

# SAINT LOUIS UNIVERSITY INSTITUTE OF GEOPHYSICAL TECHNOLOGY

3621 OLIVE STREET, SAINT LOUIS 8, MO., U. S. A.

## SEISMOLOGICAL BULLETIN

### SYMBOLS AND STATION CONSTANTS

**CG—CAPE GIRARDEAU** (in cooperation with Southeast Missouri State Teachers College, Cape Girardeau, Mo., U. S. A.)  
— (inaugurated, 1938)

Latitude: geographical,  $37^{\circ}19'N$ ; geocentric,  $37^{\circ}08'N$ .  
Longitude:  $89^{\circ}32'W$ . Altitude:  $h = 134m$ ,  $H+h = 4km$ .  
Lithologic foundation: limestone.  
Seismographs: Wood-Anderson short period EN.  
Director of the Station: Professor John Harty.

**FL—FLORISSANT** (in cooperation with Saint Stanislaus Seminary, Florissant, Missouri, U. S. A.)—(inaugurated, 1928)

Latitude: geographical,  $38^{\circ}48'06''N$ ; geocentric,  $38^{\circ}37'N$ .  
Longitude:  $90^{\circ}22'12''W$ . Altitude:  $h = 160m$ ,  $H+h = 4km$ .  
Lithologic foundation: Pennsylvanian shale.  
Seismographs: Galitzin-Wilip ENZ, Wood-Anderson short period EN.  
Clock: Shortt synchronome.  
Director of the Station: Reverend James B. Macelwane, S. J.

**LR—LITTLE ROCK** (in cooperation with Saint John's Seminary, Pulaski Heights, Little Rock, Arkansas, U. S. A.)—(inaugurated, 1930).

Latitude: geographical,  $34^{\circ}47'N$ ; geocentric,  $34^{\circ}36'N$ .  
Longitude:  $92^{\circ}21'W$ . Altitude:  $h = 135m$ ,  $H+h = 5 km$ .  
Lithologic foundation: sandstone.  
Seismographs: Wood-Anderson short period EN.  
Clock: Howard-Gaertner.  
Director of the Station: Monsignor Joseph A. Murray.

**SL—SAINT LOUIS I**, Administration Building of Saint Louis University, 221 North Grand Boulevard — (inaugurated, January 1, 1910).

Latitude: geographical,  $38^{\circ}38'11''N$ ; geocentric,  $38^{\circ}27'N$ .  
Longitude:  $90^{\circ}14'00''W$ . Altitude:  $h = 160m$ ,  $H+h = 4 km$ .  
Lithologic foundation: clay.  
Seismograph: Wiechert (80 kg) EN.  
Clock: Wiechert.

**II**, University Gymnasium, 3672 West Pine Boulevard — (inaugurated, 1927).

Latitude: geographical,  $38^{\circ}38'10''N$ ; geocentric,  $38^{\circ}27'N$ .  
Longitude:  $90^{\circ}14'10''W$ . Altitude:  $h = 161m$ ,  $H+h = 4 km$ .  
Lithologic foundation: Mississippian limestone.  
Seismographs: Wood-Anderson short period EN.  
Macelwane-Sprengnether Z; Sprengnether NE.  
Clock: Wiechert.  
Director: Reverend James B. Macelwane, S.J.

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3621 Olive Street, Saint Louis 8, Mo., U.S.A.

SEISMOLOGICAL BULLETIN

Page 1.

PREFACE

Commencing with the year 1944, the station bulletins of the Saint Louis University group will be issued jointly as one seismological bulletin of the Institute of Geophysical Technology. As this first issue of the new bulletin is released the previous individual station bulletins of Saint Louis and Florissant have been completed. Previous years for Cape Girardeau and Little Rock have not been completed. The Cape Girardeau station bulletin for July-December 1942 and January-December 1943 will be issued as an individual station bulletin when completed. Likewise an individual station bulletin will be prepared for Little Rock for the years 1940, 1941, 1942, and 1943.

August, 1948

SAINT LOUIS UNIVERSITY  
 INSTITUTE OF GEOPHYSICAL TECHNOLOGY  
 Seismological Bulletin for the month of January, 1944.

2.

No.	Date	Sta	Phase	Inst	h m s	Remarks
1	Jan. 1	S.L.	(e)N	S.	16 30 29	
2	Jan. 3	S.L.	eLE	S.	10 34 23	
3	Jan. 4	S.L.	ePZ eZ eSE e(SR <sub>1</sub> )E eLN F	M.S. M.S. S. S. S. S.	01 04 11 01 04 23 01 09 21 01 10 21 01 13 03 01 39.5	$\Delta P-H = 30^{\circ}6$ $\Delta_{meas} = 30^{\circ}8$ $H = 00^h57^m53^s$ Epicentral Region: 1298 N., 71.4 W.
4	Jan. 5	S.L.	(e)Z	M.S.	04 17 58	
5	Jan. 5	S.L.	iZ	M.S.	07 56 45.5	
6	Jan. 5	S.L.	iFZ iZ iSN eN eL F	M.S. M.S. S. S. S. S.	11 05 28.5 11 05 33.5 11 10 33.5 11 12 58.5 11 14.9 12 21.5	$\Delta P-H = 30^{\circ}2$ $\Delta_{meas} = 30^{\circ}9$ $H = 10^h59^m14^s$ Epicentral Region: 1208 N., 71.04 W.
	Jan. 5	C.G.	ePN	W.A.	11 05 15	
7	Jan. 5	S.L.	eP'Z iP'Z iZ iZ iPR <sub>1</sub> Z i(SKKS)Z i(PSKS)W eN i(FPS)N eN i(SR <sub>1</sub> )N (sSR <sub>1</sub> )N iSR <sub>2</sub> N eLN FN	M.S. M.S. M.S. M.S. M.S. M.S. S. S. S. S. S. S. S. S. S. S.	21 32 12 21 32 15 21 32 28 21 32 35 21 35 22 21 36 19 21 45 56 21 47 21 21 48 19 21 49 05 21 53 50 21 54 54 21 59 29 22 04 -- 23 48 --	$\Delta PR_1-H = 143^{\circ}2$ $\Delta_{meas} = 143^{\circ}5$ $H = 21^h13^m01^s$ Epicentral Region: 395 S., 101.97 E.  Depth of Focus: 125±km.
	Jan. 5	C.G.	eP'N eN	W.A. W.A.	21 32 18 21 33 20	
8	Jan. 6	S.L.	iPZ iZ eZ eSN eLN	M.S. M.S. M.S. S. S.	16 53 34 16 53 43 16 57 51 17 01 12 17 13 --	$\Delta P-H = 54^{\circ}8$ $\Delta_{meas} = 55^{\circ}3$ $H = 16^h14^m07^s$ Epicenter: 15° S., 75°5 W.

Seismological Bulletin for the month of January, 1944.

No.	Date	Sta	Phase	Inst	h m s	Remarks	
9	Jan. 7	S.L.	ePR <sub>1</sub> Z	M.S.	03 09 25	New Guinea. Deep.	
			iPR <sub>1</sub> Z	M.S.	03 09 30		
			epPR <sub>1</sub> Z	M.S.	03 09 57		
			eE	S.	03 10 27		
			iSKSE	S.	03 14 51		
			eE	S.	03 15 49		
			eSKKSE	S.	03 16 15		
			eSPE	S.	03 19 20		
			eL	S.	03 20 --		
			F	S.	05 02 --		
	Jan. 7	Fl.				Time Uncertain.	
10	Jan. 7	Fl.		W.A.	05 22 --	Time Uncertain.	
	Jan. 7	C.G.	iPN	W.A.	05 18 20.8	Local	
			iSN	W.A.	05 18 23		
Jan. 7	S.L.	iE	W.A.	05 18 57			
11	Jan. 8	S.L.	eZ	M.S.	10 16 14		
			eLE	S.	10 29 --		
12	Jan. 8	S.L.	eZ	M.S.	19 36 12.5		
			eL	S.	20 08 --		
	Jan. 8	Fl.				Time Uncertain	
13	Jan. 10	S.L.	ePZ	M.S.	04 33 53		
14	Jan. 10	S.L.	iPZ	M.S.	20 15 01	$\Delta_{P-H} = 23^{\circ}3$ $\Delta_{meas} = 23^{\circ}3$ $H = 20h09m56s$ Epicentral Region: 17°1 N., 100°3 W. Slightly deep.	
			ipPZ	M.S.	20 15 08		
			iSN	S.	20 19 13		
			isSN	S.	20 19 27		
	Jan. 10	C.G.	iPN	W.A.	20 14 52		$\Delta_{P-H} = 22^{\circ}2$ $\Delta_{meas} = 22^{\circ}2$
			iSN	W.A.	20 19 09		
	Jan. 10	Fl.	iPZ	G.W.	20 15 03		$\Delta_{P-H} = 23^{\circ}2$ $\Delta_{meas} = 23^{\circ}4$
			ipN	W.A.	20 15 10		
			iSZ	G.W.	20 19 16		
		isSZ	G.W.	20 19 28			
15	Jan. 10	S.L.	iPZ	M.S.	20 38 32	Aftershock of No. 14?	
			ipPZ	M.S.	20 38 40		
			i(S)Z	M.S.	20 42 57		
			i(sS)Z	M.S.	20 43 09		
	Jan. 10	C.G.	iPN	W.A.	20 38 23		
			eSE	W.A.	20 42 46		
Jan. 10	Fl.	iPN	W.A.	20 38 34			
		iSN	W.A.	20 43 00			

Seismological Bulletin for the month of January, 1944.

No.	Date	Sta	Phase	Inst	h m s	Remarks
16	Jan. 12	S.L.	iPZ	M.S.	15 08 20	$\Delta_{P-H} = 26^{\circ}3$ $\Delta_{meas} = 26^{\circ}3$ $H = 15^h02^m42^s$ Epicenter: $40^{\circ}$ N., $124.2^{\circ}$ W.
			iZ	M.S.	15 08 40	
			eSN	S.	15 12 53	
			eN	S.	15 13 30	
			eLN	S.	15 15 33	
	F	S.	15 55 --			
	Jan. 12	C.G.	e	W.A.n	15 08 47	
			eL	W.A.n	15 17.5	
	Jan. 12	Fl.	iSN	G.W.	15 12 57	$\Delta_{S-H} = 26^{\circ}2$ $\Delta_{meas} = 26^{\circ}1$
			eLN	G.W.	15 15.5	
F			G.W.	15 51 --		
17	Jan. 15	S.L.	eE	W.A.	05 54 09	$\Delta_{S-H} = 41^{\circ}3$ $\Delta_{meas} = 41^{\circ}2$ $H = 05^h46^m18^s$ ? Epicentral Region: $17^{\circ}6$ N., $49^{\circ}7$ W.
			eSN	S.	06 00 25	
			eL	S.	06 03.5	
			F	S.	06 33 --	
	Jan. 15	Fl.	e(P)Z	G.W.	05 54 01	$\Delta_{S-H} = 41^{\circ}3$ $\Delta_{meas} = 41^{\circ}4$
			eSN	G.W.	06 00 25	
			eLN	G.W.	06 03 48	
			F	G.W.	06 31 --	
18	Jan. 16	S.L.	iPZN	M.S.	00 00 56	$\Delta_{P-H} = 72^{\circ}7$ $\Delta_{meas} = 72^{\circ}7$ $H = 23^h49^m33^s$ Epicenter: $31^{\circ}$ S., $68^{\circ}2$ W. About 40 km deep.
			eNE	W.A.	00 00 57	
			iPE	S.	00 00 57	
			ipPZ	M.S.	00 01 05	
			eN	S.	00 01 42	
			i(S)N	S.	00 10 11	
			iE	S.	00 10 15	
			iSN	S.	00 10 17	
			eSE	W.A.	00 10 17	
			eSN	W.A.	00 10 18	
			isSE	S.	00 10 34	
			Records of January 15, 1944 are at La Plata, Argentina.			
19	Jan. 16	S.L.	eE	S.	14 37 50	
			(H)	S.	14 38.5	
			(L)	S.	14 40 --	
	Jan. 16	Fl.	(e)	G.W.n	14 38 38	
(L)			G.W.n	14 42 --		
20	Jan. 20	S.L.	ePZ	M.S.	03 12 28	$\Delta_{S-H} = 95^{\circ}1$ $\Delta_{meas} = 95^{\circ}1$ $H = 02^h59^m17^s$ Epicentral Region: $15^{\circ}5$ S., $174^{\circ}5$ W. About 100 km deep.
			iPZ	M.S.	03 12 29.5	
			epPZ	M.S.	03 12 52	
			iZ	M.S.	03 12 59	
			eSKSE	S.	03 22 56	
			eSE	S.	03 23 38	
			e(SP)E	S.	03 24 59	
			eL	S.	03 29 --	
			F	S.	04 17 --	

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No.	Date	Sta	Phase	Inst	h m s	Remarks
20 (Con't.)	Jan. 20	Fl.	ePZ	W.A.	03 12 31	$\Delta_{S-H} = 95^{\circ}3$ $\Delta_{meas} = 95^{\circ}$
			iSKSE	G.W.	03 22 59	
			eSE	G.W.	03 23 40	
21	Jan. 20	S.L.	iPZ	M.S.	12 49 03	
			iZ	M.S.	12 49 15	
			iZ	M.S.	12 49 24	
			iZ	M.S.	12 49 56	
22	Jan. 22	S.L.	ePZ	M.S.	19 59 31	
	Jan. 22	Fl.	eN	W.A.	19 59 45	
23	Jan. 22	S.L.	ePE	W.A.	22 01 27	
	Jan. 22	Fl.	ePN	W.A.	22 01 24	
24	Jan. 23	S.L.	iPZ	M.S.	07 27 10	South of Alaska. May be deep.
			iZ	M.S.	07 27 14	
			iZ	M.S.	07 27 23	
			e(S)E	S.	07 34 16	
	Jan. 23	Fl.	ePN	W.A.	07 27 09	
			eI	W.A.	07 27 13	
			eN	W.A.	07 27 27	
			eN	G.W.	07 34 13	
			eLN	G.W.	07 46 --	
	F	G.W.	08 10 --			
Jan. 23	C.G.	eN	W.A.	07 27 20		
25	Jan. 24	S.L.	ePZ	M.S.	00 15 57	
			eZ	M.S.	00 16 07	
			eZ	M.S.	00 16 15	
	Jan. 24	Fl.	ePN	W.A.	00 15 58	
Jan. 24	C.G.	ePN	W.A.	00 15 49		
26	Jan. 24	S.L.	eE	S.	06 17 28	
	Jan. 24	Fl.	eE F	G.W. G.W.	06 17 07 06 25 --	
27	Jan. 25	S.L.	eP'Z	M.S.	07 52 31	Region about 8° S., 121° E.
			ep'Z	M.S.	07 53 07	
			i(SK)Z	M.S.	07 56 05	
			iZ	M.S.	07 56 57	
	Jan. 25	Fl.	ep'Z e(SK)Z	G.W. G.W.	07 53 06 07 56 04	
28	Jan. 25	S.L.	iPZ	M.S.	12 48 17	
			iZ	M.S.	12 48 22	

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6.

No.	Date	Sta	Phase	Inst	h m s	Remarks
29	Jan. 27	S.L.	eZ	M.S.	04 59 51	
			eZ	M.S.	04 59 56	
			eZ	M.S.	05 00 21	
	Jan. 27	Fl.	eE	W.A.	04 59 35	
			eE	W.A.	04 59 41	
			eN	W.A.	04 59 59	
			eE	W.A.	05 00 14	
			eE	W.A.	05 00 25	
	Jan. 27	C.G.	eN	W.A.	05 00 40	
	30	Jan. 28	S.L.	eLN	S.	
F				M.S.	12 38.5	
Jan. 28		Fl.	e(L)E	G.W.	11 55 --	
			F	G.W.	12 21 --	
31	Jan. 29	S.L.	iPZ	M.S.	02 33 26	H = 02 <sup>h</sup> 25 <sup>m</sup> 13 <sup>s</sup> . Epicentral Region:  63° N., 153°8 W. Slightly deep.
			iPZ	M.S.	02 33 31	
			i(pP)Z	M.S.	02 33 36	
			eZ	M.S.	02 35 19	
			eSE	S.	02 40 05	
			eLE	S.	02 46 47	
			F	S.	03 53.5	
	Jan. 29	Fl.	iPZ	G.W.	02 33 30	
			e(S)E	G.W.	02 40 03	
			F		03 43 --	
Jan. 29	C.G.	ePN	W.A.	02 33 36		
		e(pP)N	W.A.	02 33 41		
32	Jan. 31	S.L.	(e)Z	M.S.	00 05 39	
			eLN	S.	00 29 53	
33	Jan. 31	S.L.	e(P)Z	M.S.	02 59 25	
			e(PR <sub>1</sub> )Z	M.S.	02 59 38	
			eLN	S.	03 05 54	
	Jan. 31	Fl.	eN	G.W.	03 06 03	
			Jan. 31	C.G.	eLN	
	34	Jan. 31			S.L.	
eZ			M.S.	09 40 57		
35	Jan. 31	S.L.	eN	G.W.	10 02 51	
			eZ	M.S.	21 32 36	

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7.

Minor Seismic Activity

Station	From h m	To h m	Date
S.L.	00 40	05 00	Jan. 3
S.L.	23 06	23 07	4
S.L.	08 25.5	08 40	5
S.L.	11 46.5	11 58	6
S.L.	03 22.5	03 31	8
S.L.	11 25	11 26	8
S.L.	05 35	05 40	14
S.L.	03 29.5	03 56.5	15
S.L.	02 05.5	02 08.5	15
Fl.	21 22	21 30	14
S.L.	14 17.5	14 29.5	17
S.L.	16 40	16 43	17
S.L.	06 18.5	06 22.5	18
S.L.	21 19	22 30	20
S.L.	03 22	03 30	22
S.L.	14 --	20 --	21
Fl.	04 36	04 39	24
S.L.	07 04	08 39	31

James B. Macelwane, S. J.  
 Director

Paul E. Howe  
 Student Assistant





February, 1944  
March, "  
April, "

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Longitude: 89°32'W. Altitude: h = 134m, H+h = 4km.  
Lithologic foundation: limestone.  
Seismographs: Wood-Anderson short period EN.  
Director of the Station: Professor John Harty.

**FL—FLORISSANT** (in cooperation with Saint Stanislaus Seminary, Florissant, Missouri, U. S. A.)—(inaugurated, 1928)

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Longitude: 90°22'12"W. Altitude: h = 160m, H+h = 4km.  
Lithologic foundation: Pennsylvanian shale.  
Seismographs: Galitzin-Wilip ENZ, Wood-Anderson short period EN.  
Clock: Shortt synchronome.  
Director of the Station: Reverend James B. Macelwane, S. J.

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Longitude: 92°21'W. Altitude: h = 135m, H+h = 5 km.  
Lithologic foundation: sandstone.  
Seismographs: Wood-Anderson short period EN.  
Clock: Howard-Gaertner.  
Director of the Station: Monsignor Joseph A. Murray.

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Longitude: 90°14'00"W. Altitude: h = 160m, H+h = 4 km.  
Lithologic foundation: clay.  
Seismograph: Wiechert (80 kg) EN.  
Clock: Wiechert.

**II**, University Gymnasium, 3672 West Pine Boulevard — (inaugurated, 1927).

Latitude: geographical, 38°38'10"N; geocentric, 38°27'N.  
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Lithologic foundation: Mississippian limestone.  
Seismographs: Wood-Anderson short period EN.  
Macelwane-Sprengnether Z; Sprengnether NE.  
Clock: Wiechert.  
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36	Feb. 1	S.L.	ePZ	M.S.	03 35 09	$\Delta_{P-H} = 84^{\circ}4$ $\Delta_{meas} = 84^{\circ}4$ $H = 03^h22^m43^s$ Epicentral Region: $41^{\circ}5$ N., $32^{\circ}3$ E.
			iPZ	M.S.	03 35 13	
			iPZ	M.S.	03 35 16	
			iZ	M.S.	03 35 31	
			iZ	M.S.	03 36 01	
			iZ	M.S.	03 36 55	
			iZ	M.S.	03 37 57	
			iZ	M.S.	03 38 08	
			iPR <sub>1</sub> Z	M.S.	03 38 31	
			iPR <sub>2</sub> Z	M.S.	03 40 28	
			e(PR <sub>3</sub> )Z	M.S.	03 42 04	
			iE	S.	03 45 52	
			iE	S.	03 48 33	
			eSR <sub>1</sub> E	S.	03 51 25	
			eSR <sub>1</sub> N	S.	03 51 35	
		F	M.S.	08.2		
		Fl.	iPZ	G.W.	03 35 16	
			iZ	G.W.	03 35 31	
			iZ	G.W.	03 35 49	
			iPR <sub>1</sub> Z	G.W.	03 38 35	
			iZ	G.W.	03 38 58	
			iPR <sub>2</sub> Z	G.W.	03 40 24	
			e(S)E	G.W.	03 45 41	
		C.G.	ePN	W.A.	03 35 19	$\Delta_{P-H} = 85^{\circ}6$ $\Delta_{meas} = 85^{\circ}4$
			eN	W.A.	03 35 34	
			eN	W.A.	03 38 14	
			eN	W.A.	03 38 19	
ePR <sub>1</sub> N	W.A.		03 38 30			
eN	W.A.		03 41 12			
e(S)N	W.A.		03 45 54			
F			05 18 --			
37	Feb. 1	S.L.	iPZ	M.S.	05 28 54	$\Delta_{P-H} = 87^{\circ}8$ $\Delta_{meas} = 87^{\circ}8$ $H = 05^h16.2^m$ Epicentral Region: $40^{\circ}5$ N., $141^{\circ}3$ E. About 70 km. deep.
			ipPZ	M.S.	05 29 07	
			iZ	M.S.	05 29 25	
			iZ	M.S.	05 30 03	
			eZ	M.S.	05 30 21	
			e(SKs)Z	M.S.	05 39 14	
			Fl.	iPZ	G.W.	
		iZ		G.W.	05 29 10	
		eSKSE		W.A.	05 39 11	
		eSE		G.W.	05 39 20	
		iSE		G.W.	05 39 23	

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9.

