	46
	Pr	eP			49
	CL	eP			39
	T	eP			37
Aftershock, Italy Roma: 45.3 N 9.5 E, 0 = 02:27:02					
16	MW	eP	05	56	26
		epP			51
	R	eP			30
		epP			54
	Pr	eP			37
		epP		57	02
	CL	eP		56	17
		epP			42
	T	eP			06
		epP			30
16	P	iPNEZ	13	33	47 c
		iPP		34	41
		isP		35	11
			A		T
		PZ	0.2		1½
	R	iP	13	33	43
		iPP		34	37
	Pr	iPNZ		33	38
		iPP		34	33
	CL	iPNEZ		33	51
		iPPNEZ		34	46
	T	iP		33	59
		iPP		34	54
USCGS: 15 S 69½ W, 0 = 13:23:10, h = 200 km					
16	CL	eP	14	16	36
		e			44
	T	e			34
16	P	i	14	25	13
	PX	eLEZ			58.4
	R	e		25	19
	Pr	e			24
		ePKKP		35	57
	CL	ePKKP		36	03
	T	e		25	10
		ePKKP		36	08
BCIS: 2 N 126 E, 0 = 14:06.2					
17	R	e	01	03	55
	CL	e			56
17	R	eP	01	54	31
	Pr	eP			33
	CL	eP			28
	T	eP			35
USCGS: 19 S 170 E, 0 = 01:41:38					
17	Pr	iP	04	45	19
	CL	iP			23
17	CL	eP	11	36	16

Date	Sta.	Phase	h	m	s
May					
17	MW	eP	12	34	46
		e			52
		e		35	02
	R	eP		34	50
		e			54
		e		35	06
	Pr	eP		34	49
		i			54
		i		35	07
	CL	eP		34	53
		i			58
		e		36	09
	T	eP		34	57
		i		35	02
		i			15
Tonga region					
17	Pr	iP	15	41	58
	CL	e			29
	T	e			14
17	Pr	eP	15	46	46
		iS		48	32
17	P	e(pP)	16	58	31
	R	eP			17
	Pr	eP			14
		i(pP)			25
	CL	iP			28
		i(pP)			38
BCIS: 27½ S 68 W, 0 = 16:46.5					
17	P	iP	22	36	13
		ipP			31
	R	iP			16
		ipP			34
	Pr	eP			18
		ipP			37
	CL	iP			17
		ipP			34
	T	eP			14
		ipP			32
h = 60-70 km. USCGS: 5 S 151 E, 0 = 22:23:05, h = 100 km.±					
18	R	e	02	31	37
	Pr	e(P)			06
	CL	eP			16
18	P	iP	17	48	50 d
		epP		49	19
		esP			31
	R	iP		48	46 d
		epP		49	14
		isP			31
	Pr	iP		48	42 d
		ipP		49	13
	CL	iP		48	54 d
		epP		49	35
	T	iP			01 d
		epP			30
		esP			43
h = 110 km. BCIS: 24 S 68 W, 0 = 17:37:07					

Date	Sta.	Phase	h	m	s
May					
18	MW	eP	22	17	43 d
	R	eP			40 d
	Pr	iP			37 d
	CL	iP			49 d
	T	eP			56
Small initial dilatations followed by larger compressions. South America					
19	P	eP	07	42	43
		i			49
	R	e			46
	CL	iP			51
		i			56
	T	iP		43	10
19	MW	iP	07	35	37 c
		epP			52
	R	iP			37
		ipP			52
	Pr	iP			39 c
		ipP			53
		isP		36	01
	CL	iP		35	43 c
		i		36	02
	T	iP		35	46
h = 60 km.± Wellington: 35½ S 180, 0 = 07:22.7					
19	P	iP	16	07	04
			A		T
		PZ	0.1		1½
	R	iP	16	07	02
	Pe	iP			03
	Pr	iP			03
	CL	iP		06	57 d
	T	iP			56
Strong in Spain BCIS: 38.2 N 4.3 W, 0 = 15:54:24					
20	P	iP	04	10	10
	R	eP			13
	Pr	iP			08 c
		i			18
	CL	iP			23
		i			33
		i			38
	T	eP			31
Central America, USCGS: 0 = 04:02:55					
20	P	iP"	07	26	52
	R	eP"			54
	Pr	eP"			54
	CL	eP"			52
	T	eP"			50
BCIS: ½ S 124 E, 0 = 07:08.4					
20	P	eP'	12	24	47
	R	eP'			46
	Pr	iP'			46
		i			56
		i		25	05
	CL	eP'		24	40

(continued)

Date	Sta.	Phase	h	m	s	
	May (continued)					
21	CL	iP	11	33	27	c
		epP		35	36	
		esP		36	37	
	T	iP		33	28	c
		i(PcP)			54	
	USCGS: Fiji Islands,					
	0 = 11:22:22, h = 600 km.					
22	R	iP	05	07	32	
	R	eP			33	
		e(pP)		08	07	
	Pr	iP		07	34	
		e(pP)		08	06	
	CL	iP		07	39	
		e(pP)		08	13	
	T	eP		07	39	
	USCGS: Tonga region,					
	0 = 04:55:30, h = 100 km.					
22	MW	iP	08	36	20	
	R	iP			16	
	Pr	iP			12	
	CL	iP			23	
22	CL	iP	17	55	07	
	T	eP			03	
22	T	eP	18	33		
	Experimental explosion in Utah					
22	CL	eP'	19	50	30	
	BCIS: $9\frac{1}{4}$ N $57\frac{3}{4}$ E,					
	0 = 19:31:10					
23	Pr	iP	23	28	16	
	CL	iP			16	
24	Pr	eP	08	26	23	
	CL	eP			11	
		e			35	
	Near Apia					
24	Pr	eP	09	18	24	
	CL	eP			34	
	T	eP			37	
	Near Apia					
24	P	eP	16	03	03	
	R	eP			05	
	Pr	eP			05	
	CL	eP			07	
25	MW	iP	00	02	37	
	Pr	iP			40	c
	CL	iP			43	
25	P	eP	00	11	52	
	R	eP			45	
	Pr	eP			41	
	CL	eP			50	
	T	eP			58	
	USCGS: 10 N 70 W,					
	0 = 00:02:50					
25	P	iP	21	58	28	d
	R	iP			30	d
	Pr	iP			30	
		e	22	01	32	
	CL	iPNEZ	21	58	34	d
		epP	22	00	25	
		esP		01	36	
	T	iP	21	58	36	d
		i		59	02	
	USCGS: 17 S 179 W,					
	0 = 21:47:31, h = 600 km.					

Date	Sta.	Phase	h	m	s	
	May					
26	MW	eP	04	17	08	
		e			21	
	R	eP			16	
	Pr	eP			20	
		e			31	
	CL	eP			01	
		i			12	
	T	eP		16	58	
	USCGS: 51 N 173 W,					
	0 = 04:09:03					
26	Pr	iP	06	17	28	
	CL	iP			07	
	T	eP		16	59	
26	MW	eP	13	46	15	
	R	eP			10	
	Pr	iP			05	
		e(pP)			18	
	CL	iP			15	
		i(pP)			26	
	BCIS: 23 N 85 W,					
	0 = 13:39:50					
26	Pr	iP	20	38	22	
	CL	iP			24	
26	PX	eLN	21	48		
	MW	eP		39	39	
	Pr	eP			28	
	CL	eP			46	
27	R	eP	04	41	27	
	Pr	eP			26	
	CL	eP			25	
	USCGS: $23\frac{1}{2}$ N 45 W,					
	0 = 04:30:55					
27	P	eP	10	48	17	
		e			22	
	R	eP			15	
	Pr	eP			12	
	CL	e			24	
27	MW	e	11	31	25	
	CL	e			18	
28	MW	e	16	18	46	
	Pr	e			50	
	CL	e			50	
	USCGS: 29 N $86\frac{1}{2}$ E,					
	0 = 15:59:20					
28	P	iPNEZ	17	34	56	d
		ipPEZ		35	32	
		isP			50	
	R	iP		34	54	d
		ipP		35	29	
		isP			48	
	Pr	iP		34	50	d
		ipP		35	23	
		isP			45	
	CL	iPNEZ			01	d
		ipP			37	
	T	iPNEZ			09	d
		epP			43	
	h = 140 km.					
	Andes, about 34° S.					
28	P	iPNEZ	20	09	35	c
		i			42	
		e		13	00	
			A		T	
		PZ	0.3		$1\frac{1}{2}$	

(continued)

Date	Sta.	Phase	h	m	s	
	May	(continued)				
28	R	iP	20	09	38	c
		i			47	
		e		13	05	
	Pr	iPNEZ		09	40	c
		i			46	
		e		13	06	
		i(S)NE		19	48	
	CL	iPNEZ		09	41	c
		e		12	09	
		e		13	10	
		e(S)E		19	44	
	T	iP		09	42	c
	USCGS: $18\frac{1}{2}$ S, 169 E					
	0 = 19:57:21, h = 300 km.					
28	R	eP	21	08	39	
	CL	eP			40	
28	P	eP	23	00	52	
	R	eP			54	
	Pr	eP			56	
	CL	eP			52	
	T	eP			48	
29	P	iP	01	14	57	c
	R	iP		15	01	
	Pr	iP			04	
	CL	iP		14	54	c
	T	iP			50	
	CMO: 31.5 N 138.2 E,					
	h = 300 km.					
29	P	eP	06	17	06	
		e			16	
	PX	e(PS)EZ		30.1		
		eSS		34.9		
		eGN		44.7		
		eREZ		49.8		
			A		T	
		PZ	0.1		$1\frac{1}{2}$	
		MH	15		20	
	R	eP	06	17	08	
	CL	eP			08	
		ePP		21	26	
	Magnitude $6\frac{1}{2}$ - $6\frac{3}{4}$					
	USCGS: 3 S $138\frac{1}{2}$ E,					
	0 = 06:03:06					
29	MW	e	13	47	01	
	CL	eP		46	51	
	T	e			42	
30	P	iPNEZ	01	03	00	c
		i			18	
		iPcP		04	33	
			A		T	
		PZ	$\frac{1}{4}$		1	
	R	iP	01	03	04	c
		iPcP		04	34	
	Pr	iPNEZ		03	11	c
		iPcP		04	38	
		iScP		08	17	
		iScSNE		18	50	
	CL	iP		02	54	c
		iPcP!		04	29	
		iScP		08	07	
	T	iPNZ		02	46	
		iPcP		04	27	
		iScP		08	04	
	At CL, T, R, the phase PcP is sharp and short-period ($\frac{1}{2}$ sec.)					
	USCGS: 52 N $178\frac{1}{2}$ W,					
	0 = 00:54:46, h = 150 km.					

Date	Sta.	Phase	h	m	s	
	May					
30	P	eP	19	21	34	
		e			55	
	R	eP			36	
	CL	eP			36	
	BCIS: $6\frac{1}{2}$ S $156\frac{1}{2}$ E,					
	0 = 19:08.4, h = 100 km.					
30	P	iP"	20	15	41	
		ePP		16	25	
	PX	eLEZ		49		
			A		T	
		P"Z	0.1		1	
		MH	8		20	
	R	ePP	20	16	29	
	Pr	ePP			34	
	CL	eP"		15	44	
		ePP		16	24	
	Magnitude $6\frac{1}{4}$-$6\frac{1}{2}$					
	USCGS: 3 S $126\frac{1}{2}$ E,					
	0 = 19:57:01					
31	MW	eP	02	13	43	
	R	eP			42	
	CL	eP			40	
		e			54	
31	P	e(P)	21	09	51	
		ePP		14	10	
	PX	i(S)NE		19	27	
		eLNZ		38		
	R	e	21	10	11	
	Pr	e		12	38	
		e		14	11	
	CL	eP		09	48	
		ePP		13	59	
		e(PKKP)		26	10	
	USCGS: 19 N 121 E,					
	0 = 20:56:00, h = 100 km.					
31	CL	eP	23	18	02	
	Mexico					
	June					
1	P	eP	16	36	23	
			A		T	
		PZ	$\frac{1}{2}$		2	
	R	eP			28	
		e(pP)			42	
	Pr	iP			24	
	CL	iP			25	
		e(pP)			39	
		i			44	
	USCGS: $14\frac{1}{2}$ N 145 E,					
	0 = 16:23:35					
1	P	iPNEZ	20	10	01	c
		e(pP)			19	
		i(sP)			27	
		ePcP		11	42	
		i			47	
		iScP		15	33	
	PX	eScSN		19	49	
			A		T	
		PZ	$\frac{1}{2}$		$1\frac{1}{2}$	
		PH	$\frac{1}{2}$		$1\frac{1}{2}$	
	R	iPNEZ		10	06	c
		i			33	
		iPcP		11	54	
		iScP		15	35	
				(continued)		

Date	Sta.	Phase	h	m	s	
	June	(continued)				
1	Pr	iPNEZ!	20	10	13	c
		iN			37	
		iE		11	59	
		iScP		15	38	
		iSNE		16	40	
	CL	iP		09	56	c
		i		10	10	
		i			20	
		i		11	35	
		iPcP			50	
		i		12	19	
		iScP		15	30	
	T	iPNZ		09	47	c
		i		10	11	
		iPcP		11	48	
	h = 70 km.±					
	USCGS: $52\frac{1}{2}$ N 172 W,					
	0 = 20:02:14, h = 100 km.					
1	P	iPEZ	20	12	39	
		e(sP)		13	04	
	R	iP		12	43	
		i		13	08	
	Pr	iPNEZ		12	50	c
		i		13	12	
	CL	iP		12	32	c
		i			56	
		iPcP		14	27	
		iScP		18	07	
	T	iP		12	23	
		e			46	
	Aftershock					
	USCGS: 0 = 20:04:53					
1	MW	iP	20	29	38	
	Pr	iP			49	
	CL	iP			32	
		e			56	
	Small aftershock					
2	P	e	07	06	34	
		e(PKKP)		17	16	
	PX	eLEZ		40.3		
			A		T	
		MH	12		20	
	CL	e	07	06	34	
		e		07	23	
	USCGS: 7 N 117 E,					
	0 = 06:47:52					
2	MW	iP	22	50	14	
	R	iP			11	
	CL	iP			18	
	South America?					
3	R	iP	03	56	24	
	Pr	iP			24	
	CL	iP			27	
3	Pr	iP	05	32	07	
	CL	iP			11	
3	Pr	eP	10	07	33	
	CL	eP			48	
3	CL	e	11	58	18	

Date	Sta.	Phase	h	m	s	
	June					
3	MW	eP?	12	09	06	
	CL	eP			09	
	Near Apia					
3	P	i(pP)	13	13	30	
		e			38	
		i			48	
	MW	eP			14	
		i			25	
		i(pP)			30	
		i			38	
	R	i			26	
		i			39	
	Pr	eP			03	
		i(pP)			19	
		i			27	
		i			41	
	CL	eP			20	
		i(pP)			35	
		i			44	
		e			58	
	T	i(pP)			47	
		i			54	
	h = 70 km?					
	BCIS: $17\frac{1}{4}$ N $93\frac{1}{2}$ W,					
	0 = 13:07.6, h = 100 km.					
3	CL	e(P)	18	44	01	
	USCGS: $24\frac{1}{2}$ N 122 E,					
	0 = 18:30:23					
3	R	e	21	07	35	
	Pr	eP			42	
		e			51	
	CL	eP			07	
		e			17	
	T	iP			03	
		i			10	
4	P	iP	12	29	40	d
	R	iP			37	d
	Pr	iP			34	d
	CL	iP			45	d
	BCIS: 24 S 66 W,					
	0 = 12:18.3, h = 250 km.±					
4	MW	eP	17	57	01	
	R	iP		56	56	
	Pr	iP			50	
	CL	iP		57	05	
5	P	iPNEZ	01	41	39	c
		i(sP)			57	
		iPcP		44	01	
	R	iP		41	34	
		i(sP)			53	
		ePcP		43	50	
		i			59	
	Pr	iP		41	28	c
		iPcP		43	51	
	CL	iP		41	43	
		i(pP)			56	
		i(sP)		42	00	
		iPcP		43	54	
		i		44	04	
				(continued)		

