H A R V A R D U N I V E R S I T Y
S E I S M O G R A P H S T A T I O N

Bulletin Number 32

January 1, 1949, through June 30, 1949

Part A of Paper Number 112, published under the auspices of the Committee on Experimental Geology and Geophysics and of the Division of Geological Sciences at Harvard University

STATION CONSTANTS

Latitude: 42° 30' 26" North
Longitude: 71° 33' 45" West
Altitude: 180 meters

INSTRUMENTS

Vertical, North-South, and East-West Benioff long- and short-period variable reluctance seismographs with mass of 112.7 kg., galvanometric registration, and magnetic damping.

Three-component L-B Seismograph with displacement type transducer and ink registration.

Normal Operating Constants

Instrument	T_o sec.	T_g sec.	% Critical Damping	Drum Speed	V_s	Displacement for acceleration of 10^{-6} gravity
ZSP	1.0	0.2	.6	60 mm/min.		15 mm
NSP	1.0	0.2	.6	60 mm/min.		15 mm
ESP	1.0	0.2	.6	60 mm/min.		15 mm
ZLP	1.0	14.0	.6	30 mm/min.		12 mm
NLP	1.0	14.0	.6	30 mm/min.		12 mm
ELP	1.0	14.0	.6	30 mm/min.		12 mm
L-B (Z	1.0	0.1	.5	60 mm/min.	200,000	
L-B (N	1.0	0.1	.5	60 mm/min.	200,000	
L-B (E	1.0	0.1	.5	60 mm/min.	200,000	

NOTE

This station has been listed by the International Seismological Summary as Oak Ridge, because it is located at the Oak Ridge Observatory of Harvard College. Since the world-wide advertisement of the place name Oak Ridge, Tennessee, in connection with manufacture of the Atomic Bomb, this nomenclature has led to confusion. The correct designation of this station is the Harvard Station, because it is operated by Harvard University as the direct successor to the original Harvard Station in Cambridge, Mass., and it is the Town of Harvard, Mass.

MAIL ADDRESS

Harvard Seismograph Station
c/o Prof. L. Don Leet
Harvard, Massachusetts, U.S.A.

L. Don Leet
Seismologist in Charge

Date	Phase	Time(GMT)	Remarks
1949			
Jan. 9	iP	10-45-06.5	STL: H = 10-34-54
	ipP	59	22° S 66° W
			depth = 250 km
			dist. = 7200 km
Jan. 23	eP'	06-50-41	USCGS: H = 06-31.2
	i	45.5	9° S 94° E
	i	54	(Indian Ocean about 600
	e(pP')	51-13	miles SW of Sumatra)
	e	52 ca	depth = 100 km ca
	eLR	07-48 ca	dist.(meas)= 16,000 km (144°)
			M = 7 ca (Pasadena)
Jan. 23	eP	03-23-47	USCGS: H = 03-18.4
	eL	30 ca	27.3° N 47.4° W
			(Atlantic Ocean,1100 miles
			E of Bermuda)
			dist.(meas) = 2900
Feb. 5	iP	20-23-32	USCGS: H = 20-18.4
	iS	27-35	19° N 70° W
	e_{III}	44-14	(near N coast of
			Dominican Republic)
			dist. = 2600 km
Feb. 13	iP	18-43-14	USCGS: H = 18-24.3
	i	23	33.5° S 177.5° W
	e	19-10.5	(Kermadec Islands Region)
	eLR	23 ca	dist.(meas) = 13,700 km (123.5°)
			M = 7 (Pasadena)
Feb. 13	iP	20-53-32	Blast or Local
	iS	54-01	dist.(calc) = 240 km
Feb. 14	iP	13-14-50	USCGS: H = 13-07.5 Mexico)
	eS	20-45	13.5° N 105° W (off coast/
	eL	28 ca	dist.(meas) = 4100 km
			Aftershocks: 19-24.6
			Feb. 15 03-52.5
Feb. 15	iP	14-14-07	USCGS: H = 14-09.0
	eS	18-11	19° N 70° W
			(near N coast of
			Dominican Republic)
			dist.(meas) = 2500 km
Feb. 18	eP	09-06-51	USCGS: H = 09-01.6
	eS	10-48	19° N 69-1/2° W
			(near N coast of
			Dominican Republic)
			dist.(meas) = 2600 km

Date	Phase	Time(GMT)	Remarks
1949			
Feb. 23	iP	16-21-23	USCGS: H = 16-07.9
	e	33.6	39.5° N 35° E
	e	42	(eastern Turkistan)
	eLR	52.4	dist.(meas)= 10,600 km (95.5°)
Mar. 13	i	12-54-46	
	i	55-13	
	i	54	
Mar. 13	i	13-53-34	USCGS: H = 13-43.0
	i	39	21.5° S 68° W
	i	57	(northern Chile)
			depth = 100 km ca
			dist.(meas) = 7100 km
Mar. 16	iP'	22-34-13	USCGS: H = 22-15.1
	i	29	6° S 151.5° E
	eLR	23-19	(New Britain region)
			dist. = 14,200 km (128°)
Mar. 17	iP'	21-24-12	USCGS: H = 21-05.1
	e	36.2	Aftershock of Mar. 16, 22-15.1
	eLR	22-04	
Mar. 23	eP	09-35-23	H(calc) = 9-30-14
	i	36	dist.(calc) = 2650 km (23.9°)
	eS	39-35	
	i	43	
	i	52	
	eLR	46.0	
	eIII	56-44	
	i	57-42	
	i	49	
Mar. 24	i	21-03-14	Local blast?
Mar. 24	iP	21-04-29	USCGS: H = 20-56.3
	eS	10-39	42° N 126.5° W
	eLR	16.0	(Pacific Ocean off coast of
			Cape Mendocino, Calif.)
			Dist.(meas) = 4500 km
			M = 6-1/2 (Tucson)
Mar. 27	iP'	06-53-16	USCGS: H = 06-34.1
	ePP	55-34	4° N 127.5° E
	iPHS	56-46	(Celebes Sea, off S coast
	eSKKKS	07-02-40	of Mindanao)
	eSS	13-18	dist.(meas) = 14,600 km
	$e(S_cSS_cS)$	15-10	M = 6-3/4 (Tucson)
	eLR_c	40 ca	
Mar. 29	i	15-33-13	