No.	Date	Sta	Phase	Inst	h m s	Remarks
37 (Con't.)	Feb. 1	C.G.	ePN	W.A.	05 29 01	$\Delta_{P-H} = 89^{\circ}1$ $\Delta_{meas} = 89^{\circ}2$
			eN	W.A.	05 29 05	
			epPN	W.A.	05 29 13	
			eN	W.A.	05 29 24	
			e(SKS)N	W.A.	05 39 22	
38	Feb. 1	S.L.	iPZ	M.S.	06 21 24	Aftershock of No. 36
39	Feb. 1	S.L.	ePZ	M.S.	17 42 12	Blast ?
40	Feb. 1	S.L.	eZ	M.S.	21 37 18	
			eLE	S.	22 09 41	
		Fl.	eE	G.W.	22 13.1	Surface Waves.
41	Feb. 2	S.L.	ePZ	M.S.	03 45 47	Aftershock of No. 36
			iPZ	M.S.	03 45 50	
			iZ	M.S.	03 46 02	
42	Feb. 2	S.L.	ePZ	M.S.	22 55 01	
			eZ	M.S.	22 55 23	
43	Feb. 2	S.L.	ePZ	M.S.	19 42 09	
44	Feb. 3	S.L.	ePZ	M.S.	11 32 33	Region of $5^{\circ}6$ N., $71^{\circ}6$ W. $H = 11^h 25.4^m$ $\Delta_{P-H} = 36^{\circ}6$ $\Delta_{meas} = 37^{\circ}$
45	Feb. 3	S.L.	iPZ	M.S.	12 22 06	$\Delta_{P-H} = 35^{\circ}3$ $\Delta_{meas} = 35^{\circ}4$ $H = 12^h 15^m 08^s$ Epicenter: $59^{\circ}5$ N., $135^{\circ}6$ W.
			iZ	M.S.	12 22 13	
			iPR <sub>1</sub> Z	M.S.	12 23 20	
			iPR <sub>2</sub> Z	M.S.	12 23 44	
			i(PcP)Z	M.S.	12 24 29	
			eSE	S.	12 27 47	
			eSR <sub>1</sub> E	S.	12 29 43	
			e(SR <sub>2</sub> )E	S.	12 30 26	
			eN	S.	12 33 04	
			iN	S.	12 33 44	
		C.G.	ePN	W.A.	12 22 17	
			eN	W.A.	12 23 20	
			ePR <sub>1</sub> N	W.A.	12 23 40	
			ePR <sub>2</sub> N	W.A.	12 24 04	
			ePR <sub>3</sub> N	W.A.	12 24 19	
			eN	W.A.	12 24 54	
			eSR <sub>1</sub> N	W.A.	12 30 23	
F	W.A.	12 59 --				

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10.

No.	Date	Sta	Phase	Inst	h m s	Remarks	
45 (Con't.)	Feb. 3	Fl.	iFZ	G.W.	12 22 05	$\Delta_{P-H} = 35^{\circ}2$ $\Delta_{meas} = 35^{\circ}3$	
			eZ	G.W.	12 23 14		
			ePR <sub>1</sub> Z	G.W.	12 23 21		
			iPR <sub>2</sub> Z	G.W.	12 23 44		
			e(PcP)Z	G.W.	12 24 30		
			eSE	G.W.	12 27 44		
			eSR <sub>1</sub> E	G.W.	12 29 46		
			e(L)E	G.W.	12 32 43		
			iE	G.W.	12 34 03		
			F	G.W.	14 09 --		
46	Feb. 3	S.L.	eFZ	M.S.	14 17 22	Region of No. 44.	
47	Feb. 4	S.L.	iFZ	M.S.	21 18 06	Region of: 39°2 N., 143°5 E. H = 21 <sup>h</sup> 05.5 <sup>m</sup> About 150 km. deep.	
			ipFZ	M.S.	21 18 40		
			eSKSE	S.	21 27 36		
			eSE	S.	21 28 06		
			esSKSE	S.	21 28 39		
			esSE	S.	21 29 10		
		Fl.	eSKSE	G.W.	21 27 34		
			ePN	W.A.	21 18 05		
			epPN	W.A.	21 18 40		
48	Feb. 4	S.L.	ePZ	M.S.	23 54 37	Eastern Greenland. H = 23 <sup>h</sup> 46.1 <sup>m</sup>	
			eSE	S.	24 02 02		
			eN	S.	24 04 24		
			eN	S.	24 05 45		
			eL	S.	24 10 --		
			F	S.	24 49 --		
		Fl.	eSE	G.W.	24 02 01		
			eLE	G.W.	24 09.5		
			F	G.W.	24 30 --		
49	Feb. 5	S.L.	eZ	M.S.	17 39 10	Epicentral Region: 23°6 N., 121°2 E. H = 17 <sup>h</sup> 20.1 <sup>m</sup> $\Delta_{PR_1-H} = 111^{\circ}6$ $\Delta_{meas} = 111^{\circ}2$	
			ePR <sub>1</sub> Z	M.S.	17 39 20		
			eZ	M.S.	17 39 36		
			eSKSN	S.	17 45 10		
			eSPN	S.	17 48 54		
			ePPSN	S.	17 50 40		
			F	S.	19 47 --		
			Fl.	iPR <sub>1</sub> Z	G.W.		17 39 17
				eZ	G.W.		17 42 18
		eZ		G.W.	17 44 57		
		eSKSE		G.W.	17 45 21		
		eSPE		G.W.	17 48 45		
		eE		G.W.	17 49 25		
		F		G.W.	19 32 --		

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No.	Date	Sta	Phase	Inst	h m s	Remarks	
50	Feb. 5	S.L.	eN	W.A.	20 45 40		
			eN	W.A.	20 45 42		
eLE	S.		21 00.5				
		Fl.	eN	W.A.	20 45 46		
			eLE	G.W.	21 00.1		
51	Feb. 5	C.G.	ePN	W.A.	22 10 44		
			eN	W.A.	22 10 52		
52	Feb. 6	S.L.	ePZ	M.S.	18 47 45	$\Delta_{\text{meas}} = 36^{\circ}8$ $\Delta_{\text{P-H}} = 36^{\circ}7$ $H = 18^{\text{h}}40.6^{\text{m}}$ Epicentral Region: 10°3 N., 64° W.	
			eZ	M.S.	18 48 02		
			eLN	S.	18 57 31		
		Fl.	ePN	W.A.	18 47 45		$\Delta_{\text{P-H}} = 36^{\circ}7$ $\Delta_{\text{meas}} = 36^{\circ}9$
			eE	W.A.	18 48 30		
		C.G.	ePN	W.A.	18 47 29		
			eN	W.A.	18 47 47		
53	Feb. 7	S.L.	e(L)E	S.	17 58 57	South Alaska.	
		Fl.	e(L)E	G.W.	17 59 12		
54	Feb. 10	S.L.	ePZ	M.S.	12 18 02		
55	Feb. 11	S.L.	eE	S.	19 24 58		
56	Feb. 14	S.L.	iPZ	M.S.	03 05 07	Roughly 39°N., 143°E.	
			eZ	M.S.	03 05 15		
57	Feb. 14	S.L.	eZ	M.S.	09 42 13		
58	Feb. 15	S.L.	iPZ	M.S.	05 47 23	$H = 05^{\text{h}}39.5^{\text{m}}$ Region of 49°N., 32°W. $\Delta_{\text{P-H}} = 42^{\circ}2$	
			iZ	M.S.	05 47 29		
			eSN	S.	05 53 45		
		Fl.				Time correction uncertain.	
59	Feb. 15	S.L.	ePR <sub>1</sub> Z	M.S.	16 02 55	$H = 15^{\text{h}}56.0^{\text{m}}$ Region of 17°N., 66°W. $\Delta_{\text{PR}_1\text{-H}} = 29^{\circ}6$	
60	Feb. 16	S.L.	iPZ	M.S.	11 20 15	Alaska?	
			eZ	M.S.	11 20 34		
			eSE	S.	11 27 27		
			eLN	S.	11 32 13		
			F	S.	12 07.5		

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No.	Date	Sta	Phase	Inst	h m s	Remarks
61	Feb. 18	S.L.	iPZ eZ	M.S. M.S.	19 30 41 19 30 48	Southwestern Canada?
62	Feb. 19	S.L.	ePZ eSN eN F	M.S. S. S. S.	11 44 15 11 51 04 11 56 18 12 20.5	H = 11 <sup>h</sup> 35.9 <sup>m</sup> ΔP-H = 45.7 Region of 59°N., 24°W.
63	Feb. 19	S.L.	e(P)Z	M.S.	16 03 03	Northern Pacific. South of Aleutians.
64	Feb. 19	S.L.	e(L)Z	M.S.	20 21.6	
65	Feb. 20	S.L.	eZ eE	M.S. S.	19 40 26 19 55 59	
66	Feb. 21	S.L.	ePZ e(L)E	M.S. S.	00 36 26 00 50.6	
67	Feb. 21	S.L.          C.G.	iFZ iZ iPR <sub>1</sub> Z iZ eSE L eE eScPE F  eN eN	M.S. M.S. M.S. M.S. S. S. S. S. S. S.  W.A. W.A.	11 33 57 11 34 02 11 34 22 11 34 32 11 38 19 11 39 -- 11 40 58 11 41 47 12 42 --  11 33 59 11 37 04	H = 11 <sup>h</sup> 28.9 <sup>m</sup> Region of : 104.6° W., 19.0° N. ΔP-H = 23°
68	Feb. 21	S.L.	eE eLE	S. S.	15 41 35 15 50 13	
69	Feb. 21	S.L.	(e)Z e(L)E	M.S. S.	17 42 05 17 57 40	
70	Feb. 21	S.L.	eLE	S.	20 54.3	
71	Feb. 23	S.L.	eN eLE M	S. S. S.	01 44 28 01 53 -- 01 56.2	
72	Feb. 23	S.L.	eZ eN F	M.S. S. S.	05 57 10 06 07 03 06 29.5	

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No.	Date	Sta	Phase	Inst	h m s	Remarks
73	Feb. 23	S.L.	iPZ	M.S.	12 35 15	$H = 12^h 25.5^m$ $\Delta_{P-H} = 59.1$ Region of $51^{\circ}N.$ , $176^{\circ}W.$  About 100 km. deep.
			iZ	M.S.	12 35 23	
			iZ	M.S.	12 35 31	
			ipPZ	M.S.	12 35 40	
			eSE	S.	12 43 20	
			eE	S.	12 43 37	
			esSE	S.	12 44 00	
			cN	S.	12 44 47	
			cE	W.A.	12 45 00	
			eLE	S.	12 53 45	
F	S.	13 33 --				
74	Feb. 25	S.L.	iPZ	M.S.	06 44 01	
75	Feb. 25	S.L.	iPZ	M.S.	07 41 22	$H = 07^h 32.5^m$ $\Delta_{P-H} = 49.5$ Region: $68^{\circ}N.$ , $166^{\circ}W.$
			e(SR <sub>1</sub> )N	S.	07 52 29	
			eLE	S.	07 56 03	
			F	S.	08 33 --	
		Fl.	ePE	W.A.	07 41 20	$\Delta_{P-H} = 49.2$
			eSR <sub>1</sub> E	G.W.	07 51 48	
F	G.W.	08 27 --				
76	Feb. 26	S.L.	ePZ	M.S.	22 31 27	Alaska. $H = 22^h 22.9^m$
			iPZ	M.S.	22 31 29	
			eZ	M.S.	22 32 18	
			eLE	S.	22 45.3	
		F	S.	23 14 --		
		Fl.	cPZ	G.W.	22 31 27	
cL	G.W.		22 44.9			
77	Feb. 28	S.L.	eE	S.	16 35 33	
78	Feb. 28	S.L.	e(P)Z	M.S.	17 52 01	
			eLE	S.	18 06 27	
		Fl.	eLE	G.W.	18 06 22	
79	Feb. 29	S.L.	iPE	M.S.	03 51 17	$H = 03^h 12^m 07^s$ $\Delta_{P-H} = 56.3$ $\Delta_{meas} = 56.3$ Tentative Epicenter: $14.92 S.$ , $69.93 W.$  About 275 km. deep.
			iZ	M.S.	03 51 58	
			iPcPZ	M.S.	03 52 02	
			ipPZ	M.S.	03 52 14	
			iZ	M.S.	03 52 46	
			iZ	M.S.	03 53 11	
			iPR <sub>1</sub> Z	M.S.	03 53 25	
			iZ	M.S.	03 54 07	
			ipPR <sub>1</sub> Z	M.S.	03 54 27	
			ipPR <sub>3</sub> Z	M.S.	03 55 57	
			iSE	S.	03 58 40	
			iSE	S.	03 58 47	
			iE	S.	03 59 13	
			iSPE	S.	03 59 58	

(Con't. on next page)

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No.	Date	Sta	Phase	Inst	h m s	Remarks			
79 (Con't.)	Feb. 29	S.L.	iE	S.	04 00 18				
			isSE	S.	04 00 47				
			iScSE	S.	04 01 32				
			iSR <sub>1</sub> E	S.	04 02 43				
			e(sSR <sub>1</sub> )E	S.	04 04 43				
			cLE	S.	04 08 38				
			F	S.	06 06 --				
			Fl.	ipZ	G.W.		03 51 19	$\Delta_{\text{meas}} = 56^{\circ}4$	
		iZ		G.W.	03 52 02				
		ipP		G.W.	03 52 09				
		ipPZ		G.W.	03 52 16				
		iPR <sub>1</sub> Z		G.W.	03 53 30				
		ipPR <sub>1</sub> Z		G.W.	03 54 23				
		ipPR <sub>3</sub> Z		G.W.	03 55 58				
		iSE		G.W.	03 58 44				
		iSE		G.W.	03 58 51				
		eSPE		G.W.	03 59 31				
		iE		G.W.	04 00 02				
		isSE		G.W.	04 00 49				
		iScSE		G.W.	04 01 35				
		iE		G.W.	04 02 11				
		iSR <sub>1</sub> E		G.W.	04 02 44				
		iSR <sub>1</sub> E		G.W.	04 02 53				
		eE		G.W.	04 03 55				
		csSR <sub>1</sub>		G.W.	04 04 32				
		cE		G.W.	04 06 59				
		e(L)E		G.W.	04 08 06				
		F		G.W.	05 44 --				
		C.G.		iPE	W.A.		03 51 07		$\Delta_{\text{meas}} = 55^{\circ}$
				cPcFE	W.A.		03 51 57		
				cE	W.A.		03 56 09		
			eSE	W.A.	03 58 28				
			cE	W.A.	04 00 33				
		80	Feb. 29	S.L.	eP'Z		M.S.	16 47 27	H = 16h28m08s Epicenter: 0°00'N., 75°00'E. $\Delta_{\text{PR}_1\text{-H}} = 139^{\circ}2$ $\Delta_{\text{meas}} = 139^{\circ}2$
					ip'Z		M.S.	16 47 33	
iZ	M.S.				16 47 42				
iPR <sub>1</sub> Z	M.S.				16 50 22				
eSKP <sub>1</sub> Z	M.S.				16 51 06				
iZ	M.S.				16 51 34				
iPR <sub>2</sub> Z	M.S.				16 53 29				
eSKSZ	M.S.				16 54 47				
ePR <sub>3</sub> Z	M.S.				16 55 43				
ePSKSN	S.				17 00 23				
e(FPS)N	S.				17 02 26				
eSR <sub>1</sub> N	S.				17 08 38				
cPPSSN	S.				17 09 46				
eSR <sub>2</sub> N	S.				17 13 59				
F	S.				20.5				
C.G.	eP'N			W.A.	16 47 45	$\Delta_{\text{PR}_1\text{-H}} = 140^{\circ}3$ $\Delta_{\text{meas}} = 140^{\circ}4$			
	ePR <sub>1</sub> N			W.A.	16 50 29				
	eSKP <sub>1</sub> E			W.A.	16 51 12				



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No.	Date	Sta	Phase	Inst	h m s	Remarks
80 (Con't.)	Feb. 29	Fl.	eP'Z	G.W.	16 47 24	
			iZ	G.W.	16 47 44	
			ePR <sub>1</sub> Z	G.W.	16 50 22	
			eSKP <sub>1</sub> Z	G.W.	16 50 52	
			iZ	G.W.	16 51 17	
			ePR <sub>2</sub> Z	G.W.	16 53 32	
			e(SKS)Z	G.W.	16 55 12	
			ePR <sub>3</sub> Z	G.W.	16 55 51	
			ePSKSE	G.W.	17 00 39	
			ePPFSZ	G.W.	17 04 15	
			eSR <sub>1</sub> E	G.W.	17 08 45	
			eSR <sub>2</sub> E	G.W.	17 13 45	
			F	G.W.	20.2	
			81	Feb. 29	S.L.	eFZ
eN	S.	20 55 35				

Minor Seismic Activity

Station	From h m s	To h m s	Date
S.L.	04 22 --	04 32 --	Feb. 2
Fl.	04 22 --	04 27.5	2
S.L.	12 58 36		4
S.L.	03 09 --	03 38 --	5
S.L.	16 36.5	16 43 --	5
S.L.	20 17 --	20 43 --	7
Fl.	20 21 --	20 31 --	7
S.L.	17 07.5	17 10 --	15
S.L.	03 15 --	03 20 --	16
S.L.	03 15 --	03 19 --	19
S.L.	00 59 --	01 03 --	22
S.L.	07 37 --	07 52 --	22
S.L.	02 59.5	03 18 --	26
S.L.	02 35 --	03 38 --	27

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3621 OLIVE STREET, SAINT LOUIS 8, MO., U. S. A.

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No.	Date	Sta	Phase	Inst	h m s	Remarks
82	March 1	S.L.	e(L)N	S.	13 37 40	
83	March 5	S.L.	eP <sub>1</sub> Z	M.S.	17 34 39	Epicentral Region by U.S.C.C.S.: 8° N., 127° E. H = 17 <sup>h</sup> 16.1 <sup>m</sup> 200 km. deep. (Approx.)
			iPR <sub>1</sub> Z	M.S.	17 36 12	
			eSE	S.	17 45 48	
			eSR <sub>1</sub> E	S.	17 53 00	
			eLE	S.	18 15 14	
			F	S.	19 08 --	
		Fl.	ePR <sub>1</sub> E	W.A.	17 36 13	
84	March 6	S.L.	ePZ	M.S.	20 15 14	Epicentral Region: 44°2' N., 128°6' W. May be 50 km. deep. $\Delta_{P-H} = 29^{\circ}6'$ H = 20 <sup>h</sup> 09 <sup>m</sup> 09 <sup>s</sup>
			cSE	S.	20 20 17	
			cE	S.	20 20 24	
			e(sS)E	S.	20 20 37	
			eSR <sub>1</sub> E	S.	20 21 42	
			eLN	S.	20 23 49	
			eMN	S.	20 26 00	
			Fl.	ePZ	G.W.	
		eSZ		G.W.	20 20 18	
		eE		G.W.	20 20 45	
		e(L)E		G.W.	20 24 07	
		85	March 6	S.L.	ePZ	
ePR <sub>1</sub> Z	M.S.				21 12 58	
cSE	S.				21 16 53	
eE	S.				21 21 17	
eME	S.				21 22 13	
Fl.	ePZ				G.W.	21 11 56
	eSE			G.W.	21 17 06	
	eME			G.W.	21 22 17	
86	March 6			S.L.	ePZ	M.S.
		ePR <sub>1</sub> Z	M.S.		23 23 39	
		eSN	S.		23 27 41	
		eSR <sub>1</sub> N	S.		23 29 04	
		eLN	S.		23 31 11	
		eMN	S.		23 33 29	
		Fl.	ePR <sub>1</sub> Z		G.W.	23 23 42
			eSE	G.W.	23 27 41	
			eE	G.W.	23 29 45	
			eLE	G.W.	23 31 31	$\Delta_{meas} = 29^{\circ}1'$

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No.	Date	Sta	Phase	Inst	h m s	Remarks
87	March 7	S.L.	ePZ e(S)E e(L)E	M.S. S. S.	06 15 19 06 20 42 06 24 38	Aftershock of No. 84. $\Delta_{\text{meas}} = 29^{\circ}6$ H = 06h09m13s
		Fl.	ePZ eSE	G.W. G.W.	06 15 19 06 20 20	$\Delta_{\text{meas}} = 29^{\circ}4$
88	March 7	S.L.	ePZ	M.S.	06 51 14	H = 06h44m56s $\Delta_{\text{meas}} = 30^{\circ}6$ Aftershock of No. 84.
			eSE	S.	06 56 45	
			eE	S.	07 00 47	
			eE	S.	07 03 41	
89	March 7	S.L.	ePZ	M.S.	08 27 37	$\Delta_{\text{meas}} = 29^{\circ}7$ H = 08h21m08s Aftershock of No. 84.
			eSE	S.	08 32 37	
			eE	S.	08 36 51	
			eE	S.	08 37 49	
		Fl.	ePZ	G.W.	08 27 35	$\Delta_{\text{meas}} = 29^{\circ}5$
			eSE	G.W.	08 32 38	
90	March 9	S.L.	eLE	S.	16 37 54	Aftershock of No. 84 ?
		Fl.	eLE	G.W.	16 38 --	
91	March 9	S.L.	eLE	S.	16 48 16	Aftershock of No. 84 ?
		Fl.	eLE	G.W.	16 48.5	
92	March 9	S.L.	eLE	S.	17 23 47	Aftershock of No. 84 ?
		Fl.	eLE	G.W.	17 24 --	
93	March 9	S.L.	ePZ	M.S.	22 17 18	Foreshock of No. 94.
			eSKSN	S.	22 27 54	
			eSPN	S.	22 29 58	
94	March 9	S.L.	iPZ	M.S.	22 26 32	H = 22h13m00s $\Delta_{\text{P-H}} = 97^{\circ}0$ $\Delta_{\text{meas}} = 97^{\circ}2$ Epicentral Region: 44°4 N., 85°5 E.
			eZ	M.S.	22 26 57	
			ePR <sub>1</sub> Z	M.S.	22 30 28	
			iSKSN	S.	22 37 06	
			eSE	W.A.	22 37 58	
			iSPN	S.	22 39 22	
			e(SR <sub>1</sub> )N	S.	22 45 34	
			e(SR <sub>2</sub> )N	S.	22 48 26	
			eLN	S.	23 00 19	
			C.G.	eSKSN	W.A.	
		Fl.		ePZ	G.W.	22 26 32
			e(PR <sub>1</sub> )Z	G.W.	22 30 37	
			iSKSE	G.W.	22 37 05	
			eSPZ	G.W.	22 39 22	
eSR <sub>2</sub> E	G.W.	22 49 06				

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18.