Date	Sta.	Phase	h	m	s
	June (continued)				
5	T	iP	01	41	53
		iPcP		43	57
	USCGS: $9\frac{1}{2}$ N 86 W,				
	0 = 01:34:20, h = 60 km.				
5	MW	eP	03	15	16
	R	eP			17
		e			22
	Pr	iP			18
		i			22
	CL	iP			31
	T	iP			26
		i			31
5	P	iP	17	10	32 d
		i			43
		iPP		14	05
	PX	e(S)NE		21	16
		iNE			35
		eNE		22	32
		eGNE		34.0	
			A		T
		PZ	1		3
		PH	$\frac{1}{2}$		3
		PPZ	$\frac{1}{2}$		3
		SH	7		8
		MH	20		20
	R	eP	17	10	35
	Pr	iPNZ			38
		iPPNEZ		14	11
		eSE		21	38
	CL	iP		10	29 d
		i			42
		i			56
	T	iP			25 d
		i			42
	Magnitude 7				
	USCGS: 30 N 132 E,				
	0 = 16:57:47, h = 100 km.				
	CMO: 29.8 N 131.7 E,				
	h = 90 km.				
6	CL	iP	05	54	34
		i			46
		i			58
	T	iP			30
	USCGS: $37\frac{1}{2}$ N 142 E,				
	0 = 05:42:45				
	CMO: 37.8 N 142.0 E,				
	h = 60 km.				
6	P	iPEZ	16	21	21 c
		i			28
		e			33
		ePP		23	26
	PX	eSNE		30	04
		eSSNE		33.3	
		iNE		36.6	
		eGNE		37.2	
		eR		40	
			A		T
		ePZ	0.1		$1\frac{1}{2}$
		iPZ	$\frac{1}{2}$		2
		PH	0.15		1
		SH	10		10
		MH	140		20
		MZ	120		17

(continued)

Date	Sta.	Phase	h	m	s
	June (continued)				
6	R	iP	16	21	21
		i			27
		i			34
	Pr	iP			25
		i			33
		i			40
		iPP		23	54
	CL	iP		21	10
		i			18
		i			24
		i			29
		iPP		23	35
		eP'P'		50	34
	T	eP		21	04
	Magnitude $6\frac{3}{4}$-7				
	USCGS: 71 N 8 W,				
	0 = 16:10:52, h = 60 km.				
	BCIS: $72\frac{1}{2}$ N $8\frac{1}{2}$ W,				
	0 = 16:10:49, h = 60 km.				
7	MW	eP	05	38	45
	R	eP			42
	Pr	eP			39
	CL	eP			58
7	P	i(P)	23	11	29
	PX	iSKSNE		21	52
		eG		37.4	
			A		T
		PZ	$\frac{1}{2}$		4
		SKSH	2		7
		MH	15		20
		MZ	12		18
	R	eP	23	11	25
		e			30
	Pr	iPNEZ			30
	CL	eP			30
		i			37
		i			51
		i		12	09
	T	eP		11	32
	Magnitude $6\frac{1}{2}$ - $6\frac{3}{4}$				
	USCGS: $27\frac{1}{2}$ S 176 W,				
	0 = 22:59:00				
	BCIS: $26\frac{1}{2}$ S $176\frac{1}{2}$ W,				
	0 = 22:59.0				
8	CL	e	00	16	54
		e		17	05
		e			12
	Aftershock				
8	CL	i(P")	19	13	39
		e(PP)		15	53
	South Atlantic?				
8	MW	eP	22	33	29
		e			45
	R	eP			29
	Pr	eP			33
		e			48
	CL	eP			35
	USCGS: 26 S 176 W,				
	0 = 22:21:19, h = 100 km.				
8	P	e(P)	22	47	09
	R	e		47	01
	CL	eP		46	29
9	MW	eP	04	03	13
		epP?		05	21

(continued)

Date	Sta.	Phase	h	m	s
	June (continued)				
9	CL	eP	04	03	18
		epP		05	30
	T	eP		03	21
	USCGS: 20 S $179\frac{1}{2}$ W,				
	0 = 03:52:02, h = 600 km.				
9	P	e	11	41	17
		e			28
	Pr	e			35
	CL	e		40	59
		e(PP)		41	14
	BCIS: 32 N 50 E,				
	0 = 11:22:00				
12	P	ePNZ	05	52	53
		epP		53	15
		esP			28
	R	iP			49
		epP		53	11
	Pr	iP		52	44
		epP		53	04
	CL	iP		52	57
		epP		53	20
	T	iP		53	06
	h = 95 km.				
	BCIS: $13\frac{1}{2}$ S $76\frac{1}{4}$ W,				
	0 = 05:42:11				
12	P	iP'	08	09	01
	R	eP'		08	55
		i		09	01
	Pr	eP'		08	55
		i		09	02
	CL	eP'		09	03
	T	eP'		09	03
	South of Australia				
12	MW	iP	21	45	31
	Pr	iP			32
	CL	iP			37
	T	eP			39
12	MW	e(P)	22	10	06
	CL	e(P)		09	55
12	Pr	e	22	59	27
	CL	e		58	55
		i		59	09
	Hindu Kush				
	BCIS: $36\frac{1}{2}$ N $71\frac{1}{4}$ E,				
	0 = 22:40:36, h = 220 km.				
13	MW	e(P)	01	15	35
		e			48
	R	e			49
	Pr	e(P)			27
		e			42
	USCGS: $19\frac{1}{2}$ N 63 W,				
	0 = 01:06:40, h = 60 km.				
13	R	eP	06	37	01
	Pr	eP			01
		e			13
	CL	eP			04
		e			16
13	P	eP	14	51	59
	PX	eLNZ	15	09.2	
	R	eP	14	51	58
	Pr	eP			56
	CL	iP		52	10

Date	Sta.	Phase	h	m	s
	June				
14	MW	iP	08	31	43
	Pr	iP			45
	CL	iP			50
	Wellington: 34 S $177\frac{1}{2}$ W,				
	0 = 08:19:43				
14	MW	eP	15	33	41
	Pr	eP			31
	CL	iP			45
15	P	eP	18	11	51
	R	eP			49
	Pr	eP			45
	CL	eP			58
	South America				
15	MW	eP	20	54	08
		e(pP)			19
	R	eP			09
		e(pP)			23
	Pr	eP			10
		e(pP)			22
	CL	eP			17
		e(pP)			29
	T	eP			18
		e(pP)			30
	Tonga region				
16	P	iPNZ	05	53	44
		iSNE		54	30
	R	iPNZ		53	45
	SB	eP			58
	CL	iP!			19 c
	H	iPNEZ			16 d
		iSN			30
	T	iPNEZ!			11 c
		iSN!			22
	Magnitude 4.5				
	37°05' N 117°05' W,				
	0 = 05:52:56				
16	CL	iP	12	56	16
		i		57	35
16	P	i	23	50	28
		i			49
	PX	eGNE		52.7	
		i(S)NEZ		53	22
		eR		53.8	
			A		T
		PZ	0.3		2
		SH	1		4
		MH	10		20
	MW	eP	23	50	17
		i			28
	R	eP			26
		i			35
	Pr	iPNEZ			35
		i			43
		i			49
	CL	eP			07
		i			20
	T	eP		49	52
	Magnitude $5\frac{1}{2}\pm$				
	USCGS: $44\frac{1}{2}$ N 130 W,				
	0 = 23:46:58				

Date	Sta.	Phase	h	m	s	
June						
17	P	iP	02	07	50	
	R	iP			52	
	Pr	iP			56	
	CL	iP			49	
		i		08	12	
		e			17	
	T	iP			44	
	USCGS: Bonin Islands,					
	0 = 01:55:05					
17 .	MW	iP	03	58	27	
	Pr	iP			38	
	CL	iP			23	
	T	iP			14	
	BCIS: $56\frac{1}{2}$ N 162 E,					
	0 = 03:48:40					
17	MW	eP	09	04	24	
	R	eP			26	
	Pr	eP			30	
	CL	eP			25	
17	P	ePNEZ	09	43	34	d
		iNEZ!			45	c
		iNZ			52	
	PX	eGN		46.3		
		i(S)EZ		46	40	
		eR		47.0		
			A		T	
		PZ	$\frac{1}{2}$		2	
		iZ	$1\frac{1}{4}$		2	
		PH	1		4	
		SH	4		4	
		MH	20		20	
	R	ePNEZ	09	43	42	
	Pr	ePNEZ			53	d
		iNEZ		44	05	c
		i(S)		47	10	
	CL	eP		43	23	d
		i			35	
	T	iP	09	43	08	d
	Magnitude 6±					
	USCGS: $44\frac{1}{2}$ N 130 W,					
	0 = 09:40:15					
17	P	eP	11	02	04	
		i			14	
	R	eP			12	
	Pr	iP			23	
	CL	iP		01	54	
		i		02	04	
	T	eP		01	40	
		e			51	
	USCGS: $44\frac{1}{2}$ N 130 W,					
	0 = 10:58:43					
17	MW	eP	21	40	09	
	R	eP			16	
	Pr	eP			23	
	CL	eP		39	50	
17	MW	eP	22	32	43	
		e		33	01	
	R	eP		32	47	
	Pr	eP			48	
	CL	eP			50	
	T	eP		33	01	
	USCGS: 16 S 172 W,					
	0 = 22:21:27, h = 100 km.					

Date	Sta.	Phase	h	m	s	
June						
18	MW	eP	07	42	00	
	R	eP			02	
	CL	eP		41	56	
	BCIS: 31.0 N 41.5 W,					
	0 = 07:31:25					
18	P	iP	13	48	04	c
			A		T	
		PZ	0.2		$1\frac{1}{4}$	
	R	eP	13	48	01	
	Pr	iP		47	57	c
	CL	iP		48	08	c
		e			21	
	T	iP			16	
	BCIS: 33.5 S 71.5 W,					
	0 = 13:36:00, h = 60 km.					
18	MW	eP	15	37	45	
	R	eP			47	
	Pr	iP			47	
		e		38	13	
	CL	iP		37	49	
		e		38	13	
	USCGS: $19\frac{1}{2}$ S 169 E,					
	0 = 15:25:05, h = 100km.					
18	MW	e	17	04	12	
	R	e			12	
	CL	e			21	
	South Atlantic?					
18	P	iPNEZ	17	51	44	c
		ePP		53	16	
		i(ScP,S)!		57	36	
	PX	iScSNE	18	01	46	
			A		T	
		PZ	0.7		2	
		PH	0.5		2	
		(ScP)Z	0.4		2	
		(ScS)H	0.3		2	
	R	iP	17	51	39	
		ePP		53	11	
		e			53	
		iScP		57	32	
	Pr	iP		51	32	
		ePPN		53	08	
		i			51	
		iSNE		57	15	
		iScP			30	
		iScSNE	18	01	39	
	CL	iPNEZ	17	51	46	
		iScPNEZ		57	37	
		e		58	39	
		iScSNEZ	18	01	50	
	T	eP	17	51	58	
		iScP		57	42	
	USCGS: 11 N 85 W,					
	0 = 17:44:27 h = 100 km.					
	BCIS: 10.2 N 84.8 W,					
	0 = 17:44:25, h = 100 km.					
18	R	eP	19	48	39	
	Pr	iP			33	
	CL	iP			45	c
19	P	eP	01	11	25	
	Pr	eP			18	
	CL	iP			29	

Date	Sta.	Phase	h	m	s	
June						
19	P	iP	16	58	51	
	R	iP			53	
	Pr	iP			53	
	CL	iP			57	d
	T	iP		59	00	
	USCGS: 0 = 16:47:40,					
	h = 600 km.					
	BCIS: 20 S 180, h = 600 km.					
20	P	e	18	43	53	
	R	e			14	
	Pr	eP		40	50	
		e(S)		43	25	
	CL	eP		41	20	
		e(S)		43	50	
	USCGS: $35\frac{1}{2}$ N 103 W,					
	0 = 18:37:10					
20	P	eP	23	36	46	
		iS		37	21	
	R	iP		36	39	
	Pr	iPNZ			28	
		iSNE			52	
	Magnitude 4.3					
	Roughly 32.0 N 115.5 W,					
	0 = 22:35.9					
	Preceded by a foreshock at 20:08. Several aftershocks the largest at 01:21, June 21					
21	MW	eP	07	42	18	
	R	eP			20	
	Pr	eP			19	
	CL	eP			22	
	Kermadec Is. Addendum, 17h, p. 47					
23	CL	eP	01	26	18	
		e			35	
	USCGS: 0 = 01:14:15					
	CMO: 37.2 N 141.2 E,					
	h = 45 km.					
23	P	eP	03	33	56	
		iNZ		34	03	
		iSNEZ		35	03	
	R	eP		33	43	
	Pr	eP			29	
		i			37	
		iS!		34	26	
	Magnitude 4.9					
	USCGS: $31\frac{1}{2}$ N $113\frac{1}{2}$ W,					
	0 = 03:32:40					
23	R	eP	09	45	15	
	Pr	eP			17	
	CL	iP			18	
	USCGS: 14 S 167 E,					
	0 = 09:32:33					
23	R	eP	13	50	08	
	Pr	eP			10	
	CL	eP			12	
24	P	eP	01	54	08	
	R	eP			04	
		e			19	
		e			27	

(continued)

Date	Sta.	Phase	h	m	s	
June (continued)						
24	Pr	eP	01	54	00	
		e			21	
	CL	iP			14	c
		e			33	
		e			39	
	T	eP			22	
		e			46	
	USCGS: $8\frac{1}{2}$ S 80 W,					
	0 = 01:44:25					
24	Pr	eP	02	07	17	
	CL	eP			32	
		e			47	
	BCIS: off Ecuador?					
24	MW	e	02	37	32	
	R	eP?			05	
		e			24	
	Pr	eP		36	58	
		e		37	22	
	CL	eP			12	
		e			39	
		e		38	02	
	h = 100 km?					
	USCGS: 14 S $76\frac{1}{2}$ W,					
	0 = 02:26:40					
24	P	eP	04	55	07	
		e			27	
		ePP		58	45	
	PX	eLEZ	05	22		
			A		T	
		PZ	0.1		$1\frac{1}{2}$	
		PPZ	0.2		$1\frac{1}{2}$	
		MH	3		20	
	R	eP	04	55	10	
		e			31	
	Pr	eP			09	
		e			31	
		e			38	
	CL	eP			14	
		e			40	
		ePP		59	09	
	Wellington: 39.4 S 176.2 E,					
	0 = 04:41:50, magnitude $6\frac{1}{4}$					
24	MW	iP	06	53	08	
	R	iP			09	
	Pr	iP			11	
	CL	iP			15	
24	P	eP	11	08	11	
		ePP		11	37	
	PX	eLN		30.2		
		eLEZ		38		
			A		T	
		PZ	0.2		2	
		PPZ	0.2		2	
		MH	4		20	
	R	eP	11	08	13	
	Pr	eP			18	
	CL	iP			11	
		iPP		11	38	
	T	eP		08	07	
	USCGS: 19 N $146\frac{1}{2}$ E,					
	0 = 10:55:40					
	BCIS: 19.0 N 147.3 E,					
	0 = 10:55:45					