Date	Phase	Time(GMT)	Remarks
1949			
Mar. 29	iP	20-41-52	Blast: H(calc) = 20-41-39
	iS	42-02	dist.(calc) = 80 km
	iLR	07	
Apr. 13	iP	15-20-45	USCGS: H = 15-12.9
	eL	31.5	11° N 41° W
			(Atlantic Ocean, off coast of NE South Carolina)
			dist.(meas) = 4500 km
Apr. 13	iP	20-02-33	USCGS: H = 19-55-41
	ePP	03-56	47.1° N 122.7° W
	eS	08-03	(between Olympia and Tacoma, Washington)
	eL	13.0	deeper than normal
			dist.(meas) = 4000 km
			M = 6-3/4-7 (Pasadena)
Apr. 17	iP	00-15-25	Local: H(calc) = 00-15-10
	iS	36	dist.(calc) = 90 km, 56 miles
Apr. 19	iP	15-31-40	USCGS: H = 15-19.2
			43° N 154° E
			(Kurile Islands Region)
			depth greater than normal
			dist.(meas) = 9100 km (82°)
Apr. 20	iP	03-41-10	USCGS: H = 03-29.0
	ipP	26	33° S 72.5° W
	ePP	44-30	(Chile, Province of Bio Bio)
	iS	51-10	Heavy casualties and
	esS	38	property damage at
			Angol and Traiguen
			depth = 70 km
			dist.(meas) = 8900 km
			M = 7-1/2 (Pasadena)
			7-1/4 (Tucson)
			7.0 (Strasbourg)
Apr. 23	iP	11-35-04	USCGS: H = 11-15.5
	ipP	13	3° S 120° E
	iPP	33-21	(Flores Sea)
			dist.(meas) = 16,200 km
			M = 7 (Pasadena)
Apr. 25	iP	14-05-11	USCGS: H = 13-55.0
	ipP	40	20° S 69.5° W
	iS	13-29	(Coast of N. Chile)
	isS	14-12	depth = 100 km
	eScS	48	dist-(meas) = 6900 km
	e(sScS)	15-42	M = 7-1/2 (Pasadena)
	eSS	17-20	

Date	Phase	Time (GMT)	Remarks
1949			
Apr. 30	eP'	01-42-29	USCGS: H = 01-23.4
	iP'	33	6° N 126° E
	i	43-05	(near S coast of Mindanao)
	i	15	dist.(meas) = 14,400 km
	i	21	M = 7-3/4 (Wellington)
	i	29	
	e	44-34	
	i	41	
	ePP	45.0	
	i	40	
	iPKS	46-40	
	eSKSP	54-21	
	eSS	02-01-54	
	eLR	21 ca	
May 2	i	05-54-02	
May 2	i	12-32-48	
	eL	44 ca	
May 3	iP	06-08-47	USCGS: H = 05-56.7
	iPcP	50	49° N 153.5° E
	ipP	09-21	(Kurile Islands)
	iS	18-42	depth = 100 km ca
	esS	19-36	dist.(meas) = 9000 km
			M = 7 ca (Pasadena)
May 7	iP	13-12-21	
May 8	iP	21-34-44	USCGS: H = 21-24.6
	ipP	35-16	20° S 71° W
			(off coast of N Chile)
			depth = 120 km
			dist.(meas) = 6900 km (62°)
			M = 6-3/4 (Pasadena)
May 9	iP'	13-55-35	USCGS: H = 13-36.3
	iPP	59-00	5° N 95° E
	eL	14-46	(near coast of NW Sumatra)
			dist.(meas) = 14,600 km (131.5°)
			M = 6-3/4 (Pasadena)
May 10	eP	00-31-55	USCGS: H = 00-24.7
	ePP	33-22	19° N 106.5° W
	eL	48	(off W coast of Mexico)
			dist.(meas) = 4200 km (38°)
			M = 6-1/4 (Pasadena)
May 10	eL	03-35	USCGS: H = 03-12.2
			17° N 109° W
			(off W coast of Mexico)
			dist.(meas) = 4600 km
			M = 5-1/4 (Pasadena)