No.	Date	Sta	Phase	Inst	h m s	Remarks
95	March 10	S.L.	ePZ	M.S.	06 52 42	H = 06 <sup>h</sup> 40 <sup>m</sup> 08 <sup>s</sup> $\Delta P-H = 85.9$ $\Delta_{meas} = 86.1$ Epicentral Region: 41.94 N., 143.93 E. Depth: 50 km.
			ipPZ	M.S.	06 52 55	
			epPR <sub>1</sub> Z	M.S.	06 56 21	
			eSE	S.	07 03 21	
			eSR <sub>1</sub> E	S.	07 09 11	
			c(SR <sub>3</sub> )E	S.	07 15 43	
			cLE	S.	07 20 36	
			F	S.	08.5	
		Fl.	ePZ	G.W.	06 52 44	$\Delta_{meas} = 86.90$ $\Delta P-H = 86.93$
			epPR <sub>1</sub> Z	G.W.	06 56 16	
			eSKSE	G.W.	07 03 37	
			eSE	G.W.	07 03 49	
			eSR <sub>1</sub> E	G.W.	07 09 08	
			c(SR <sub>3</sub> )E	G.W.	07 15 39	
eLE	G.W.	07 21 --				
F	G.W.	08.1				
96	March 12	S.L.	c(P)Z	M.S.	18 22 26	
97	March 14	S.L.	c(P)Z	M.S.	07 32 47	
			eLE	S.	07 52.6	
		Fl.	eLE	G.W.	07 53.5	
98	March 15	S.L.	eLE	S.	05 59 --	
		Fl.	eLE	G.W.	05 59.5	
99	March 15	S.L.	cZ	M.S.	09 15 42	
100	March 21	S.L.	c(P)Z	M.S.	15 28 07	Weak.
			eLN	S.	15 43 --	
101	March 21	S.L.	ipZ	M.S.	22 22 37	Epicentral Region by U.S.C.G.S.: 42° N., 143° E.  (May be 50 km. deep.)
			c(pP)Z	M.S.	22 22 52	
			eZ	M.S.	22 24 04	
			cPR <sub>1</sub> Z	M.S.	22 26 18	
			iSE	S.	22 33 15	
			cSR <sub>1</sub> E	S.	22 38 57	
			eLE	S.	22 50 --	
			Fl.	e(P)Z	G.W.	
		eSE		G.W.	22 33 01	
				cSR <sub>1</sub> E	G.W.	22 38 56
		eLE	G.W.	22 52 --		

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No.	Date	Sta	Phase	Inst	h m s	Remarks
102	March 22	S.L.	eZ	M.S.	01 02 05	Epicentral Region: 8°7 S., 123°8 E H = 00 <sup>h</sup> 43 <sup>m</sup> 20 <sup>s</sup> $\Delta_{PR_1-H} = 137^{\circ}7$ $\Delta_{meas} = 137^{\circ}8$  200±km deep.
			i(P')Z	M.S.	01 02 10	
			iP'Z	M.S.	01 02 19	
			iPR <sub>1</sub> Z	M.S.	01 05 02	
			iSKPZ	M.S.	01 05 32	
			ipPR <sub>1</sub> Z	M.S.	01 05 47	
			iZ	M.S.	01 06 06	
			isSKPE	S.	01 06 49	
			ePR <sub>2</sub> Z	M.S.	01 07 58	
			eSKKSE	S.	01 11 39	
			esSKKSE	S.	01 12 52	
			esSN	S.	01 15 06	
			ePPSE	S.	01 17 50	
			eE	S.	01 18 40	
			eSR <sub>1</sub> Z	M.S.	01 22 53	
			e(FPSS)N	S.	01 23 59	
			eSR <sub>2</sub> E	S.	01 28 59	
			eN	S.	01 36 39	
			F	S.	03.4	
			Fl.	iP'Z	G.W.	
		iPR <sub>1</sub> Z		G.W.	01 05 03	
		eSKPZ		G.W.	01 05 38	
		esSKPE		G.W.	01 06 47	
		eZ		G.W.	01 11 38	
		eSKKSE		G.W.	01 11 41	
		ePPSE		G.W.	01 17 34	
		ePPPSE		G.W.	01 18 47	
		eSR <sub>1</sub>		G.W.	01 23 00	
		eSR <sub>2</sub> E		G.W.	01 28 01	
		F	G.W.	03.3		
		C.G.	eP'N	W.A.	01 02 23	$\Delta_{meas} = 138^{\circ}8$
			eSKPN	W.A.	01 05 44	
			epPR <sub>1</sub> N	W.A.	01 05 59	
103	March 22	S.L.	e(P)Z	M.S.	17 45 18	
104	March 22	S.L.	iPZ	M.S.	17 56 50	
			iZ	M.S.	17 57 03	
			eLE	S.	18 15 --	
105	March 22	S.L.	eN	S.	19 32 54	
			eLE	S.	19 57 --	
		Fl.	eLE	G.W.	19 58 --	
106	March 23	S.L.	iPZ	M.S.	12 11 00	Off West Coast of Central America.  Time correction un- certain.
			e(S)E	S.	12 15 59	
		Fl.	ePN	W.A.	12 11 05	

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No.	Date	Sta	Phase	Inst	h m s	Remarks
107	March 24	S.L.	iPZ eSN	M.S. S.	17 08 07 17 13 07	Epicentral Region: by U.S.C.G.S. 9° N., 83 1/2°W.
108	March 25	S.L.	iPZ	M.S.	04 30 06	Central America?
109	March 25	S.L.	eZ	M.S.	19 30 22	
110	March 26	S.L.	iPZ	M.S.	23 54 55	
		Fl.	eFN	W.A.	23 54 58	
111	March 28	S.L.	eLE	S.	11 25 --	
112	March 28	S.L.	eLE	S.	23 37 --	Also Fl.
113	March 31	S.L.	eP'Z eZ ePR <sub>1</sub> Z iSKPZ iZ eE ePR <sub>2</sub> E eSE eSR <sub>1</sub> E cSR <sub>2</sub> N eN eL F	M.S. M.S. M.S. M.S. M.S. M.S. M.S. M.S. M.S. M.S. M.S. M.S. M.S. M.S.	03 11 03 03 11 17 03 13 23 03 14 09 03 14 17 03 14 52 03 15 44 03 21 40 03 30 20 03 35 46 03 46 18 03 55.4 05.6	Region by U.S.C.G.S. 5 1/2°S., 136 1/2°E.  H = 02 <sup>h</sup> 51.9 <sup>m</sup>
		Fl.	eZ eSKPZ ePR <sub>2</sub> Z eSE F	G.W. G.W. G.W. G.W. G.W.	03 13 02 03 14 18 03 15 42 03 30 21 05.3	
		C.G.	eSKPN	W.A.	03 14 17	
114	March 31	C.G.	eN eN eN	W.A. W.A. W.A.	20 42 28 20 42 41 20 44 11	

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21.

Minor Seismic Activity

Station	Date	From h <sup>h</sup> m <sup>m</sup> s <sup>s</sup>	To h <sup>h</sup> m <sup>m</sup> s <sup>s</sup>	Remarks	
S.L.	March 1	21 32.5	22 01	Calif. reports quake.	
S.L.	6	03 21.4	03 25.5		
S.L.	6	13 11.5	13 22.5		
S.L.	8	23 49.5	24 14		
Fl.	8	23 51	24 15		
S.L.	12	13 54	14 23		
S.L.	14	12 25	12 51		
S.L.	14	19 28	19 55		
S.L.	16	13 09.5	13 29		
S.L.	17	00 25	00 47		
Fl.	17	00 30	00 39		
S.L.	17	17.5	17.7		
S.L.	25	12 40.5	12 55.5		
Fl.	24	23 07.5	23 13		
S.L.	25	22 22.5	22 37		
S.L.	26	17.2	17.5		
Fl.	27	04.0	05.7		Seismic?
S.L.	27	04.3	06.5		Seismic?

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No.	Date	Sta	Phase	Inst	h m s	Remarks	
115	April 2	S.L.	eLN	S.	04 51 36		
116	April 3	S.L.	e(L)N	S.	13 04 39		
117	April 3	S.L.	eLN	S.	13 22 58		
118	April 3	S.L.	eSN	S.	18 16 38		
			eLN	S.	18 36.1		
		Fl.	eLE	G.W.	18 39 --		
119	April 4	S.L.	ePZ	M.S.	22 57 46	H = 22 <sup>h</sup> 46 <sup>m</sup> 10 <sup>s</sup> Epicentral Region: 35°2 S., 100°5 W. $\Delta_{P-H} = 74.06$ $\Delta_{meas} = 74.05$	
			eSE	S.	23 07 22		
120	April 5	S.L.	iFZ	M.S.	04 53 14	H = 04 <sup>h</sup> 40.7 <sup>m</sup> Epicentral Region: 40° N., 31° E. $\Delta_{P-H} = 84.08$ $\Delta_{meas} = 84.9$	
			iZ	M.S.	04 53 21		
			eSN	S.	05 03 39		
			eLE	S.	05 20.5		
		Fl.	eLE	S.	05 21.4		
121	April 6	S.L.	iPZ	M.S.	02 39 25		
			eZ	M.S.	02 39 41		
		Fl.	ePN	W.A.	02 39 26		
122	April 7	S.L.	iPZ	M.S.	13 38 27	H = 13 <sup>h</sup> 32 <sup>m</sup> 51 <sup>s</sup> . Epicentral Region: 11°6 N., 86°3 W. $\Delta_{P-H} = 26.09$ $\Delta_{meas} = 27.01$ Depth of Focus: 100±km.	
			iPR <sub>1</sub> Z	M.S.	13 39 19		
			iPcPZ	M.S.	13 41 25		
			eSN	S.	13 42 51		
			eSN	S.	13 43 03		
			esSN	S.	13 43 20		
			eSR <sub>1</sub> N	S.	13 44 01		
			eN	S.	14 15 04		
			C.G.	ePN	W.A.		13 38 13
				iPN	W.A.		13 38 14
		ePR <sub>1</sub> N		W.A.	13 38 14		
eSN	W.A.	13 42 31					
eSR <sub>1</sub> N	W.A.	13 43 36					
					$\Delta_{P-H} = 25.04$ $\Delta_{meas} = 25.7$		
123	April 10	S.L.	iFZ	M.S.	02 32 10		



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No.	Date	Sta	Phase	Inst	h m s	Remarks
124	April 10	S.L.	iPZ	M.S.	21 09 29	
			iZ	M.S.	21 09 49	
125	April 11	S.L.	(e)Z	M.S.	01 28 23	
126	April 11	S.L.	eLN	S.	02 43 --	
		Fl.	eLN	G.W.	02 43.3	
127	April 11	S.L.	iPZ	M.S.	23 06 01	H = 23 <sup>h</sup> 00 <sup>m</sup> 45 <sup>s</sup> Epicentral Region: 15°1 N., 97°7 W. ΔP-H = 24.01 Δmeas = 24.01
			eSN	S.	23 10 27	
		Fl.	ePZ	G.W.	23 06 03	
			eSE	G.W.	23 10 25	
128	April 13	S.L.	eN	S.	15 52 42	
129	April 17	S.L.	iPZ	M.S.	17 57 16	
			iZ	M.S.	17 57 38	
			eN	S.	18 10 49	
		Fl.	ePZ	G.W.	17 57 16	
eZ	G.W.		17 57 39			
130	April 19	S.L.	ePZ	M.S.	22 43 14	Epicentral Region by U.S.C.G.S.: 29° S., 116° W. H = 22 <sup>h</sup> 32.0 <sup>m</sup>
			iZ	M.S.	22 45 13	
			iSE	S.	22 52 23	
			eSR <sub>2</sub> E	S.	23 00 13	
			eLN	S.	23 05 --	
		Fl.	ePZ	G.W.	22 43 19	
			iSE	G.W.	22 52 28	
			eSR <sub>2</sub> E	G.W.	23 00 18	
eLE	G.W.	23 05 --				
131	April 21	S.L.	ePZ	M.S.	15 08 15	H = 15 <sup>h</sup> 01 <sup>m</sup> 27 <sup>s</sup> Epicenter: 1.08 N., 84.7 W. ΔP-H = 34.01 Δmeas = 34.01
			eSE	S.	15 13 45	
			e(SR <sub>1</sub> )E	S.	15 15 59	
			F	S.	15.6	
		Fl.	ePZ	G.W.	15 08 18	
			eSE	G.W.	15 13 48	
eZ	G.W.	15 16 10				
132	April 22	S.L.	ePZ	M.S.	03 46 49	
			eSE	S.	03 55 58	
			eE	S.	04 04 05	
		Fl.	eSE	G.W.	03 56 03	

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24.

No.	Date	Sta	Phase	Inst	h m s	Remarks
133	April 23	S.L.	e(P)Z	M.S.	08 25 56	
134	April 23	S.L.	epPZ eSKSE iE eSN eSR <sub>1</sub> E	M.S. S. S. S. S.	11 12 32 11 21 00 11 21 41 11 22 10 11 29 24	Epicentral Region by U.S.C.G.S.: 22°0 S., 177 1/2°W. Depth approximately 375 km.
135	April 24	S.L.	eLE	S.	02 28 --	
		Fl.	eLE	G.W.	02 28 --	
136	April 26	S.L.	iP'Z iPR <sub>1</sub> Z eSKPE ePR <sub>2</sub> Z eSPE iSR <sub>1</sub> E ePPSSE eE iSR <sub>2</sub> E eLE F	M.S. M.S. S. M.S. S. S. S. S. S. S. S.	02 13 14 02 15 01 02 16 25 02 18 00 02 24 54 02 31 55 02 32 30 02 34 53 02 36 43 02 53.6 04.7	Epicentral Region: 1°0 S., 135°0 E. H = 01 <sup>h</sup> 54.3 <sup>m</sup> Agreement is poor. Possibly slightly deep. $\Delta_{PR_1-H} = 124.96$ $\Delta_{meas} = 124.94$
		Fl.	eP'Z iPR <sub>1</sub> Z eSKPE eSKSE eSPE eE eSR <sub>1</sub> E iSR <sub>1</sub> E iPPSSE iSR <sub>2</sub> E F	G.W. G.W. G.W. G.W. G.W. G.W. G.W. G.W. G.W. G.W. G.W.	02 13 14 02 14 59 02 16 25 02 20 14 02 24 55 02 30 35 02 31 48 02 31 52 02 32 26 02 36 39 04.5	$\Delta_{SR_1-H} = 124.90$ $\Delta_{meas} = 124.92$
137	April 26	S.L.	eZ	M.S.	18 46 52	
138	April 27	S.L.	eP'Z iPZ iZ iPR <sub>1</sub> Z iPR <sub>2</sub> Z iSKSE eE eSE iSPE iE iSR <sub>1</sub> E F	M.S. M.S. M.S. M.S. M.S. S. S. S. S. S. S. S.	14 57 07 14 57 12 14 57 17 14 59 01 15 01 38 15 04 22 15 05 51 15 07 07 15 08 57 15 11 29 15 15 53 18.5	Epicentral Region: 1°0 S., 134°0 E. H = 14 <sup>h</sup> 38.2 <sup>m</sup> Poor Agreement. Possibly 50 km. deep. $\Delta_{meas} = 124.94$

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No.	Date	Sta	Phase	Inst	h m s	Remarks	
138 (Con't.)	April 27	Fl.	iP'Z	G.W.	14 57 15	$\Delta_{\text{meas}} = 124.92$	
			ePR <sub>1</sub> Z	G.W.	14 58 52		
			iZ	G.W.	14 59 27		
			ePR <sub>2</sub> Z	G.W.	15 01 11		
			iSKSE	G.W.	15 04 22		
			e(SKKS)E	G.W.	15 05 47		
			iSE	G.W.	15 07 26		
			iSPE	G.W.	15 08 59		
			eSR <sub>1</sub> E	G.W.	15 15 36		
			eE	G.W.	15 16 02		
			eSR <sub>2</sub> E	G.W.	15 20 37		
F	G.W.	18.0					
139	April 27	S.L.	eP'Z	M.S.	19 24 13	Aftershock of No. 136. $H = 19^{\text{h}}05.2^{\text{m}}$	
			ePR <sub>1</sub> Z	M.S.	19 26 01		
			eSKSE	S.	19 31 19		
			eSPN	S.	19 36 01		
			eSR <sub>1</sub> N	S.	19 42 54		
			eE	S.	19 43 40		
			eE	S.	19 45 49		
			eSR <sub>2</sub> E	S.	19 47 49		
			eLE	S.	20 02 49		
			eME	S.	20 15 54		
			F	S.	21.5		
140	April 28	S.L.	(e)	M.S.	05 55 37		
141	April 28	S.L.	iPZ	M.S.	05 56 47	$H = 05^{\text{h}}50^{\text{m}}28^{\text{s}}$ Epicentral Region: 8° N., 82 1/2° W. $\Delta_{\text{P-H}} = 30.7$ $\Delta_{\text{meas}} = 30.97$	
			iPR <sub>1</sub> ZN	M.S.	05 57 45		
			eSN	S.	06 01 51		
			eE	S.	06 03 42		
			F	M.S.	06.6		
		Fl.	iPZ	G.W.	05 56 49		$\Delta_{\text{meas}} = 30.99$
			iPR <sub>1</sub> Z	G.W.	05 57 47		
			eSN	G.W.	06 01 57		
			eE	G.W.	06 03 47		
			F	G.W.	06.5		
142	April 29	S.L.	e(P)Z	M.S.	06 34 37		
			eLN	S.	06 50 09		
		Fl.	eLN	G.W.	06 50 30		
143	April 29	S.L.	ePZ	M.S.	16 30 48		
144	April 29	S.L.	eZ	M.S.	18 30 59	Very weak.	

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26.

Minor Seismic Activity

Station	Date	G.M.T.		Remarks
		From h m s	To h m s	
S.L.	April 8	03 55	04 02	Pasadena reports quake.
S.L.	9	19.1	19.5	
S.L.	10	04 33	04 51	
Fl.	10	04 33	04 40	
S.L.	16	09 26	09 43.5	
S.L.	18	12 46.5	12 53	
S.L.	25	18 56	19 17	

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No.	Date	Sta	Phase	Inst	h m s	Remarks
145	May 4	S.L.	eZ	M.S.	06 07 31	Very weak.
146	May 4	S.L.	iPZ	M.S.	06 20 17	
147	May 4	S.L.	e(L)N	S.	07 38 --	
		Fl.	e(L)	G.W.	07 37.5	
148	May 4	S.L.	ePZ	M.S.	20 42 58	Very weak. H = 20h36.3m Region: 6° N., 83° W.
149	May 6	S.L.	cPZ	M.S.	00 21 35	H = 00h13m45s Epicenter: 23°0 N., 44°6 W. $\Delta_{P-H} = 41^{\circ}8$ $\Delta_{meas} = 41^{\circ}8$
			iPZ	M.S.	00 21 38	
			iPZ	M.S.	00 21 41	
			iZ	M.S.	00 22 29	
			ePR <sub>1</sub> E	S.	00 23 13	
			e(ScP)E	S.	00 27 41	
			iSE	S.	00 27 59	
			e(SR <sub>1</sub> )N	S.	00 30 57	
			eE	S.	00 31 49	
			eLE	S.	00 33 20	
		F	S.	01.6		
		Fl.	ePZ	G.W.	00 21 37	$\Delta_{P-H} = 42^{\circ}1$ $\Delta_{meas} = 42^{\circ}0$
			eZ	G.W.	00 22 22	
			ePR <sub>1</sub> Z	G.W.	00 23 25	
			eSE	G.W.	00 27 53	
			e(SR <sub>1</sub> )N	G.W.	00 30 36	
			eE	G.W.	00 31 50	
			eLE	G.W.	00 33 21	
			F	G.W.	01.6	
150	May 6	S.L.	ePZ	M.S.	17 47 18	Weak.
151	May 7	S.L.	iPZ	M.S.	15 18 15	Region: 58° N., 104° W. H = 15h10.0m
			e(PR <sub>1</sub> )Z	M.S.	15 20 04	
			eSE	S.	15 25 01	
			eScSN	S.	15 28 23	
			eLE	S.	15 32.7	
			F	S.	16.5	
			Fl.	eN	G.W.	
		cScSN		G.W.	15 28 22	
		F		G.W.	16.5	

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No.	Date	Sta	Phase	Inst	h m s	Remarks.
152	May 9	S.L.	ePZ	M.S.	14 37 08	H = 14 <sup>h</sup> 29.9 <sup>m</sup> Epicentral Region: 3° N., 54.5° W. Depth of Focus: 75±km.
			epP Z	M.S.	14 37 19	
			iSE	S.	14 42 59	
			eSR <sub>1</sub> E	S.	14 45 22	
		F	S.	15.6		
		Fl.	iSE	G.W.	14 43 02	
eSR <sub>1</sub> E	G.W.		14 46 03			
F	G.W.		15.4			
153	May 9	S.L.	eZ	M.S.	19 34 12	May not be seismic.
			eZ	M.S.	19 39 02	
154	May 11	S.L.	(e)Z	M.S.	08 44 39	Very Weak.
155	May 12	S.L.	e(L)E	S.	07 54	
156	May 13	S.L.	eZ	M.S.	02 51 42	Weak; indefinite beginning.
157	May 13	S.L.	ePZ	M.S.	22 10 34	
			eLE	S.	22 24	
		Fl.	eLE	S.	22 24.3	
158	May 14	S.L.	iPZ	M.S.	11 07 38	H = 05 <sup>h</sup> 54.5 <sup>m</sup> Region: 175° W., 14° S. Probably deeper than normal.
			ePR <sub>1</sub> Z	M.S.	11 11 26	
			eSKSE	S.	11 17 59	
		Fl.	ePZ	G.W.	11 07 38	
			ePR <sub>1</sub> Z	G.W.	11 11 27	
			eSKSE	G.W.	11 17 59	
159	May 14	S.L.	eZ	M.S.	17 37 53	Very weak.
160	May 15	Fl.	eE	G.W.	19 45 19	
			eE	G.W.	19 47 55	
			eLE	G.W.	20 11 --	
161	May 17	S.L.	ePZ	M.S.	07 07 20	
162	May 18	S.L.	ePR <sub>1</sub> Z	M.S.	05 02 39	H = 04 <sup>h</sup> 43 <sup>m</sup> 14 <sup>s</sup> Epicentral Region: 1°5' S., 151° E. ΔPR <sub>1</sub> -H = 113°5' Δmeas = 113°3'
			eSKSE	S.	05 08 37	
			eSKKSE	S.	05 09 45	
			iSPE	S.	05 12 11	
			eSR <sub>2</sub> E	S.	05 22 44	
			eLE	S.	05 35 --	
			F	S.	07.1	

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No.	Date	Sta	Phase	Inst	h m s	Remarks
162 (Con't.)	May 18	Fl.	ePR <sub>1</sub> Z	G.W.	05 02 38	$\Delta_{PR_1-H} = 113^{\circ}3$ $\Delta_{meas} = 113^{\circ}2$
			eZ	G.W.	05 03 11	
			eSKSE	G.W.	05 08 39	
			eSKKSE	G.W.	05 09 44	
			eSPE	G.W.	05 12 11	
			eSR <sub>2</sub> E	G.W.	05 22 31	
			F	G.W.	06.9	
163	May 18	S.L.	ePZ	M.S.	20 07 47	H = 19 <sup>h</sup> 55.5 <sup>m</sup> Epicentral Region: 110° W., 41 1/2° S. $\Delta_{P-H} = 81^{\circ}8$ $\Delta_{meas} = 82^{\circ}1$
			eE	S.	20 18 08	
			eE	S.	20 23 37	
			F	S.	21.0	
		Fl.	ePZ	G.W.	20 07 47	$\Delta_{P-H} = 81^{\circ}8$ $\Delta_{meas} = 82^{\circ}2$
			eN	G.W.	20 18 11	
			eN	G.W.	20 23 --	
			F	G.W.	20.9	
164	May 19	S.L.	ePR <sub>1</sub> Z	M.S.	00 38 41	H = 00 <sup>h</sup> 19.3 <sup>m</sup> Epicentral Region: 2° S., 152 1/2° E. $\Delta_{PR_1-H} = 113^{\circ}2$
			eSKSE	S.	00 44 37	
			eSKKSE	S.	00 45 47	
			iSPE	S.	00 48 14	
			eE	S.	00 58 03	
			eSR <sub>2</sub> E	S.	00 58 48	
			eLE	S.	01 12 --	
			F	S.	03.3	
			Fl.	ePR <sub>1</sub> Z	G.W.	
		eE		G.W.	00 41 53	
		eSKSE		G.W.	00 44 43	
		eSKKSE		G.W.	00 45 45	
		eSPE		G.W.	00 48 09	
		eSR <sub>1</sub> E		G.W.	00 54 08	
		eSR <sub>2</sub> E		G.W.	00 58 47	
		eLE	G.W.	01 12 --		
F	G.W.	03.4				
165	May 20	S.L.	eZ	M.S.	01 04.2	Weak beginning.
			eE	S.	01 08 07	
			eLE	S.	01 10 13	
		Fl.	eLE	G.W.	01 10 22	
166	May 20	S.L.	ePZ	M.S.	22 43 41	
167	May 20	S.L.	ePZ	M.S.	23 38 33	
			eE	S.	23 45 18	
			eLE	S.	23 53 --	
		Fl.	ePZ	G.W.	23 38 35	
			eLE	G.W.	23 54.5	