Date	Sta.	Phase	h	m	s	
	June					
24	MW	e	15	09	12	
		e			41	
	Pr	e			27	
	CL	e			11	
		e			31	
24	P	eP	16	59	19	
		e			30	
			A		T	
		PZ	0.1		$1\frac{1}{2}$	
	R	e	16	59	31	
	Pr	eP			25	
		e			37	
	CL	e			15	
	T	e			15	
	CMO: Marianas					
24	P	ePNZ	17	02	22	
		iNZ!			47	
	PX	i(S)E		13	12	
		eLEZ		30	6	
			A		T	
		PZ	0.15		1	
		i!Z	0.4		2	
		MH	2		20	
	Pr	ePNEZ	17	02	28	
		iNEZ			52	
		e(S)E		13	26	
	CL	eP		02	27	
		i			49	
	T	eP			24	
		i			48	
	h = 100 km?					
	USCGS: 5 S 154 E,					
	0 = 16:49:13					
24	P	iP	18	10	54	
	R	iP			57	
	Pr	iP			57	
	CL	iP			59	
		e		11	31	
	T	iP			02	
	USCGS: Loyalty Islands,					
	0 = 17:58:00					
25	P	eP	03	25	09	
	R	eP			04	
		e			14	
	Pr	eP			13	
		e			21	
	CL	eP		24	53	
		e		25	01	
	USCGS: 56 N 154 W,					
	0 = 03:18:23					
25	P	e	05	45	45	
	R	eP'			32	
		e			47	
	CL	eP'			32	
		e			43	
	BCIS: 35 S 52 E,					
	0 = 05:25:30					
25	MW	e	08	10	55	
	Pr	e			54	
	CL	e		11	02	
	USCGS: Kermadec Islands,					
	0 = 07:58:20					

Date	Sta.	Phase	h	m	s	
	June					
25	MW	e	08	20	27	
	R	e			31	
	CL	e			27	
25	P	eP	15	56	54	
	R	eP			58	
	Pr	eP			56	
	CL	eP			52	
	USCGS: $3\frac{1}{2}$ S 149 E,					
	0 = 15:43:30					
25	P	iPNEZ	16	19	11	d
		i			19	
		ipP			25	
		isP			31	
		i			34	
		i			40	
		e		22	10	
	PX	eSN		24	34	
		eLNZ		26.5		
			A		T	
		PZ	0.4		1	
		PH	0.3		1	
		SH	$\frac{1}{2}$		4	
		MH	5		20	
	R	iP	16	19	14	d
		ipP			27	
		isP			33	
		i			37	
	Pr	iPNEZ			20	d
		i			26	
		ipP			34	
		isP			41	
	CL	iPNZ			00	d
		ipP			14	
		isP			21	
		i			29	
		iPcPNZ		21	33	
		e			58	
		eSN		24	15	
	T	iPNZ		18	50	d
		i			58	
		ipP		19	04	
		i			13	
	Magnitude $6\frac{1}{4}\pm$					
	USCGS: 61 N 150 W,					
	0 = 16:12:32, h = 100 km.					
25	R	eP	19	20	21	
	Pr	eP			17	
	CL	eP			30	
25	P	iPNEZ!	19	46	09	d
		iSE			30	
	R	iPNEZ			12	
		iSNEZ			40	
	SB	eP			14	
		iSNE			42	
	CL	iP!		45	47	
	H	iPNEZ!		48	48	d
	T	iPNZ		46	05	d
		iSN!			23	
	Magnitude 4.6					
	35°47' N 117°57' W,					
	0 = 19:45:41					
	Felt from Owens Valley to the west side of the Sierra Nevada.					

(continued)

Date	Sta.	Phase	h	m	s	
	June (continued)					
25	Numerous aftershocks the largest (magnitude 4.4) at 01:26:39, June 26					
25	P	eP	20	24	55	
	PX	eLEZ		38.6		
	Pr	eP		24	33	
		i			48	
	CL	iP			58	
	USCGS: 1 N 85 W,					
	Q = 20:16:26					
25	MW	e	20	38	33	
	R	e			29	
	Pr	eP			25	
	CL	eP			37	
25	P	e(P)	20	47	22	
		i		48	45	
	R	e?		47	18	
		i		48	48	
	Pr	e(P)		47	13	
		i			21	
	CL	e(P)		47	27	
		i		48	48	
	Peculiar. Very distant?					
26	PX	eL	04	34		
	MW	e?	03	59	36	
		e	04	00	54	
	R	e			53	
	CL	e			46	
	BCIS: north of New Guinea,					
	0 = 03:39.9					
26	MW	eP	13	05	14	
	Pr	eP			11	
	CL	eP			20	
	Near Apia.					
	USCGS: 0 = 12:53:45					
27	CL	iP	09	13	00	
	USCGS: $52\frac{1}{2}$ N 31 W,					
	0 = 09:02:49					
27	CL	eP	10	54	20	
28	MW	i	01	48	29	
	R	eP		47	48	
		e(pP)		48	15	
		i(sP)			26	
	CL	iP		47	54	
		e(pP)		48	22	
		i(sP)			32	
	Andes, h = 100 km?					
28	P	eP	03	19	27	
	R	eP			23	
	Pr	eP			19	
	CL	eP			30	
		e			45	
	T	eP			36	
	Shallow?					
	USCGS: 19 S $64\frac{1}{2}$ W,					
	0 = 03:07:55, h = 60 km.					
	BCIS: 19.4 S 65.0 W,					
	0 = 03:08:00, h = 100 km.					
28	P	iP	03	47	51	
		e(pP)		48	15	
	R	iP		47	46	
	Pr	iP			44	
		e(pP)		48	09	

(continued)

Date	Sta.	Phase	h	m	s	
	June (continued)					
28	CL	iP	03	47	55	
		i(pP)		48	22	
	T	iP		48	03	
		i(pP)			30	
	h = 100 km?					
	USCGS: 16 S 72 W,					
	0 = 03:37:00					
28	MW	iP	04	07	40	
		ipP			58	
	Pr	iP			50	
		ipP		08	07	
	CL	iP		07	33	
		ipP			50	
		i			58	
		iPcP		09	18	
	T	iP		07	25	
		ipP			43	
	USCGS: 52 N $175\frac{1}{2}$ W,					
	0 = 03:59:31, h = 60 km.					
28	P	iP	16	48	47	d
	R	iP			44	d
	Pr	iP			41	
	CL	iP			52	d
	South America?					
28	P	iP	20	23	18	
		e			47	
		e		24	02	
	Pr	iP		23	23	
		e		24	07	
	CL	iP		23	21	
		e			46	
	T	iP			19	
		e			47	
	Pacific					
29	P	iP	18	03	10	
	R	iP			12	
	Pr	iP			12	c
	CL	iP			16	c
29	MW	iP	18	25	22	
	R	eP			18	
	CL	eP			25	
29	P	eP	18	42	05	
	Pr	eP		41	54	
	CL	eP		42	09	
		e			26	
	USCGS: $4\frac{1}{2}$ N 82 W,					
	0 = 18:34:00, h = 100 km.					
30	P	eP	17	24	21	
	Pr	eP			27	
	CL	iP			23	
	USCGS: 6 S $154\frac{1}{2}$ E,					
	0 = 17:11:13					

Addendum:
June 21

Date	Sta.	Phase	h	m	s
	P	eP	17	46	53
	R	eP			59
	Pr	eP			57
	CL	eP			58
	USCGS: Fiji Islands,				
	0 = 17:35:50, h = 600 km.				

Date	Sta.	phase	h	m	s
	July				
1	P	iPNEZ	18	04	56
		epP		07	00
	Small surface waves recorded				
			A		T
		PZ	0.15		1
	R	iP	18	04	59
		epP		07	05
	Pr	iP		04	59
		epP		07	07
	CL	iP		05	03
		epP		07	08
	T	iP		05	04
		epP		07	10
	USCGS: 0 = 17:54:00, h = 600 km.				
	BCIS: 18 S 179 W, 0 = 17:53:57				
2	P	e	05	25	16
	PX	e		26	53
		eLE		57	
	MW	e		24	52
	USCGS: 6 N 124½ E, 0 = 05:06:23, h = 100 km.				
2	P	eP	07	05	17
		e			35
	R	eP			12
	Pr	eP			07
		e			25
	CL	iP			21
	USCGS: 4 N 82½ W, 0 = 06:57:10, h = 100 km.				
2	MW	eP	07	36	59
	CL	iP			53
	USCGS: Kurile Islands, 0 = 07:26:26				
2	P	eP	07	44	32
	R	eP			26
	Pr	eP			23
	CL	eP			30
	USCGS: 4 N 82½ W 0 = 07:36:23, h = 100 km.				
2	P	iP	18	23	17
		e			48
	R	iP			13
		e			44
	Pr	iP			09
	CL	iP			22
	T	iP			32
	USCGS: 0 = 18:13:10, h = 100 km.				
	BCIS: 10.3 S 79.5 W, 0 = 18:13:19, h = 150 km.				
2	P	iPEZ	21	58	30
	PX	eSNE	22	08	22
		eLEZ		22	
			A		T
		PZ	0.1		1
		MH	7		20
	R	eP	21	58	28
		e			38
	Pr	eP			29
		i			39
	CL	eP			35
		e			44

(continued)

Date	Sta.	Phase	h	m	s
	July (continued)				
2	T	eP	22	08	38
		e			45
	USCGS: 21 S 176 W, 0 = 21:46:30				
3	MW	eP'	05	43	01
	Pr	eP'			03
	CL	eP'		42	57
	BCIS: 11.8 N 45.0 E, 0 = 05:23:47				
3	PX	eLEZ	09	44	
3	P	iPNEZ	11	35	14 d
		isP			42
	R	iP			11 d
		isP			38
	Pr	iP			06 d
		epP			25
		esP			33
	CL	iP			19 d
		ipP			39
		isP			46
	T	iP			28 d
		ipP			48
		isP			56
	h = 75± km.				
	BCIS: 17.6 S 74.4 W, 0 = 11:24:36, h = 150 km.				
3	MW	iP'	18	35	16
	R	eP'			14
	CL	eP'			12
	BCIS: aftershock of 05h; 0 = 18:16:04				
4	MW	e(pP)	02	35	40
	R	eP			34
		e(pP)			43
	Pr	iP			43
		i(pP)			52
	CL	iP			23
		i(pP)			31
	USCGS: Fox Islands (Aleutians), 0 = 02:28:00				
4	P	iP	07	18	12 c
		ipP			48
	R	iP			15 c
		ipP			51
	Pr	iP			17 c
	CL	iP			21 c
		epP			56
	T	iP			24 c
	USCGS: 19 S 174½ W, 0 = 07:06:41, h = 150 km.				
4	MW	iP	07	41	50
		i		42	01
	R	iP		41	46
		e			56
	Pr	i			54
	CL	iP			55
		e		42	05
	Andes				

Charles F. Richter
February 15, 1952

Date	Sta.	Phase	h	m	s
July					
4	P	eP	12	28	46
		ipP		29	21
	R	eP		28	50
		ipP		29	25
	Pr	eP		28	55
		epP		29	28
	CL	iP		28	47
		ipP		29	21
	USCGS: 14 N 143½ E				
	0 = 12:16:06, h = 150 km.				
5	R	e	19	59	18
	CL	e			11
	USCGS: Kurile Islands,				
	0 = 19:48:30				
6	P	iP	05	02	58
	R	iP		03	00
	Pr	iP			01
	CL	iP			04
	USCGS: Fiji Islands,				
	0 = 04:51:50, h = 600 km±				
6	MW	e	05	16	38
	R	e			41
	CL	e			40
6	MW	iP	13	10	38
	R	eP			35
	Pr	iP			30
	CL	iP			44
	Andes?				
6	MW	iP	15	25	02
		i(pP)			36
	R	iP			05
		i(pP)			39
	Pr	iP			05
		i(pP)			38
	CL	iP			11
		i(pP)			44
6	CL	eP	19	17	43
6	CL	eP'	23	15	46
	BCIS: Indian Ocean,				
	0 = 22:57.3				
7	P	iPNEZ	03	48	43
		ipPNZ			59
	R	iP			46
		ipP		49	02
	Pr	iPEZ		48	46 c
		ipP		49	02
	CL	iPNEZ		48	50 c
		ipPNZ		49	07
	h = 60 km.				
	USCGS: 0 = 03:36:10				
	BCIS: 32 S 178 W,				
	0 = 03:36.2				
7	CL	i	10	45	20
7	MW	eP	15	16	07
	R	eP			10
	Pr	iP			14
		e			30
	CL	eP			04
	USCGS: 0 = 15:02:57				
	CMO: 27 N 128 E				

Date	Sta.	Phase	h	m	s
July					
7	P	iP	20	09	34 d
			A		T
		PZ	¼		1
	R	iP	20	09	37 d
	Pr	iP			40 d
	CL	iP			34 d
	USCGS: 14 N 145 E,				
	0 = 19:56:40				
8	R	e	04	06	49
	CL	e		07	03
8	PX	ePN?	05	59	20
		ePPZ?	06	03	08
		e		04	40
		iSKSNE		09	19
		ePS			12.3
		ePPSNE			13.6
		eSSNE			18.1
		eGN			28.5
		eREZ			34.2
			A		T
		MH	15		20
	R	e	06	02	19
		e			53
		ePKKP		14	13
	CL	e(P)	05	58	43
		e	06	02	50
		ePKKP		14	16
	USCGS: 11 N 122 E,				
	0 = 05:44:20				
	BCIS: 9.9 N 122.2 E,				
	0 = 05:44:20				
	Manila: 10.4 N 122.5 E				
8	CL	e	09	49	57
		e		51	36
8	P	e(P)	11	07	18
	R	eP			13
	Pr	iP			07
	CL	iP			22
	USCGS: 12 N 86 W,				
	0 = 11:00:12				
8	P	iP	15	32	39
	R	iP			42
	Pr	iP			42
	CL	iP			47
8	CL	eP	19	23	51
8	CL	e(P)	23	37	25
		i			28
	Small foreshock?				
8	Pr	eP	23	38	32
	CL	eP			04
		e			27
		iPcP		40	32
		i			42
	USCGS: 53 N 167 W,				
	0 = 23:30:40				
9	P	iPNEZ	00	09	29 c
		i			45
		iPcP		12	53
		i		13	05
	PX	eSNE		14	06
		eLE			16.5
		iX		18	40

(continued)

Date	Sta.	Phase	h	m	s	
	October					
10	MW	eP	04	28	06	
		i(pP)			17	
	R	eP			09	
		i(pP)			19	
	Pr	iP			15	
		i(pP)			27	
	CL	eP		27	57	
		i(pP)		28	09	
	T	eP		27	47	
		i(pP)		28	00	
10	CL	eP	10	00	37	
10	MW	eP	22	22	22	
	R	eP			24	
	CL	eP			25	
		i			30	
	BCIS: 8 S 155 E,					
	0 = 22:09:10					
11	P	iPNEZ	01	50	50	
		ipP		51	01	
		i			06	
		i			11	
	PX	iSKSE	02	01	18	
		iSE			52	
		eGN		16.0		
		eR		19.3		
			A		T	
		PZ	0.3		1	
		PH	0.2		1	
		SKSH	2		8	
		SH	2		5	
		MH	25		20	
		MZ	25		20	
	R	iPEZ	01	50	52	
		ipP		51	03	
		ePP		54	14	
	Pr	iP		50	54	
	CL	iPNZ			53	
		ipP		51	04	
		eSKSNE	02	01	24	
	T	iPNEZ	01	50	50	d
		i		51	01	
		iSKSN	02	01	21	
		eN			41	
		eRNZ		19.8		
	Magnitude $6\frac{3}{4}$, h = 60 km.					
	USCGS: 5 S 152 E,					
	0 = 01:37:31					
11	MW	eP	05	04	30	
	R	eP			32	
	Pr	eP			38	
	CL	eP			25	
	T	eP			17	
	USCGS: 04:53:00					
	BCIS: 43 N 143 E					
11	CL	eP	11	14	46	
	T	eP			40	
	CMO: 41.0 N 143.4 E					
11	PX	eLE	15	51		
	Pr	iP		40	50	
	CL	eP		41	10	
	BCIS: $2\frac{1}{2}$ N $95\frac{1}{2}$ W,					
	0 = 15:33:43					