Date	Phase	Time(GMT)	Remarks
1949			
May 15	eLQ	05-49.0	
	eLR	51.5	
May 16	iP	04-16-49	
May 16	iP	04-52-01.5	
	eL	05-52	
May 19	iP	05-25-12	
May 21	e	22-05-40	USCGS: H = 21-40.0
	eLQ	31.5	27° N 142° E
	eLR	35	(off E coast of Honshu, Japan)
			dist.(meas) = 10,600 km
			M = 6-1/2 (Pasadena)
May 30	iP	01-43-09	USCGS: H = 01-32.9
	ipP	35	20° S 69.5° W
	iPcP	48	(coast of N Chile)
	e	58	depth = 100 km
	eS	51-28	dist.(meas) = 6900 km
			M = 7 (Pasadena)
June 11	iP	07-41-24	USCGS: H = 07-34.8
	e	42-38	12.5° N 87.5° W
	eL	52	(near W coast of Nicaragua)
			deeper than normal
			dist.(meas) = 3650 km
June 12	iPI	18-02-41	USCGS: H = 17-52.4
	epP	04-42	Aftershock 55.8
	iPII	06-08	27° S 64° W
	e	11-06	(N. Argentina)
			depth = 600 km
			dist.(meas) = 7700 km
			M = 7 (Pasadena)
June 13	iP	02-09-13	USCGS: H = 01-53-55
			27° S 64° W
			(Argentina)
			depth = 600 km
			dist.(meas) = 7700 km
June 24	iP'	22-58-15	USCGS: H = 22-33.6
	iPP	23-01-30	7° S 105° E
	e	13-04	(off SW coast of Java)
	eLR	54 ca	dist.(meas) = 16,200 km
			M = 7 (Pasadena)

Date	Phase	Time (GMT)	Remarks
1949			
June 25	eL	20-15 ca	USCGS: H = 19-17-05 Tonga Islands dist. = 12,600 km
June 26	iP'	09-00-40	USCGS: H = 03-41-16
	ePP	03-14	Celebes Islands Region
	eLR	50 ca	M = 6-1/2 (Wellington)
June 26	iP	21-31-51	USCGS: H = 20-59-23 Region of Kamchatka
June 28	eP	20-14-22	USCGS: H = 20-03-29
	eL	22 ca	24° N 45° W (N. Atlantic Ocean)

Harvard, Massachusetts

L. Don Leet
Philip R. Berger

H A R V A R D U N I V E R S I T Y
S E I S M O G R A P H S T A T I O N

Bulletin Number 33

July 1, 1949, through December 31, 1949

Part B of Paper Number 112, published under the auspices of the Committee on Experimental Geology and Geophysics and of the Division of Geological Sciences at Harvard University

STATION CONSTANTS

Latitude: 42° 30' 26" North
Longitude: 71° 33' 45" West
Altitude: 180 meters

INSTRUMENTS

Vertical, North-South, and East-West Benioff long- and short-period variable reluctance seismography with mass of 112.7 kg., galvanometric registration, and magnetic damping.

Three-component L-B Seismograph with displacement type transducer and ink registration.

Normal Operating Constants

Instrument	T_o sec.	T_g sec.	% Critical Damping	Drum Speed	V_s	Displacement for acceleration of 10-6 gravity
ZSP	1.0	0.2	.6	60 mm/min.		15 mm
NSP	1.0	0.2	.6	60 mm/min.		15 mm
ESP	1.0	0.2	.6	60 mm/min.		15 mm
ZLP	1.0	14.0	.6	30 mm/min.		12 mm
NLP	1.0	14.0	.6	30 mm/min.		12 mm
ELP	1.0	14.0	.6	30 mm/min.		12 mm
L-B (Z	1.0	0.1	.5	60 mm/min.	100,000	
L-B (N	1.0	0.1	.5	60 mm/min.	100,000	
L-B (E	1.0	0.1	.5	60 mm/min.	100,000	

NOTE

This station has been listed by the International Seismological Summary as Oak Ridge, because it is located at the Oak Ridge Observatory of Harvard College. Since the world-wide advertisement of the place name Oak Ridge, Tennessee, in connection with manufacture of the Atomic Bomb, this nomenclature has led to confusion. The correct designation of this station is the Harvard Station, because it is operated by Harvard University as the direct successor to the original Harvard Station in Cambridge, Mass., and it is the Town of Harvard, Mass.

MAIL ADDRESS

Harvard Seismograph Station
c/o Prof. L. Don Leet
Harvard, Massachusetts, U.S.A.

Date	Phase	Time (GCT)	Remarks
1949			
July 2	eL	12-35 ca.	CGS: H = 11-27-35 52° S 162° E (Auckland Is., SW of New Zealand) M = 6-1/2 (Wellington)
July 2	eP	20-11-48	CGS: H = 19-57-10 16° N 148° E (Marianas Is. Region) M = 7 (Pasadena) dist.(meas) = 12,500 km.
	iP'	15-48	
	ePP	16-15	
	eSKS	22-25	
	ePS	25-50	
	eSS	31 ca	
	e	40 ca	
	eQ	46 ca	
	eR	51 ca	
July 3	i	00-23-01	Local?
	i	10	
July 8	eP	12-47-18	CGS: H = 12-40-30 13° N 91° W (off W. coast of Guatemala) M = 6 (Pasadena) dist.(meas) = 3800 km.
	eS	52-47	
	e	53-54	
	eR	58.5 ca	
July 8	i	18-04-20	Unusual character
July 8	iP	18-26-20	CGS: H = 18-18-06 72° N 0° (200 mi. E. of Jan Mayen Is.)
July 9	iP_n	18-47-10	CGS: H = 18-44-50 33° N 71° W (N. Atlantic, 350 mi. W. of Bermuda dist.(meas) = 1060 km.
	iS^n	48-54	
	iT^n	55-53	
July 9	iP_n	20-00-00	Aftershock of 18-44-58 ?
	iS_n	01-44	
July 10	iP	04-06-49	CGS: H = 03-53-36 39° N 71° E (eastern Turkistan) M = 8 (Pasadena) dist.(meas) = 10,250 km
	ePP	10-10	
	eS	17-15	
	ePPS	18-57	
	eSS	23-35	
	eL	35.5 ca	
July 10	iP	16-02-23	CGS: H = 15-49-46 Aftershock of 03-53-36
	iS	12-57	
	eSS	19 ca	
	eL	31 ca	