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No.	Date	Sta	Phase	Inst	h m s	Remarks
168	May 21	S.L.	ePZ	M.S.	00 24 40	Very weak beginning.
			eE	S.	00 36 47	
			e(L)E	S.	00 40 --	
		Fl.	e(L)E	G.W.	00 40 --	
169	May 21	S.L.	ePZ	M.S.	00 45 01	Weak.
170	May 21	S.L.	ePZ	M.S.	04 50 56	$\Delta_{P-H} = 49^{\circ}4$ $\Delta_{meas} = 49^{\circ}6$
			iPZ	M.S.	04 50 59	
			eSE	S.	04 58 14	
			eSR <sub>1</sub> E	S.	05 01 34	
			eLE	S.	05 05 44	
		F	S.	05 38 --		
		Fl.	ePZ	G.W.	04 50 59	Epicentral Region: 11 <sup>o</sup> 1 N., 44 <sup>o</sup> W. H = 04h42m08s $\Delta_{P-H} = 49^{\circ}8$ $\Delta_{meas} = 49^{\circ}8$
eSE	G.W.	04 58 17				
eLE	G.W.	05 06 --				
F	G.W.	05 35 --				
171	May 21	Fl.	ePZ	G.W.	17 12 53	U.S.C.G.S. gives: H = 17 <sup>h</sup> 07.1 <sup>m</sup> Epicentral Region: 19 1/2 <sup>o</sup> N., 71 <sup>o</sup> W.
			eSE	G.W.	17 17 14	
			F	G.W.	17 32 --	
172	May 23	S.L.	iPZ	M.S.	10 48 05	H = 10 <sup>h</sup> 38m30s Epicentral Region: 52 <sup>o</sup> N., 171 1/2 <sup>o</sup> W. $\Delta_{P-H} = 55^{\circ}9$
			eSE	S.	10 55 47	
			eLE	S.	11 04.5	
			eME	S.	11 09 --	
		F	S.	12.0		
Fl.	eSN	G.W.	10 55 44	$\Delta_{S-H} = 55^{\circ}0$		
173	May 24	S.L.	ePZ	M.S.	01 35 50	Epicenter: 20 <sup>o</sup> 0 N, 70 <sup>o</sup> 8 W. H = 01 <sup>h</sup> 30m26s $\Delta_{P-H} = 24^{\circ}9$ $\Delta_{meas} = 25^{\circ}1$
			eSE	S.	01 40 14	
			eLE	S.	01 42 16	
			F	S.	02.2	
		Fl.	ePZ	G.W.	01 35 56	$\Delta_{P-H} = 25^{\circ}5$ $\Delta_{meas} = 25^{\circ}3$
			eSE	G.W.	01 40 30	
	F	G.W.	02.1			
174	May 25	S.L.	eP	M.S.	01 19 29	H = 01 <sup>h</sup> 06m37s $\Delta_{S-H} = 102^{\circ}5$ $\Delta_{meas} = 102^{\circ}7$ Epicenter: 21 <sup>o</sup> 9 S., 179 <sup>o</sup> 2 W. Depth = 625 $\pm$ km.
			pP	M.S.	01 21 42	
			SP	M.S.	01 22 53	
			PKP	M.S.	01 23 21	
			PR <sub>1</sub>	M.S.	01 23 50	
			pPR <sub>1</sub>	M.S.	01 25 46	
			pPKP	M.S.	01 25 48	
			PR <sub>2</sub>	M.S.	01 26 13	
			SKS	S.	01 29 07	

(Con't. on next page)



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31.

No.	Date	Sta	Phase	Inst	h m s	Remarks
174 (Con't.)	May 25	S.L.	SKKS	S.	01 29 52	$\Delta_{P-H} = 102^{\circ}0$ $\Delta_{meas} = 102^{\circ}6$
			eS	S.	01 30 24	
			SP	S.	01 32 01	
			PS	S.	01 33 25	
			sS	S.	01 34 29	
			SR <sub>1</sub>	S.	01 37 29	
		SR <sub>2</sub>	S.	01 41 26		
		Fl.	eFZ	G.W.	01 19 29	
			epFZ	G.W.	01 21 44	
			isPZ	G.W.	01 22 55	
			iFR <sub>1</sub> Z	G.W.	01 23 50	
			eE	G.W.	01 26 54	
			iSKSE	G.W.	01 29 08	
			iSKKSE	G.W.	01 29 53	
			eSE	G.W.	01 30 30	
			iSPE	G.W.	01 32 08	
			iE	G.W.	01 33 01	
			esSE	G.W.	01 34 32	
			eSR <sub>1</sub> E	G.W.	01 37 41	
			F	G.W.	04.3	
175	May 25		S.L.	iFR <sub>1</sub> Z	M.S.	13 17 30
		iZ		M.S.	13 17 53	
		eE		S.	13 18 11	
		iFR <sub>2</sub> E		S.	13 19 58	
		iSKSE		S.	13 23 30	
		iSKKSE		S.	13 24 32	
		iSE		S.	13 25 28	
		iE		S.	13 26 18	
		iPSE		S.	13 27 01	
		F		S.	17.8	
176	May 28	S.L.	iPZ	M.S.	00 05 04	
177	May 29	S.L.	iPZ	M.S.	02 50 02	H = 02h43 <sup>m</sup> 20 <sup>s</sup> Epicentral Region: 5°9 N., 82°3 W. $\Delta_{P-H} = 33^{\circ}3$ $\Delta_{meas} = 33^{\circ}3$
			eSE	M.S.	02 55 28	
			e(SR <sub>1</sub> )E	S.	02 57 42	
			eSR <sub>2</sub> E	S.	02 58 20	
178	May 29	S.L.	eFZ	M.S.	02 59 27	
179	May 29	S.L.	ePZ	M.S.	15 30 30	H = 15h19.0 <sup>m</sup> Region: 33° S., 53° W.
			e(S)E	S.	15 39 44	
180	May 30	S.L.	e(P)Z	M.S.	03 52 47	
181	May 30	S.L.	eP'Z	M.S.	10 15 01	Indian Ocean?
			eZ	M.S.	10 17 31	
182	May 31	S.L.	iPZ	M.S.	11 01 45	South America.

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Minor Seismic Activity

Station	Date	From h m s	To h m s	Remarks
S.L.	May 4	08.8	09.3	Pas. has a "P" at 08 <sup>h</sup> 06 <sup>m</sup> 07 <sup>s</sup>
S.L.	5	06.4	07.5	
Fl.	5	06.6	07.4	
S.L.	6	02.7	03.5	
S.L.	7	19.2	19.4	
S.L.	8	17.1	17.4	
S.L.	14	00.6	00.8	
S.L.	19	17 26 --	18 08 --	
Fl.	22	16 44 --	17 00 --	

James B. Macelwane, S. J.  
 Director

Paul E. Howe  
 Student Assistant

# SAINT LOUIS UNIVERSITY INSTITUTE OF GEOPHYSICAL TECHNOLOGY

3621 OLIVE STREET, SAINT LOUIS 8, MO., U. S. A.

## SEISMOLOGICAL BULLETIN

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No.	Date	Sta	Phase	Inst	h m s	Remarks
183	June 1	S.L.	eE	S.	02 49 54	
184	June 3	S.L.	eLE	S.	01 54.5	
		Fl.	eLE	G.W.	01 54.5	
185	June 3	S.L.	iSKSE	S.	04 33 18	H = 04 <sup>h</sup> 10.8 <sup>m</sup> Region: 28°N., 145°E. About 400 km. deep. ΔSKS -H = 95°2 Δ <sub>meas</sub> = 95°2
		Fl.	iPR <sub>1</sub> Z	G.W.	04 27 23	ΔPR <sub>1</sub> -H = 95°2
			epPR <sub>1</sub> Z	G.W.	04 28 41	Δ <sub>meas</sub> = 95°0
			iSKSE	G.W.	04 33 18	
			eSE	G.W.	04 34 07	
			eE	G.W.	04 36 14	
186	June 3	S.L.	e(P)Z	M.S.	07 18 24	Epicentral Region by U.S.C.G.S. 20° N., 63° W. H = 07 <sup>h</sup> 12 <sup>m</sup> 13 <sup>s</sup>
			oPR <sub>1</sub> Z	M.S.	07 19 08	
			eLE	S.	07 26.3	
			F	S.	08.1	
		Fl.	eLE	G.W.	07 26.4	
187	June 3	S.L.	eE	S.	16 01 11	U.S.C.G.S. gives: H = 15 <sup>h</sup> 16.4 <sup>m</sup> Epicentral Region: 8° S., 80° W. Slight depth.
			eE	S.	16 03 19	
188	June 4	S.L.	iSE	S.	13 46 20	
			e(L)E	S.	13 59 --	
F	S.		15.4			
		Fl.	e(L)E	G.W.	13 59.5	
189	June 4	S.L.	iSE	S.	19 57 08	
			e(L)E	S.	20 09.5	
		Fl.	iSE	G.W.	19 57 06	Beginning masked by microseisms.
			e(L)E	G.W.	20 10 --	
190	June 5	S.L.	eLE	S.	01 19 --	

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No.	Date	Sta	Phase	Inst	h m s	Remarks
191	June 6	S.L.	eSKKSE	S.	04 10 55	U.S.C.G.S. gives: H = 03 <sup>h</sup> 44.2 <sup>m</sup> Epicentral Region: 5° S., 152° E.
			eSE	S.	04 11 41	
			ePSE	S.	04 13 32	
			eLE	S.	04 38 --	
192	June 7	S.L.	eLE	S.	06 41 --	
		Fl.	eLE	G.W.	06 41.5	
193	June 8	S.L.	iFZ	M.S.	02 46 19	H = 02 <sup>h</sup> 38 <sup>m</sup> 15 <sup>s</sup> ΔP-H = 50°9 Δmeas = 60°0 Epicentral Region: 9 1/2° S., 72° W. Depth: 600+km.
			iPcPZ	M.S.	02 47 23	
			epFZ	M.S.	02 48 11	
			iSN	S.	02 52 53	
			eScSN	S.	02 55 06	
			eE	S.	02 56 39	
		Fl.	iPZ	G.W.	02 46 23	
			iSN	G.W.	02 52 58	
194	June 8	S.L.	eFZ	M.S.	15 39 59	
195	June 9	S.L.	ePR <sub>1</sub> Z	M.S.	20 54 44	U.S.C.G.S. gives: H = 20 <sup>h</sup> 35.0 <sup>m</sup> Epicentral Region: 4° S., 150° E.
			eSKSE	M.S.	21 00 24	
			e(PFS)E	M.S.	21 05 53	
			eSR <sub>1</sub> E	M.S.	21 10 55	
			F	M.S.	23.6	
		Fl.	ePR <sub>1</sub> Z	G.W.	20 54 43	
			e(PFS)E	G.W.	21 05 52	
			eE	G.W.	21 10 12	
	F	G.W.	23.4			
196	June 10	Fl.	eE	G.W.	14 44 09	
			eLE	G.W.	14 56 --	
197	June 11	S.L.	eSE	S.	19 32 01	H = 19 <sup>h</sup> 18 <sup>m</sup> 54 <sup>s</sup> Epicentral Region: 0°7 N., 85°7 W. Δmeas = 38°1  ΔP-H = 38°1 Δmeas = 38°3
			eSR <sub>1</sub> E	S.	19 34 31	
			M	S.	19 40 --	
			F	S.	20.5	
		Fl.	ePZ	G.W.	19 26 14	
			iSE	G.W.	19 32 07	
			eSR <sub>1</sub> E	G.W.	19 34 35	
			F	G.W.	20.4	
198	June 12	S.L.	ePE	W.A.	10 50 34	Epicenter by Pasadena: 33° 58' N., 116° 45' W. H = 10 <sup>h</sup> 45 <sup>m</sup> 34 <sup>s</sup>  San Andreas fault in San Gorgonio Pass.
			eLN	S.	10 57 14	
			eME	S.	10 58 55	
		Fl.	ePE	W.A.	10 50 32	
			eME	G.W.	10 58 48	

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No.	Date	Sta	Phase	Inst	h m s	Remarks		
199	June 12	S.L.	ePE	W.A.	11 21 30			
			iPE	W.A.	11 21 34			
			eSE	S.	11 25 42			
			iLN	S.	11 28 16			
			iME	S.	11 29 48			
			F	S.	11.9			
		Fl.	ePE	W.A.	11 21 29			
			iPE	W.A.	11 21 33			
			eSE	G.W.	11 25 40			
			eLN	G.W.	11 28 03			
		eME	G.W.	11 29 43				
200	June 13	S.L.	iFZ	M.S.	10 04 42			
			iZ	M.S.	10 04 58			
			eE	S.	10 12 20			
		Fl.	iPZ	G.W.	10 04 42			
201	June 13	S.L.	iFZ	M.S.	13 48 56	H = 13h40.2 <sup>m</sup> Region: 7°S., 72°W.		
		Fl.	iPZ	G.W.	13 48 58			
202	June 15	S.L.	e(P)Z	M.S.	16 45 32	Weak.		
203	June 16	S.L.	ePZ	M.S.	00 18 51			
			iZ	M.S.	00 19 04			
		Fl.	iZ	G.W.	00 19 04			
204	June 16	S.L.	iPZ	M.S.	04 30 21	Near Japan. Depth: 100±km.		
			ipPZ	M.S.	04 30 40			
			eSE	S.	04 40 48			
			esSE	S.	04 41 20			
		Fl.	eSE	G.W.	04 40 47			
			esSE	G.W.	04 41 19			
205	June 16	S.L.	iPZ	M.S.	21 56 41	H = 21h51m37 <sup>s</sup> Epicenter: 19°41' N., 104°07' W. $\Delta_{P-H} = 22^{\circ}9$ $\Delta_{meas} = 22^{\circ}9$		
			iZ	M.S.	21 57 16			
			iZ	M.S.	21 57 31			
			eSN	S.	22 00 49			
			iSN	S.	22 00 55			
			iE	S.	22 01 14			
			iSR <sub>1</sub> E	S.	22 01 53			
			eLE	S.	22 02.7			
			Fl.	iPZ	G.W.		21 56 42	$\Delta_{P-H} = 23^{\circ}0$ $\Delta_{meas} = 22^{\circ}9$
				iE	W.A.		21 57 14	
		iE		W.A.	21 57 33			
		iSN		G.W.	22 00 59			
				eL	C.W.		22 03 --	

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206	June 18	S.L.	eLE	S.	02 50 --	
207	June 18	S.L.	e(P)Z eMN	M.S. S.	22 17 37 22 24.2	U.S.C.G.S. Reports: H = 22 <sup>h</sup> 12.3 <sup>m</sup> Epicentral Region: 26° N., 110° W.
208	June 19	S.L.	MN	S.	00 16.2	Epicenter by Pasadena: 33° 52' N., 118° 13' W. H = 00 <sup>h</sup> 03 <sup>m</sup> 33 <sup>s</sup>
209	June 19	S.L.	M	S.	03 18.7	Epicenter by Pasadena: 33° 52' N., 118° 13' W. H = 03 <sup>h</sup> 06 <sup>m</sup> 07 <sup>s</sup>
210	June 20	S.L.	iPZ iE iE	M.S. S. S.	02 02 50 02 10 41 02 12 00	
		Fl.	iE	G.W.	02 10 42	
211	June 20	S.L.	eFZ eSE	M.S. S.	12 29 08 12 39 36	Kurile Islands?
		Fl.	eSE	G.W.	12 39 38	
212	June 21	S.L.	ePE ePR <sub>1</sub> E eSKSE iSKKSE ePS eSR <sub>1</sub> E	S. S. S. S. S. S.	11 12 58 11 17 29 11 23 37 11 24 34 11 26 58 11 33 28	H = 10 <sup>h</sup> 55 <sup>m</sup> 20 <sup>s</sup> Epicenter: 21°6 S., 169°3 E. Probably deeper than normal. $\Delta_{P-H} = 111^{\circ}1$ $\Delta_{meas} = 111^{\circ}1$
		Fl.	ePZ ePR <sub>1</sub> Z eSKSE eSKKSE ePSE eSR <sub>1</sub> E	G.W. G.W. G.W. G.W. G.W. G.W.	11 12 56 11 17 29 11 23 37 11 24 31 11 26 59 11 33 39	$\Delta_{P-H} = 110^{\circ}7$ $\Delta_{meas} = 111^{\circ}0$
213	June 21	S.L.	ePZ eE	M.S. S.	17 12 30 17 22 08	Weak - no surface waves.
		Fl.	eZ	G.W.	17 22 07	
214	June 22	S.L.	e(P)Z (e)E F	M.S. S. S.	00 45 44 00 52 11 01 09 --	Weak.
215	June 23	S.L.	eZ	M.S.	06 47 58	

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216	June 23	S.L.	eZ eE	M.S. S.	07 42 32 07 50 34	Weak.
217	June 25	S.L.	ePZ iPZ iZ eSN F	M.S. M.S. M.S. S. S.	01 13 35 01 13 36 01 13 44 01 18 00 02.6	Epicenter: 14°5' N., 93°3' W. H = 01 <sup>h</sup> 08 <sup>m</sup> 18 <sup>s</sup> $\Delta_{P-H} = 24.2$ $\Delta_{meas} = 24.2$
		Fl.	eFZ eSZ eSE eE F	G.W. G.W. G.W. G.W. G.W.	01 13 35 01 18 12 01 18 09 01 25 51 02.0	$\Delta_{P-H} = 24.2$ $\Delta_{meas} = 24.3$
218	June 25	S.L.	ePZ iPZ eSN F	M.S. M.S. S. S.	04 28 56 04 29 00 04 39 21 05.8	U.S.C.G.S. gives: Epicentral Region: 39° N., 29° E. Western Turkey.
		Fl.	ePZ iPZ eSE F	G.W. G.W. G.W. G.W.	04 28 54 04 28 57 04 39 25 05.6	Time Uncertain.
219	June 25	S.L.	eFZ eSN F	M.S. S. S.	07 10 23 07 20 54 07.9	Aftershock of No. 218.
		Fl.	eFZ eSN	G.W. G.W.	07 10 21 07 20 51	Time Uncertain.
220	June 25	S.L.	ePZ eSE	M.S. S.	08 16 43 08 24 20	Epicentral Region: 51 1/2°N., 72 1/2°W. H = 08 <sup>h</sup> 07 <sup>m</sup> 03 <sup>s</sup> $\Delta_{P-H} = 56.7$ $\Delta_{meas} = 56.7$
		Fl.	eSE	G.W.	08 24 18	
221	June 25	S.L.	ePZ eSE	M.S. S.	08 19 56 08 27 33	
222	June 26	S.L.	eZ eN eE F	M.S. S. S. S.	14 23 53 14 44 22 14 46 07 17.0	U.S.C.G.S. gives: H = 04 <sup>h</sup> 16.3 <sup>m</sup> Epicentral Region: 39° N., 29° W.
		Fl.	eE eE	G.W. G.W.	14 44 24 14 46 05	Time Uncertain.

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No.	Date	Sta	Phase	Inst	h m s	Remarks		
223	June 26	S.L.	iPZ	M.S.	17 53 36	Epicentral Region: 1° S., 24° W. H = 17 <sup>h</sup> 42.2 <sup>m</sup>		
			iZ	M.S.	17 53 40			
			iZ	M.S.	17 53 50			
			eZ	M.S.	17 54 35			
			iZ	M.S.	17 55 18			
			eSEN	S.	18 03 00			
			eE	S.	18 03 37			
			eN	S.	18 08 40			
			eLE	S.	18 16 10			
			F	S.	19.5			
224	June 27	S.L.	e(P)Z	M.S.	03 31 48	No S phases.		
225	June 27	S.L.	(e)Z	M.S.	23 40 55	Foreshock of #228?		
			eZ	M.S.	23 41 10			
			eN	S.	23 45 17			
			e(M)N	S.	23 50.2			
			F	S.	24.2			
226	June 28	S.L.	ePZ	M.S.	05 37 05	Foreshock of # 228.		
			eE	S.	05 41 31			
			F	S.	Lost			
227	June 28	S.L.	ePZ	M.S.	05 51 33	Foreshock of # 228.		
228	June 28	S.L.	iPZ	M.S.	08 04 10	H = 07 <sup>h</sup> 58 <sup>m</sup> 50 <sup>s</sup> Epicenter: 14°1 N., 92°5 W. $\Delta P-H = 24^{\circ}5$ $\Delta_{meas} = 24^{\circ}5$  $\Delta P-H = 23^{\circ}0$ $\Delta_{meas} = 23^{\circ}0$		
			iZ	M.S.	08 07 14			
			iSE	S.	08 08 35			
			eE	S.	08 11 09			
			F	S.	Lost			
				C.G.	ePN		W.A.	08 03 55
					eSN		W.A.	08 08 06
					F		W.A.	08.8
229	June 28	S.L.	iPZ	M.S.	08 29 41	Aftershock of # 228.		
230	June 28	S.L.	ePZ	M.S.	09 09 21	Aftershock of # 228.		
231	June 28	S.L.	ePZ	M.S.	10 00 38	Aftershock of # 228.		
232	June 28	S.L.	ePZ	M.S.	10 58 37	Aftershock of # 228.		
233	June 29	S.L.	ePZ	M.S.	01 42 34	Aftershock of # 228.		
			F	M.S.	02.3			
234	June 29	S.L.	ePZ	M.S.	06 25 33	Aftershock of # 228.		
235	June 29	S.L.	ePZ	M.S.	11 38 44	Aftershock of # 228.		
			eN	S.	11 45 59			
			F	M.S.	12.3			



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Minor Seismic Activity

Station	Date	From h m s	G.M.T.	To h m s	Remarks
S.L.	June 2	01 03 --		01 22 --	
S.L.	2	09.1		09.5	
S.L.	3	09.1		09.9	
S.L.	3	12 26 --		12 35 --	
S.L.	4	00 18 --		00 24 --	
S.L.	6	12 35 --		12 47 --	
S.L.	7	00 47.5		00 55.5	
S.L.	12	02.5		03.1	
S.L.	13	08 40 --		08 51 --	Also Fl.
S.L.	18	09 17 --		09 23 --	
S.L.	19	02 30.5		02 47.5	
S.L.	26	04 18 --		04 50 --	
S.L.	26	05 40 --		06 10 --	
S.L.	26	19 24 --		19 33 --	
S.L.	28	19 02.5		19 14 --	