Date	Sta.	Phase	h	m	s	
	October					
11	Pr	iP	16	36	07	
	CL	iP		35	49	
	T	iP			39	
12	Pr	iP	17	19	59	c
	CL	iP		20	04	
	T	iP			06	
12	CL	iP	18	17	13	
	T	iP			15	
	Near Apia					
12	P	iP	18	32	07	
	CL	eP			11	
	T	eP			21	
	BCIS: 2 S 77 W,					
	0 = 18:22.6					
12	Pr	ePNE	21	48	48	
	CL	eP		49	00-	
		i			06	
	T	eP			20	
	Mexico					
13	P	iP	01	27	22	
		epP		28	24	
	CL	iP		27	29	
		epP		28	31	
	T	iP		27	32	
		epP		28	32	
	USCGS: 0 = 01:15:54,					
	h = 200 km.					
	BCIS: 20 S 174 W,					
	0 = 01:16.0, h = 250 km.					
13	P	iPNEZ	19	47	54	
	Pr	iP		48	11	
	CL	iP		47	41	
	T	iP			25	
	USCGS: $43\frac{1}{2}$ N 127 W,					
	0 = 19:45:06					
13	P	eP"	22	47	02	
		ePP		48.5		
		eGE	23	20.2		
		eRNZ		27.1		
	Pr	eP"		47	04	
		ePP		48	32	
	CL	eP"		47	05	
		ePP		48	52	
	T	eP"		47	08	
	USCGS: 60 S 19 W,					
	0 = 22:28:06					
	BCIS: 61.0 S 21.3 W,					
	0 = 22:28:11					
14	Pr	iP	01	15	49	
	CL	iP		16	08	
14	P	iP"	09	48	52	
		iSKPNEZ		52	10	
	Pr	eP"		48	54	
		eSKP		52	15	
	CL	eP"		48	51	
		iSKP		52	10	
		eSKKP	10	02	03	
	T	iP"	09	48	52	
		iSKP		52	13	
	BCIS: 8 S 107 E,					
	0 = 09:29:37					

Date	Sta.	Phase	h	m	s	
	October					
14	MW	e	12	34	55	
	Pr	e			47	
	CL	e		35	03	
	T	e(P)			13	
		e			23	
14	P	iPNEZ!	18	29	29	c
		e(sP)		32	42	
	Pr	iPNE!		29	42	
	CL	iP			46	c
		e(pP)		31	50	
	T	iP!		29	48	c
		e		30	13	
		e(pP)		31	55	
		e(sP)		32	55	
	USCGS: Fiji Islands, 0 = 18:18:43, h = 600 km.					
14	MW	eP	20	24	58	
	CL	iP		25	05	
	T	iP			06	
	USCGS: Fiji Islands, 0 = 20:13:00					
15	MW	iP	05	27	47	
	CL	iP			40	
	T	eP			32	
	USCGS: North of Lake Baikal, 0 = 05:15:28					
15	P	iP	21	14	34	c
		ipP			44	
	PX	eREZ			41.3	
	R	iP		14	36	c
		ipP			46	
	Pr	iP			41	c
		epP			51	
	CL	iP			30	c
		ipP			40	
	T	eP			26	
	USCGS: 33 N 134 E, 0 = 21:01:57 CMO: 32.8 N 134.3 E, h = 40-50 km.					
15	MW	e	21	43	43	
	R	e			41	
	Pr	e			41	
	CL	e			44	
	T	e			41	
	Possibly SKPP' of preceding					
16	MW	eP	07	05	13	
	PX	eL			25.4	
	Pr	eP		05	23	
	CL	eP			03	
	T	eP		04	56	
	BCIS: 77 N 6 E, 0 = 06:54:30					
16	P	iPNEZ!	12	42	24	c
		iSNEZ			36	
	R	iPNEZ!			13	c
		iSNE!			18	
	Pr	iPNEZ!			20	c
		iS			31	
	BB	iP!			08	
	34°10' N 116°59' W, 0 = 12:42:05. Magnitude 4.0. Felt at Big Bear and in the surrounding area.					

Date	Sta.	Phase	h	m	s	
	October					
16	CL	eP	19	04	36	
	USCGS: 0 = 18:52:40 CMO: 34.9 N 142.7 E, h = 40 km.					
17	P	iP	08	19	09	
	Pr	iP			12	
		i(pP)			41	
	CL	iP			17	c
		i(pP)			47	
	Near Apia					
17	P	eP	12	37	36	
	Pr	iP			46	
	CL	iP			31	
		iPcP		39	08	
		iScP		42	59	
	USCGS: Andreanov Islands, 0 = 12:29:13					
17	CL	eP	18	39	02	
18	MW	i	00	16	17	
	R	i			17	
	CL	iP			07	
18	CL	e(P)	05	11	37	
		e			48	
	USCGS: Andreanov Islands, 0 = 05:03:27					
18	R	eP	07	52	53	
	Pr	eP			55	
	CL	iP			57	
	Wellington: 34 S 179 W, 0 = 07:40.1, h = 100 km?					
18	P	iPNEZ	08	37	59	
		iPcP		38	08	
		ipPNEZ!			18	
		iNEZ			51	
		ePP		40	51	
		e		41	26	
		e		42	02	
	PX	iSE		47	31	
		iE		48	07	
		eGN			57.3	
		eREZ	09		00.8	
			A		T	
		PZ	$\frac{1}{4}$		2	
		pPZ	1		2	
		PPZ	$\frac{1}{2}$		3	
		SH	$\frac{1}{4}$		3	
		MH	14		20	
		MZ	10		20	
	R	eP	08	38	02	
		ipP			22	
	Pr	eP			07	
		i			23	
		ipP!			28	
		i			46	
		iSE		47	47	
		iNE		48	23	
	CL	ePNZ		37	55	
		i		38	06	
		ipPNEZ!			14	
		eSNE		47	23	
		eN		48	01	

(continued)

Date	Sta.	Phase	h	m	s
	October (continued)				
18	T	ePNEZ	08	37	51
		i		38	01
		ipPNEZ		38	12
		eSNEZ		47	15
	Depth 75 km. (Unless phase reported as pP is sP) Magnitude $6\frac{1}{4}$ BCIS: 41.9 N 142.2 E, 0 = 08:26:24, h = 60 km± CMO: 41.4 N 142.1 E, h = 40 km.				
18	CL	e(P)	20	51	16
		e			58
	Pr	e			51
18	CL	e(PP)	21	00	32
		e			58
	T	e(PP)			31
19	P	iP	02	46	42
	R	iP			47
	Pr	iP			58
	CL	iP			29
	T	iP			16
19	P	iP	13	10	59
	R	eP			54
	Pr	eP		11	01
	CL	eP		10	55
	T	eP		11	06
19	P	iP	15	03	05
		i(PcP)			12
		i(pP)			19
		iEZ!			23
			A		T
		PZ	0.2		$1\frac{1}{2}$
		(pP)Z	$\frac{1}{2}$		$1\frac{1}{2}$
	R	eP	15	03	08
		i			26
	Pr	eP			13
		i			32
		iE		12	53
	CL	ePNEZ		03	01
		i(PcP)			08
		i(pP)NEZ			19
		eSN		12	39
	T	iP		02	55
		e		03	08
		iNEZ			13
	Magnitude 6 USCGS: 41 N 142 E, 0 = 14:51:14, h = 100 km. CMO: 41.3 N 142.3 E, h = 40 km.				
20	CL	eP	22	07	56
		epP		08	27
	T	eP		08	03
		epP			36
21	P	eP	01	40	11
	Pr	iP			15
	CL	iP			18
	T	eP			21
21	CL	eP	18	45	41
	CMO: 37.7 N 142.0 E, h = 40 km.				

Date	Sta.	Phase	h	m	s
	October				
21	CL	eP	21	21	29
21	P	eP	21	47	58
	PX	ePP		51	35
		iPPEZ		52	08
		eE		57	48
		iNE		58	50
		iN		59	44
		iLN	22		15.4
		iR			20.3
			A		T
		PZ	0.3		2
		PH	$\frac{1}{4}$		$1\frac{1}{2}$
		PPZ	2		5
		PPH	$1\frac{1}{2}$		4
		(S)H	3		6
		MH	30		20
		MZ	30		20
	R	eP	21	48	01
	Pr	eP			06
		ePKKP	22	04	26
	CL	eP	21	47	56
		iPP		51	57
		ePKKP	22	04	28
	T	eP	21	47	48
		ePP		51	56
		eN			57.3
		eN		58	41
	Off Formosa Magnitude 7.3 USCGS: 24 N 122 E, 0 = 21:34:13				
21	CL	eP	22	18	52
		e(pP)		19	07
	USCGS: $44\frac{1}{2}$ N 151 E, 0 = 22:07:55 Some Japanese stations report this shock as part of preceding				
21	P	eP	23	09	11
	Pr	eP			19
	CL	iP			08
	T	eP			02
	Off Formosa				
22	CL	eP	01	08	22
	T	eP			18
	Off Formosa				
22	P	eP	03	43	14
		ePP		47	13
		iNE		54	09
		i		56	14
		eGN	04		10.6
		iR			15.9
			A		T
		PZ	0.3		$1\frac{1}{2}$
		PH	0.1		1
		PPZ	1		4
		PPH	1		5
		MH	40		20
		MZ	40		20
	Pr	eP	03	43	21
	CL	eP			05
		i			10
	T	eP			00
		iN		53	58

(continued)

Date	Sta.	Phase	h	m	s
	October (continued)				
22	Off Formosa				
	Magnitude 7.1				
	USCGS: 24 N 122 E,				
	0 = 03:29:26				
	BCIS: 23.4 N 121.9 E,				
	0 = 03:29:26				
22	CL	eP	04	05	58
	T	eP			55
	Off Formosa?				
22	P	iP	04	41	51
	Pr	eP			53
	CL	iP			47
	T	eP			41
	Off Formosa				
22	MW	eP	05	31	31
	CL	eP			26
	Off Formosa				
22	MW	eP	05	37	41
	CL	eP			33
	T	eP			28
	Off Formosa				
22	P	eP	05	56	45
	PX	ePP	06	00	54
		iNE		07	10
		eGN		24.3	
		eR		29.6	
			A		T
		MH	20		20
	Pr	eP	05	56	53
	CL	eP			43
	T	eP			41
	Magnitude 7.1				
	USCGS: 24 N 122 E,				
	0 = 05:43:01				
22	CL	eP	07	21	04
	Off Formosa?				
22	CL	eP	07	25	49
	Off Formosa?				
22	CL	eP	09	10	26
		e			37
	Kermadec Islands				
22	CL	eP	09	28	42
22	P	iPNEZ	10	11	54
		ipP		12	26
	R	iP		11	49
		ipP		12	22
	Pr	iP		11	46
		ipP		12	19
	CL	iP		11	58
		ipP		12	32
		ePcP		13	35
	T	iP		12	07
		ipP			39
	USCGS: $2\frac{1}{2}$ S 76 W,				
	0 = 10:02:47, h = 150 km.				
22	PX	eR	11	57.9	
	CL	eP		24	47
	T	eP			45
	Off Formosa				
22	PX	eR	13	36.5	
	Pr	eP	13	02	24
	CL	eP			19
	Off Formosa				

Date	Sta.	Phase	h	m	s
	October				
22	The following ten are aftershocks off Formosa:				
22	CL	eP	13	14	54
22	CL	eP	13	23	43
22	CL	eP	15	00	23
22	P	iP	15	43	33
	PX	eR	16	16.7	
	CL	eP	15	43	28
22	CL	eP	16	20	35
22	CL	eP	16	52	40
22	CL	eP	18	56	16
22	CL	eP	20	38	25
22	CL	eP	21	05	20
22	CL	eP	23	50	05
23	P	iPNEZ	00	53	07 d
	R	iP			09 d
	Pr	iP			10 d
	CL	iP			[illegible] d
	T	iP			16 d
	Near Apia.				
	USCGS: 0 = 00:41:40				
23	P	eP	01	33	21
	PX	eL	02	06.2	
			A		T
		MH	10		20
		MZ	10		20
	R	eP	01	33	21
	Pr	eP			21
	CL	eP			15
	T	eP			14
	USCGS: 24 N 122 E,				
	0 = 01:19:35				
23	P	iP	06	24	37 c
	R	iP			40 c
	Pr	iP!			42 c
	CL	iP!			46 c
	T	iP			47
	USCGS: 17 S 178 W,				
	0 = 06:13:03, h = 200 km.				
23	P	eP	09	08	58
	PX	eL		41	
	CL	eP		08	54
	Off Formosa				
23	CL	eP	13	40	57
	Off Formosa				
23	CL	eP	18	32	25
	Off Formosa				
23	P	iP	20	48	49
	Pr	iP			53
	CL	iP			56 c
	South Pacific?				
24	MW	eP	01	59	42
	CL	eP			31
		e(pP)			46
	USCGS: 0 = 01:48:04				
	CMO: 42.1 N 144.0 E,				
	h = 60 km.				
24	MW	eP	03	52	43
	CL	eP			40
	Off Formosa				
24	P	eP	04	37	24
	R	eP			27

(continued)

Date	Sta.	Phase	h	m	s
	October (continued)				
24	Pr	iP	04	37	30
	CL	iP			27
	Pacific				
24	P	eP	05	32	21
	R	eP			24
	CL	eP			24
	Pacific				
24	P	eP	05	59	04
	R	eP			07
	Pr	eP			08
	CL	iP			12
	T	eP			14
	Near Apia				
24	CL	eP	13	55	55
	Off Formosa				
24	P	iP	19	34	53
	R	eP			56
	CL	iP			48
	T	iP			44
	BCIS: 0 = 19:23:17				
	CMO: 41.8 N 142.6 E,				
	h = 20 km.				
25	CL	eP	00	23	17
	to the southeast				
25	P	iP	04	12	10
			A		T
		PZ	$\frac{1}{4}$		$1\frac{1}{2}$
		MH	15		10
	R	iP	04	12	05
	Pr	iP			00
	CL	iP			16
	T	iP			26
	Magnitude $5\frac{3}{4}$				
	USCGS: 15 N 93 W,				
	0 = 04:06:00				
	BCIS: 17 N 93 W,				
	0 = 04:06:30, h = 100 km.				
25	PX	eLEZ	13	06.2	
			A		T
		MH	5		20
	CL	eP	12	33	20
	Off Formosa				
26	MW	e(P)	05	47	49
	R	eP			46
	Pr	e(P)			53
	CL	eP			48
		e			53
	T	e(P)			53
	Wellington: 11 S 166 E,				
	0 = 05:35:00				
26	P	iEZ	10	43	36
	R	i			44
	Pr	i			54
	T	e			24
27	P	iP	17	34	13 d
		i			20
	Pr	iP			06
	CL	iP			17 d
		i			24
	T	iP			26 d
	BCIS: 23 S 67 W,				
	0 = 17:22.4				

Date	Sta.	Phase	h	m	s
	October				
28	P	e	07	06	17
	PX	ePP		07	27
		eLNEZ		40.0	
			A		T
		PPZ	1		5
		MH	15		20
	R	e	07	06	27
	T	e			47
	Magnitude $6\frac{1}{2}$ - $6\frac{3}{4}$				
	BCIS: 58 S 158 E,				
	0 = 06:47:45				
	Wellington: 61 S 157 E,				
	0 = 06:47:25				
28	P	e	14	55	33
	R	e			31
	T	e(P)			02
	USCGS: Off Vancouver Island,				
	0 = 14:51:14				
29	P	iP	12	27	49
		i(pP)		28	01
		e(sP)			15
	R	eP		27	53
	Pr	eP			55
		e(pP)		28	07
		e(sP)			21
	Pacific				
30	MW	iP	21	44	42
	R	iP			39
	CL	iP			47
31	P	eP	05	38	21
	R	eP			27
	CL	eP			25
	T	eP			25
	USCGS: New Britain region,				
	0 = 05:25:00				
31	P	iP	06	26	57
	R	iP		27	00
	Pr	iP		26	54
	CL	eP		27	00
	T	eP		26	58
	USCGS: New Britain region,				
	0 = 06:13:35				
31	P	iP"	07	15	38
		i		16	52
	PX	ePP		17	53
		iSKP		19	01
		iSKPNE			05
		e		20	46
		eSKSPNEZ		28.0	
		eSS		36.2	
		eL		52.6	
			A		T
		P"Z	0.3		2
		PPZ	$1\frac{1}{2}$		7
		SKPZ	2		6
		SKPH	$1\frac{1}{2}$		5
		MH	12		20
	R	eP"	07	15	38
	Pr	eP"			46
	CL	eP"			34
		ePP		17	59
		iSKP		19	00