Date	Phase	Time(GCT)	Remarks
1949			
July 10	iP	16-37-10	CGS: H = 16-24-31
	eS	47-49	Aftershock of 03-53-36
			M = 6-1/2 (Strasbourg)
July 12	e	04-57-15	
	i	30	
	i	47	
July 12	iP	21-25-48.0	Blast or Local ?
	iS	26-08.4	dist.(calc) = 167 km
			H(calc) = 21-25-20.0
July 13	$e(S_1)$	12-59-23	Blast or Local?
	eL	27	
July 13	iP	18-53-12.0	Blast or Local?
	iS	30.0	dist.(calc) = 152 km
			H(calc) = 18-52-47.5
July 14	iS_1	15-43-11	Blast or Local?
	iL_1	12	
July 14	iS_1	20-44-55.5	Blast or Local?
July 14	eL	21-26-44	CGS: H = 20-35-06
			Off E. coast of Borneo
July 15	eS_1	12-17-48	Blast or Local?
	eL_1	50	
July 15	iS_1	14-30-31	Blast or Local?
	iL_1	32.5	
July 15	iP_1	19-05-17	Blast
	iS_1	19	dist.(calc) = 16.3 km
			H(calc) = 19-05-14.2
July 16	eP	10-04-03	CGS: H = 09-57-20
	eL	17.5 ca.	Off coast of Guatemala
July 16	iS_1	13-42-13.0	Blast
	iS_1S_1	16.5	dist.(meas) = 84.5 km
	eL_1	18.0	
July 16	i(P)	18-31-40	Blast or Local?
	i(S)	32-10	
July 16	eP_n	18-57-13.5	Blast or Local?
	iP_1	22.0	dist(calc) = 380 km
	eS_n	53.0	H(calc) = 18-56-21.5
	eS_1	58-06.0	
July 18	eL	01-44 ca	

Date	Phase	Time(GCT)	Remarks
1949			
July 18	iP'	05-01-01	CGS: H = 04-41-56
	ePP	04-13	5.5° N 126° E
			(off S. coast of Mindanao, P.I.)
			dist.(meas) = 14,600 km
July 18	e	16-34-18	Blast or Local ?
	e	36	
July 19	$i(S_1)$	05-23-47	Local ?
July 19	$i(S_1)$	13-10-02	Blast or Local ?
	iL	03	
July 19	$i(S_1)$	15-25-24	Blast or Local ?
	iL	26	
July 19	eL	18-33 ca	CGS: H = 17-41-57
			36° N 70° E
			(NE Afghanistan)
July 20	iP_1	20-27-37.5	Blast
	iS_1	41.5	dist.(calc) = 36 km
	iL_1	43.0	H(calc) = 20-27-31.5
July 21	iP	08-11-18	CGS: H = 08-01-34
	ipP	45	16° S 74° W
	eL	33 ca	(near S. coast of Peru)
			depth = 100 km
			dist.(meas) = 6560 km
			M = 6-1/2 (Pasadena)
July 21	i	12-12-25	Blast or Local??
	i	26	
	i	27	
July 23	i	09-11-27	
	i	13-42	
July 23	iP'	10-45-27	CGS: H = 10-26-49
	iPP	47-12	18.5° S 169° E
	eSS	11-05-06	(New Hebrides Is.)
	eR	17.5 ca.	dist.(meas) = 13,900 km
July 23	iP	15-14-46	CGS: H = 15-03-30
	iPP	17-21	38.5° N 26.5° E
	eS	24-05	(Near W. coast of Turkey)
	eScS	54	Several reported killed
	eQ	35.0 ca	and injured. Destructive in
	eR	39.5 ca	Izmir and Karaburun)
			dist.(meas) = 7700 km
			M = 7 (Tucson)
July 25	$e(P_1)$	06-31-23	Local ?
	$e(S_1)$	32	