James B. Macelwane, S. J.  
Director

Paul E. Howe  
Student Assistant

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### SEISMOLOGICAL BULLETIN

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No.	Date	Station	Phase	Inst.	h m s	Remarks
236	July 1	S.L.	ePZ eSE F	M.S. S. S.	11 25 13 11 29 25 12.0	
237	July 2	S.L.	ePZ eSN F	M.S. S.	04 00 44 04 05 11	Region: 13° N., 92° W. H = 03h55.2m
238	July 2	S.L.	e(SKS)N eN	S. S.	09 00 01 09 03 41	Southwest Pacific Deep?
239	July 2	S.L.	ePZ F	M.S. S.	09 12 02 09 45	
240	July 2	S.L.	ePZ iPZ iSN F	M.S. M.S. S. S.	22 17 37 22 17 43 22 22 08 23 45	Epicentral Region: 13° N., 93° W. H = 22h12m07s $\Delta P-H = 2596$ $\Delta_{meas} = 2598$
241	July 3	S.L.	e(P)Z eSN F	M.S. S. S.	04 27 37 04 32 05 04 58	Aftershock of No. 240
242	July 3	S.L.	eLN eNE F	S. S. S.	05 50 12 05 52 00 05 55	Fasadena gives: 35° 21' N., 117° 52' W. H = 05h38m23s
243	July 3	S.L.	iPZ	M.S.	07 30 42	
244	July 4	S.L.	e(P)Z eN F	M.S. S. S.	03 28 07 03 33 03 03 55	Weak
245	July 5	S.L.	iPZ eSN F	M.S. S. S.	09 51 58 09 56 28 10.3	Off the Pacific coast of Guatemala
246	July 5	S.L.	e(P)Z F	M.S. S.	10 18(54) 12.3	Very weak

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
247	July 9	S.L.	e(P)Z eLN F	M.S. S. S.	02 53 27 03 02 22 03 08 --	Weak.
248	July 10	S.L.	eE	W.A.	12 54 12	Mac instruments not operating.
249	July 10	Fl.	ePZ i(pP)Z iSKSE F	G.W. G.W. G.W. G.W.	13 38 06 13 38 54 13 48 27 14 48 --	Near Samoa. U.S.C.G.S. gives: 14° S., 176° W. H = 13 <sup>h</sup> 24. <sup>m</sup> 9 <sup>s</sup> h = 150km.
250	July 10	S.L.	ePR <sub>1</sub> Z e(SKS)E i(SKKS)E ePSE F	M.S. S. S. S. S.	16 06 28 16 12 32 16 13 25 16 15 48 18 25 --	Region: 31°S., 178°W. H = 15 <sup>h</sup> 47 <sup>m</sup> 46 <sup>s</sup> $\Delta_{PR_1-H} = 107^{\circ}7$ $\Delta_{meas} = 107^{\circ}7$
		Fl.	ePR <sub>1</sub> Z e(SKS)E e(SKKS)E F	G.W. G.W. G.W. G.W.	16 06 23 16 12 31 16 13 25 18 21 --	$\Delta_{PR_1-H} = 107^{\circ}1$ $\Delta_{meas} = 107^{\circ}6$
251	July 12	S.L.	iPZ	M.S.	07 53 42	No surface work. Deep?
252	July 12	S.L.	ePZ eSN e(SR <sub>2</sub> )N F	M.S. S. S. S.	08 09 13 08 15 37 08 18 52 Lost in following.	Probably a foreshock of # 253.
		Fl.	eZ eSE F	G.W. G.W. G.W.	08 09 26 08 15 39 Lost in following.	
253	July 12	S.L.	ePZ iSN i(SR <sub>2</sub> )N F	M.S. S. S. S.	08 22 31 08 28 57 08 32 13 09 16 --	Epicentral Region: 18°7 N., 149°4 W. H = 08 <sup>h</sup> 11 <sup>m</sup> 45 <sup>s</sup> $\Delta_{P-H} = 41^{\circ}3$ $\Delta_{meas} = 41^{\circ}4$
		Fl.	ePZ iSE F	G.W. G.W. G.W.	08 22 39 08 29 02 09 19 --	$\Delta_{P-H} = 41^{\circ}5$ $\Delta_{meas} = 41^{\circ}6$
254	July 12	S.L.	ePZ iPZ eSE i(L)E F	M.S. M.S. S. S. S.	19 34 47 19 34 48 19 38 29 19 40 26 20 44 --	14°7 N., 111°5 W. H = 19 <sup>h</sup> 30 <sup>m</sup> 22 <sup>s</sup> $\Delta_{P-H} = 19^{\circ}3$ $\Delta_{meas} = 19^{\circ}3$
		Fl.	ePZ eSE i(L)E	G.W. G.W. G.W.	19 34 46 19 38 22 19 40 10	$\Delta_{P-H} = 19^{\circ}2$ $\Delta_{meas} = 19^{\circ}2$

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No.	Date	Sta	Phase	Inst	h m s	Remarks	
255	July 13	S.L.	ePZ	M.S.	10 58 39	Japan. $\Delta =$ about $94^{\circ}$	
			eSKSE	S.	11 09 18		
			eSKKSE	S.	11 09 54		
			eN	S.	11 10 01		
			e(S)N	S.	11 10 15		
			e(PPS)N	S.	11 12 05		
		F	S.	13.1			
		Fl.	eZ	G.W.	10 58 46	Time doubtful.	
			eSKSE	G.W.	10 09 20		
			eSKKSE	G.W.	10 09 57		
F	G.W.		12 52 --				
256	July 13	S.L.	ePZ	M.S.	19 55 57	Epicentral Region: $16^{\circ}2$ N., $97^{\circ}0$ W. $\Delta P-H = 23^{\circ}2$ $\Delta_{meas} = 23^{\circ}2$ $H = 19^h50^m50^s$	
			eSN	S.	20 00 09		
			F	S.	20 23 --		
		Fl.	ePZ	G.W.	19 55 58		$\Delta P-H = 23^{\circ}3$ $\Delta_{meas} = 23^{\circ}3$
			eSE	G.W.	20 00 16		
			F	G.W.	20 18 --		
257	July 15	S.L.	e(P)Z	M.S.	23 44 27	Very Weak.	
258	July 16	S.L.	ePZ	M.S.	10 32 11	U.S.C.G.S. gives: $22^{\circ}$ S., $175^{\circ}$ W. $H = 10^h19.1^m$ $h = 450^{\pm} km.$	
			eZ	M.S.	10 35 08		
			eZ	M.S.	10 36 38		
			iSN	S.	10 43 04		
			eE	S.	10 44 27		
			e(SR <sub>1</sub> )N	S.	10 50 00		
			F	S.	11 33 --		
			Fl.	eSE	G.W.		10 42 38
		eE		G.W.	10 43 07		
		259	July 17	S.L.	ePZ	M.S.	11 07 04
e(S)E	S.				11 18 12		
e(PPS)E	S.				11 20 00		
e(SR <sub>1</sub> )E	S.				11 24 53		
F	S.	13.5					
260	July 19	S.L.	e(P)Z	M.S.	10 34 43	Region: $33^{\circ}$ N., $140^{\circ}$ E. $H = 10^h21^m18^s$ $\Delta_{PS-H} = 95^{\circ}1$ $\Delta_{meas} = 94^{\circ}4$	
			e(SKS)N	S.	10 45 22		
			iSE	S.	10 46 00		
			iPSN	S.	10 47 05		
			i(PPS)N	S.	10 48 08		
			eSR <sub>1</sub> N	S.	10 52 27		
			eSR <sub>2</sub> E	S.	10 55 28		
			eLN	S.	11 06 48		
			F	S.	Lost.		

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
260 (Con't.)	July 19	Fl.	ePZ	G.W.	10 34 37	$\Delta_{PR_1-H} = 94.97$ $\Delta_{meas} = 94.92$
			ePR <sub>1</sub> Z	G.W.	10 38 28	
			cSKSN	G.W.	10 45 05	
			iSE	G.W.	10 45 57	
			e(PS)E	G.W.	10 47 14	
			eE	G.W.	10 48 28	
			eSR <sub>1</sub> E F	G.W. G.W.	10 52 34 Lost	
261	July 19	S.L.	ePZ	M.S.	11 15 49	South America.
262	July 19	S.L.	ePZ	M.S.	11 28 44	
263	July 19	S.L.	ePZ	M.S.	11 35 27	
264	July 19	S.L.	ePZ	M.S.	16 35 18	Central America.
			eSE	S.	16 40 18	
			F	S.	17 +	
		Fl.	ePZ	G.W.	16 35 25	Time doubtful.
			e(S)E	G.W.	16 39 46	
			F	G.W.	17 12 --	
265	July 19	Fl.	ePZ	G.W.	18 04 08	Central America? Time doubtful.
			eSE	G.W.	18 09 16	
			F	G.W.	18 45 --	
266	July 20	Fl.	eLE	G.W.	00 03.5	Time doubtful.
			F	G.W.	00 52 --	
267	July 20	Fl.	eLE	G.W.	02 47 18	Time doubtful.
			F	G.W.	02 57 --	
268	July 20	S.L.	eSKSN	S.	20 31 04	Time doubtful.
			eSKSE	S.	20 31 37	
			e(SR <sub>1</sub> )E	S.	20 37 19	
			eN	S.	20 38 26	
			F	S.	22 17 --	
		Fl.	eSKSE eSKKSE F	G.W. G.W. G.W.	20 31 07 20 31 41 22 05 --	
269	July 21	S.L.	e(P)Z	M.S.	02 24 57	
270	July 21	S.L.	eZ	M.S.	10 30 15	
			e(L)N	S.	10 40 32	
			F	S.	10 44 --	
271	July 21	S.L.	ePZ	M.S.	12 30 54	Epicentral Region: 43°0 N., 127°2 W. H = 12 <sup>h</sup> 24 <sup>m</sup> 54 <sup>s</sup> $\Delta_{P-H} = 28.6$ $\Delta_{meas} = 28.6$
			eZ	M.S.	12 30 59	
			iZ	M.S.	12 31 04	
			eSE	S.	12 35 37	
			eLN	S.	12 38 30	
			F	S.	13 17 --	

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
271 (Con't.)	July 21	Fl.	ePZ	G.W.	12 30 58	Time doubtful. $\Delta_{\text{meas}} = 28^{\circ}4$
			eSE	G.W.	12 35 40	
			F	G.W.	Lost.	
272	July 21	S.L.	e(P)Z	M.S.	19 04 10	
			eE	S.	19 15 17	
			F	S.	20 22 --	
273	July 22	S.L.	iPZ	M.S.	11 33 28	Deep? Region: $17^{\circ}\text{N.}$ , $95^{\circ}\text{W.}$ $H = 11^{\text{h}}28^{\text{m}}35^{\text{s}}$ $\Delta_{\text{P-H}} = 21^{\circ}8$ $\Delta_{\text{meas}} = 21^{\circ}9$
			iZ	M.S.	11 33 45	
			iSE	S.	11 37 28	
			iE	S.	11 37 45	
			iN	S.	11 36 08	
			iSR <sub>1</sub> N	S.	11 38 20	
			iSR <sub>2</sub> N	S.	11 38 27	
			F	S.	12 12 --	
		Fl.	iPZ	G.W.	11 33 30	$\Delta_{\text{P-H}} = 22^{\circ}0$ $\Delta_{\text{meas}} = 22^{\circ}0$
			iZ	G.W.	11 33 49	
			iSE	G.W.	11 37 30	
			iE	G.W.	11 37 49	
			F	G.W.	12 04 --	
274	July 22	S.L.	ePZ	M.S.	11 56 40	Aftershock?
275	July 23	S.L.	eZ	M.S.	15 52(54)	Very Weak.
276	July 23	S.L.	iPZ	M.S.	16 24 04	Epicentral Region: $23^{\circ}3 \text{ S.}$ , $67^{\circ}0 \text{ W.}$ $H = 16^{\text{h}}13^{\text{m}}50^{\text{s}}$ $h = 250^{\pm} \text{ km.}$ $\Delta_{\text{P-H}} = 65^{\circ}6$ $\Delta_{\text{meas}} = 65^{\circ}9$
			ipFZ	M.S.	16 24 59	
			ePR <sub>1</sub> Z	M.S.	16 26 41	
			eSE	S.	16 32 26	
			e(PS)E	S.	16 33 30	
			eE	S.	16 35 17	
			F	S.	17 04 --	
277	July 24	S.L.	eSKSE	S.	07 55 36	Region: $10^{\circ}5 \text{ S.}$ , $161^{\circ}\text{E.}$ $H = 07^{\text{h}}30^{\text{m}}27^{\text{s}}$ $h = 50^{\pm} \text{ km.}$
			eSKKSE	S.	07 56 40	
			ePSE	S.	07 59 06	
			epPSE	S.	07 59 35	
			ePTSE	S.	08 00 20	
			F	S.	10.0	
278	July 24	S.L.	e(F)Z	M.S.	22 12 58	Weak.
279	July 27	S.L.	iPZ	M.S.	00 13 23	$54^{\circ}3 \text{ N.}$ , $163^{\circ}5 \text{ W.}$ $H = 00^{\text{h}}04^{\text{m}}30^{\text{s}}$ $h = 80^{\pm} \text{ km.}$ $\Delta_{\text{P-H}} = 50^{\circ}8$ $\Delta_{\text{meas}} = 50^{\circ}9$
			ipFN	S.	00 13 40	
			iP <sub>c</sub> PZ	M.S.	00 14 31	
			iSN	S.	00 20 37	
			isSN	S.	00 21 08	
			iScSN	S.	00 23 06	
			isScSN	S.	00 23 40	
			F	S.	03.5	
		C.G.	eFE	W.A.	00 13 33	$\Delta_{\text{P-H}} = 52^{\circ}1$ $\Delta_{\text{meas}} = 52^{\circ}2$
			eSE	W.A.	00 20 55	
	F	W.A.	01.0			

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
280	July 27	S.L.	ePZ	M.S.	00 52 46	U.S.C.G.S. Gives: 44°07' N., 115°02' W. H = 00h18.3 <sup>m</sup>
281	July 27	S.L.	eF'Z ePR <sub>1</sub> Z eSKFZ eSE eE ePSE eSR <sub>1</sub> E F	M.S. M.S. M.S. S. S. S. S. S.	08 37 47 08 39 58 08 41 04 08 47 57 08 48 24 08 50 25 08 57 10 10.4	Region: 12° N., 92°05' E. H = 08h18m10s
282	July 27	S.L.	ePZ	M.S.	10 36 46	Weak.
283	July 28	S.L.	ePZ	M.S.	03 43 10	South America?
284	July 29	S.L.	ePZ e(M)E F	M.S. S. S.	11 43 03 11 52 17 12.0	Pasadena gives: 40° N., 125° W. H = 11h37m15s
285	July 29	S.L.	e(P)Z	M.S.	13 08 59	Indefinite beginning.
286	July 29	S.L.	e(SKS)N e(M)E F	S. S. S.	22 47 36 23 13 -- 24.1	
287	July 30	S.L.  Fl.	iFZ iZ iZ iSE i(sS)E  ePZ eSE e(sS)E F	M.S. M.S. M.S. S. S.  G.W. G.W. G.W. G.W.	04 13 02 04 13 05 04 13 08 04 23 17 04 23 36  04 13 03 04 23 17 04 23 37 05.2	Approximately: 37° N., 21° W. Possibly deeper than normal.
288	July 31	S.L.  Fl.	eN eN F  eE eN F	W.A. W.A. W.A.  W.A. W.A. W.A.	00 52 51 00 53 10 00 55 --  00 52 48 00 53 27 00 55 --	Local shock? Also recorded at Little Rock. (No time marks.)
289	July 31	S.L.	e(P)Z eN F	M.S. S. S.	21 31 53 21 39 48 22 06 --	

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Minor Seismic Activity

Station	Date	From h m s	To h m s
S.L.	July 4	01 20	01 38
S.L.	7	19 00	19 46
S.L.	8	01 42	02 16
S.L.	11	19.3	20.2
S.L.	13	00 48	01 56
S.L.	16	00 20	01 31
S.L.	19	01 19	01 25
S.L.	22	06 57	07 20
S.L.	23	10 59	13 33
Fl.	25	05 --	06 --
S.L.	30	00 58	01 33
S.L.	30	09 55	10 48
S.L.	31	18 28	19 06

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Director

Harry K. Hail  
Student Assistant





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## SEISMOLOGICAL BULLETIN

### SYMBOLS AND STATION CONSTANTS

**CG—CAPE GIRARDEAU** (in cooperation with Southeast Missouri State Teachers College, Cape Girardeau, Mo., U. S. A.)  
— (inaugurated, 1938)

Latitude: geographical, 37°19'N; geocentric, 37°08'N.  
Longitude: 89°32'W. Altitude: h = 134m, H+h = 4km.  
Lithologic foundation: limestone.  
Seismographs: Wood-Anderson short period EN.  
Director of the Station: Professor John Harty.

**FL—FLORISSANT** (in cooperation with Saint Stanislaus Seminary, Florissant, Missouri, U. S. A.)—(inaugurated, 1928)

Latitude: geographical, 38°48'06"N; geocentric, 38°37'N.  
Longitude: 90°22'12"W. Altitude: h = 160m, H+h = 4km.  
Lithologic foundation: Pennsylvanian shale.  
Seismographs: Galitzin-Wilip ENZ, Wood-Anderson short period EN.  
Clock: Shortt synchronome.  
Director of the Station: Reverend James B. Macelwane, S. J.

**LR—LITTLE ROCK** (in cooperation with Saint John's Seminary, Pulaski Heights, Little Rock, Arkansas, U. S. A.)—(inaugurated, 1930).

Latitude: geographical, 34° 47'N; geocentric, 34°36'N.  
Longitude: 92°21'W. Altitude: h = 135m, H+h = 5 km.  
Lithologic foundation: sandstone.  
Seismographs: Wood-Anderson short period EN.  
Clock: Howard-Gaertner.  
Director of the Station: Monsignor Joseph A. Murray.

**SL—SAINT LOUIS I**, Administration Building of Saint Louis University, 221 North Grand Boulevard — (inaugurated, January 1, 1910).

Latitude: geographical, 38°38'11"N; geocentric, 38°27'N.  
Longitude: 90°14'00"W. Altitude: h = 160m, H+h = 4 km.  
Lithologic foundation: clay.  
Seismograph: Wiechert (80 kg) EN.  
Clock: Wiechert.

**II**, University Gymnasium, 3672 West Pine Boulevard — (inaugurated, 1927).

Latitude: geographical, 38°38'10"N; geocentric, 38°27'N.  
Longitude: 90°14'10"W. Altitude: h = 161m, H+h = 4 km.  
Lithologic foundation: Mississippian limestone.  
Seismographs: Wood-Anderson short period EN.  
Macelwane-Sprengnether Z; Sprengnether NE.  
Clock: Wiechert.  
Director: Reverend James B. Macelwane, S.J.

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
290	Aug. 1	S.L.	ePZ eSN F	M.S. S. S.	15 33 44 15 37 56 15.7	Mexico; Tacubaya gives: 15°8 N., 97°4 W.
291	Aug. 2	S.L.	iPZ eSN F	M.S. S. S.	12 34 13 12 39 14 13.2	Region: 10° N., 84° W. H = 12 <sup>h</sup> 28 <sup>m</sup> 10 <sup>s</sup>
292	Aug. 2	S.L.	e(SKS)E e(SKKS)E F	S. S. S.	18 13 24 18 14 06 19.3	
		Fl.	e(SKS)E F	G.W. G.W.	18 13 26 19.2	
293	Aug. 2	S.L.	iPZ eSE eE F	M.S. S. S. S.	20 20 30 20 29 57 20 30 14 20.6	Off the coast of Chile. Deep?
		Fl.	eSE eE F	G.W. G.W. G.W.	20 29 58 20 30 16 20.5	
294	Aug. 2	S.L.	ePZ eSE eE F	M.S. S. S. S.	20 39 55 20 49 22 20 49 38 20.9	Very similar to preceding.
		Fl.	eSE F	G.W. G.W.	20 49 24 20.9	
295	Aug. 2	S.L.	eLN F	S. S.	23 57 40 24.6	
296	Aug. 4	S.L.	ePZ e(S)N F	M.S. S. S.	20 00 14 20 04 27 20.1	Southwest of Central America.
297	Aug. 4	S.L.	iPZ eSN e(ScS)E F	M.S. S. S. S.	20 38 36 20 46 18 20 48 20 21.3	Approximately: 25° S., 75° W. H = 20 <sup>h</sup> 29.2 <sup>m</sup> Possibly slightly deeper than normal.
		Fl.	eSE e(ScS)E F	G.W. G.W. G.W.	20 46 18 20 48 24 20.9	

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
298	Aug. 5	S.L.	iPZ	M.S.	01 06 28	Foreshock of # 299. H = 00h57m19s
			e(PcP)Z	M.S.	01 07 39	
			eSN	S.	01 13 56	
			eN	S.	01 14 05	
			eN	S.	01 15 25	
			F	S.	01.5	
FL.	iPZ	G.W.	01 06 30			
	eE	G.W.	01 14 00			
	F	G.W.	01.3			
299	Aug. 5	S.L.	iPZ	M.S.	01 33 19	13°6 S., 92°7 W. H = 01h24m10s $\Delta_{P-H} = 52^{\circ}2$ $\Delta_{meas} = 52^{\circ}1$
			iZ	M.S.	01 33 22	
			iZ	M.S.	01 34 25	
			eSE	S.	01 40 48	
			F	S.	02.2	
			FL.	iPZ	G.W.	
eSE	G.W.	01 40 50				
F	G.W.	02.2				
300	Aug. 5	S.L.	ePZ	M.S.	13 12 26	12°1 N., 87°2 W. H = 13h07m00s h = 100±km. $\Delta_{P-H} = 26^{\circ}2$ $\Delta_{meas} = 26^{\circ}3$
			epfZ	M.S.	13 12 40	
			e(PR <sub>1</sub> )Z	M.S.	13 12 53	
			i(PR <sub>2</sub> )Z	M.S.	13 13 21	
			eN	S.	13 16 36	
			eSE	S.	13 16 51	
			i(SR <sub>1</sub> )N	S.	13 17 41	
			iLN	S.	13 19 31	
			F	S.	13.9	
			FL.	ePZ	G.W.	
eSE	G.W.	13 16 55				
e(SR <sub>1</sub> )E	G.W.	13 17 47				
F	G.W.	13.9				
301	Aug. 6	S.L.	eE	S.	15 53 05	Time Uncertain.
			eSE	S.	15 53 39	
			F	S.	16.0	
		FL.	eSE	G.W.	15 53 34	
			F	G.W.	16.0	
302	Aug. 6	S.L.	e(PR <sub>1</sub> )Z	M.S.	18 33 31	Time Uncertain.
			eN	S.	18 50 33	
			F	S.	21.1	
		FL.	e(PR <sub>1</sub> )Z	G.W.	18 33 28	
			F	G.W.	20.7	

