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SEISMOLOGICAL BULLETIN

of

The MATSUSHIRO SEISMOLOGICAL OBSERVATORY,

JAPAN.

for

January , 1954.

COAST & GEODETIC SURVEY

1954 MAY 3 AM 9 07

Latitude 36° 32' 30" N.
 Longitude 138° 12' 32" E.
 Height(M.S.L.) 440 M.

Instrument	Comp.	M (Kg.)	T (Sec.)	V	v	ρ/T^2	μ^2	T_B	M^2
Wiechert	N	200	5.6	72	5.9	0.0052			
	E	200	5.3	67	9.1	0.0042			
	Z	80	3.3	64	6.3	0.0108			
1000 Kg. (C.M.O. type)	N	1000							
	E	1000	27.3	104	3.5	0.0027			
Galitzin	N		14.9				Near	15.3	Ordinary
	E		17.0				Critical	15.3	damping
	Z		15.				"	12.8	"

COPY

	Phase (comp.)	Time G.M.T.	Remarks
1	eP(N) ipP(Z)? epPPorsPP(N) iPPP?(Z) eS(NE) i(Z) i(NE) L(E)	13 ^h 12 ^m 46 ^s 13 06 14 56 15 14 19 25 26 30 23 58	8 $\frac{1}{2}$ S., 124E. Sawoe sea. h, about 100km. H= 13 04 17 U.S.C.G.S.
1	eP(Z) e(E) e(Z) e(Z)	23 50 43 51 45 52 32 53 29	
2	e(NE) eL?(E)	13 55 44 57 11	43N., 147E. Off east coast of Hokkaido. H=13 52 27 U.S.C.G.S.
2	eL?(N) eL (E) e (E)	20 34 59 37 55 43 12	54N., 165W. Fox Islands, Aleutian Islands. H= 20 17 25 U.S.C.G.S.
3	eP(Z) e(N) i(Z) e(E)	17 32 58 34 14 20 35 55	43 $\frac{1}{2}$ N., 145E. Near east coast of Hokkaido. H=17 30 31 U.S.C.G.S.
4	eSKS?(N) eSS?(N) eL (E) eL (E)	12 35 49 50 04 13 17 03 14 01 02	Bouvet Islands region, South Atlantic Ocean. H=12 08 49 U.S.C.G.S.
5	eS?(N) eL?(E)	03 21 38 55	43N., 147E. Off east coast of Hokkaido. H=03 18 00 U.S.C.G.S.
6	eP?(NE) eS?(N) e (N) eLq?(E) eLr?(NE)	16 13 03 21 38 28 48 29 18 32 19	Weak.
7	eP(NEZ) eS(NE) eSS?(N) eLq(E) eLr(NE)	07 01 00 10 03 14 40 18 05 21 59	About 500 miles south of Fiji Is. H=06 48 50 U.S.C.G.S.
7	e (N) e (N) e (E)	14 33 29 34 40 34 46	

e	Phase (comp.)	Time G.M.T.	Remarks
7	e (NE) e (E) e (N)	18 ^h 18 ^m 13 ^s 19 19 19 23	
8	eP(NEZ) eS(NE)	04 15 03 15 55	{ N(-) E(-) Z(+)
9	iP(NEZ) e (N) i (NE) M (E) M (N)	08 07 26.1 08 01 09 15 09 55	{ N(+) E(-) Z(+) T=17 T=16
			34 1/2 N., 141 E. Off coast of Honshu, Japan. H=08 06 30 U.S.C.G.S.
11	P(NEZ) i(NEZ) i(NE) isP?(NE) iS(Z) iS(NE) i(NE)	17 13 06 13 17 13 31 14 17 16 31 16 33 19 00	{ N(+) E(+) Z(-)
			23 N., 126 E. Ryukyu Islands, region. H=17 09 02 U.S.C.G.S.
12	iP (Z) iP (N) i (E) e(NE) iS(Z) i(N) e(NE)	14 29 15.9 16.8 29 40 32 46 33 16.4 33 19 43 52	
12	eS?(N) e (N) e (N)	23 55 49 00 04 00 07 05	
			35.0N., 119.1W. Near Wheeler risge, California. H=23 33 46.5 U.S.C.G.S.
13	iP(NZ) PP?(Z) iPPP?(Z) eSKS?(N) eSS?(N) M (E)	00 26 05 29 35 31 47 36 11 42 41 01 40 55	{ N(+) E(+) T=17
			49S., 165E. Off coast of south Island, New Zealand. H=00 13 06 U.S.C.G.S.
13	eP(NE) i (Z) i (Z) i(NEZ) i(Z) e(NE) i(Z)	09 26 21 26 44 27 14 27 24 28 19 29 17	