(continued)

Date	Sta.	Phase	h	m	s
	October				
31	T	eP"	07	15	35
		ePP		17	45
		iSKP		18	58
	Magnitude $6\frac{1}{2}$-$6\frac{3}{4}$				
	BCIS: 1 N $98\frac{1}{4}$ E,				
	0 = 06:56:24				
31	P	eP"	08	22	24
		eSKP		25	48
			A		T
		P"Z	0.1		2
		SKPZ	0.4		4
	Pr	eP"	08	22	28
	CL	eP"			24
		ePP		24	46
		eSKP		25	46
	T	eP"		22	22
	Aftershock. Magnitude $6\frac{1}{4}$±				
31	MW	eP	08	55	40
	R	eP			36
	CL	eP			44
	T	eP			52
	South America?				
31	P	eP"	10	41	33
		ePP		43	51
		iSKPNZ		44	56
			A		T
		P"Z	$\frac{1}{4}$		2
	R	eP"	10	41	34
		ePP		43	54
		eSKP		44	59
	Pr	eP"		41	36
	CL	eP"		41	32
		ePP		43	40
		iSKP		44	55
	T	eP"		41	29
		ePP		43	46
		iSKP		44	49
	Magnitude $6\frac{1}{4}$±				
	Aftershock of 07h				
31	MW	eP'	12	02	56
	R	eP'			50
	Pr	eP'		03	07
	CL	eP'		02	53
	BCIS: 56 S 6 W,				
	0 = 11:43:38				
31	P	iPNZ	20	59	20
		iSN	21	00	07
	CL	eP	20	59	11
		i(S)			58
		iSNE!	21	00	04
	SB	eP	20	59	06
		iS	21	00	08
	T	iPNEZ	20	59	04 c
		iSNE			38
	Magnitude 4.7				
	USCGS: 36^{o} 54' N, 121^{o} 25' W,				
	0 = 20:58:19, felt at Hollister				
	November				
1	MW	eP?	08	01	16
		e			34
	Pr	eP			17
		e			38
		(continued)			

Date	Sta.	Phase	h	m	s
	November (continued)				
1	CL	eP	08	01	18
		e			39
		e			48
	T	eP			19
		e			33
	BCIS: New Hebrides,				
	0 = 07:49.0				
1	MW	iP	10	33	46
	R	iP			50
	Pr	iP			56
	CL	iP			35
	T	iP			27
1	MW	eP'	11	30	02
		i			09
	R	i			08
	Pr	eP'			02
	CL	eP'		29	56
		i		30	05
	T	eP'			03
		i			14
	BCIS: 4.0 S 35.7 E,				
	0 = 11:10:36				
1	P	iP	11	37	11
	R	iP			14
	Pr	iP			13
	CL	iP			18
		epP		39	20
	T	iP		37	18
	USCGS: 23 S 179 E,				
	0 = 11:25:37, h = 500 km.				
1	P	iPEZ	19	21	10
	R	iP			03
	Pr	iPNEZ		20	58
	CL	iP		21	13
	BCIS: 5.3 N 82.8 W,				
	0 = 19:12:59				
2	R	e	03	21	02
	CL	e			03
2	MW	eP	03	37	40
	R	eP			36
	CL	eP			45
2	P	e	04	11	36
	R	e			33
	CL	e(P)			28
2	CL	iP	15	47	29
2	PX	eLNEZ	22	56	
	CL	e		12	09
	Caucasus				
3	CL	e	07	37	59
	T	e			40
3	MW	eP	09	00	24
	R	eP			20
	Pr	iP			15
	CL	eP			27
	T	eP			35
	BCIS: 4 N 77 W,				
	0 = 08:51:15, h = 100 km.				
3	MW	eP	13	55	28
	Pr	eP			36
	CL	eP			24
	CMO: 35.8 N 140.8 E,				
	h = 60 km.				

Date	Sta.	Phase	h	m	s
	November				
4	P	iPNEZ	09	07	47 d
		epP		08	43
		e		09	23
		e		10	33
		ePP		11	47
	PX	i		13	46
		iSKSE		18	00
			A		T
		PZ	0.3		$1\frac{1}{4}$
	R	iP	09	07	50 d
		epP		08	47
	Pr	iPEZ		07	52 d
		epP		08	51
		i		09	28
		iSKSNE		18	09
	CL	eP		07	48
		iNEZ			50
		e		09	25
		iPPNEZ		11	47
		iSKSNE		18	05
	T	iP		07	47
		epP		08	43
		ePP		11	42
	USCGS: $5\frac{1}{2}$ S 146 E,				
	0 = 08:54:30, h = 200 km.				
4	P	ePP	11	28	06
		ePKKP		39	54
	PX	eLEZ		57.3	
	Pr	ePP		28	17
		ePKKP		39	49
	CL	eP		23	48
		ePP		27	16
		ePKKP		39	56
	T	ePP		28	08
		ePKKP		40	00
	USCGS: $11\frac{1}{2}$ N 125 E,				
	0 = 11:09:41				
4	MW	eP	14	34	48
	R	eP			52
	Pr	eP			59
	CL	iP			37
	USCGS: 64 N 147 W,				
	0 = 14:28:00				
4	MW	eP	17	30	34
	CL	eP			35
4	Pr	eP	22	33	15
	CL	iP			09
	T	iP			05
	USCGS: Marianas,				
	0 = 22:20:15				
5	MW	eP	05	30	00
	R	eP			02
		i(pP)			11
	Pr	eP			08
		i(pP)			18
	CL	eP		29	56
		e(pP)		30	06
	T	eP		29	51
		e(pP)		30	01
	BCIS: 41 N 139 E,				
	0 = 05:18:05				
6	CL	iP	07	52	01
	T	iP			08

Date	Sta.	Phase	h	m	s
	November				
6	R	eP'	08	15	15
		e			22
	Pr	eP'			17
	CL	iP'			21
		e			31
	T	eP'			21
	Indian Ocean				
6	P	ePEZ	15	07	54
		eEZ		08	03
	Pr	eP		08	01
		i			11
	CL	eP		07	49
		i(pP)			56
		i			59
	T	eP			46
	USCGS: 47 N 154 E,				
	0 = 14:57:15				
6	P	eP	16	50	45
		iNZ			47
		i(pP)		51	00
		iPcP			13
	PX	ePP		53	33
		iSNE		59	22
		iGN	17	06.4	
		iREZ		09.7	
		eP'P'		19	42
			A		T
		PZ	$2\frac{1}{2}$		3
		PH	6		8
		SH	20		14
		G	70		45
		MH	100		20
	R	eP	16	50	47
		i			51
		i(pP)		51	02
		eP'P'	17	19	40
	Pr	eP	16	50	52
		i			56
		i		51	03
		iSN		59	40
	CL	eP		50	38
		i			42
		i(pP)			54
		i		51	07
		eSN		59	15
		eP'P'	17	19	33
	Magnitude 7.2				
	USCGS: 47 N 154 E,				
	0 = 16:40:06				
6	P	iP	19	01	10
		i			17
		i			25
	R	eP			13
		i			19
	Pr	iP			20
		i			25
	CL	iP			01
		i			06
		i			12
	T	iP		00	54
		i			59
		i		01	05
	USCGS: 47 N 154 E,				
	0 = 18:50:27				

Date	Sta.	Phase	h	m	s	
	November					
6	P	e	20	53	26	
	R	e			30	
	Pr	e			33	
	CL	eP			17	
		i			21	
	T	e			13	
	USCGS: 47 N 154 E,					
	0 = 20:42:40					
6	P	eP	22	32	35	
		epP			48	
	R	eP			32	
	Pr	eP			27	
		epP			42	
		e			51	
	CL	eP			40	
		epP			53	
	T	eP			48	
		e			54	
		epP		33	00	
	h = 45 km±					
	BCIS: 26.2 S 70.4 W,					
	0 = 22:20:50					
7	MW	eP	04	27	19	
		e(pP)			32	
	R	eP			21	
		e(pP)			34	
	CL	iP			13	
		e(pP)			26	
	T	eP			06	
	Kurile Islands?					
7	P	iP	04	46	27	
	R	iP			30	
	Pr	iP			31	d
	CL	iP			34	d
	T	iP			35	
	USCGS: Fiji Islands,					
	0 = 04:35:20, h = 600 km.					
7	MW	e(P)	05	07	43	
	CL	iP			57	
		i		08	09	
	T	eP		07	50	
		i			52	
		i		08	00	
	Southeast Pacific?					
7	P	eP	05	10	54	
		i(pP)		11	08	
	R	eP		10	58	
		e(pP)		11	10	
	Pr	iP			03	
		i(pP)			15	
	CL	iP		10	49	
		i(pP)		11	02	
	T	iP		10	43	
		i(pP)			55	
	Kurile Islands,					
	0 = 05:00:14±					
7	MW	eP	08	40	18	
	Pr	eP			36	
	CL	eP			09	
	Kurile Islands					
7	MW	eP	08	52	24	
	Pr	eP			31	
	CL	eP			19	
	Kurile Islands					

Date	Sta.	Phase	h	m	s	
	November					
8	CL	eP	05	36	55	
	T	eP			53	
8	P	eP	13	52	07	
		ePcP		54	19	
		eSNE		57	44	
		eGN	14	00.1		
		eR		01.3		
	Surface waves unusually long-continued					
				A	T	
		PZ		0.2	2	
		PPZ		1	5	
		SH		3	8	
		MH		30	15	
	R	eP	13	52	13	
	Pr	ePNEZ			16	
	CL	ePNEZ		51	57	
	Magnitude $6\frac{1}{4}$±					
	USCGS: $54\frac{1}{2}$ N 160 W,					
	0 = 13:45:09					
8	P	iPEZ	19	41	22	
				A	T	
		PZ		0.5	2	
		MH		8	9	
	R	iP	19	41	26	
	Pr	iPNEZ			30	
	CL	iPNEZ			30	
	T	eP			38	
	USCGS: 19 N $155\frac{1}{2}$ W,					
	0 = 19:34:13					
8	P	iPNEZ	24	03	36	c
	R	iP			38	c
	Pr	iP			39	c
	CL	iPNEZ			43	c
	T	iP			44	c
	USCGS: Fiji Islands,					
	0 = 23:52:27, h = 500 km.					
9	CL	e	06	06	21	
	T	e			13	
	BCIS: $26\frac{3}{4}$ N 122 E,					
	0 = 05:52:54					
9	P	eP	08	08	09	
	R	eP			11	
	Pr	iP			18	
	CL	iP			05	
		i			11	
	T	eP			01	
		e			12	
	USCGS: $46\frac{1}{2}$ N 154 E,					
	0 = 07:57:28					
9	P	eP	08	25	36	
	R	eP			39	
	Pr	eP			44	
	CL	eP			31	
	T	eP			24	
	Kurile Islands?					
9	P	eP	08	35	37	
		i(pP)			47	
	R	eP			38	
		i(pP)			50	
	Pr	iP			44	
		i(pP)			55	
	CL	iP			30	
		i(pP)			41	
	T	eP			23	
		i(pP)			35	
	USCGS: $46\frac{1}{2}$ N 154 E,					
	0 = 08:24:52					

Date	Sta.	Phase	h	m	s	
	November					
9	CL	eP	13	07	31	
9	MW	eP	16	15	30	
	Pr	eP			39	
	CL	iP			25	
		i(pP)			36	
	Kurile Islands					
9	P	iPNEZ	22	19	17	d
		i!			21	
		epP			46	
		i		20	03	
	PX	ePP		22	07	
		eSEZ		28	36	
		iE		29	18	
		eLNEZ		39.0		
			A		T	
		PZ	1		$1\frac{1}{4}$	
		PH	$\frac{1}{2}$		$1\frac{1}{2}$	
		PPZ	$\frac{3}{4}$		3	
		SH	4		5	
	Surface waves small					
	R	iPNEZ	22	19	13	d
		i!			17	
		i(pP)			47	
		eSN		28	33	
	Pr	iPNEZ	22	19	10	
		i			15	
		i			33	
		i			43	
		iSE		28	25	
		iE		29	02	
	CL	iPNEZ		19	21	d
		i			25	
		i			49	
		i			55	
		eSNE		28	46	
	T	iP		19	29	d
		i!			36	
		i			48	
		e		20	04	
		iSNZ		29	02	
	h = 120 km. magnitude 6.8					
	USCGS: 22 S 68 W,					
	0 = 22:07:53, h = 100 km.					
	BCIS: 20.8 S 68.0 W,					
	0 = 22:07:53, h = 100 km.					
10	P	iP	04	50	52	
	R	iP			46	d
	Pr	iP			40	
	CL	iP		51	01	
	T	iP			16	
	Mexico					
10	P	iP	05	43	55	
	PX	eLNZ	06	03		
	R	iP	05	43	55	
	Pr	iP			58	
	CL	iP		44	00	
	BCIS: $16\frac{1}{4}$ S $177\frac{1}{4}$ W,					
	0 = 05:32:09					
10	PX	eLEZ	08	00		
	T	eL		01.7		
10	P	e	19	46	35	
	Pr	e			21	
	CL	eP			48	

Date	Sta.	Phase	h	m	s	
	November					
11	P	eP	02	07	17	
	R	eP			12	
	Pr	eP			04	
	CL	eP			32	
	T	eP			48	
11	PX	eLNE	05	01.7		
	MW	e	04	58	43	
	Pr	e			26	
	CL	e			54	
	Gulf of California?					
11	MW	iP	11	51	31	
	Pr	iP			33	
11	MW	eP	12	08	51	
		epP		09	13	
	Pr	eP		08	41	
		epP		09	04	
	CL	eP		08	58	
		epP		09	22	
	Tacubaya: 16°35' N,					
	92°34' W., 0 = 12:03:14,					
	h = 100 km.					
11	P	eP	12	26	15	
	R	eP			19	
	Pr	eP			23	
	CL	iP			10	c
	USCGS: 47 N 152 E,					
	0 = 12:15:28					
	CMO: 45.0 N 154.0 E					
11	P	iP	23	05	11	
	R	iP			07	
	Pr	iP			03	
	CL	iP			16	
	T	iP			23	
	USCGS: Chile-Bolivia,					
	0 = 22:54:45					
12	CL	e	04	12	12	
12	P	eP	08	20	05	
		iNEZ			12	
		iNEZ			18	
		iEZ			37	
	PX	eSNE		28	38	
		eGNE		36.0		
			A		T	
		PZ	1		$2\frac{1}{2}$	
		PH	$\frac{3}{4}$		$2\frac{1}{2}$	
		SH	5		14	
		MH	15		15	
	R	eP	08-20		09	
		i			16	
		e			22	
	Pr	ePNEZ			16	
		i			21	
		i			29	
		iSE		29	01	
	CL	eP		20	02	
		i			08	
	T	eP		19	56	
		i		20	01	
		eSN		28	24	
	Magnitude $6\frac{1}{2}$-$6\frac{3}{4}$					
	USCGS: 47 N 154 E,					
	0 = 08:09:26					
	CMO: 46.0 N 153.0 E					

Date	Sta.	Phase	h	m	s	
	November					
12	MW	eP	08	32	59	
		i(pP)		33	11	
	R	i			13	
	Pr	e			19	
	CL	eP		32	55	
		i(pP)		33	07	
		e			18	
	Aftershock					
12	CL	eP	08	52	51	
	Aftershock					
12	P	e	09	00	59	
	R	eP			53	
		e		01	02	
	Pr	i			10	
	CL	eP		00	45	
		i(pP)			55	
	T	e			48	
	Aftershock					
12	P	iPNEZ	09	25	28	
		iNZ			38	
		ipPNEZ		26	50	
		i		27	04	
		iPKKP		43	57	
		eP'P'		52	07	
		iSKPP'		54	58	
			A		T	
		PZ	0.4		1	
		pPZ	0.3		1	
	R	iPNEZ	09	25	30	c
		i			41	
		ipP		26	53	
		iPKKP		43	56	
		eP'P'		52	03	
		eSKPP'		54	55	
	Pr	iPNEZ		25	31	c
		iNZ			42	
		ipPNZ		26	53	
		iSNE		35	21	
		eSKPP'		54	57	
	CL	iP		25	35	c
		i			45	
		ipP		26	59	
		i		27	50	
		iPKKP		43	55	
		eP'P'		52	03	
		eSKPP'		54	52	
	T	iPNEZ		25	39	
		i			48	
		epP		27	00	
		i			57	
		iSN		35	26	
		eSKPP'		54	53	

Magnitude 6±
h = 350 km.
USCGS: 23½ S 179 W,
0 = 09:13:50, h = 400 km.
The sharp phase about 10 seconds following P is not explained; there is no similar duplication of pP.