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
303	Aug. 7	S.L.	ePZ	M.S.	00 12 11	Mexico.
			ePR2Z	M.S.	00 12 46	
			eSN	S.	00 16 13	
			F	S.	00.5	
		Fl.	ePZ F	G.W. G.W.	00 12 12 00.3	
304	Aug. 7	S.L.	ePZ	M.S.	03 35 08	Epicentral Region: 15°5 S., 73°08 W. H = 03 <sup>h</sup> 25 <sup>m</sup> 32 <sup>s</sup> ΔP-H = 56°2 Δ <sub>meas</sub> = 56°4 the character of the recordings of this earthquake indicate that it is deeper than normal. However, the present interpretation is based on a normal depth.
			iFZ	M.S.	03 35 09	
			iZ	M.S.	03 35 22	
			iSE	S.	03 43 02	
			iN	S.	03 43 47	
			i(ScS)E	S.	03 44 54	
			iN	S.	03 45 39	
			iN	S.	03 46 14	
			iSR <sub>1</sub> N	S.	03 47 06	
			i(SR <sub>2</sub> )N	S.	03 48 46	
			i(SR <sub>3</sub> )N	S.	03 49 57	
F	S.	07.3				
305	Aug. 7	S.L.	ePZ	M.S.	05 07 55	
306	Aug. 7	S.L.	eSKSE	S.	13 09 32	New Hebrides. Δ = about 110°0
			eSE	S.	13 11 09	
			ePSE	S.	13 13 55	
			eE	S.	13 15 13	
			F	S.	Lost	
No record at Saint Louis from 13 <sup>h</sup> 50 <sup>m</sup> August 7 to 14 <sup>h</sup> 30 <sup>m</sup> August 8.						
307	Aug. 7	Fl.	iPZ	G.W.	18 52 29	16°1 N., 97°7 W. H = 18 <sup>h</sup> 47 <sup>m</sup> 17 <sup>s</sup> ΔP-H = 23°7 Δ <sub>meas</sub> = 23°7
			eSE	G.W.	18 56 46	
			F	G.W.	19.4	
		C.G.	ePN eSE F	W.A. W.A. W.A.	18 52 19 18 56 45 19.0	ΔP-H = 22°6 Δ <sub>meas</sub> = 22°3
308	Aug. 7	Fl.	ePZ	G.W.	23 48 06	Epicentral Region: 15°0 S., 72°2 W. H = 23 <sup>h</sup> 38 <sup>m</sup> 31 <sup>s</sup> ΔP-H = 56°0 Δ <sub>meas</sub> = 56°2
			iSE	G.W.	23 55 59	
			iE	G.W.	23 56 10	
			e(ScS)E	G.W.	23 57 51	
			F	G.W.	24.3	
309	Aug. 8	C.G.	ePN	W.A.	03 43 11	Guatemala.
			eSE	W.A.	03 47 19	
			F	W.A.	03.9	

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
310	Aug. 8	Fl.	iPR <sub>1</sub> Z	G.W.	08 53 47	4 <sup>o</sup> 9 S., 140 <sup>o</sup> 5 E. H = 08 <sup>h</sup> 33 <sup>m</sup> 30 <sup>s</sup> h = 100 <sup>±</sup> km. ΔPR <sub>1</sub> -H = 123 <sup>o</sup> 0 Δ <sub>meas</sub> = 123 <sup>o</sup> 1
			ipPR <sub>1</sub> Z	G.W.	08 54 11	
			e(PR <sub>2</sub> )Z	G.W.	08 56 49	
			eSKSE	G.W.	08 59 05	
			esSKSE	G.W.	08 59 50	
			ePSE	G.W.	09 03 40	
			epPSE	G.W.	09 04 04	
			ePFSZ	G.W.	09 05 02	
			e(pPPS)E	G.W.	09 05 42	
			iSR <sub>1</sub> N	G.W.	09 10 17	
			isSR <sub>1</sub> N	G.W.	09 10 58	
F	G.W.	10.3				
311	Aug. 9	S.L.	iPZ	M.S.	04 21 19	18 <sup>o</sup> 9 N., 67 <sup>o</sup> 2 W. H = 04 <sup>h</sup> 15 <sup>m</sup> 28 <sup>s</sup> ΔP-H = 27 <sup>o</sup> 6 Δ <sub>meas</sub> = 28 <sup>o</sup> 0 ↘ Another shock?
			iPR <sub>1</sub> Z	M.S.	04 21 54	
			eSN	S.	04 26 01	
			i(P)Z	M.S.	04 26 32	
F	M.S.	05.0				
		Fl.	eSE	G.W.	04 26 07	ΔS-H = 27 <sup>o</sup> 7
			F	G.W.	04.9	Δ <sub>meas</sub> = 28 <sup>o</sup> 1
312	Aug. 9	S.L.	ePZ	M.S.	05 41 05	Central America?
			F	S.	05.9	
313	Aug. 9	S.L.	eSE	S.	07 44 45	
			F	S.	07.8	
314	Aug. 10	S.L.	ePZ	M.S.	01 59 09	51 <sup>o</sup> 5 N., 129 <sup>o</sup> 8 W. H = 01 <sup>h</sup> 52 <sup>m</sup> 52 <sup>s</sup> ΔP-H = 30 <sup>o</sup> 5 Δ <sub>meas</sub> = 30 <sup>o</sup> 5
			iPZ	M.S.	01 59 10	
			eSE	S.	02 04 12	
			iSE	S.	02 04 18	
			iSR <sub>1</sub> E	S.	02 06 03	
			iLE	S.	02 07 57	
			F	S.	05.5	
		C.G.	ePE	W.A.	01 59 16	ΔP-H = 31 <sup>o</sup> 3
			eLN	W.A.	02 09 49	Δ <sub>meas</sub> = 31 <sup>o</sup> 7
			F	W.A.	03.0	
315	Aug. 10	S.L.	eP'E	S.	11 08 34	New Guinea. Δ = about 125 <sup>o</sup> 0
			eN	S.	11 11 56	
			e(SKS)E	S.	11 14 35	
			eE	S.	11 15 39	
			eSKKSN	S.	11 16 37	
			eSE	S.	11 18 16	
			eE	S.	11 23 10	
			F	S.	Lost in following	

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
316	Aug. 10	S.L.	iPZ	M.S.	11 36 32	16°0 N., 96°2 W. H = 11 <sup>h</sup> 31 <sup>m</sup> 26 <sup>s</sup> h = 50±km. $\Delta_{P-H} = 23^{\circ}3$ $\Delta_{meas} = 23^{\circ}3$
			ipPZ	M.S.	11 36 43	
			iSPZ	M.S.	11 36 48	
			i(PR <sub>1</sub> )N	S.	11 37 12	
			iSE	S.	11 40 46	
			isSE	S.	11 41 04	
			iSR <sub>1</sub> E	S.	11 41 20	
		F	S.	13.4		
		C.G.	W.A.	11 36 16	$\Delta_{P-H} = 22^{\circ}1$	
		eSE	W.A.	11 40 20	$\Delta_{meas} = 22^{\circ}0$	
F	W.A.	11.8				
317	Aug. 10	S.L.	eSE	S.	19 50 08	
			eE	S.	19 55 00	
			F	S.	20.5	
318	Aug. 13	S.L.	e(P)Z	M.S.	08 27 42	Indefinite beginning. Foreshock of following? S phase doubtful.
			e(S)E	S.	08 32 46	
			F	S.	Lost	
319	Aug. 13	S.L.	iPZ	M.S.	08 28 47	---Part of preceding? ---Part of preceding? 49°9 N., 127°7 W. H = 08 <sup>h</sup> 22 <sup>m</sup> 40 <sup>s</sup> $\Delta_{P-H} = 29^{\circ}4$ $\Delta_{meas} = 29^{\circ}2$
			eN	S.	08 33 07	
			eSE	S.	08 33 47	
			eE	S.	08 34 10	
			eN	S.	08 35 21	
			eN	S.	08 36 20	
			eLN	S.	08 37 56	
		F	S.	09.4		
		Fl.	G.W.	08 28 43	Vertical not operating.	
		eSE	G.W.	08 33 43	$\Delta_{P-H} = 29^{\circ}0$	
F	G.W.	09.5	$\Delta_{meas} = 29^{\circ}1$			
320	Aug. 14	S.L.	iPZ	M.S.	11 15 30	58°4 N., 151°9 W. H = 11 <sup>h</sup> 07 <sup>m</sup> 32 <sup>s</sup> h = 100±km. $\Delta_{P-H} = 43^{\circ}9$ $\Delta_{meas} = 43^{\circ}8$
			ipPZ	M.S.	11 15 53	
			iZ	M.S.	11 17 36	
			iSE	S.	11 22 01	
			isSE	S.	11 22 40	
			iSR <sub>1</sub> N	S.	11 25 27	
			isSR <sub>1</sub> E	S.	11 26 04	
			F	S.	12.0	
			Fl.	G.W.	11 15 50	
		iSE	G.W.	11 21 58	$\Delta_{P-H} = 43^{\circ}6$	
		isSE	G.W.	11 22 36	$\Delta_{meas} = 43^{\circ}7$	
		iSR <sub>1</sub> E	G.W.	11 25 18		
		isSR <sub>1</sub> E	G.W.	11 25 50		
F	G.W.	11.9				
321	Aug. 14	Fl.	eN	G.W.	14 51 52	U.S.C.G.S. gives: Philippine Islands.
			eE	G.W.	14 58 29	
			eLE	G.W.	15 17 --	
			F	G.W.	16.2	

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
322	Aug. 14	S.L.	eFZ	M.S.	16 56 53	Weak.
323	Aug. 14	S.L.	e(P)Z eZ	M.S. M.S.	17 57 16 17 58 20	Indefinite beginning.
324	Aug. 14	S.L.	ePZ iZ	M.S. M.S.	23 05 57 23 06 12	
325	Aug. 15	S.L.	eZ eSKSE ePSN ePFSE eSR <sub>1</sub> E F	M.S. S. S. S. S. S.	01 39 11 01 46 50 01 49 13 01 50 33 01 55 29 03.0	Indefinite beginning. $\Delta$ = about 100°0
326	Aug. 15	S.L.	ePR <sub>1</sub> Z iSKSE isSKSE iSN isSN ePSN ipPSN iPFSN eE iSR <sub>1</sub> E isSR <sub>1</sub> E F	M.S. S. S. S. S. S. S. S. S. S. S. S. S.	12 06 22 12 12 21 12 13 12 12 13 47 12 15 39 12 15 45 12 16 22 12 16 42 12 18 27 12 21 26 12 22 14 14.1	13°0 N., 142°3 E. H = 11 <sup>h</sup> 47 <sup>m</sup> 42 <sup>s</sup> h = 150±km. $\Delta$ PR <sub>1</sub> -H = 109°0 $\Delta$ meas = 108°7
		Fl.	iSKSE isSKSE iSE ePSE ipPSE e(PFS)E iSR <sub>1</sub> E esSR <sub>1</sub> E F	G.W. G.W. G.W. G.W. G.W. G.W. G.W. G.W. G.W.	12 12 18 12 13 10 12 13 40 12 15 45 12 16 20 12 16 44 12 21 22 12 22 14 Lost.	$\Delta$ SKS-H = 109°3 $\Delta$ meas = 108°6
327	Aug. 16	S.L.	eLE F	S. S.	15 27 20 15.6	
		Fl.	eLE F	G.W. G.W.	15 27 15 15.5	

No Saint Louis Records from August 16, 18<sup>h</sup> to August 18, 15<sup>h</sup>.

328	Aug. 18	Fl.	iPZ ipPZ i(sF)Z iPR <sub>1</sub> Z ipPR <sub>1</sub> Z iSKSE iSE	G.W. G.W. G.W. G.W. G.W. G.W. G.W.	10 46 05 10 46 41 10 46 56 10 49 41 10 50 15 10 56 23 10 56 47	37°9 N., 139°2 E. H = 10 <sup>h</sup> 33 <sup>m</sup> 27 <sup>s</sup> h = 200±km. $\Delta$ P-H = 90°4 $\Delta$ meas = 90°8
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(Con't. on next page)

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks		
328	August 18 (Con't)	Fl	isSKSE	G.W.	10 57 25	$\Delta P-H = 92^{\circ}0$ $\Delta_{meas} = 92^{\circ}1$		
			i(sS)E	G.W.	10 57 41			
			i(PS)E	G.W.	10 58 50			
			iSR <sub>1</sub> E	G.W.	11 02 49			
			isSR <sub>1</sub> E	G.W.	11 03 44			
		C.G.	F	G.W.	12.5			
			ePE	W.A.	10 46 13			
			eSKSE	W.A.	10 56 23			
			eSE	W.A.	10 57 02			
			e(sS)E	W.A.	10 58 01			
F	W.A.	11.0						
329	August 18	S.L.	eP <sub>2</sub>	M.S.	19 32 49	Epicentral Region: 18°1.5' S., 71°3' W. H = 19 <sup>h</sup> 22 <sup>m</sup> 48 <sup>s</sup> $\Delta P-H = 59^{\circ}7$ $\Delta_{meas} = 59^{\circ}7$ $\Delta P-H = 59^{\circ}8$ $\Delta_{meas} = 59^{\circ}8$		
			eSN	S.	19 41 06			
			F	S.	20.7			
		Fl.	eP <sub>2</sub>	G.W.	19 32 49			
			iSE	G.W.	19 41 08			
			eE	G.W.	19 42 41			
			F	G.W.	20.7			
		S.L.	iP <sub>2</sub>	M.S.	02 48 53			
			e(S)N	S.	02 53 51			
			F	S.	03.0			
331	August 21	S.L.	eP <sub>2</sub>	M.S.	20 25 09	General Region: 2° N., 33° W. H = 20 <sup>h</sup> 14 <sup>m</sup> 7 <sup>s</sup>		
			eSN	S.	20 33 52			
			ePSE	S.	20 34 15			
			e(SR <sub>1</sub> )N	S.	20 41 10			
			F	S.	21.3			
		Fl.	eP <sub>2</sub>	G.W.	20 25 14	Time doubtful		
			eSN	G.W.	20 34 00			
			F	G.W.	21.2			
			S.L.	eP <sub>2</sub>	M.S.		07 25 23	Weak
				F	S.		07.6	
333	August 22	S.L.	e(P) <sub>2</sub>	M.S.	17 01 37	Very Weak		
334	August 22	S.L.	eP <sub>2</sub>	M.S.	19 29 23			
			F	M.S.	20.0			
335	August 23	S.L.	eN	S.	09 17 51			
			e(L)N	S.	09 20.1			
			F	S.	09.4			
336	August 24	S.L.	iP <sub>2</sub>	M.S.	00 05 07	Region: 16°5' N., 96° W. H = 00 <sup>h</sup> 00 <sup>m</sup> 10 <sup>s</sup> h = 100 <sup>±</sup> Km $\Delta P-H = 22^{\circ}9$ $\Delta_{meas} = 22.9$		
			ipP <sub>2</sub>	M.S.	00 05 31			
			i <sub>2</sub>	M.S.	00 05 57			
			iSN	S.	00 09 08			
			isSE	S.	00 09 38			
			F	S.	00.5			





No.	Date	Sta.	Phase	Inst.	h m s	Remarks		
336 (Con't.)	August 24	Fl.	ePZ	G.W.	00h05m09s	$\Delta P-H = 23^{\circ}1$ $\Delta_{meas} = 23^{\circ}0$		
			epPZ	G.W.	00 05 39			
			eSE	G.W.	00 09 09			
			isSE	G.W.	00 09 43			
			F	G.W.	00.3			
337	August 24	S.L.	ePZ	M.S.	02 43 25	Weak		
338	August 24	S.L.	ePZ	M.S.	16 08 13	General Region: 77° N., 5° E. H = 17 <sup>h</sup> 59 <sup>m</sup> 0		
			eSN	S.	16 15 48			
			cSR <sub>1</sub> N	S.	16 19 31			
			eLN	S.	16 24 16			
			F	S.	17.0			
		Fl.	ePZ	G.W.	16 08 12	Time doubtful		
			eSN	G.W.	16 15 41			
339	August 24	Fl.	iPZ	G.W.	23 42 42	Time doubtful 15°5 N., 93°6 W. H = 23 <sup>h</sup> 37 <sup>m</sup> 51 <sup>s</sup> h = 80±km. $\Delta S-P = 23^{\circ}3$ $\Delta_{meas} = 23^{\circ}1$		
			ipPZ	G.W.	23 43 02			
			iSE	G.W.	23 46 48			
			F	G.W.	25.3			
		C.G.	ePN	W.A.	23 42 38	$\Delta P-H = 21^{\circ}7$ $\Delta_{meas} = 21^{\circ}7$		
			ipPN	W.A.	23 42 57			
			iSPN	W.A.	23 43 07			
			iSE	W.A.	23 46 34			
			i(sS)E	W.A.	23 46 53			
340	August 26	S.L.	ePZ	M.S.	02 06 49	Deep?		
			e(pP)Z	M.S.	02 07 16			
			eN	S.	02 16 02			
			F	S.	02.5			
341	August 27	S.L.	ePZ	M.S.	18 57 44	N.S., E.W. not operating.		
			eZ	M.S.	18 57 50			
342	August 30	S.L.	eSKSE	S.	01 37 16	Epicentral Region: 17°0 S., 167°9 E. H = 01 <sup>h</sup> 14 <sup>m</sup> 12 <sup>s</sup> $\Delta SKS-H = 109^{\circ}5$ $\Delta_{meas} = 109^{\circ}5$		
			eE	S.	01 39 33			
			ePSE	S.	01 42 38			
			eE	S.	01 43 05			
			ePPSE	S.	01 43 42			
			eSR <sub>1</sub> E	S.	01 48 36			
			eSR <sub>2</sub> E	S.	01 53 06			
			F	S.	03.9			
			Fl.	eSKSE	G.W.		01 39 23	Time doubtful.
				ePSE	G.W.		01 42 46	
		eE		G.W.	01 49 02			
					F	G.W.	03.8	

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
343	Aug. 30	S.L.	iPZ	M.S.	04 09 53	U.S.C.G.S. gives: Region: 14.95 S., 78° W. H = 04 <sup>h</sup> 00.8 <sup>m</sup> h = 100±km.
			iZ	M.S.	04 10 47	
			eSE	S.	04 17 48	
			esSE	S.	04 18 55	
			eSR <sub>1</sub> E	S.	04 19 30	
			esSR <sub>1</sub> E	S.	04 20 41	
			F	S.	04.4	
		Fl.	iSE	G.W.	04 17 49	Time doubtful.
			esSE	G.W.	04 19 01	
			eSR <sub>1</sub> E	G.W.	04 19 31	
			esSR <sub>1</sub> E	G.W.	04 20 42	
			F	G.W.	04.4	

Minor Seismic Activity

Station	Date	From			To		
		h	m	s	h	m	s
S.L.	August 1	18	29		18	47	
S.L.	6	17	00		18	18	
FL.	8	02	57		03	18	
S.L.	8	15	26		15	34	
S.L.	11	10	00		10	15	
S.L.	11	17	51		18	18	
S.L.	12	10	13		10	43	
S.L.	12	10	12		10	35	
FL.	17	18	27		18	33	
S.L.	21	12	00		12	12	
Fl.	25	03	59		04	15	
S.L.	31	16	06		16	48	

James B. Macelwane, Director

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(No time signal at St. Louis from Sept. 1 to Sept. 18)

344	Sept. 5	C.G.	e(P)	W.A.	04 <sup>h</sup> 41 <sup>m</sup> 57 <sup>s</sup>	Dominion Observatory gives: 44° 51' N., 74° 18' W.
			i(S)	W.A.	04 43 27	
			i	W.A.	04 45 35	
345	Sept. 16	Fl.	eLN F	G.W. G.W.	03 00 27 03.1	U.S.C.C.S. gives: 42° 5' N., 127° W. H = 02 <sup>h</sup> 44.7 <sup>m</sup>
346	Sept. 20	S.L.	ePZ	M.S.	18 38 35	Weak
347	Sept. 21	S.L.	ePZ	M.S.	01 57 11	
348	Sept. 23	S.L.	ePZ	M.S.	12 24 28	Epicentral RegionZ: 53° 2' N., 162° 0' E. H = 12 <sup>h</sup> 13 <sup>m</sup> 28 <sup>s</sup> h = 50± km. $\Delta_{P-H} = 69.3$ $\Delta_{meas} = 69.3$ $\Delta_{P-H} = 69.4$ $\Delta_{meas} = 69.2$
			iPZ	M.S.	12 24 29	
			iSN	S.	12 33 42	
			iN	S.	12 33 47	
			F	S.	16 -- --	
		Fl.	ePZ	G.W.	12 24 29	
			iPZ	C.W.	12 24 33	
			ipPZ	G.W.	12 24 40	
		C.G.	iSE	G.W.	12 33 36	
			F	G.W.	16 -- --	
			ePE	W.A.	12 24 45	
349	Sept. 23	S.L.	e(SKKS)N	S.	16 26 58	Region: 31° S., 177° W. H = 16 <sup>h</sup> 01 <sup>m</sup> 19 <sup>s</sup>
			eSN	S.	16 27 37	
			eSR <sub>1</sub> N	S.	16 34 59	
F	S.		18.6			
Fl.	eSN	G.W.	16 27 38			
	F	G.W.	17.9			
350	Sept. 23	S.L.	ePZ	M.S.	22 43 24	Weak
			eLE	S.	23 07.4	
			F	S.	23.4	



No.	Date	Sta	Phase	Inst.	h m s	Remarks
351	Sept. 24	S.L.	iPZ eSN F	M.S. S. S.	11 06 56 11 16 12 11.2	Region: 53° N., 160° E. H = 10 <sup>h</sup> 55 <sup>m</sup> 45 <sup>s</sup>
		Fl.	iPZ eSN F	G.W. G.W. G.W.	11 06 54 11 16 10 11.9	
352	Sept. 24	S.L.	iZ iZ	M.S. M.S.	20 39 03 20 39 28	May not be seismic
353	Sept. 25	S.L.	ePZ	M.S.	10 47 03	Weak
354	Sept. 25	S.L.	iPE iSE	W.A. W.A.	11 37 37.0 11 37 48.9	Local shock 37° 56' N., 89° 58' W. H = 11 <sup>h</sup> 37 <sup>m</sup> 22.9 <sup>s</sup> For details see <u>Earthquake Notes</u> , Vol. 16, No. 4, pp. 1-2, June, 1945
		Fl.	iPE iPN	W.A. W.A.	11 37 40.7 11 37 40.9	
		C.G.	iPE iSE	W.A. W.A.	11 37 36.4 11 37 46.2	
355	Sept. 25	S.L.	iPZ eSN eN eScSE F	M.S. S. S. S. S.	16 26 50 16 35 59 16 36 09 16 37 02 17.5	Aftershock of No. 348
		Fl.	ePZ eSE eScSE F	G.W. G.W. G.W. G.W.	16 26 50 16 36 04 16 37 02 17.3	
356	Sept. 25	S.L.	ePZ e(SR <sub>1</sub> )E F	M.S. S. S.	17 24 35 17 38 38 18.1	
357	Sept. 25	S.L.	eFZ eSN F	M.S. S. S.	21 24 17 21 28 43 Lost	Mexico Tacubaya gives: 16° N., 95° 05' W.
358	Sept. 25	S.L.	iPZ eSN F	M.S. S. S.	21 34 13 21 38 36 21.9	Region of No. 357
359	Sept. 27	S.L.	ePR <sub>1</sub> N iSE iPSN F	M.S. S. S. S.	16 43 07 16 50 37 16 52 12 18.6	Epicentral Region: 38° 1' N., 73° 06' E. H = 16 <sup>h</sup> 25 <sup>m</sup> 06 <sup>s</sup> ΔPR <sub>1</sub> -H = 102° 02' Δmeas = 102° 00' ΔP-H = 101° 09' Δmeas = 101° 08'
		Fl.	ePZ eSKSE eSE F	G.W. G.W. G.W. G.W.	16 39 01 16 49 36 16 50 37 19.3	

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No.	Date	Sta	Phase	Inst.	h m s	Remarks
360	Sept. 29	S.L.	ePZ	M.S.	17 06 28	Weak
361	Sept. 29	S.L.	(e) Z?	M.S.	19 17 39	Epicentral Region: 51°5' N., 170°3' W. H = 19h08m14s $\Delta P-H = 55^{\circ}2$ $\Delta_{meas} = 55^{\circ}2$
			ePZ	M.S.	19 17 44	
			eZ	M.S.	19 17 47	
			eSE	S.	19 25 19	
			F	S.	20.8	
362	Sept. 29	S.L.	iPZ	M.S.	22 10 49	

Minor Seismic Activity

Station	Date	From	To
		h m	h m
S.L.	September 21	07 06	07 44
S.L.	30	01 34	02 00
S.L.	30	04 36	05 45
S.L.	30	08 26	09 16

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# SAINT LOUIS UNIVERSITY INSTITUTE OF GEOPHYSICAL TECHNOLOGY

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
363	Oct. 1	S.L.	ePZ e(S)E F	M.S. S. S.	08 26 06 08 35 08 09.3	
364	Oct. 2	S.L.	iPN ipFN iSE isSE F	W.A. W.A. W.A. W.A. W.A.	17 27 04 17 27 36 17 31 14 17 32 15 17.8	14°4 N., 90°6 W. H = 17 <sup>h</sup> 21 <sup>m</sup> 59 <sup>s</sup> h = 150± Km $\Delta P-H = 24.02$ $\Delta_{meas} = 24.01$
		C.G.	ePE. eE eSE e(sS)E F	W.A. W.A. W.A. W.A. W.A.	17 26 53 <del>17 27 56</del> 17 30 47 17 31 30 17.6	$\Delta P-H = 23.90$ $\Delta_{meas} = 22.99$
365	Oct. 2	S.L.	ePN ipP eSKSE iSE isSE ePSE F	W.A. W.A. W.A. W.A. W.A. W.A. W.A.	20 42 26 20 42 42 20 52 48 20 53 02 20 53 32 20 53 54 21.1	43°5 N., 141°7 E. H = 20 <sup>h</sup> 29 <sup>m</sup> 57 <sup>s</sup> $\Delta P-H = 85.96$ $\Delta_{meas} = 85.97$ h = 80± Km.
		C.G.	eSKSE eSE esSE F	W.A. W.A. W.A. W.A.	20 52 55 20 53 13 20 53 46 20.9	$\Delta S-H = 87.96$ $\Delta_{meas} = 86.99$
366	Oct. 3	S.L.	(eE)? eE	W.A. W.A.	02 31 42 02 32 53	
367	Oct. 5	S.L.	ePZ	M.S.	15 28 28	Epicentral Region: 4.4 N., 77.8 W. H = 15 <sup>h</sup> 21 <sup>m</sup> 25 <sup>s</sup> $\Delta P-H = 36.90$ $\Delta_{meas} = 36.90$
368	Oct. 5	S.L.	ePR <sub>1</sub> Z eSKSE eSKKSE ePSE F.	M.S. S. S. S. S.	17 16 15 17 22 22 17 23 26 17 25 58 Lost	Region: 4° S., 152° E. H = 16 <sup>h</sup> 57.1 <sup>m</sup> h = about 150 km.