e	Phase (comp.)	Time G.M.T.			Remarks	
		h	m	s		
14	e (N) e (N) eL(E)	02 ^h	19 ^m	45 ^s 23 47 25 45	Celebes sea. H=02 11 25	U.S.C.G.S.
17	iP(NEZ)	03	05	00	34N., 141E. H=03 03 57	U.S.C.G.S.
	iS(EZ)		05	50		
	i (Z)		07	53		
	i (N)		07	55		
17	eP(Z)	11	46	36	36.1N., 140.0E. h:70km.	SW of Ibaragi Pref. Japan. C.M.O.
	iP(NEZ)			37	N-14 E+40 Z-36	
	i (NE)			42		
	S (Z)			54		
	iS(NE)			57		
	M (N)			59 T=3.3		
	M (Z)			59 T=1.8		
	M (E)		47	03 T=3.6		
18	eP(N)	10	55	16	Banda sea.	U.S.C.G.S.
	e (E)	11	01	35	H=10 47 07	
	eS(N)		01	40		
18	eP(NE)	14	46	10		
	iS?(NE)		46	53		
	i (NE)		47	09		
19	e (E)	09	13	08		
	e (N)		13	19		
	e (NE)		14	21		
	e (NE)		15	34		
19	eS?(NE)	21	36	30 ^{ca}	14S., 175 ¹ / ₂ W.	Samoa Islands region. U.S.C.G.S.
	eSSSorL(E)		45	13	H=21 16 40	
	eL (N)		47	18		
	eL (E)		48	34		
20	eSKS(NE)	04	41	23	8 ¹ / ₂ N., 103 ¹ / ₂ W.	Pacific Ocean. U.S.C.G.S.
	eSPorePS		44	22	H= 04 16 25	
	e (NE)		50	28		
	e (E)	05	04	25		
	Lr(N)		06	40		
20	eP(NE)	14	01	10	21S., 176 ¹ / ₂ W.	Tonga Islands. h; about 200 km. U.S.C.G.S.
	eS (E)		11	10	H=13 50 14	
20	eP (NE)	16	31	11		
	e (N)		41	12		
	eS?(E)		41	18		

e	Phase (comp.)	Time G.M.T.	Remarks
22	e (NE) eL?(NE)	01 ^h 18 ^m 24 ^s 19 28	
22	eS?(E) eL (E)	11 30 35 34 04	54N., 163W. Near Unimak Islands. H=11 16 07 U.S.C.G.S.
22	eS?(N) eL?(N)	11 53 43 57 24	6S., 151½E. New Britain. H=11 39 09 U.S.C.G.S.
22	eP (NE) e (N) eS?(E) e (N)	21 33 31 41 23 44 29	20S., 169E. Loyalty Islands. h; about 100 km. H=21 23 04 U.S.C.G.S.
23	e (NE) e (E) eL?(E)	16 22 58 26 50 34 29	T=23
26	e (NE) eL?(E)	14 20 21 33 43	Microseisms. Weak.
26	eP(NE) e (N) e (E)	22 25 40 26 34 27 43	Microseisms.
29	eS?(E) eSS?(E)	08 15 53 20 11	8½S., 159E. Solomon Islands. h; about 100 km. H=08 00 14 U.S.C.G.S.
30	e (N) e (N) e(L?)(N)	00 45 06 45 58 46 56	
30	eS?(E) eL (E) eL (N)	18 42 29 45 51 47 08	54N., 163W. Near Unimak Island, Alaska. H=18 27 44 U.S.C.G.S.
31	eP(E) S (NE) eLq(E) eLr(E) M (E)	11 47 41 52 36 54 37 55 27 12 00 35	52N., 160E. Off east coast of Kamchatka. H=11 43 27 U.S.C.G.S. T=17
31	e (E) e (E) e (E) eL(E)	23 26 35 27 21 30 05	

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Chief.

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SEISMOLOGICAL BULLETIN



The MATSUSHIRO SEISMOLOGICAL OBSERVATORY
of JAPAN
for

February, 1954

1954 JUN 7 PM 2 57

Latitude 36° 32' 30" N.
Longitude 138° 12' 32" E.
Height(M.S.L.) 440 M.