Date	Phase	Time (GCT)	Remarks
1949			
July 25	iP	11-37-07	CGS: H = 11-24-40 32° S 111° W (Pacific Ocean, S. of Easter Island)
July 25	$e(S_1)$	19-02-54	Blast or Local ?
July 26	iP_1 iS_1 iL_1	16-01-49.5 56.0 57.5	Blast dist.(calc) = 53.3 km. H(calc) = 16-01-40.8
July 26	eP_1 iS_1 iL_1	20-10-24.0 28.5 30.0	Blast dist.(calc) = 28.9 km. H(calc) = 20-10-19.7
July 27	iPP eSKS ePS eSS eSSS eR	15-31-45 37-30 41-28 48-17 52-10 16-12.5 ca	CGS: H = 15-11-35 29° S 177° W (Kermadec Is. Region) dist.(meas) = 13,400 km. M = 7 (Pasadena and Tucson)
July 27	e	19-14-30	Blast or Local ?
July 27	iS_1 iL_1	19-27-53.5 55.5	Blast or Local
July 28	iP	03-46-23	CGS: H = 03-36-28 16° S 76° W (near coast of Peru)
July 28	iP_1 iS_1 iL_1	19-30-59.5 31-12.5 21.0	Blast at Westfield, Mass. dist.(calc) = 106 km. H(calc) = 19-30-42.0
July 28	e	20-38-49	On Long Period Records
July 29	e e(L)	21-10-05 15.0 ca	CGS: H = 20-53-13 Gulf of California
July 29	e e	22-07-27 09-56	CGS: H = 21-47-06 Gulf of California
July 29	e e	22-16-46 21.0 ca	CGS: H = 21-59-21 Gulf of California
July 30	iP	06-42-13.5	CGS: H = 06-29-34 45.5° N 149° E (Kurile Is. Region)
July 30	i i	16-08-12.5 15.5	Blast or Local ?
July 31	eL	00-21-22	

Date	Phase	Time (GCT)	Remarks
1949			
July 31	iP	04-25-42	CGS: H = 04-14-04 (Near Central Coast of Chile)
Aug. 1	iP_1	15-30-01.5	Blast or Local
	iS_1	17.5	dist.(calc) = 131 km.
			H(calc) = 15-29-40.0
Aug. 2	iS_1	02-01-01.5	Local?
Aug. 3	i	00-48-17.5	Teleseism?
Aug. 3	$i(S_1)$	14-04-19	Blast or Local?
	i(L)	20	
Aug. 3	e	14-19-00	Blast or Local?
Aug. 3	$i(S_1)$	19-19-53.0	Blast or Local?
	i(L)	59.5	
Aug. 3	i	20-47-07.5	Blast or Local?
	i	11.0	
Aug. 4	i	08-10-24.5	
	eL	58-36	
Aug. 4	iP_1	18-23-37.0	Blast
	iS_1	38.5	dist.(calc) = 12.3 km.
	iL	41.0	
Aug. 5	e	18-56-26	
Aug. 5	e	19-07-19	
Aug. 5	iP	19-11-08	CGS: H = 19-02-56 Foreshock of 19-08-47
Aug. 5	iP	19-16-56.5	CGS: H = 19-08-47
	iPP	18-41	1° S 78° W
	iPPP	20-01	(Central Ecuador. Several
	iS	23-27	thousand killed. Heavy
	iSS	26-57	damage, severest at
	eQ	28.5 ca	Ambato and vicinity.)
	eR	30.5 ca	dist.(meas) = 4850 km
			M = 7 (Pasadena & Tucson)
Aug. 5	i	22-24-53	Blast or Local?
Aug. 6	iP	00-50-07	CGS: H = 00-35-27
	i(P')	54-28	19° S 174.5° W
	iPP	49	(Tonga Islands Region)
	eSKS	01-00-45	dist.(Meas) = 12,500 km.
	e	01-12	M = 7-1/2 (Pasadena and Tucson)
	eSKKS	45	
	eS	02-20	
	ePS	04-12	
	e	32	
	ePPS	05-07	
	eSS	09-50	

Date	Phase	Time (GCT)	Remarks
1949			
Aug. 6 (Cont.)	e	11-57	
	eSSS	14-20	
	eQ	25-26	
	eR	27-30	
Aug. 7	e	08-36-13	CGS: H = 08-15-20
	eL	39-08	50.5° N 130° W (Off British Columbia)
Aug. 7	eL	11-08-40	CGS: H = 10-44-42 50.5° N 130° W (Off British Columbia)
Aug. 8	i	00-03-41.5	Teleseism?
Aug. 8	eL	08-19.2 ca	CGS: H = 07-09-05 Indian Ocean, 1100 mi. E. of Madagascar
Aug. 8	eP	14-17-14	CGS: H = 14-10-29
	eL	30-38	15° N 93° W (near SW coast of Mexico) dist.(meas) = 3700 km.
Aug. 8	iS_1	16-02-58.5	Blast at Weston, Mass. 635 lb., Short Delay
Aug. 8	iP	19-17-11.5	CGS: H = 19-07-18
	eL	39-20	16° S 75.5° W (Off coast of southern Peru)
Aug. 8	i	20-10-21.0	Blast at West
	i	23.5	Roxbury, Mass.
Aug. 10	e	15-59-51	
Aug. 10	iP_1	21-34-36.0	Blast at Sterling, Mass.
	iS_1	38.5	dist.(calc) = 21 km H(calc) = 21-34-32.5
Aug. 11	iP_n	10-02-08	Submarine Explosion
	iS_n	28	H = 10-01-39.86 43°32' N 70° 02' W dist.(calc) = 173 km.
	Followed by 29 shots at 30 min. intervals		
Aug. 11	eL	14-10.2 ca.	CGS: H = 13-49-53 Aftershock of Aug. 8, 14-10-29
Aug. 13	eL	00-14 ca	CGS: H = Aug.12 23-15-36 14° S 167.5° E (New Hebrides Is. Region)
Aug. 13	i	00-51-16	
Aug. 13	iP'	18-43-57	CGS: H = 18-24-49
	iPP	45-41	0° 146° E
	eSKKKS	53-04	(Admiralty Is. Region)
	eR	19-26 ca.	dist.(meas) = 14,000 km. M = 6-1/2 (Pasadena)