No.	Date	Sta.	Phase	Inst.	h m s	Remarks
369	Oct. 5	S.L.	(eZ)	M.S.	17 26 30	
			ePZ	M.S.	17 26 55	
			iZ	M.S.	17 27 01	
			iE	S.	17 32 19	Part of Preceding?
			iE	S.	17 37 03	Part of Preceding?
			F	S.	Lost	
370	Oct. 5	S.L.	ipPR <sub>1</sub> Z	M.S.	17 47 57	Epicentral Region: 21°9' S., 171°02' E. H = 17 <sup>h</sup> 28 <sup>m</sup> 34 <sup>s</sup> h = 150± Km ΔS-H = 110°0 Δ <sub>meas</sub> = 109°8
			iSN	S.	17 54 58	
			isSN	S.	17 55 52	
			iSR <sub>1</sub> N	S.	18 03 24	
			iSR <sub>2</sub> N	S.	18 06 55	
			F	S.	20+	
371	Oct. 6.	S.L.	ePZ	M.S.	02 47 09	39°9' N., 26°2' E. H = 02 <sup>h</sup> 34 <sup>m</sup> 50 <sup>s</sup> ΔP-H = 82°3 Δ <sub>meas</sub> = 82°4
			iPZ	M.S.	02 47 13	
			iZ	M.S.	02 47 17	
			iSN	S.	02 57 28	
			F	S.	05.6	
		Fl.	ePZ	G.W.	02 47 11	ΔP-H = 82°6
			eSN	G.W.	02 57 37	Δ <sub>meas</sub> = 82°5
			F	G.W.	05.4	
372	Oct. 6	S.L.	eZ	M.S.	09 05 51	
			eE	S.	09 12 47	
			F	S.	10.3	
373	Oct. 7	S.L.	e(FR <sub>1</sub> )E	M.S.	19 10 44	New Hebrides Δ = about 109°
			eE	S.	19 11 16	
			e(FR <sub>2</sub> )E	S.	19 12 35	
			eE	S.	19 13 48	
			eN	S.	19 14 11	
			e(SKS)E	S.	19 16 17	
			e(SIKS)E	S.	19 17 29	
			eSE	S.	19 18 09	
			e (PS)E	S.	19 20 03	
			F	S.	21.6	
374	Oct. 7	S.L.	ePZ	M.S.	21 46 48	38°0' N., 25°9' E. H = 21 <sup>h</sup> 34 <sup>m</sup> 24 <sup>s</sup> ΔP-H = 83°2 Δ <sub>meas</sub> = 83°0
			iPZ	M.S.	21 46 52	
			eE	S.	21 55 31	
			F	S.	22.5	
375	Oct. 9	S.L.	ePZ	M.S.	02 20 16	Epicentral Region: 9°1' S., 75°8' W. H = 02 <sup>h</sup> 11 <sup>m</sup> 25 <sup>s</sup> ΔP-H = 49°8 Δ <sub>meas</sub> = 49°8
			F	S.	Lost	
376	Oct. 9	S.L.	iPZ	M.S.	02 33 12	
			eZ	M.S.	02 33 21	
			F	S.	03.1	

No.	Date	Sta.	Phase	Inst	h m s	Remarks
377	Oct. 9	S.L.	eLN F	S. S.	21 32.7 22.3	Southwest Pacific
378	Oct. 11	S.L.	iPZ i(pF)Z i i	M.S. M.S. S. S.	09 58 20 09 58 33 10 08 54 10 09 16	Epicentral Region: 14°08 S., 173°07 W. H = 09h45m16s h = 80± Km $\Delta_{P-H} = 92^{\circ}4$ $\Delta_{meas} = 94^{\circ}0$ Saint Louis readings from J.S.A. Preliminary Bulletin #40, 1944
		FL.	iPZ iSKSE isSKSE F	G.W. G.W. G.W. G.W.	09 58 21 10 08 52 10 09 18 11.5	$\Delta_{P-H} = 92^{\circ}7$ $\Delta_{meas} = 93^{\circ}9$
379	Oct. 13	S.L.	eE eSN ePSE e(SR <sub>2</sub> )E F	S. S. S. S. S.	11 45 43 11 46 44 11 48 24 11 58 02 13.5	Epicentral Region: 33°9 S., 178°4 W. H = 11h20m10s $\Delta_{PS-H} = 109^{\circ}0$ $\Delta_{meas} = 108^{\circ}9$
		FL.	e(PR <sub>1</sub> )Z eSKKSE eSN F	G.W. G.W. G.W. G.W.	11 39 10 11 46 09 11 46 45 13.2	$\Delta_{SKKS-H} = 108^{\circ}7$ $\Delta_{meas} = 108^{\circ}9$
380	Oct. 14	S.L.	eP'Z ePR <sub>1</sub> E i(PS)E F	M.S. S. S. S.	02 37 00 02 38 04 02 48 02 05.0	Region: 7° S., 151° E. H = 02h18.4m h = about 50 Km
		FL.	ePR <sub>1</sub> Z eSKSE e(PS)E F	G.W. G.W. G.W. G.W.	02 38 09 02 43 51 02 48 12 04.9	
381	Oct. 14	S.L.	eSKSE ePSE eSR <sub>1</sub> E eSR <sub>2</sub> E F	S. S. S. S. S.	09 32 23 09 34 56 09 40 29 09 44 44 10.7	Approximately: 11° S., 173° E. H = 09h07.8m
382	Oct. 14	S.L.	iPZ eZ eSE eE F	M.S. M.S. S. S. S.	15 27 24 15 29 08 15 37 17 15 39 04 15.7	Northern Japan Deep No surface waves
		FL.	eSE eE F	G.W. G.W. G.W.	15 37 16 15 39 19 15.7	



No.	Date	Sta.	Phase	Inst.	h m s	Remarks	
383	Oct. 14	S.L.	eSKSE	S.	16 45 27	Southwest Pacific $\Delta = \text{about } 110^\circ$	
			eSKKSN	S.	16 46 32		
			eN	S.	16 47 57		
			eE	S.	16 53 15		
			F	S.	17.7+		
		Fl.	eSKSE	G.W.	16 45 25		
	eSKKSE	G.W.	16 46 32				
	F	G.W.	18.0				
384	Oct. 14	Fl.	e(SKS)E	G.W.	19 43 18	Southwest Pacific	
			e(SKKS)E	G.W.	19 44 36		
			F	G.W.	19.8		
385	Oct. 14	S.L.	eP <sub>1</sub> Z	M.S.	20 35 19	Southeast of Mindanao $\Delta = \text{about } 128^\circ$	
			ePR <sub>1</sub> Z	M.S.	20 37 15		
			e(SKP)N	S.	20 38 41		
			ePSN	S.	20 47 31		
			ePPSN	S.	20 48 56		
			e(SR <sub>1</sub> )N	S.	20 54 59		
		F	S.	22.6			
		Fl.	ePR <sub>1</sub> Z	G.W.	20 37 12		
			e(SIP)E	G.W.	20 38 42		
			e(SKKS)E	G.W.	20 44 23		
			eE	G.W.	20 46 10		
F	G.W.		22+				
386	Oct. 15	S.L.	eFZ	M.S.	04 12 58	Epicentral Region: 10°7 S., 78°4 W. H = 04 <sup>h</sup> 04 <sup>m</sup> 05 <sup>s</sup> $\Delta_{P-H} = 50.0$ $\Delta_{\text{meas}} = 50.4$	
			eZ	M.S.	04 13 09		
			eSE	S.	04 20 07		
			ePSE	S.	04 20 41		
			eE	S.	04 22 41		
			e(SR <sub>1</sub> )E	S.	04 23 40		
		F	S.	04.9			
		Fl.	eE	G.W.	04 19 36		$\Delta_{\text{meas}} = 50.6$
			e(S)E	G.W.	04 20 05		
			F	G.W.	04.5		
387	Oct. 15	S.L.	e(PS)E	S.	08 28 40	Southwest Pacific?	
			eLE	S.	08 49 07		
			F	S.	09.5		
388	Oct. 15	S.L.	eLE	S.	20 08 13		
			F	S.	20.2		
389	Oct. 17	Fl.	ePR <sub>1</sub> Z	G.W.	18 56 06	Epicentral Region: 30°7 N., 83°2 E. H = 18 <sup>h</sup> 36 <sup>m</sup> 57 <sup>s</sup> $\Delta_{PS-H} = 110.9$ $\Delta_{\text{meas}} = 110.8$	
			eSKSN	G.W.	19 02 08		
			eSKKSN	G.W.	19 03 08		
			iSPZ	G.W.	19 05 21		
			iPSN	G.W.	19 05 31		
			F	G.W.	21.3		
390	Oct. 19	S.L.	eLE	S.	04 58 31		
			F	S.	05.1		

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
391	Oct. 19	S.L.	eLE F	S. S.	16 21 22 16.6	
392	Oct. 20	S.L.	iPZ	M.S.	23 14 42	
		Fl.	eFE F	W.A. W.A.	23 14 40 23 16.6	
393	Oct. 21	S.L.	iPZ	M.S.	10 52 22	
394	Oct. 21	S.L.	ePZ eSN eE eME F	M.S. S. S. S. S.	20 24 05 20 28 26 20 28 52 20 36 02 21.0	Off the coast of Guatemala.
395	Oct. 23	S.L.	ePZ iPZ ePR <sub>1</sub> Z iZ iSE iSR <sub>1</sub> E F	M.S. M.S. M.S. M.S. S. S. S.	23 47 30 23 47 31 23 49 07 23 49 19 23 53 45 23 56 08 03.6	0°7 N., 79°6 W. H = 23 <sup>h</sup> 40 <sup>m</sup> 07 <sup>s</sup> $\Delta_{P-H} = 33^{\circ}6$ $\Delta_{meas} = 39^{\circ}0$
		Fl.	ePZ iPZ iPR <sub>1</sub> Z i(ScP)E iSE F	G.W. G.W. G.W. G.W. G.W. G.W.	23 47 33 23 47 36 23 49 10 23 53 17 23 53 31 04.4	$\Delta_{P-H} = 38^{\circ}8$ $\Delta_{meas} = 39^{\circ}2$
396	Oct. 26	S.L.	ePZ	M.S.	01 53 20	
397	Oct. 29	S.L.	iSKSN eSKSN eSE eN iPSN eE ePPSN e(PKRP)Z eN ePPSN F	S. S. S. S. S. S. S. S. S. S. S.	00 36 44 00 37 42 00 38 13 00 39 50 00 40 07 00 40 29 00 41 07 00 41 14 00 41 28 00 41 55 02.7	Same Region as No. 389, October 17. H = 00 <sup>h</sup> 11 <sup>m</sup> 15 <sup>s</sup>
		Fl.	e(PR <sub>1</sub> )Z eN eSKSE eSKSE e(S)E ePSN F	G.W. G.W. G.W. G.W. G.W. G.W. G.W.	00 30 39 00 36 21 00 36 44 00 37 38 00 38 15 00 40 05 02 5	

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
398	Oct. 30	S.L.	ePZ	M.S.	05 42 00	1096 N., 4398 W. H = 05 <sup>h</sup> 33 <sup>m</sup> 12 <sup>s</sup> h = 50 <sup>±</sup> km ΔP-H = 4999 Δmeas = 5090 ΔS-H = 5094 Δmeas = 5092
			ipPZ	M.S.	05 42 12	
			eSE	S.	05 49 16	
			eSR <sub>1</sub> E	S.	05 52 56	
		F	S.	06.4		
		Fl.	eSE	G.W.	05 49 19	
			eLE	G.W.	05 56.5	
			F	G.W.	06.2	

Minor Seismic Activity

Station	Date	From		To	
		h	m	h	m
S.L.	October 14	06	36	05	57
S.L.	14	07	44	08	13
S.L.	14	22		24.5	
Fl.	15	09	00	10	53
S.L.	15	09	45	11	35
S.L.	17	04	39	05	44
S.L.	21	22.0		22.5	

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
399	Nov. 1	S.L.	iP'Z	M.S.	12 20 51	Region: 4° S., 102° E. H = 12 <sup>h</sup> 01 <sup>m</sup> 30 <sup>s</sup> h = 100 <sup>±</sup> km.
			iZ	M.S.	12 21 03	
			iZ	M.S.	12 21 12	
			ipP'Z	M.S.	12 21 18	
			iZ	M.S.	12 21 27	
			eSR <sub>1</sub> E	S.	12 42 47	
			ePPSSE	S.	12 44 01	
			eLE	S.	13 05.5	
			F	S.	14.1	
400	Nov. 3	S.L.	eN	S.	06 39 49	
			eLN	S.	07 03 48	
			F	S.	07.9	
401	Nov. 5	S.L.	e(P)Z	M.S.	06 12 06	Weak.
402	Nov. 6	S.L.	(eZ)	M.S.	06 09 02	Japan?
			eSN	S.	06 13 48	
			eSR <sub>1</sub> E	S.	06 15 50	
			eLN	S.	06 26 58	
			F	S.	07.5	
		Fl.	eSR <sub>1</sub> E	G.W.	06 15 49	
F	G.W.	07.4				
403	Nov. 6	S.L.	eZ	M.S.	17 35 03	Obscured by microseisms.
			(eE)	S.	17 43 16	
404	Nov. 7	S.L.	iPZ	M.S.	05 42 03	Deep? No surface waves. General Region: 14° N., 89° W. H = 05 <sup>h</sup> 36.7 <sup>m</sup>
			iZ	M.S.	05 42 05	
			iZ	M.S.	05 42 11	
			e(S)Z	M.S.	05 46 29	
			F	M.S.	05 47.0	
		C.G.	ePN	W.A.	05 41 54	
405	Nov. 8	S.L.	ePZ	M.S.	04 14 26	
406	Nov. 8	S.L.	e(P)Z	M.S.	06 35 13	
			eLE	S.	06 51 12	
			F	S.	07.1	

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66.

No.	Date	Sta.	Phase	Inst.	h m s	Remarks
407	Nov. 10	S.L.	epPZ	M.S.	13 25 20	Epicentral Region: 54°2 N., 156°7 W. h = 50±km. H = 13 <sup>h</sup> 16 <sup>m</sup> 46 <sup>s</sup> Δ <sub>pP-H</sub> = 46°5 Δ <sub>meas</sub> = 46°7
			iSE	S.	13 31 56	
			i(PS)E	S.	13 32 08	
			isSN	S.	13 32 32	
			i(pPS)E	S.	13 32 41	
			eSR <sub>1</sub> N	S.	13 35 30	
			F	S.	Lost	
408	Nov. 13	S.L.	ePnE	W.A.	11 50(20)	Very weak initial phase. Epicentral Region: 39°7 N., 84°2 W. H = 11 <sup>h</sup> 49 <sup>m</sup> 09 <sup>s</sup> Δ <sub>S*-H</sub> = 4°6 Δ <sub>meas</sub> = 4°7  Δ <sub>Pn-H</sub> = 4°6 Δ <sub>Sn-H</sub> = 4°9 Δ <sub>meas</sub> = 4°8  Δ <sub>S*-H</sub> = 4°8 Δ <sub>meas</sub> = 4°9 Felt at Anna and Botkins, Ohio.
			iS*N	W.A.	11 51 27	
			F	W.A.	11 56.7	
		Fl.	ePnE	W.A.	11 50 19	
			eSnN	W.A.	11 51 12	
			iS*E	W.A.	11 51 30	
			F	W.A.	11 57.1	
		C.G.	eS*N	W.A.	11 51 32	
			eN	W.A.	11 51 35	
			F	W.A.	11 53.2	
409	Nov. 13	S.L.	eE	S.	19 47 14	Epicentral Region: 24°9 S., 177°9 E. H = 19 <sup>h</sup> 23 <sup>m</sup> 30 <sup>s</sup> h = 600±km. Δ <sub>S-H</sub> = 106°1 Δ <sub>meas</sub> = 106°5
			eSN	S.	19 47 53	
410	Nov. 14	S.L.	iSN	S.	00 01 39	
			F	S.	00.6	
		Fl.	eSN	G.W.	00 01 38	
			F	G.W.	00.4	
411	Nov. 14	S.L.	(ePZ)	M.S.	00 42 04	
			eSE	S.	00 51 25	
			eSR <sub>1</sub> E	S.	00 56 04	
			F	S.	02.1	
		Fl.	eN	G.W.	00 47 49	
			eSE	G.W.	00 51 26	
			F	G.W.	02.2	
412	Nov. 14	S.L.	ePZ	M.S.	23 26 50	

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks				
413	Nov. 14	S.L.	eSKSN	S.	23 42 05	Region: 41° N., 66° E. H = 23 <sup>h</sup> 18.6 <sup>m</sup> h = about 100 km.				
			esSKSN	S.	23 42 44					
			eSKKSE	S.	23 43 15					
			e(sSKKS)E	S.	23 43 38					
			iPSN	S.	23 44 45					
			eN	S.	23 46 45					
			F	S.	24.4					
414	Nov. 15	S.L.	ePZ	M.S.	16 06 58	South of Easter Island?				
			e(S)E	S.	16 16 22					
			F	S.	16.6					
415	Nov. 15	S.L.	eP'Z	M.S.	21 06 01	Epicentral Region: 4° N., 128° E. H = 20 <sup>h</sup> 17 <sup>m</sup> 04 <sup>s</sup> $\Delta_{PR_1-H} = 125^{\circ}2$ $\Delta_{meas} = 125^{\circ}0$				
			iPR <sub>1</sub> Z	M.S.	21 07 51					
			eSKSE	S.	21 12 56					
			ePSE	S.	21 18 06					
			ePPSE	S.	21 19 26					
			F	S.	24.3					
			Fl.	eP'Z	G.W.		21 05 59	$\Delta_{PR_1-H} = 125^{\circ}0$ $\Delta_{meas} = 124^{\circ}8$		
		iPR <sub>1</sub> Z		G.W.	21 07 50					
		eSKSE		G.W.	21 12 55					
		e(PS)E		G.W.	21 18 14					
		F		G.W.	24.2					
		416		Nov. 15	S.L.	iPZ	M.S.		22 34 14	Deep?
						i(pP)Z	M.S.		22 34 48	
			F			S.	Lost			
417	Nov. 16	S.L.	ePR <sub>1</sub> E	S.	12 29 50	12°1 S., 166°1 E. H = 12 <sup>h</sup> 10 <sup>m</sup> 59 <sup>s</sup> $\Delta_{PS-H} = 108^{\circ}3$ $\Delta_{meas} = 108^{\circ}0$				
			iSKSE	S.	12 36 03					
			eSE	S.	12 37 44					
			iE	S.	12 38 52					
			iPSE	S.	12 39 06					
			F	S.	15.4					
			Fl.	iSKSE	G.W.		12 36 02	$\Delta_{PS-H} = 108^{\circ}5$ $\Delta_{meas} = 107^{\circ}9$		
		iPSE		G.W.	12 39 08					
		F		G.W.	15.3					
		418	Nov. 18	S.L.	ePZ	M.S.	08 04 33	29°0 S., 112°2 W. H = 07 <sup>h</sup> 53 <sup>m</sup> 20 <sup>s</sup> $\Delta_{P-H} = 70^{\circ}8$ $\Delta_{meas} = 70^{\circ}6$		
iSE	S.				08 13 46					
F	S.				09.1					
419	Nov. 19	S.L.	eLE	S.	04 33 48					
			F	S.	05.0					
420	Nov. 19	S.L.	eLE	S.	07 39.4					
			F	S.	08.2					
421	Nov. 19	S.L.	ePZ	M.S.	19 23 12					
			eZ	M.S.	19 23 19					
			eZ	M.S.	19 23 37					