COAST & GEODETIC SURVEY

Instrument	Comp. (Tg.)	M (Kg.)	T (Sec.)	V	v	P/T^2	μ^2	Tg (Sec.)	M^2
Wiechert	N	200	5.6	71	6.2	0.0075			
	E	200	5.2	67	7.5	0.0043			
	Z	80	3.3	64	6.6	0.0216			
1000Kg. (C.M.O.type)	E	1000	27.8	104	2.8	0.0025			
Galitzin	N		14.9				Near critical	15.3	Ordinary damping
	E		17.0				"	15.3	"
	Z		15.				"	12.8	"

COPY

COAST & GEODETIC SEISMOLOGICAL BULLETIN
 of



The MATSUSHIRO SEISMOLOGICAL OBSERVATORY,
 1954 JUL 8 AM 10 36
 JAPAN

for
 March , 1954.

Latitude 36° 32' 30" N.
 Longitude 138° 12' 32" E.
 Height (M.S.L.) 440 M.

Instrument	Comp.	M (Kg)	T (Sec)	V	v	ρ/T^2	μ^2	Tg (Sec)	μ^2
Wiechert	N	200	5.8	70	6.2	0.0084			
	E	200	5.5	64	7.7	0070			
	Z	80	3.4	72	6.0	0164			
1000 Kg. (C.M.O. type)	N	1000	27.5	104	3.6	0.0046			
	E	1000	27.0	104	3.5	0018			
Galitzin	N		14.9				Near critical	15.3	Ordinary damping
	E		17.0				"	15.3	"
	Z		15.				"	12.8	"

COPY

Date	Phase (comp.)	Time G.M.T.			Remarks
		h	m	s	
1	eP (E)	12	47	56	
	e (NZ)			58	
	e (N)	48	15		
	S (E)			27	
	e (E)			28	
3	iP (NZ)	06	10	50.2	$5\frac{1}{2}S., 142\frac{1}{2}E.$ Central New Guinea. H=06 02 55 U.S.C.G.S.
	i (Z)			59	
	PPP (N)	13	03		
	i (Z)			12	
	i (NE)	16	23		
	iS (N)			53	
	eL (E)	19	53		
	L (N)	20	02		
	M (E)	21	34		
	L (N)			47	
	i (N)	22	53		
	i (E)	23	29		
i (N)	26	59			
T=29sec.					
3	eP (E)	10	45	00ca	Central New Guinea. h: about 60km. H=10 37 10 U.S.C.G.S.
	eS (N)			51 06	
	eS (E)			17	
	L (E)			54 27	
3	P (NZ)	15	29	24	$5\frac{1}{2}S., 142\frac{1}{2}E.$ Central New Guinea H=15 21 27 U.S.C.G.S.
	PP (Z)			30 45	
	PPP (N)			31 29	
	i (Z)			32 21	
	i (Z)			33 14	
	eS (E)			35 05	
	e (E)			33	
	eL (E)			37 25	
	L (E)			39 27	
	i (E)			40 01	
T=30.5sec.					
3	eP? (E)	20	55	10	$61\frac{1}{2}N., 146\frac{1}{2}W.$ Southern Alaska. H=20 46 07 U.S.C.G.S.
	eS? (E)	21	02	19	
4	e (N)	04	28	33	Very weak.
	e (N)			31 07	
	e (E)			43 48	
5	P (NE)	04	14	47	Microseisms. 39.6N., 143.9E. Off coast of Sanriku, Japan. G.M.O.
	i (N)			15 35	
	iS (N)			16 45.3	
6	eP (E)	00	40	01	$24S., 180.$ Fiji Islands region, h: about 550km. H=00 29 27 U.S.C.G.S.
	S (N)			48 42	