Date	Sta.	Phase	h	m	s	
12	P	iPNEZ	09	45	49	
		i			59	
			A		T	
		PZ	0.1		1	
	R	iP	09	45	44	
		i		46	00	
		e			52	
	Pr	iPNEZ		45	41	c
		i			53	
		i		46	05	

(continued)

Date	Sta.	Phase	h	m	s	
	November (continued)					
12	CL	iP	09	45	47	c
		i		46	00	
	T	iP		45	53	
	Magnitude 5¾					
	USCGS: 17 N 61 W,					
	0 = 09:36:36, h = 100 km.					
12	MW	e	09	58	32	
	R	e			41	
	Pr	eP			22	
	Kurile Islands					
12	CL	eP	19	22	08	
		e			18	
	USCGS: 53 N 166 W,					
	0 = 19:14:50, h = 100 km.					
12	P	eP	19	32	07	
		i(pP)			17	
	R	eP			10	
		e			20	
	CL	iP			03	
		i			12	
	T	eP		31	56	
		e		32	06	
	USCGS: 47½ N 155 E,					
	0 = 19:21:30					
13	Pr	iP	03	17	32	
	CL	iP			38	
13	P	eP	08	10	24	
		i			27	
	R	e			27	
	Pr	eP			22	
	CL	eP			23	
		i			28	
	T	eP			20	
	USCGS: 0 = 07:57:40					
	BCIS: 15 N 146 E					
13	P	iPNEZ	11	26	48	
		i			57	
		iSNEZ		28	20	
	R	iP		26	53	
	Pr	iP		27	04	
		i			17	
	CL	iP		26	37	
		i			47	
	H	eP			32	
		iSNEZ		28	13	
	T	iPNEZ		26	22	
		iSNZ		27	47	
	Magnitude 4.8					
	Intensity IV near the coast of northern California					
	Berkeley 40.4 N 125.3 W,					
	0 = 11:24:42					
13	Pr	iP?	12	55	43	
	CL	iP			47	
	T	iP			50	
14	P	ePNEZ	08	41	49	
		i			53	
		eSNEZ		43	19	
	R	eP		41	56	
	Pr	eP		42	07	
	CL	eP		41	39	
		i			44	
		i(S)		43	24	
	H	iPNEZ		41	34	
		iSNEZ		43	27	
	T	eP		41	19	
		iSEZ		42	43	

Magnitude 4.9
Intensity up to VI in northern California coastal area.
Berkeley: 40°26'N 124°03'W,
0 = 08:39:53

Date	Sta.	Phase	h	m	s	
	November					
14	P	iPNEZ	23	55	38	d
		iSE		56	02	
	R	iP		55	28	
		iSNE			48	
	Pr	iPNEZ!			16	
	LJ	iPNEZ			17	
		iSNE			29	
	BB	iP			27	
		iS			47	
	Magnitude 4.1					
	Felt in San Diego County					
	32°57' N 116°15'W,					
	0 = 23:55:03					
15	P	eP	00	42	02	
	R	eP			08	
	CL	iP		41	58	
		i		42	10	
	T	iP		41	51	
	Alaska?					
15	P	iP	08	35	55	
		i		36	05	
	PX	eLEZ			53.9	
			A		T	
		PZ	0.3		2	
		MH	3½		20	
	R	eP	08	35	59	
	Pr	eP		36	01	
	CL	eP		35	43	
		i			50	
		i			59	
		eSE		44	05	
	T	i		35	44	
	Kamchatka					
	USCGS: 52½ N 160½ E,					
	0 = 08:25:53, h = 60 km.					
	First of a numerous swarm. Following shocks on Nov. 15 are probably from this source unless otherwise noted.					
15	P	e	08	49	21	
	CL	iP			04	
		i			25	
15	CL	e	08	54	32	
15	CL	eP	09	36	27	
15	P	i	10	12	46	
	R	e			47	
	Pr	i			54	
	CL	eP			31	
		i			40	
	T	i			53	
15	CL	eP	10	31	22	
15	CL	eP	10	37	31	
15	P	eP	10	41	30	
		i			44	
		eLEZ			59.4	
			A		T	
		MH	3		20	
	CL	eP	10	41	25	
		i			31	
		eSE		49	25	
	Aftershock: USCGS 0 = 10:31:33; h = 60 km.					
15	CL	eP	10	48	43	
		i			54	
15	CL	i(P)	10	50	01	

Date	Sta.	Phase	h	m	s
	November				
15	P	i	11	11	20
	CL	eP			10
		i			15
		i			25
15	CL	i	11	56	54
15	CL	e	12	23	10
15	P	iP	13	58	55
		i		59	29
	R	iP		58	58
	Pr	iP		59	05
	CL	iP		58	44
		i		59	04
15	MW	eP	15	11	47
	CL	eP			40
		i			50
15	MW	i	15	12	54
		i		13	04
	CL	eP		12	43
		i			49
		i			58
15	CL	eP	16	21	59
		i		22	05
15	MW	eP	17	55	16
	CL	eP			09
		i			20
15	CL	iP	18	46	33
	Near Apia				
15	CL	e	19	12	13
15	P	iP	19	52	09
		iEZ			20
	PX	iSE	20	00	15
		eLN			07.5
		eLEZ			10.2
			A		T
		PZ	0.2		1
		SH	¾		5
		MH	5		20
	R	eP	19	52	12
		e			23
	Pr	eP			18
	CL	eP			01
		i			14
		iSNE	20	00	03
		iE			18
	T	iP	19	51	55
		i		52	06
		iSN		59	50
	Magnitude 6¼-6½				
	USCGS: 52½ N 160½ E,				
	0 = 19:42:12, h = 60 km.				
15	P	iP	20	30	26
		i			33
	R	eP			29
	Pr	eP			36
	CL	iP			20
		i			27
15	MW	iP	20	49	46
	R	iP			48
	Pr	iP			52
	CL	iPNEZ			42
	H	iP			40

CMO: 33.4 N 138.5 E,
h = 270 km.

Date	Sta.	Phase	h	m	s
	November				
15	P	eP	22	09	12
	R	eP			14
	Pr	eP			22
	CL	iP			07
		i			18
		eSE		17	10
	T	eP		09	05
16	P	eP	01	49	49
	R	eP			52
	Pr	eP		50	01
	CL	iP		49	43
		i			54
	Kurile Islands				
	USCGS: 46½ N 154 E,				
	0 = 01:39:07				
16	MW	eP	05	02	27
	R	eP			35
	Pr	eP			36
	CL	eP			21
	Kurile Islands				
	Aftershock of preceding				
16	P	eP	15	13	22
		i			26
		i			39
	PX	eL			31.4
			A		T
		MH	2½		20
	Pr	ePZ	15	13	39
		i			57
	CL	iPNEZ			16
		i			22
		i			33
		i			43
	USCGS: 52½ N 160½ E,				
	0 = 15:03:26				
16	PX	i(SKS)E	15	14	51
		eLNZ			38.6
			A		T
		(SKS)H	½		2½
		MH	2½		20
	These two clear phases not explained. Not part of the preceding shock. Earthquake at large distance, with origin time 14h 50m ±?				
16	P	eP	15	30	38
		eEZ			45
		i		31	03
	PX	eLEZ			48.6
			A		T
		MH	5		20
	CL	iP	15	30	34
		i			39
		i			58
	USCGS: 52½ N 160½ E,				
	0 = 15:20:44, h = 60 km.				
16	P	eP	15	39	01
	CL	eP		38	56
	Aftershock				
16	P	iPNEZ	17	45	54
		ipPEZ		46	10
	PX	eLE	18	12.0	
	R	iP	17	45	55
		ipP		46	12
	Pr	iP		45	56 c
		ipP		46	12

(continued)

Date	Sta.	Phase	h	m	s
	November (continued)				
16	CL	iPNEZ	17	46	01 c
		i			08
		i			13
		ipPEZ			18
	T	iP			03
	USCGS: 29½ S 178 W,				
	0 = 17:33:22, h = 60 km.				
16	CL	eP	19	16	39
		e			48
	Kamchatka				
17	P	ePPNZ	05	05	00
	CL	ePP		04	54
	Near 31N 90E; foreshock				
	USCGS: 0 = 04:46:00				
17	CL	eP	07	29	55
17	MW	eP	13	27	49
		i		28	01
	CL	iP		27	43
		i			56
	Kamchatka				
17	MW	eP	17	32	25
	CL	iP			18
		i			28
	Kamchatka				
17	MW	iP	18	27	08
	CL	iP			15
	T	iP			18
	Near Apia				
17	MW	eP	19	13	35
	CL	eP			28
		e			38
	Kamchatka				
17	P	eP	20	34	43
		e			54
	Pr	eP			53
		e		35	03
	CL	eP		34	39
		i			50
	T	eP			31
	Kamchatka				
18	MW	iP	02	24	14
	Pr	iP			16
	CL	iP			20
	Pacific?				
18	P	eP	04	48	25
		e			34
		i			45
		i			56
	R	eP			32
		e			39
		e			47
		e			59
	Pr	e			43
		i			53
		i		49	05
	CL	eP		48	21
		i			30
		i			39
		i			50
		eSE		56	26
	T	eP		48	16
	Two shocks?				
	USCGS: 53 N 161 E,				
	0 = 04:38:35, h = 60 km.				
18	P	e	09	45	24
		iPP			45

(continued)

Date	Sta.	Phase	h	m	s
	November (continued)				
18	Pr	iPP	09	45	53
	CL	eP"		44	53
		iPP		45	26
	T	ePP		45	21
		e		47	39
	Foreshock of next				
	Magnitude 6¾?				
	USCGS: 31 N 90½ E,				
	0 = 09:26:33				
18	P	eP	09	50	30
		e			49
		eP"		53	43
		e		54	29
	PX	iPPNEZ		55	01
		ePPP		57	08
		iSNE	10	02	30
		iPSNEZ		04.3	
		ePPS		05.3	
	P	iPKKP		05	24
	PX	iSSNE		10.2	
		iSSSN		14.5	
		iGNE		21.2	
			A		T
		PPZ	2½		7
		PPH	1¼		5
		SH	20		20
		SSH	100		30
		MH	400		22
		MZ	250		20
	R	i	09	54	30
		e		55	07
		ePKKP	10	05	26
		e			43
	Pr	e	09	54	18
		i			31
		e		55	02
		i			13
		iPKKP	10	05	32
	CL	eP	09	50	14
		i			21
		eP"		54	11
		iPPNZ			45
		eN	10	00	53
		eSN		01	55
		ePSN		04	25
		ePKKP		05	28
	T	eP	09	50	09
		eP"		53	39
		iPP		54	21
		i			32
		eN	10	00	55
	Magnitude 8				
	USCGS: 31 N 90½ E,				
	0 = 09:35:43				
	BCIS: 30.3 N 91.7 E,				
	0 = 09:35:44				
18	MW	eP	13	04	09
	CL	eP			02
	Kurile Islands?				
18	CL	e	19	00	23
	Tibet; aftershock of 09h				
19	MW	e	01	04	36
	CL	e			36
19	R	eP	10	52	06
	Pr	eP			06
	CL	eP			07
	BCIS: New Hebrides,				
	0 = 10:39:15				

Date	Sta.	Phase	h	m	s
	November				
18	P	e(P)	15	15	18
	CL	eP			09
		e			26
19	P	eP	21	15	02
		i			11
	PX	eLE		54	
	R	eP		15	07
		e			55
	Pr	iP			10
		e			58
	CL	eP			10
		i			18
	USCGS: 16½ N 172 W,				
	0 = 21:03:35				
21	CL	iP	07	10	52
21	CL	i(P2')	08	12	04
21	R	e	19	13	56
	CL	eP			48
	BCIS: 50.6 N 154.2 E,				
	0 = 19:03:22				
22	P	iPNEZ	02	18	06 c
	PX	eLEZ			47.1
			A		T
		PZ	½		1½
		MH	1½		20
	R	iP	02	18	07 c
	Pr	iP			11
	CL	iPNEZ			08 c
		iPP		21	52
	T	iPNEZ		18	06 c
	Magnitude 6-6¼				
	USCGS: 5 S 151½ E,				
	0 = 02:04:49				
22	P	iP	04	42	27
	R	iP			24
	CL	iP			31
22	P	iP	07	15	35
		ipP		16	01
	R	iP		15	31
		ipP			58
	Pr	eP			26
	CL	iP			39
		ipP		16	05
	T	eP		15	46
		epP		16	13
	h = 100 km.				
	BCIS: 14 S 67½ W,				
	0 = 07:04:33				
22	P	eP	07	30	21
	R	eP			15
	Pr	eP			07
	CL	iP			27
	T	eP			39
	Mexico				
22	P	eP	09	42	12
		eGE			51.5
		eRNZ			54.0
	R	eP		42	11
	Pr	eP			07
	CL	eP			24
	BCIS: 6 S 108 W,				
	0 = 09:34:28				
22	P	eP"	10	02	24
		ePP		04	01
		eSKP		05	52
	R	eP"		02	23
		eSKP		05	48
	Pr	eP"		02	21
		ePP		03	45

(continued)

Date	Sta.	Phase	h	m	s
November (continued)					
22	CL	iP"	10	02	25
		iPP		04	04
		iSKP		05	51
		ePKKP		12	41
Roughly 55 S 25 W,					
0 = 09:43.4					
22	P	eP	13	04	51
	R	eP			57
	Pr	eP			52
	CL	iP			57
	T	eP		05	04
USCGS: 26 S 177 W,					
0 = 12:52:30					
23	P	eP?	05	52	34
	CL	eP			40
BCIS: 15 S 75 W,					
0 = 05:42:08					
23	MW	iP	10	19	24
	Pr	iP			27
	CL	iP			32
24	MW	eP	01	56	12
		i			24
	R	eP			16
		e			28
	CL	eP			03
		i			14
		i			18
Kamchatka					
24	P	iP	04	38	36 d
		i			54
		i		39	03
		iPcP		40	18
	R	iP		38	41 d
		iPcP		40	20
		e			55
	Pr	iPNEZ		38	48
	CL	iPNEZ			31 d
		i			39
		i			46
		iPcP		40	16
		eScP		44	03
		iNEZ			10
		eSN		45	03
		eScSN		48	26
	T	iP		38	23
USCGS: 51½ N 176 W,					
0 = 04:30:24, h = 60 m.					
24	MW	eP	07	30	04
		e(pP)			12
	R	iP			07
		i(pP)			15
	Pr	iP			15
		i(pP)			23
	CL	iP		29	55
		i(pP)		30	02
24	MW	e	08	40	51
	CL	eP			30
		e			44
24	PX	eP	19	00	58
	P	eP		01	02
	PX	ePP		05	00
		iSKSE		11	35
		eSN		12	47
			A		T
		PZ	½		10
		PPZ	2½		8
		PPH	1		9