Date	Phase	Time (GCT)	Remarks
1949			
Aug. 15	iS_1	14-23-49.0	Blast ?
	iL_1	51.5	
Aug. 15	iP_1	16-11-43.5	Blast?
	iS_1	52.0	dist.(Calc) = 28.7 km.
	iL_1	54.0	
Aug. 16	iP_1	15-23-26.5	Blast?
	iS_1	36.0	dist.(calc) = 77.8 km..
			H(calc) = 15-28-13.7
Aug. 17	iP	13-46-55	CGS: H = 13-34-07
	ipP	47-16	43° N 146° E
	iPP	50-22	(Near E. coast of
	i(sPP)	51-26	Hokkaido, Japan)
	i	56-14	depth = 100 km.
	isS	58-25	dist.(meas) = 9900 km.
			M = 6-1/2 (Pasadena)
Aug. 17	iP	13-56-14	CGS: H = 13-44-15
	eS	19-06-03	39° N 40° E
	eG	17-45	(Eastern Turkey, several
	eR	23-35	killed, moderate damage)
			dist.(meas) = 8650 km.
			M = 6-3/4 (Pasadena)
Aug. 18	i	01-34-39.5	Local?
Aug. 18	iP	13-40-22	CGS: H = 13-33-25
	eS	45-57	8.5° N 82.5° W
	eG	48.0 ca	(Near SW coast of Panama)
	eR	50.0 ca	dist.(meas) = 3900 km.
			M = 6-1/2 (Pasadena)
Aug. 19	i	14-25-17.5	Blast or Local?
Aug. 19	i	16-08-46.5	Blast or Local?
	e	58	
Aug. 19	i	20-06-39	Blast or Local?
Aug. 21	iP	20-39-53.5	CGS: H = 20-33-20
	ePP	40-45	10.5° N 62.5° W
			(Near coast of Venequela)
Aug. 22	iP	04-09-03	CGS: H = 04-01-12
	iPP	10-47	54° N 133° W
	iS	15-19	(Queen Charlotte Is., off coast of British Columbia. Widely felt, minor damage reported. Two foot tidal wave at Ketchikan, Alaska)
			dist.(meas) = 4650 km.
			M = 8 (Pasadena)
			8.2(Tucson)
Aug. 22	e	06-33-20	CGS: H = 06-16-45
			Off British Columbia
Aug. 22	iP	06-41-55.5	CGS: H = 06-31-00
			Aleutian Islands

Date	Phase	Time (GCT)	Remarks
1949			
Aug. 22	iP	07-21-34.5	CGS: H = 07-11-35
	i	40.5	Near coast of northern
	epP	22-05	Chile
Aug. 22	eP	09-04-35	CGS: H = 08-51-15
			S. Atlantic near
			Tristan da Cunba Is.
Aug. 22	e	12-43-42	CGS: H = 12-21-43
	e	46-51	Off British Columbia
Aug. 22	e	14-01-57	CGS: H = 13-40-24
	e	04-57	Off British Columbia
Aug. 22	iP	20-38-08	
Aug. 23	i	03-20-39	CGS: H = 02-59-29
	e	23-32	Off British Columbia
Aug. 23	i	14-00-22.5	Blast or Local?
Aug. 23	iP	15-23-25.5	
	e	43.0 ca.	
Aug. 23	i	16-30-23	Blast or Local?
Aug. 23	i	19-08-33.0	Blast or Local?
	i	43.5	
	i	53.0	
Aug. 23	iP_1	19-51-17.0	Blast or Local
	iS_1	29.5	dist.(calc) = 104 km
	iL_1	34.0	H(calc) = 19-51-05.7
Aug. 23	eR	20-02-07	CGS: H = 19-37-30
			Off British Columbia
Aug. 23	eP	19-58-35	CGS: H = 19-43-35
	ePP	59-39	Foreshock of 20-24-36
	iS	20-04-46	
	eR	07-38	
Aug. 23	iP_1	20-21-27.5	Blast?
	iS_1	30.2	dist.(calc) = 22.5 km
	iL_1	32.5	H(calc) = 20-21-23.7
Aug. 23	iP	20-32-17	CGS: H = 20-24-32
	iPP	33-51	53° N 132° W
	iPPP	34-22	(Queen Charlotte Is., off
	eS	38-39	coast of British Columbia.
	iSS	41-41	Felt widely.)
	iR	45-31	dist.(meas) = 4600 km.
			M = 6-1/4 (Pasadena)
			6-3/4 (Tucson)
Aug. 24	eL	03-02-30	CGS: H = 02-37-32
			Off British Columbia
Aug. 24	eL	06-29-36	CGS: H = 06-07-14
			43.5° N 127° W
			(Off coast of Oregon)