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422	Nov. 20	S.L.	ePZ	M.S.	03 34 36	
423	Nov. 20	S.L.	e(SKKS)E eLE F	S. S. S.	05 07 27 05 35.0 06.3	Possibly the same region as # 417, Nov. 16, with $H = 04^h 41.3^m$
424	Nov. 20	S.L.	iPZ iPZ iSE F	M.S. M.S. S. S.	21 41 41 21 42 09 21 51 00 21 52.0	$50^{\circ}9' N.$ , $155^{\circ}0' E.$ $H = 21^h 30^m 23^s$ $h = 150 \pm km.$ $\Delta P-H = 74^{\circ}2$ $\Delta_{meas} = 74^{\circ}1$
425	Nov. 21	S.L.	ePZ iSKSN iPSN eSR <sub>1</sub> E F	M.S. S. S. S. S.	10 16 03 10 26 38 10 28 53 10 34 04 11.5	Region: $56^{\circ}S.$ , $70^{\circ}W.$ $H = 10^h 02.5^m$ Possibly deeper than normal.
		FL.	eSKSN F	G.W. G.W.	10 26 43 11.5	
426	Nov. 21	S.L.	eZ F	M.S. M.S.	15 12 54 15 14.0	Very weak.
427	Nov. 23	S.L.	e(P)Z F	M.S. M.S.	05 55 16 05 56.7	Weak.
428	Nov. 23	S.L.	e(P)Z F	M.S. M.S.	11 02 40 11 03.7	Very Weak.
429	Nov. 24	S.L.	ePZ eE iPR <sub>1</sub> Z iE iSKSE isSKSE iSKKSE iSE iPSE iPPSE iE iSR <sub>1</sub> E isSR <sub>1</sub> E iSR <sub>2</sub> E F	M.S. S. M.S. S. S. S. S. S. S. S. S. S. S. S. S. S. S. S. S. S.	05 03 18 05 06 38 05 07 48 05 08 47 05 13 40 05 14 37 05 14 57 05 15 54 05 17 16 05 18 14 05 19 39 05 23 15 05 24 21 05 27 26 08.0	$19^{\circ}0' S.$ , $169^{\circ}1' E.$ $H = 04^h 49^m 00^s$ $h = 100 \pm km.$ $\Delta_{PR_1-H} = 109^{\circ}7$ $\Delta_{meas} = 109^{\circ}9$
		FL.	ePZ iPR <sub>1</sub> Z iZ iSKSE isSKSE iSKKSE iSE iPSE	G.W. G.W. G.W. G.W. G.W. G.W. G.W. G.W.	05 03 15 05 07 49 05 08 49 05 13 36 05 14 36 05 15 00 05 15 52 05 17 09	$\Delta_{PR_1-H} = 109^{\circ}8$ $\Delta_{meas} = 109^{\circ}8$

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
429 (Continued)	Nov. 24	Fl.	iPPSE	G.W.	05 18 08	
			iE	G.W.	05 22 35	
			iSR <sub>1</sub> E	G.W.	05 23 17	
			isSR <sub>1</sub> E	G.W.	05 24 21	
			iE	G.W.	05 25 03	
			iE	G.W.	05 26 05	
			iSR <sub>2</sub> E F	G.W.	05 27 24 07.6	
430	Nov. 24	S.L.	eLE	S.	19 13 13	
			F	S.	19.4	
431	Nov. 26	S.L.	e(P)Z	M.S.	00 51 09	
			eLE	S.	01 22 --	
			F	S.	01.9	
432	Nov. 26	S.L.	eSR <sub>1</sub> E	S.	08 47 04	Region: 19° S., 173° W. H = 08 <sup>h</sup> 15.5 <sup>m</sup>
			eME	S.	09 00.5	
			F	S.	10.3	
433	Nov. 27	S.L.	ePZ	M.S.	16 38 06	16°0 N., 97°7 W. H = 16 <sup>h</sup> 32 <sup>m</sup> 54 <sup>s</sup> ΔP-H = 23°7 Δ <sub>meas</sub> = 23°7
			iZ	M.S.	16 38 16	
			e(S)N	S.	16 42 31	
			eLN	S.	16 47.4	
			F	S.	17.2	
		Fl.	G.W.	16 38 07	ΔP-H = 23°8 Δ <sub>meas</sub> = 23°7	
434	Nov. 28	S.L.	e(P)Z	M.S.	16 15 12	
			iLN	S.	16 21 52	
			F	S.	16.6	
435	Nov. 28	S.L.	ePZ	M.S.	19 06 56	Kurile Islands.
			eSE	S.	19 17 14	
			F	S.	20.1	
436	Nov. 29	S.L.	e(P)Z	M.S.	00 49 01	Indefinite. Peru?
			e(S)E	S.	00 56 44	
			F	S.	01.3	
437	Nov. 29	S.L.	e(PR <sub>1</sub> )E	S.	19 09 58	Aftershock of # 429, November 24, at 04 <sup>h</sup> . H = 18 <sup>h</sup> 51 <sup>m</sup> 23 <sup>s</sup> h = 150±km.
			eE	S.	19 11 07	
			eSKSE	S.	19 16 02	
			e(sSKS)E	S.	19 17 17	
			eSN	S.	19 17 49	
			iE	S.	19 18 15	
			i(sS)N	S.	19 18 59	
			eE	S.	19 19 48	
			i(PPS)NE	S.	19 20 35	
			iE	S.	19 26 45	
			e(SR <sub>2</sub> )N	S.	19 30 45	
			F	S.	21.4	



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No.	Date	Sta.	Phase	Inst.	h m s	Remarks	
437 (Con't.)	Nov. 29	Fl.	e(SKKS)E	G.W.	19 17 23		
			iE	G.W.	19 18 13		
			eE	G.W.	19 19 47		
			i(FPS)E	G.W.	19 20 33		
			eE	G.W.	19 26 43		
			iE	G.W.	19 31 17		
			F	G.W.	21.1		
438	Nov. 30	S.L.	eSKSN	S.	02 09 54	Epicentral Region: 24°9 S., 178°08 W. H = 01 <sup>h</sup> 45 <sup>m</sup> 50 <sup>s</sup> h = 200±km. $\Delta_{S-H} = 104^{\circ}1$ $\Delta_{meas} = 104^{\circ}1$	
			eE	S.	02 10 36		
			iSN	S.	02 11 08		
			e(PS)N	S.	02 12 30		
			e(pPS)E	S.	02 14 08		
			eE	S.	02 17 11		
			F	S.	03.3		
		Fl.	eSKSE	G.W.	02 09 50		$\Delta_{S-H} = 104^{\circ}2$
			eE	G.W.	02 10 34		$\Delta_{meas} = 104^{\circ}0$
			eSE	G.W.	02 11 12		
			F	G.W.	03.2		

Minor Seismic Activity

Station	Date	From h m	To h m
S.L.	November 7	16 36	17 16
S.L.	17	22 --	24 --
S.L.	19	06 22	06 42

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No.	Date	Sta.	Phase	Inst.	h m s	Remarks
439	Dec. 1	S.L.	iSKSE	S.	04 23 02	Epicentral Region: 21°2 S., 179°1 W. H = 04 <sup>h</sup> 00 <sup>m</sup> 27 <sup>s</sup> $\Delta_{S-H} = 102^{\circ}2$ $\Delta_{meas} = 102^{\circ}2$ h = 600 Km. $\Delta_{S-H} = 102^{\circ}2$ $\Delta_{meas} = 102^{\circ}1$
			iE+	S.	04 23 45	
			iSN	S.	04 24 18	
			esSN	S.	04 28 06	
			eSR <sub>1</sub> N	S.	04 31 27	
		F	S.	05.3		
		Fl.	eSKSE	G.W.	04 23 00	
			eE	G.W.	04 23 45	
			eSN	G.W.	04 24 18	
			eSR <sub>1</sub> N	G.W.	04 31 26	
F	G.W.		05.1			
440	Dec. 2	S.L.	ePZ	M.S.	03 02 44	Region: 2°5 N., 84°5 W. H = 02 <sup>h</sup> 55 <sup>m</sup> 37 <sup>s</sup> $\Delta_{P-H} = 36^{\circ}5$ $\Delta_{meas} = 36^{\circ}5$
			eZ	M.S.	03 02 50	
			eSN	S.	03 08 42	
			F	S.	03.4	
441	Dec. 4	S.L.	e(P)Z	M.S.	03 09 58	
442	Dec. 4	S.L.	e(P)Z	M.S.	11 34 00	
443	Dec. 4	S.L.	eZ	M.S.	20 52 22	Region: 16° N, 145° E. H = 20 34 36 h = 50± km $\Delta_{PR_1-H} = 105^{\circ}6$ $\Delta_{meas} = 105^{\circ}3$
			ePR <sub>1</sub> Z	M.S.	20 53 00	
			epPR <sub>1</sub> Z	M.S.	20 53 13	
			iSKSE	S.	20 59 14	
			eE	S.	20 59 25	
			eS <sub>E</sub>	S.	21 00 42	
			eSN	S.	21 00 48	
			e(PS)E	S.	21 02 10	
			eN	S.	21 07 51	
			iSR <sub>1</sub> E	S.	21 08 05	
		eN	S.	21 08 10		
		F	S.	22.4		
		Fl.	c(pPR <sub>1</sub> )Z	G.W.	20 53 18	
			iSKSE	G.W.	20 59 15	
eSR <sub>1</sub> E	G.W.		21 08 04			
F	G.W.		22.2			
444	Dec. 5.	S.L.	iPZ	M.S.	01 02 23	Epicentral Region: 32°9 S., 66°8 W. H = 00 <sup>h</sup> 51 <sup>m</sup> 00 <sup>s</sup> h = 150± Km $\Delta_{P-H} = 75^{\circ}0$ $\Delta_{meas} = 75^{\circ}0$
			epPZ	M.S.	01 02 55	
			esPZ	M.S.	01 03 05	
			eSN	S.	01 11 37	
			eN	S.	01 12 14	
F	S.	01.3				



No.	Date	Sta.	Phase	Inst.	h m s	Remarks
445	Dec. 5	S.L.	ePZ	M.S.	09 33 58	
446	Dec. 5	S.L.	ePZ iPZ iZ eSN eLN iLN F	M.S. M.S. M.S. S. S. S. S.	14 46 11 14 46 14 14 46 19 14 50 07 14 52 26 14 52 51 Lost	Region 25° N., 110°W. H = 14 <sup>h</sup> 41 <sup>m</sup> 22 <sup>s</sup>
447	Dec. 5	S.L.	ePZ iZ eSN eLN iLN F	M.S. M.S. S. S. S. S.	17 14 10 17 14 19 17 18 05 17 20 28 17 20 56 17.8	Region 25°N., 110°W. H = 17 <sup>h</sup> 09 <sup>m</sup> 20 <sup>s</sup>
448	Dec. 5	S.L.	e(P)Z eLN F	M.S. S. S.	17 57 45 18 04.7 18.2	Indefinite Region of No. 447?
449	Dec. 7	S.L.  Fl.  C.G.	ePZ iZ iPR <sub>1</sub> Z iSKSN iSE F  ePZ iZ iPR <sub>1</sub> E iSE F  e(P)E eSN F	M.S. M.S. M.S. S. S. S.  G.W. G.W. G.W. G.W. G.W.  W.A. W.A. W.A.	04 49 09 04 49 38 04 53 17 04 59 36 05 00 20 10.3  04 49 09 04 49 25 04 53 19 05 00 21 10.0  04 49 48 05 00 53 06.9	Weak initial phase. Region of 33°N., 137°E. H = 04 35 46 Destructive along Pacific coast of Lower Honshu, Japan
450	Dec. 7	S.L.	ePZ ePR <sub>1</sub> Z	M.S. M.S.	06 39 00 06 43 06	Aftershock of No. 449
451	Dec. 7	S.L.	e(P)Z eE F	M.S. S. S.	22 55 12 23 12.8 23.3	
452	Dec. 8	S.L.	eN eSN e(L)N F	S. S. S. S.	01 35 38 01 35 56 01 51 -- 02.7	Epicentral Region: 20°0 S., 175°5 W. H = 01 <sup>h</sup> 10 <sup>m</sup> 40 <sup>s</sup> ΔS-H = 9899 Δmeas = 9897
453	Dec. 8	S.L.	e(S)E eE eE eE F	S. S. S. S. S.	07 43 28 07 45 45 07 47 19 07 49 58 09.3	Epicentral Region: 21°7 S., 169°9 E. H = 07 <sup>h</sup> 17 <sup>m</sup> 14 <sup>s</sup> h = 100± Km Δmeas = 110°9



No.	Date	Sta.	Phase	Inst.	h m s	Remarks
454	Dec. 8	S.L.	ePSE	S.	13 27 41	Region of No. 453 h = 100± Km
			eE	S.	13 28 07	
			eSR <sub>1</sub> E	S.	13 34.3	
			F	S.	Lost	
455	Dec. 8	S.L.	iPZ	M.S.	18 34 20	Epicentral Region: 33°9 N., 141.2 E. H = 18 <sup>h</sup> 21 <sup>m</sup> 06 <sup>s</sup> ΔP-H = 93°3 Δ <sub>meas</sub> = 93°3
			eSE	S.	18 45 33	
			eSR <sub>1</sub> E	S.	18 51 48	
			eIE	S.	19 02.5	
			F	S.	20.1	
456	Dec. 10	S.L.	iPKP <sub>1</sub> Z	M.S.	05 31 23	Approximately: 24° S., 65° E. H = 05 <sup>h</sup> 11.5 <sup>m</sup> Possibly deeper than normal.
			iZ	M.S.	05 31 32	
			iPKP <sub>2</sub> Z	M.S.	05 31 44	
			iZ	M.S.	05 31 47	
			iPR <sub>1</sub> Z	M.S.	05 35 21	
			iZ	M.S.	05 35 30	
			eSKKSN	S.	05 42 04	
			eN	S.	05 45 19	
			iPSKSN	S.	05 45 51	
			eE	S.	05 46 34	
			iE	S.	05 48 39	
			iE	S.	05 50 35	
			iSR <sub>1</sub> E	S.	05 54 31	
			eE	S.	05 59 46	
		F	S.	07.8		
		Fl.	iPKP <sub>1</sub> Z	G.W.	05 31 24	
			iPKP <sub>2</sub> Z	G.W.	05 31 50	
			iPR <sub>1</sub> Z	G.W.	05 35 26	
			eE	G.W.	05 39 39	
			iSKKSE	G.W.	05 42 11	
			eE	G.W.	05 45 13	
			iE	G.W.	05 48 46	
eE	G.W.		05 50 05			
457	Dec. 10	S.L.	e(PR <sub>1</sub> )Z	M.S.	09 45 37	No surface waves Pasadena gives Region of Japan. Depth about 600 Km?
458	Dec. 10	S.L.	ePR <sub>1</sub> Z	M.S.	16 44 01	18°3 S., 167°8 E. H = 16 <sup>h</sup> 25 <sup>m</sup> 00 <sup>s</sup> ΔPR <sub>1</sub> -H = 110°3 Δ <sub>meas</sub> = 110°4
			eSKSE	S.	16 49 57	
			iSKKSE	S.	16 51 03	
			iE	S.	16 51 23	
			iPSE	S.	16 53 26	
			iSR <sub>1</sub> E	S.	16 59 01	
			F	S.	20 --	
			Fl.	ePR <sub>1</sub> Z	G.W.	
		iZ		G.W.	16 44 18	
		iSKSE		G.W.	16 50 09	
		iSKKSE		G.W.	16 51 04	
		iPSE		G.W.	16 53 42	
		F		G.W.	20 --	



No.	Date	Sta.	Phase	Inst.	h m s	Remarks		
459	Dec. 10	S.L.	iPZ	M.S.	19 42 52			
			e(L)E F	S. S.	20 26 -- 21.3			
		Fl.	ePZ	G.W.	19 42 52			
460	Dec. 12	S.L.	e(P)E	S.	01 26 22			
461	Dec. 12	S.L.	iPE	S.	04 27 20	52°0 N., 176°7 W. H = 04 <sup>h</sup> 17 <sup>m</sup> 24 <sup>s</sup> Possibly slightly deeper than normal. $\Delta P-H = 59^{\circ}0$ $\Delta_{meas} = 58^{\circ}9$		
			iE	S.	04 27 30			
			iE	S.	04 27 51			
			iE	S.	04 28 56			
			eN	S.	04 30 20			
			iSE	S.	04 35 32			
			iE	S.	04 35 47			
			eN	S.	04 37 02			
			iN	S.	04 37 08			
			iN	S.	04 37 25			
			iSR <sub>1</sub> N	S.	04 39.4			
			F	S.	07.6			
			Fl.	iPZ	G.W.		04 27 18	$\Delta P-H = 58^{\circ}8$ $\Delta_{meas} = 58.8$
				iZ	G.W.		04 27 27	
iSE	G.W.	04 35 28						
F	G.W.	07.6						
462	Dec. 12	S.L.	eSKSE	S.	10 49 10	Japan about 92°		
			e(S)E	S.	10 49 52			
			ePPSN	S.	10 51 28			
			iE	S.	10 52 52			
			eSR <sub>1</sub> N	S.	10 56 20			
			e(L)E	S.	11 07.9			
			F	S.	12.3			
			Fl.	ePZ	G.W.		10 38 40	
				e(S)E	G.W.		10 49 58	
				ePPSN	G.W.		10 51 38	
eE F	G.W. G.W.	10 53 37 12.2						
463	Dec. 15	S.L.	ePZ	M.S.	04 59 11	Tacubaya gives: 18° 39' N., 104° 33' W.		
464	Dec. 15	S.L.	e(P)Z	M.S.	05 21 26	Region of #463		
465	Dec. 15	S.L.	(eP)Z	M.S.	08 18 45			
466	Dec. 15	S.L.	ePZ	M.S.	14 01 17			
			iZ	M.S.	14 01 22			



No.	Date	Sta.	Phase	Inst.	h m s	Remarks				
472 (Con't.P)	Dec. 21	Fl.	eSKSE	G.W.	20 38 36	$\Delta$ SKS-H = 105 <sup>9</sup> 8 $\Delta$ meas = 106 <sup>9</sup> 7				
			esSKSE	G.W.	20 39 19					
			e(SR <sub>1</sub> )E	G.W.	20 46 53					
			eSR <sub>2</sub> E	G.W.	20 51.5					
			eLE	G.W.	21 01.0					
			F	G.W.	22.2					
473	Dec. 21	S.L.	eSKSE	S.	22 52 29	Region of No. 472 h = 100 $\pm$ Km				
			esSKSE	S.	22 53 13					
			iSN	S.	22 53 54					
			esSN	S.	22 54 40					
			ePSE	S.	22 55 25					
			ePPSE	S.	22 56 37					
			eN	S.	23 00 03					
			eN	S.	23 00 14					
			eSR <sub>2</sub> E	S.	23 05 25					
			e(L)E	S.	23 12.4					
		F	S.	24.4						
		Fl.	eSKSE	G.W.	22 52 30					
			ePPSE	G.W.	22 56 37					
			eLE	G.W.	23 14 --					
F	G.W.		24.2							
474	Dec. 22	S.L.	eSKSN	S.	06 01 37	Region of No. 472				
			eSE	S.	06 03 16					
			eE	S.	06 08 51					
			eE	S.	06 13 07					
			eLE	S.	06 25.5					
			F	S.	07.3					
		Fl.	eLE	G.W.	06 26 --					
			F	G.W.	07.1					
			475	Dec. 22	S.L.		ePN	W.A.	22 42 30	Region of: 23 <sup>9</sup> 1 S., 71 <sup>9</sup> 2 W. H = 22 <sup>h</sup> 32 <sup>m</sup> 10 <sup>s</sup> h = 150 $\pm$ Km Sprengnether Instruments not operating
							eSE	W.A.	22 51 14	
476	Dec. 23	S.L.	ePnN	W.A.	07 24 20.5	Reported felt in Caruthersville, Missouri $\Delta$ Sn-Pn = 162 miles				
			eSnE	W.A.	07 24 49.7					
			iSnN	W.A.	07 24 50.7					
			iLE	W.A.	07 24 52.7					
477	Dec. 24	S.L.	eE	S.	15 14 18					
			eN	S.	15 16 40					
			eN	S.	15 17 46					
			eE	S.	15 34 32					
			e(L)E	S.	15 38 05					
			F	S.	16.4					

No.	Date	Sta	Phase	Inst.	h m s	Remarks
478	Dec. 27	Fl.	iPR <sub>1</sub> Z	G.W.	15 45 22	Epical Region: 6 <sup>o</sup> .5 S., 151 <sup>o</sup> .7 E. h = 100 <sup>±</sup> Km H = 15 <sup>h</sup> 25 <sup>m</sup> 50 <sup>s</sup> ΔPR <sub>1</sub> -H = 116 <sup>o</sup> .2 Δ <sub>meas</sub> = 116 <sup>o</sup> .2
			ipPR <sub>1</sub> Z	G.W.	15 45 47	
			iSKKSE	G.W.	15 52 28	
			iPSE	G.W.	15 55 10	
			iLE	G.W.	16 25 —	
			F	G.W.	18.0	
479	Dec. 29	S.L.	ePZ	M.S.	23 02 32	Epical Region: 9 <sup>o</sup> .2 N., 102 <sup>o</sup> .0 W. H = 22 <sup>h</sup> 56 <sup>m</sup> 06 <sup>s</sup> ΔP-H = 31 <sup>o</sup> 5 Δ <sub>meas</sub> = 31 <sup>o</sup> 3 ΔS-H = 31 <sup>o</sup> 0 Δ <sub>meas</sub> = 31 <sup>o</sup> .4
			iSE	S.	23 07 44	
			iSN	S.	23 07 53	
		F	S.	Lost		
		Fl.	eSN	G.W.	23 07 39	
			eLN	G.W.	23 11 00	
F	G.W.		Lost			
480	Dec. 29	S.L.	ePZ	M.S.	23 10 08	Region of #479
			i(S)E	S.	23 15 04	
			F	S.	Lost	
		Fl.	i(S)N	G.W.	23 16 03	
F	G.W.		Lost			
481	Dec. 29	S.L.	iPZ	M.S.	23 51 48	Region of #479
			iN	S.	23 52 48	
			eE	S.	23 56 24	
			i(S)N	S.	23 56 46	
			i(S)N	S.	23 57 11	
			iLN	S.	24 01 56	
		F	S.	24.3		
		Fl.	e(S)N	G.W.	23 57 00	
			F	G.W.	24.3	
482	Dec. 30	S.L.	ePZ	M.S.	22 09 08	Region: 44 <sup>o</sup> N., 130 <sup>o</sup> W. H = 22 <sup>h</sup> 02 <sup>m</sup> 50 <sup>s</sup>
			iPZ	M.S.	22 09 15	
			iZ!	M.S.	22 09 24	
			iSN	S.	22 14 15	
			iLN	S.	22 16 08	
			F	S.	23.2	
		Fl.	iE	G.W.	22 09 19	
			iSE	G.W.	22 14 14	
			F	G.W.	23 — —	
483	Dec. 31	S.L.	ePZ	M.S.	22 01 12	14 <sup>o</sup> .1 N., 93 <sup>o</sup> .5 W. H = 21 <sup>h</sup> 55 <sup>m</sup> 47 <sup>s</sup> ΔP-H = 25 <sup>o</sup> 0 Δ <sub>meas</sub> = 25 <sup>o</sup> 0 ΔS-H = 24 <sup>o</sup> 9 Δ <sub>meas</sub> = 25 <sup>o</sup> .1
			eSN	S.	22 05 40	
			eE	S.	22 06 07	
			eE	S.	22 06 28	
			eME	S.	22 12 48	
			F	S.	22.7	
		Fl.	eSN	G.W.	22 05 38	
			F	G.W.	22.5	





## Minor Seismic Activity

Station	Date	From		To		Remarks
		h	m	h	s	
S.L.	December 7	16	01	16	06	
S.L.	7	21	42	22	38	
S.L.	8	09	25	09	53	
S.L.	13	03	29	03	48	
S.L.	17	14	17	15	09	
Fl.	17	14	39	15	05	
S.L.	17	22	13	22	31	
S.L.	18	17	57	18	06	
S.L.	21	00	12	00	56	
S.L.	22	02	40	03	05	
S.L.	22	09	48	10	07	
S.L.	22	11	30	12	10+	
S.L.	23	18	06	19	09	
S.L.	27	01	--	03	.5	Strong surface waves.
Fl.	27	06	52	07	08	
Fl.	28	01	35	04	09	

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