(continued)

Date	Sta.	Phase	h	m	s
November (continued)					
24	H	eP	19	00	55
	T	eP			58
Magnitude 6¾					
Foreshock of next;					
USCGS: 0 = 18:47:13					
24	P	iP	19	04	07
		i		07	13
	PX	iPPNEZ		08	07
		iSKSNE		14	41
		ePSNEZ		17	05
			A		T
		PZ	2½		10
		PPZ	2		4
		PPH	3		8
		MH	90		20
		MZ	75		20
	Pr	eP	09	04	22
	H	eP			04
	T	eP			01
Magnitude 7.3					
USCGS: 23 N 121½ E,					
0 = 18:50:19					
Pasadena: 23 N 122½ E,					
0 = 18:50:18					
24	P	eP	21	34	45
		e			51
		i			56
		i		35	12
	Pr	eP		34	48
		i		35	05
	H	eP		34	43
	T	eP			38
		i			43
		e			59
Kamchatka					
25	P	eP	01	54	13
		e			33
	Pr	iP			25
25	P	iP	06	24	26
		i(pP)			40
	Pr	iP			35
		i(pP)			50
	T	i			15
		i			25
25	MW	e	09	55	57
	Pr	e			59
25	P	iP	10	05	35
	Pr	iP			42
	H	iP			32
	T	iP			30
CMO: 21 N 146 E					
USCGS: 0 = 09:53:10					
26	P	eP	06	52	17
		ePP		56	25
	PX	eREZ	07	25.3	
			A		T
		MH	2½		20
	Pr	iP	06	52	25
	CL	eP			16
USCGS: 23 N 121½ E,					
0 = 06:38:29					
26	P	eP	18	15	53
	Pr	eP			55
	CL	eP		16	00
	T	eP			03
27	CL	iP	01	34	47 d
	Pr	iP			43

Date	Sta.	Phase	h	m	s
November					
27	CL	eP	07	44	27
		i			38
	T	i			30
27	P	iP	16	29	21
		ipP			45
	Pr	iP			23
		ipP			47
	CL	iP			28
		ipP			53
USCGS: 34½ S 180,					
0 = 16:16:29, h = 100 km.					
Wellington: 35.0 S 179.9 W,					
0 = 16:16:35, h = 220 km,					
magnitude 6¼					
27	P	iP	21	03	21
	Pr	iP			26 c
	CL	iP			27 c
	T	iP			28
USCGS: Santa Cruz Islands,					
0 = 20:50:44					
29	P	eP	05	00	50
		iP"NEZ		04	26 d
		i(pP")			51
		iPP		05	49
		ePKKP		15	05
	Pr	eP		00	59
		eP"		04	28 d
		ePKKP		15	01
	CL	eP		00	41
		iP"			25 d
		e(pP")			51
		ePKKP		15	02
	T	iP"		04	24
		ePKKP		15	06
No surface waves recorded.					
h = 100 km?					
USCGS: 1 N 121 E, 0 = 04:45:44					
29	MW	eP	23	39	41
		e			52
	Pr	eP			32
	CL	eP			46
BCIS: 22½ S 69 W,					
0 = 23:28:06					
30	P	eP	08	01	50
		i		02	51
			A		T
		PZ	0.1		1
		MH	3		20
	Pr	iP	08	01	47
		i		02	51
	CL	eP		01	43
		i		02	54
	T	eP		01	44
Magnitude 5¾					
USCGS: 32 N 41 W,					
0 = 07:51:17					
December					
2	MW	iP	07	40	50
	CL	iP			56
	T	iP			57
BCIS: 25 S 178 E,					
0 = 07:29:09, h = 500 km.					
2	P	iP	19	15	21
	Pr	iP			15
	CL	iP			26
		epP		16	26

(continued)

Date	Sta.	Phase	h	m	s
December (continued)					
2	T	eP	19	15	34
BCIS: 22½ S 66 W,					
0 = 19:04:50, h = 250 km.					
2	CL	eP	20	35	07
2	CL	e	22	21	21
2	MW	iP	22	41	35
	CL	iP			38
3	CL	iP	07	45	48
4	MW	eP	09	00	55
	Pr	eP		01	04
	CL	eP		00	50
	T	eP			43
BCIS: 54.5 N 36.0 W,					
0 = 08:50:50					
4	MW	e	11	54	25
	Pr	e			26
	CL	i(P)			31
		e		55	21
BCIS: Tonga region,					
0 = 11:42.7					
5	CL	eP	14	20	13
	T	eP			14
5	P	iPNEZ	15	54	02
		iNZ			12
		eSE			32
		iSN			36
	R	iP		53	45
		iSNE		54	12
	LJ	iPNZ		53	42
		iS			58
Magnitude 4.5					
33.1 N 115.4 W,					
0 = 15:53:14					
Damage only in a small area near this epicenter (Mulberry district, east of Niland). Felt as far as Yuma and San Diego					
6	P	iPNEZ	14	37	55
			A		T
		PZ	¼		1½
	Pr	iP			48
	CL	eP			57
	T	eP		38	07
USCGS: 5½ N 77½ W,					
0 = 14:29:18					
6	CL	iP	19	32	14
Japan					
6	MW	e	19	39	10
	CL	e			18
6	MW	e	23	00	08
	Pr	e			02
	CL	e	22	59	51
7	P	iP	12	25	51
	CL	iP			59 d
	T	iP		26	03
USCGS: Tonga region,					
0 = 12:14:17					
8	P	i(pP)	03	52	02
	R	eP		51	49
		i(pP)		52	07
		e			13
		e			30
	Pr	e(pP)			12
		i			18
		i			34

(continued)

Date	Sta.	Phase	h	m	s	
December (continued)						
8	CL	eP	03	51	42	
		i(pP)			58	
	T	i		52	06	
		i(pP)		51	52	
h = 60 km?						
USCGS: 43½ N 146 E,						
O = 03:40:25, CMO: 43.5N, 146.2E						
8	P	eP'	04	34	23	
		iP'			32	
		i			45	
		iP2'		36	11	
		i			50	
	PX	iPP		39	54	
		i		40	05	
		i!			35	
		e		43	03	
		iPcPP'		43	12	
		iPPP		44	26	
		iSKKSE		46	57	
		eSKSPE		51	24	
		eSSE	05	01.7		
		iSSSNE		09	30	
		eGE		27		
			A		T	
		P'Z	14		18	
		P'H	3		4	
		PPZ	40		12	
		PPH	20		12	
		SSSH	400		50	
		MH	150		20	
	R	iP'	04	34	24	
		iPP		39	58	
		i		41	29	
		i		43	05	
		iPcPP'			16	
	Pr	iP		34	24	
		iP2'		36	02	
		ePP		39	31	
		iPP		40	06	
		iPcPP'		43	31	
	CL	iP'		34	24	
		i			32	
		iP2'		35	58	
		iPP		39	59	
		i		40	57	
		iPcPP'		43	16	
	T	iP'		34	24	
		i			20	
		i		35	22	
		iP2'Z		36	05	
		iPP		39	59	
		iSKKSN		46	50	
Magnitude 7¾						
USCGS: 34 S 56½ E,						
O = 04:14:20, h = 100 km±						
Pasadena: 34 S 57 E,						
O = 04:14:12; shallow						
8	MW	eP	12	37	34	
	CL	iP			28	
8	P	iP	13	58	53	
	R	eP			54	
	Pr	iP			54	
	CL	iP			59	

Date	Sta.	Phase	h	m	s	
December						
8	P	iP	14	11	09	d
		ipP			47	
	R	iP			12	d
		ipP			49	
	Pr	iP			15	d
		ipP			52	
	CL	iP			13	d
		ipP			50	
	T	iP			12	
		epP			49	
USCGS: 6 S 154½ E,						
O = 13:58:10, h = 100 km.						
9	P	e	02	58	14	
9	MW	eP	03	03	19	
	Pr	eP			23	
	CL	iP			28	
	T	iP			31	
9	MW	eP	05	40	11	
	R	eP			15	
	Pr	eP			23	
	CL	eP			02	
9	MW	e?	18	01	23	
	CL	iP			21	
		e(pP)			30	
	T	iP			22	
		i(pP)			32	
9	CL	e	19	05	10	
		i			27	
10	CL	eP	10	43	47	
		e			56	
Near Apia						
12	R	eP	01	16	34	
		e			41	
	Pr	eP			31	
		e			40	
	CL	eP			35	
		e			43	
USCGS: 19 N 62 W,						
O = 01:07:26						
BCIS: 18.3 N 61.5 W,						
O = 01:07:21						
12	P	iPNEZ	01	43	15	c
		ipPNEZ			34	
		isPNEZ			44	
		iPP		44	10	
		isPP			30	
	PX	iPcP		46	17	
		iN			46	
		i			57	
		iSNE		47	51	
		iN		48	06	
		eGN		49.8		
		iGNE		50.1		
		iN		52	40	
		iE			51	
			A		T	
		PZ	2		2	
		PH	4		3	
		pPZ	3		2	
		pPH	15		4	
		sPZ	4		2	
		PPZ	5		4	
		PPH	12		4	

(continued)

Date	Sta.	Phase	h	m	s	
December (continued)						
12			A		T	
		SH	12		6	
		MH	250		45	
		MH	140		20	
	R	iPNEZ	01	43	09	c
		ipPNEZ			28	
		isP			37	
		i		46	31	
		i			53	
	Pr	iPNEZ		43	03	
	CL	iPNEZ			20	
		iNEZ			22	c
		i			35	
	T	iPNEZ			33	
		ipPNZ			51	
Magnitude 6¾. Depth 90km±						
USCGS: 17 N 94½ W,						
O = 01:37:34, h = 100 km.						
BCIS: 16.7 N 94.6 W,						
O = 01:37:35, h = 100 km.						
12	MW	e	02	15	47	
		e		16	21	
	CL	e		15	45	
		e		16	18	
12	MW	e	21	51	14	
	CL	e?			01	
		e			10	
USCGS: O = 21:39:07						
CMO: 35.2 N 140.5 E						
13	MW	eP	01	27	51	
		i			54	
	R	eP			52	
	Pr	eP			47	
		i			51	
	CL	iP			02	
	T	eP			11	
Southeast Pacific						
14	P	i(P")	02	26	59	
		i		29	17	
	R	i(P")		27	00	
	Pr	i(P")			01	
	CL	i(P")		26	58	
		i		29	15	
	T	i(P")		26	57	
East Indies. Deep?						
15	MW	eP	05	45	24	
	R	eP			25	
	Pr	iP			26	c
	CL	iP			31	c
15	MW	eP	06	44	45	
	Pr	eP			48	
		e			59	
	CL	eP			54	
		e		45	08	
Tonga region?						
15	P	eP	10	01	15	
	R	iP			20	
		e			34	
		iPcP		03	07	
		e			22	
	Pr	eP		01	23	
		i			26	
		i			35	

(continued)

Date	Sta.	Phase	h	m	s	
December (continued)						
15	CL	eP	10	01	06	
		i			10	
		e			24	
		ePcP		02	59	
		i		03	03	
		e			18	
	T	iP		01	01	
		iPcP		03	00	
USCGS: 52 N 173 W,						
O = 09:53:14						
16	R	iP	09	18	57	
	CL	iP		19	01	
	T	iP			08	
16	P	ePNEZ	12	38	06	
		i(pP)			23	
	R	eP			08	
		e(pP)			25	
	Pr	iP			07	
		e			19	
		i(pP)			23	
	CL	iP			12	
		e			24	
		i(pP)			27	
	T	eP			15	
		e(pP)			31	
USCGS: 28½ S 178 W,						
O = 12:25:30, h = 60 km±						
16	P	eP	19	26	31	
		ePP		29	54	
	PX	eLEZ		54.0		
	R	eP		26	35	
	Pr	eP			35	
	CL	eP			38	
	T	eP			38	
USCGS: 18 S 168½ E,						
O = 19:13:43						
17	P	eP	12	41	43	
	R	eP			45	
	Pr	eP			46	
	CL	eP			52	
	T	eP			52	
USCGS: 18 S 173 W,						
O = 12:30:08						
17	MW	eP	17	58	40	
		e		59	46	
		i	18	02	18	
		eScP		04	35	
	R	iP	17	58	33	
		iPcP	18	00	57	
		iScP		04	39	
	Pr	iP	17	58	27	
		i		59	32	
		iScP	18	04	32	
	CL	iP	17	58	42	
		i		59	10	
		e			43	
		iPcP	18	01	02	
		iScP		04	39	
	T	iP	17	58	52	
		e		59	20	
		iPcP	18	01	07	
		eScP		04	41	
USCGS: 11 N 86½ W,						
O = 17:51:34, h = 100 km.						

Date	Sta.	Phase	h	m	s
	December				
18	Pr	iP	00	10	50
	CL	iP			29
		i(PcP)		13	04
	T	iP		10	23
18	P	iPNEZ	14	20	45 c
		e		21	00
		ipP			03
		e			18
	PX	ePPNE		23	59
		i(S)E		30	50
		iSNE			52
		eNE		31	34
		eGN			40.4
		iR			42.9
			A		T
		PZ	$1\frac{1}{4}$		2
		PH	1		7
		SH	3		7
		MH	6		20
	R	iPNEZ	14	20	49 c
		ipP		21	07
	Pr	iPNEZ		20	48 c
		iNEZ		21	05
	SB	iPNEZ		20	42 c
		ipP			59
	CL	iPNEZ			53 c
		ipPNZ!		21	11
		i			23
		i			40
		eP'P'		48	12
	T	iPNEZ		20	56 c
		i		21	16
		i			23
	Magnitude $6\frac{3}{4}$				
	USCGS: 19 S $174\frac{1}{2}$ W,				
	0 = 14:09:03, h = 60 km.				
18	P	eP	14	43	29
	Pr	eP			30
	CL	eP			35
	Aftershock?				
18	P	iP	17	01	35
		ipP			53
	R	iP			40
		ipP			58
	Pr	iPNEZ			46 c
		ipPNEZ		02	04
	CL	iPNEZ		01	30 c
		ipPEZ			48
		iPcP		03	21
		i			32
		iScP		06	47
	T	iP		01	21
		ipP			38
	h = 90 km±				
	USCGS: 52 N $174\frac{1}{2}$ W,				
	0 = 16:53:26				
18	MW	i(P)	20	29	35
		e		30	43
	R	e(P)		29	37
	CL	i(P)			41
		e		30	50
	T	i(P)		29	44
19	R	iP	21	23	00
	CL	iP			02

Date	Sta.	Phase	h	m	s
	December				
21	PX	eL	09	30	
	MW	e	08	56	07
	Pr	e			10
	CL	e		55	52
		e		56	22
	T	e			35
	BCIS: 27.0 N 99.7 E,				
	0 = 08:37:27				
21	P	iP	18	17	34
		i			46
	R	iP			36
		i			42
		i			49
	Pr	iP			42
	CL	iP			28
		i			34
		i			41
	USCGS: 49N 156 E,				
	0 = 18:07:06				
21	P	i	18	19	59
	CL	i			54
	Aftershock				
21	Pr	e?	23	43	35
	CL	iP			50
	T	iP			43
22	MW	e	00	27	54
	Pr	e			48
	CL	e		28	05
	T	e			14
	Near Apia				
22	P	ePEZ	15	00	28
		i			38
	PX	eLEZ		30	
	R	eP		00	29
		i			42
	Pr	iP			33
		i			43
	CL	eP			31
		i			42
	T	iP			31
	USCGS: 1 S 155 E,				
	0 = 14:47:36				
23	P	eP	00	33	11
		e(pP)			25
	PX	eLNEZ	01	00	
	R	eP	00	33	13
	Pr	eP			13
		i			31
	CL	eP			18
		e(pP)			33
	T	eP			20
	USCGS: $24\frac{1}{2}$ S 177 W,				
	0 = 00:21:06, h = 100 km.				
23	P	eP'	06	49	21
	R	eP'			22
	Pr	eP'			21
	CL	eP'			21
	T	eP'			26
	BCIS: 52.3 S 140.0 E,				
	0 = 06:30:20				
23	P	iPNEZ	07	06	33 c
		i(sP)		07	14
	PX	eLEZ			27.9
			A		T
		PZ	0.3		1
		PH	0.2		1