Date	Phase	Time (GCT)	Remarks
1949			
Aug. 24	eP	09-32-23	CGS: H = 09-22-02
	eSS	44-29	9° S 109° W
	eL	53-40	(Pacific Ocean, 1200 mi. N. of Easter Is.)
Aug. 24	i	13-40-22.0	Blast or Local?
	i	37.5	
Aug. 24	e	22-53-36	CGS: H = 22-37-13
	eR	23-02-02	Off British Columbia
Aug. 25	iP	04-25-16.5	CGS: H = 04-14-25
	eR	50-52	52.5° N 173° W (Aleutians) dist.(meas) = 7400 km. M = 6-1/2 (Pasadena)
Aug. 25	i	14-33-13	Blast or Local?
Aug. 25	i	15-53-55	Blast or Local?
	i	59	
Aug. 25	iP	13-43-23.5	CGS: H = 13-33-07
	ipP	48	Near coast of northern Chile
Aug. 25	e	23-45-03	
	i	48-33	
	i	53-05	
	eL	00-29 ca.	
Aug. 26	i	05-47-56	CGS: H = 05-26-00
	e	51-02	Off British Columbia
Aug. 26	i	15-41-24	Blast or Local?
Aug. 26	i	15-55-57	Blast or Local?
Aug. 26	i	16-07-16.5	Blast or Local?
Aug. 26	i	16-10-17	Blast or Local?
Aug. 26	i	19-07-57	Blast or Local?
Aug. 26	i	20-33-56.5	Blast or Local?
Aug. 26	i	23-01-14	CGS: H = 22-39-40
	eR	04-21	Off British Columbia
Aug. 27	eL	15-15-10	
Aug. 27	e	21-52-02	CGS: H = 21-30-40
	eL	55-12	Off British Columbia
Aug. 28	eL	19-42-36	CGS: H = 19-23-54 54° N 34° W (N. Atlantic Ocean)
Aug. 29	i	13-50-27	Blast or Local?
Aug. 30	i	17-35-05	
	i	17.3	
	i	20.4	

Date	Phase	Time(GCT)	Remarks
1949			
Aug. 30	iP_1	20-10-07.3	Blast or Local?
	iS_1	08.5	dist.(calc) = 9.8 km
Aug. 31	$i(P_1)$	17-05-41.2	Blast or Local?
	$i(S_1)$	06-00.5	
Aug. 31	i	17-50-26	Blast or Local?
Sept. 1	iP	14-10-35	CGS: H = 13-58-44
	eR	32-04	36°S 97° W (South Pacific, SE of Easter Is.)
Sept. 1	iS_1	15-59-57.5	Blast or Local?
Sept. 1	eL	18-45-05	CGS: H = 18-26-32 Galapagos Is. Region
Sept. 1	iS_1	19-14-50.5	Blast or Local?
Sept. 2	iP_2	05-48-34.6	Local - Felt by a few residents of South Tamworth, New Hampshire. dist.(calc) = 150 km H(Calc) = 05-48-10.2
	iP_1	35.2	
	$i2(P_1P_1)$	36.5	
	iS_2	52.2	
	iS_1	53.2	
	iS_1S_1	54.4	
	$i2(S_1S_1)$	56.5	
Sept. 2	iP_1	20-30-34.3	Blast at Westfield, Mass. dist.(calc) = 97 km H(calc) = 20-30-13.2
	eS_1	46	
	eL_1	56	
Sept. 3	iP	03-15-16	CGS: H = 03-06-47
	ipP	39	62° N 148° W (Southern Alaska) depth = 100 km
	isP	54	
Sept. 4	iP	00-01-22.3	Caribbean?
	iS	05-14.7	dist.(calc) = 2415 km
	eT	23-50	H(calc) = Sept. 3, 23-56-34
Sept. 4	eL	15-52-04	CGS: H = 14-55-20 Samoa Islands Region
Sept. 5	i	03-21-53	CGS: H = 02-54-00 Luzon, P.I.
	i	22-02	
	eL	57.5 ca	
Sept. 5	i	07-15-32	CGS: H = 06-54-16 Off British Columbia
	e	18-24	
Sept. 6	e	04-54-42	Artificial?
Sept. 6	iS_1	15-49-56.3	Blast or Local?
Sept. 6	iS_1	20-22-07.0	Blast or Local?
Sept. 7	eL	07-50-30	

Date	Phase	Time(GCT)	Remarks
1949			
Sept. 7	i	14-29-51.5	S Group from
	i	53.5	Blast or Local ?
	i	58.0	
Sept. 7	iP_1	20-52-33.0	Blast?
	$i2(P_1P_1)$	35.5	dist(calc) = 107.5 km
	iF	46.0	H(calc) = 20-52-15.1
	iS_1	47.3	
	iS_1S_1	50.2	
	$i2(S_1S_1)$	52.0	
	iL	53-02.8	
Sept. 8	iP_1	19-07-18.5	Blast?
	$i2(P_1P_1)$	20.8	dist(calc) = 115 km
	iS_1	32.5	H(calc) = 19-06-59.3
Sept. 9	i(PPP?)	21-00-08	CGS: H = 20-26-20
			17° S 172° W
			Samoa Islands Region
Sept. 12	iPP	09-30-06	CGS: H = 09-17-04
	eL	10-15-22	20° S 170° E
			(Loyalty Is. Region)
			dist.(meas) = 14,000 km
Sept. 12	eL	14-59-16	CGS: H = 14-37-52
			Off British Columbia
Sept. 12	e	16-49-05	S Group from
			Blast or Local?
Sept. 12	e	16-52-22	S Group from
			Blast or Local
Sept. 12	e	18-10-07	S Group from Blast or Local
Sept. 12	iS_1	22-26-56	Blast or Local?
Sept. 13	i	16-36-38	Blast or Local?
Sept. 13	iS_1	21-11-07	Blast or Local?
Sept. 13	i	20-15-13	Blast or Local?
	i	16	
Sept. 13	i	21-04-30.5	Blast or Local?
	i	33.0	
Sept. 14	i	15-41-56	Blast or Local?
Sept. 14	i	15-58-23.2	S Group from Blast
	i	24.7	or Local
	i	28.5	
Sept. 14	iP_1	16-44-55.7	Blast or Local?
	$iS_1P_1S_1$	45-00.0	dist.(calc) = 149 km
	iS_2	12.5	H(calc) = 16-44-30.8
Sept. 14	eL	17-51-38	

Date	Phase	Time(GCT)	Remarks
1949			
Sept. 14	iP'	20-09-36	CGS: H = 19-50-15
	iPP	12-01	1° N 126° E
	iPKS	13-09	(Celebes Region)
	iPPP	14-50	dist.(meas) = 15,100 km
	eSKSP	22-47	M = 7-1/2 (Pasadena
	i	23-49	and Tucson)
	ePPS	24-27	
	ePPPS	25-49	
	e	27-05	
	e	28-43	
	eSS	29-42	
	eG	47-50	
	eR	55-17	
Sept. 14	iP_1	20-24-32.4	Blast or Local
	iS_2	49.5	dist.(calc) = 149 km
	iS_1	50.5	H(calc) = 20-24-07.5
Sept. 14	$i(P_1)$	20-41-05.5	Blast or Local?
	$i(S_1)$	23.0	
Sept. 14	iS_1	23-00-42	Blast or Local?
Sept. 14	iP_2	23-30-24.5	Blast (Submarine?)
	iP_1^2	25.3	dist.(calc) = 152.5 km.
	iS_1^2	42.7	H(calc) = 23-29-59.7
	iS_1^2	44.0	
	i	45.4	
	$i2(S_1S_1)$	46.8	
	Records have similar signals Sept. 15 at 00-00, 00-30, and 01-30		
Sept. 15	iS_1	14-05-23.5	Blast or Local?
Sept. 15	iP_2	16-55-20.0	Blast or Local?
	iP_1^2	20.8	dist(calc) = 155 km
	iS_2	38.5	H(calc) = 16-54-54.9
Sept. 15	iP_1	19-55-33.3	Blast or Local?
	iS_2	55.9	dist.(calc) = 155 km
			H(calc) = 19-55-32
Sept. 16	e	16-07-56	Blast or Local?
Sept. 16	iP	19-04-51	Caribbean?
	eS	08-07	dist.(calc) = 1970 km
			H(calc) = 19-00-49
Sept. 16	eP'	19-30-30	CGS: H = 19-11-07
	iPP	32-58	1°N 126° E
	iPKS	33-57	(Celebes Region)
	e	46-52	
	eL	20-15-50	
Sept. 16	iS_1	19-46-28.5	Blast or Local?

Date	Phase	Time(GCT)	Remarks
1949			
Sept. 16	e	21-04-14	
	e	05-35	
	eL	07-26	
Sept. 16	$i(S_1)$	21-05-43	Blast or Local?
	$i(L)^1$	50	
Sept. 16	e	21-20-47	S Group from Blast or Local?
Sept. 16	$i(S_2)$	21-27-43	Blast or Local?
	$i(S_1^2)$	44.7	
Sept. 17	iP	10-47-43.5	Deep Focus?
Sept. 17	iP_1	15-21-15.5	Blast or Local?
	i	22.5	dist(calc) = 74 km
	iS_1	24.6	H(calc) = 15-21-03.2
Sept. 17	eL	16-24-32	CGS: H = 15-22-11 6° S 154° E (Solomon Is. Region)
Sept. 17	iP_1	13-35-23.5	Blast or Local?
	iP_1P_1	24.4	dist.(calc) = 118 km
	$i(S_1P_1S_1)$	28.3	H(calc) = 13-35-03.9
	i(F)	35.5	
	iS_1	33.0	
Sept. 17	eL	23-47-56	
Sept. 18	iP	12-55-48.5	CGS: H = 12-45-58 14° S 68.5° W depth = 100 km
Sept. 19	iP_1	12-49-57.2	Blast?
	iS_1^1	50-04.0	dist.(calc) = 53.7 km
	iL^1	04.8	H(calc) = 12-49-43.2
Sept. 19	eP	13-14-27	Caribbean?
	eS	13-38	dist.(calc) = 2640 km
	eT	37-08	H(calc) = 13-09-19
Sept. 19	iP_1	15-57-24.6	Blast?
	iS_1^1	31.0	dist(calc) = 53.5 km
	iL^1	34.2	H(calc) = 15-57-15.7
Sept. 19	iS_1	16-03-24.0	Blast or Local?
	iL^1	25.0	
Sept. 19	iP_1	20-00-19.5	Blast?
	iS_1^1	32.5	dist.(calc) = 103 km
	$iS_1^1S_1$	33.9	H(calc) = 20-00-01.5
	iL^1	44.0	
Sept. 19	eL	22-35-25	CGS: H = 21-42-17 53° S 3° W
Sept. 20	e	12-40-04	CGS: H = 11-55-20 30° S 178° W (Kermadec Islands)
	eL	52-00	dist.(meas) = 13,600 M = 6-3/4 (Pasadena)