(continued)

Date	Sta.	Phase	h	m	s
	December (continued)				
23	R	iP	07	06	28 c
		e(sP)		07	09
	Pr	iP		06	24 c
		i			36
		i(sP)		07	05
		i(PcP)			29
	CL	iPNEZ		06	30 c
		e(sP)		07	10
		i(PcP)			33
	T	iP		06	35 c
	USCGS: 15 N 61 W,				
	0 = 06:57:20, h = 100 km.				
23	MW	eP	11	39	57
	Pr	eP		40	11
	CL	eP		39	50
	T	eP			42
	USCGS: 49 N $155\frac{1}{2}$ E,				
	0 = 11:29:31, h = 60 km.				
23	P	eP	18	40	08
		e			17
	CL	eP		39	53
	T	iP			47
	USCGS: 18:28:42				
	BCIS: 41 N 146 E				
23	P	iP	19	23	04
		e(pP)			17
	R	iP		22	58
		e(pP)		23	11
	Pr	iP		22	53
		i		23	06
	CL	iP		23	08
		i(pP)			22
		iPcP		25	46
		i		26	01
	T	eP		23	18
	Central America?				
23	Pr	eP	22	21	52
	CL	eP		22	04
	T	iP			11
	BCIS: 9.1 N 123.0 E,				
	0 = 22:09:42				
23	MW	iP	23	37	06
	Pr	iP			09
	CL	iP			13
24	P	ePNZ	01	06	31
		eSNEZ		07	28
	Pr	eP		05	56
		i		06	13
		iS		07	00
	LJ	eP		06	01
		iS			51
	Magnitude $4\frac{1}{2}$.				
	Gulf of California				
24	P	ePNEZ	05	55	01
		e			19
	PX	e(S)		58	29
		eLNE			58.6
			A		T
		PZ	0.4		3
		MH	7		20
	R	eP		54	55
	Pr	eP			44
		e			49
		i		55	02
	CL	eP			14
	T	eP			28
	BCIS: 19.5 N 106.5 W,				
	0 = 05:50:56				

Date	Sta.	Phase	h	m	s
	December				
24	MW	eP	06	18	25
	Pr	eP			35
	CL	iP			19
		iPcP		20	11
	T	eP		18	03
	USCGS: Aleutian Islands,				
	0 = 06:10:39				
24	P	iP	10	33	58
	Pr	iP			47
	CL	iP		34	02
	T	iP			11
	BCIS: 5.4 N 82.2 W,				
	0 = 10:25:52				
24	P	iP	14	54	16
	Pr	eP			20
	CL	iP			15
	T	iP			11
	Felt at Guam.				
	USCGS: 0 = 14:41:26				
	BCIS: $15\frac{1}{4}$ N $144\frac{1}{4}$ E				
25	P	iPEZ	00	35	07 c
		epP			53
	R	iP			10 c
	Pr	iP			16 c
		ipP		36	03
	CL	iP!		35	01 c
		ipP			47
	T	iP		34	53 c
		epP		35	40
	h = 200 km.				
	Kamchatka				
25	P	eP2'	06	11	17
	PX	eLNZ	07	25	
	R	eP'	06	09	49
		e		12	08
	CL	eP'		09	38
		iP2'		11	13
		ePP		15	03
		e		22	00
	T	eP'		09	37
	BCIS: 0 = 05:49:40;				
	Indian Ocean, aftershock				
	of December 8				
25	MW	e	11	08	52
	R	e		09	08
	Pr	e			07
	CL	eP		08	49
		e		09	01
	Kurile Islands				
25	MW	e	11	14	18
	R	e			20
	Pr	e			26
	CL	eP			13
		i			25
	T	e			13
	Kurile Islands?				
25	P	iP	14	40	03
		epP			47
	R	iP			00
		ipP			44
	Pr	iP		39	56
		epP			40
	CL	iP		40	08
		epP			51

(continued)

Date	Sta.	Phase	h	m	s	
	December (continued)					
25	T	iP	14	40	15	
		epP			59	
	BCIS: 28 S 67 W,					
	0 = 14:28:25, h = 250 km.					
25	P	iPNEZ	15	44	58	d
		i		45	13	
		ipP		46	57	
		iPP		48	41	
			A		T	
		PZ	0.3		1	
	R	iP	15	45	02	d
		ipP		46	56	
	Pr	iP		45	03	d
		epP		47	01	
	CL	iPNZ		45	02	d
		ipP		47	01	
	T	iP		45	01	d
		epP		47	02	
	USCGS: 8 S 158 E,					
	0 = 15:32:59, h = 600 km.					
25	P	eP	16	08	52	
		iEZ			56	
		ipPEZ!		09	03	
	PX	eLEZ		28		
	R	eP		08	55	
		ipP		09	08	
	Pr	eP		08	59	
		i		09	06	
		ipP			13	
	CL	iPNEZ		08	46	
		i			52	
		ipPNZ!			58	
	T	eP			40	
		ipP			51	
	USCGS: 49 N 155½ E,					
	0 = 15:58:28, h = 60 km.					
26	P	iPNEZ	00	47	17	c
		iSE			33	
	R	iPNEZ!			18	c
		iSNE			35	
	Pr	iPNEZ!			17	
		iS			34	
	LJ	iPN!			11	
	SB	iPNZ			26	
	CL	iP!			41	c
	H	iP			46	
	T	iP			58	
	Magnitude 5.9					
	32°49' N. 118°21' W.,					
	0 = 00:46:54					
	Felt along the coast from Ventura to San Diego; less strongly inland.					
26	P	eP	03	16	45	
	R	eP			49	
	Pr	iP			56	
	CL	iP			38	
		i		18	37	
		iScP		22	16	
	T	iP		16	30	

Date	Sta.	Phase	h	m	s
	December				
26	P	eP	06	34	35
	R	eP			40
	Pr	eP			53
	CL	eP			21
	T	eP			01
	USCGS: 43½ N 127 W,				
	0 = 06:31:46				
26	MW	eP	07	30	13
	R	eP			19
	CL	eP			02
	T	eP		29	47
26	PX	eLE	11	03.9	
	MW	e	10	25	54
	Pr	e		26	10
	CL	e		25	53
	T	e			35
	USCGS: 32 N 91 E,				
	0 = 10:06:57				
	Poona: 32.0 N 90.5 E,				
	0 = 10:06:54				
26	P	eP	14	36	13
	R	eP			15
	Pr	eP			16
	CL	eP			21
	T	eP			23
	Near Apia				
26	MW	eP	16	08	06
	Pr	eP			20
	CL	ePN		07	58
	T	eP			51
26	P	eP	16	44	40
		ePP		48	50
	Pr	eP		44	45
	CL	iP			35
	T	eP			28
	BCIS: 41¼ N 95½ E,				
	0 = 16:30:55				
26	P	eP	17	03	47
		i		04	01
	R	eP		03	57
	Pr	iP			45
	CL	iP			41
		i			47
	T	eP			34
		i			45
	USCGS: 49½ N 156 E,				
	0 = 16:53:23				
26	MW	e	17	32	38
		i			51
	CL	eP			34
	T	eP			25
		i			38
	USCGS: 50½ N 156 E,				
	0 = 17:22:20				
26	MW	eP	17	38	13
		i			25
	CL	eP			03
		i			16
	T	i			08

Date	Sta.	Phase	h	m	s
	December				
26	P	eP	19	44	16
		i			28
	R	eP			18
		e			31
	CL	iP			09
		i			22
	T	eP			02
		i			12
	Kurile Islands				
26	MW	eP	20	36	43
		e			57
	R	eP			47
		e			59
	Pr	eP			48
	CL	iP			49
		e		37	01
26	CL	eP	23	29	09
27	MW	e	00	29	53
	R	e			46
	Pr	e			45
	CL	e(P)		30	04
27	Pr	eP	02	00	43
27	P	eP	02	32	13
		e			25
	R	eP			15
		e			27
	Pr	eP			20
	CL	eP			05
		i			18
	USCGS: 49 N 156 E,				
	0 = 02:21:46				
27	MW	e	03	31	00
	R	e			02
	Pr	e			04
	CL	i			04
	T	e			05
27	MW	e	04	05	20
	CL	eP			01
		e			14
27	MW	e	11	03	52
	Pr	eP			38
	CL	eP			51
		e		04	03
27	MW	e	11	12	42
	CL	e			58
27	P	eP	16	32	39
		e			53
	R	e			56
	CL	eP			34
		e			47
	BCIS: Kurile Islands,				
	0 = 16:22:16				
27	MW	eP	16	46	51
	CL	eP			45
	T	eP			41
	USCGS: Kurile Islands,				
	0 = 16:36:25				
27	MW	eP	19	02	00
	CL	eP		01	54
27	MW	e	21	32	17
	Pr	e			02
	CL	e			24

Date	Sta.	Phase	h	m	s	
	December					
28	P	ePNZ	02	50	21	
		eSE		51	09	
	R	eP		50	25	
	Pr	eP			36	
	SB	eP			19	
		eS		51	02	
	CL	iPNEZ!		49	52	
	H	iPEZ			54	
		iSNE		50	13	
	T	iPNZ!		49	38	
		iSNE			47	
	Magnitude 5.2					
	37°34' N, 118°35' W					
	VI at Owens River Gorge					
	Felt from Bishop to Fresno					
28	MW	eP	03	01	35	
	CL	iP			35	
28	Pr	eP	04	42	02	
28	P	iPNEZ	09	25	44	c
		i(pP)NEZ!			54	
	PX	iNZ		26	23	
		i		27	36	
		iSE		30	09	
		iN			20	
		i		31	02	
		eGE		31.5		
		eGNE		31.7		
			A		T	
		PZ	20		5	
		PH	18		5	
		(pP)Z	25		4	
		(pP)H	40		4	
		SH	30		6	
		MH	300		14	
	R	iP	09	25	38	c
		i(pP)NEZ			49	
		e		27	17	
	Pr	iPNEZ		25	31	c
		i			38	
		i			49	
		i		26	01	
	LJ	iPNZ		25	31	
	CL	iPNEZ			51	c
	T	iP		26	04	
	Magnitude 6¾-7					
	USCGS: 17 N 98½ W,					
	0 = 09:20:25					
28	T	i(P)	15	54	15	
28	P	iPNEZ!	16	08	33	
		iPcP		09	03	
		epP		10	33	
			A		T	
		PZ	0.4		1	
		PH	0.2		1	
	R	iP	16	08	29	
		iPcP		09	01	
		epP		10	30	
	Pr	iP		08	24	
		iPcP			59	
		epP		10	25	

(continued)

Date	Sta.	Phase	h	m	s
	December (continued)				
28	CL	iP	16	08	37
		epP		10	37
	T	iP		08	45
		i			51
		i(PcP)		09	01
	USCGS: 10 S 71½ W, O = 15:59:06, h = 650 km.				
29	P	eP	10	49	05
	R	eP			02
	CL	eP			14
	T	eP			23
	BCIS: 31 S 96 W, O = 10:38.0				
29	P	iP	12	58	49
	R	iP			43
	Pr	eP			36
	CL	iP			58
	T	iP		59	10
	USCGS: 18½ N 101 W, O = 12:53:55				
30	P	eP	17	49	01
	R	iP			05
		i			35
	T	eP		48	40
		i		49	09
	USCGS: 62½ N 146 W, O = 17:42:28, h = 100 km.				

Date	Sta.	Phase	h	m	s
	December				
30	P	iPNEZ	22	28	13
	PX	eR			46.6
			A		T
		PZ	o.4		2
	R	eP	22	28	09
	Pr	eP			06
	T	eP			32
	USCGS: 28 S 114½ W, O = 22:17:51				
30	P	iPNZ	22	33	25
	PX	eSNE		41	50
		eGE			48.4
		eR			51.9
	USCGS: 28 S 114½ W, O = 22:23:05				
31	P	iPNEZ	20	12	30
	R	iP			14
	Pr	iP			09
	T	iP			36
	USCGS: 13 N 90½ W, O = 20:05:40				

Addenda for 1951:
Page 15, February 13, 22h

	A	T
PZ	2	2
PH	4	4
SH	70	20
MH	400	20
MZ	450	20

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January 2, 1953

The following changes in stations and instruments have been made since those listed on page 3 of this Bulletin for 1951

Palomar - long period Z continuous recording ended Nov. 20, 1951

Barrett - 32° 40.8' N 116° 40.3' W, h = 510 meters. Installed as temporary station, January 17, 1952. Short-period Benioff Z. To be equipped as a permanent station in 1953.

Santa Barbara - On March 11, 1952 installation was modified to record on film; short-period Benioff Z, short-period torsion N and E. Former torsion N continued recording on paper sheets until discontinued Dec. 23, 1952.

La Jolla - Recording reduced on April 7, 1952 to one short-period torsion instrument (N). Station discontinued July 30, 1952.

The following units were installed in consequence of the Kern County earthquakes of July 21 ff., 1952; all with short-period Benioff Z:

First unit, at Chuchupate July 21 - Nov. 19; at Fort Tejon, Nov. 21 ---

Second unit, at Havilah Aug. 5 - Sept. 4; at Knox Ranch Sept. 4 - Nov. 10; at Williams Ranch Nov. 11 ---

Third unit, at Woody Aug. 5 ---. This is being equipped as a permanent station.

Fourth unit, at King Ranch, Oct. 16 ---

Coordinates:	N. Lat.	W. Long.	h (meters)
Chuchupate	34° 48.5'	119° 00.7'	1590
Fort Tejon	34 52.4	118 53.7	980
Havilah	35 30.6	118 31.0	990
Knox Ranch	35 29.0	118 31.7	1090
Williams Ranch	35 17.9	118 36.7	430
Woody	35 42.0	118 50.6	500
King Ranch	35 19.7	119 44.7	670

Portable seismographs were operated at 12 additional locations in Kern County, for durations of a few hours to a few days each.

C. F. Richter

Larger shocks of 1951

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

Date	Time	Lat.	Long	Depth	Magnitude
Jan. 6	07 51 31	7½ N	80½ W	90	6.9
Feb. 13	11 55 50	15 S	175¼ W	250	6.9
Feb. 13	22 12 57	56 N	156 W	normal	7.1
Feb. 17	21 07 07	7 S	146 E	180?	7.3
Mar. 5	20 11 48	28½ N	128 E	170	6.9
Mar. 10	21 57 29	15 S	167 E	130	7.2
Mar. 23	21 38 51	30½ S	180	270	7.0
May 1	05 02 40	50½ S	149 E	normal	7.0
May 21	08 27 20	6 S	154½ E	150	7.0
July 11	18 21 52	27½ N	139½ E	480	6.9
July 18	09 06 16	1 N	27 W	normal	6.9
Aug. 21	10 57 00	19¾ N	156 W	60±	6.9
Oct. 11	01 37 35	5½ S	152 E	60	6.9
Oct. 21	21 34 14	23¾ N	121½ E	normal	7.3
Oct. 22	03 29 27	23¾ N	121¼ E	normal	7.1
Oct. 22	05 43 01	24 N	121¼ E	normal	7.1
Nov. 6	16 40 05	47¾ N	154¼ E	normal	7.2
Nov. 18	09 35 47	301½ N	91 E	normal	8.0
Nov. 24	18 50 16	23 N	122½ E	normal	7.3
Dec. 8	04 14 12	34 S	57 E	normal	7.7
Dec. 28	09 20 25	17 N	99 E	60?	6.9