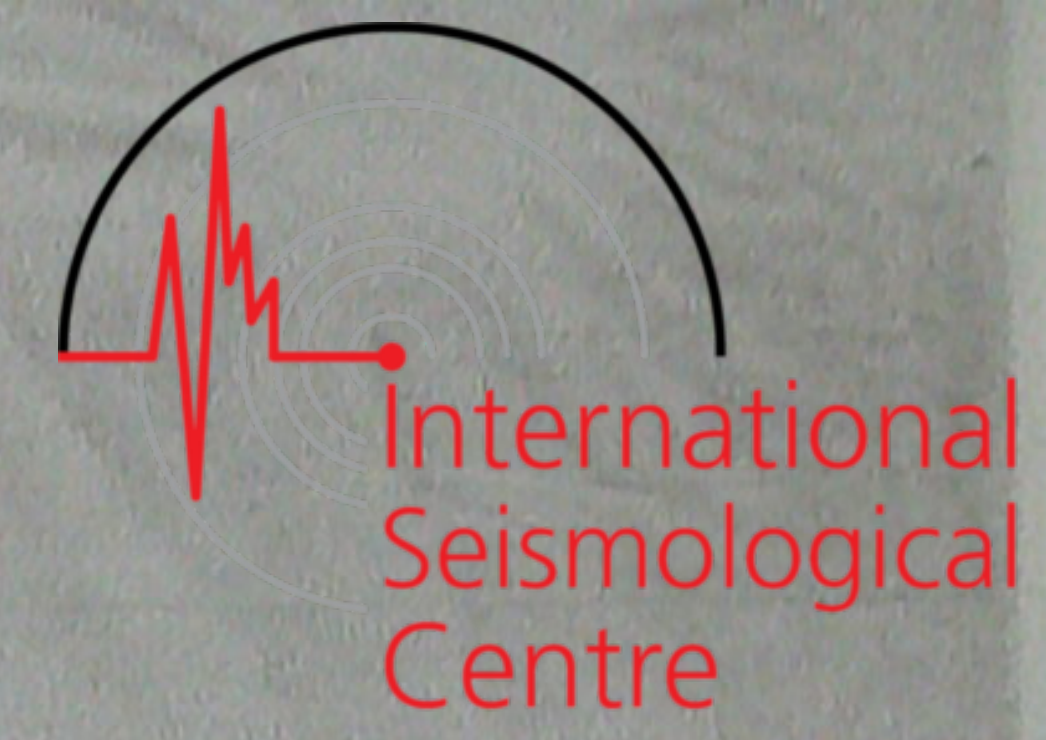
Date	Phase (comp.)	Time G.M.T.				Remarks
		h	m	s		
6	e (E)	05	25	21		
	e (E)		26	05		
	e (E)			45		
7	e (E)	19	31	15		Microseisms, uncertainty.
	e (E)		34	39		
	e (E)		42	22		
7	P (NZ)	23	36	07	Z(+)	Microseisms. 38N., 144E. Off east coast of Japan. H=23 35 00 U.S.C.G.S.
	e (N)			09		
	e (N)			45		
	S (Z)		37	10		
	S (N)			13		
	L (N)			47		
	M (N)		38	10	T=12sec.	
8	P (Z)	13	38	46	Z(+)	37.9N., 143.0E. Off east coast of Off east coast of Fukushima Pref. Japan. C.M.O.
	i (Z)		39	24		
	iS (N)			38		
	i (Z)			49		
	M (Z)			53	T=7.2sec.	
8	PPP? (E)	18	15	57		15S., 175W. Samoa Islands region. H=18 00 45 U.S.C.G.S.
	eS (E)		20	14		
	L (E)		28	32		
8	eP (E)	20	46	36		New Hebrides Islands region. H=20 36 24 U.S.C.G.S.
	e (E)		53	50		
9	eP' (E)	02	41	23		1 1/2 N., 30 1/2 W. Atlantic Ocean, NE of Brazil. H=02 21 43 U.S.C.G.S.
	ePP (E)		44	25		
	eSKSP? (E)		55	01		
	e (E)			59		
	ePSPS? (E)	03	04	03		
	eSSS? (E)		08	19		
9	L (N)		20	04		
	iP (NEZ)	05	43	50.4	{ N(-) E(-) Z(+)	50N., 157E. Off south coast of Kamchatka. H=05 39 20 U.S.C.G.S.
	i (E)		46	21		
	iS (E)		47	29		
	L (E)		49	32		
M (E)		51	13	T=18sec.		
14	P (Z)	09	03	25	Z(+)	16S., 179W. Fiji Islands. H=08 52 36 U.S.C.G.S.
	eL (EZ)		23	57		
	e (E)		28	45		
	e (E)		31	20		

No	Phase (comp.)	Time G.M.T.			Remarks
		h	m	s	
14	P (Z)	17	49	26	51 $\frac{1}{2}$ N., 160E. Off southeast coast of Kamchatka H=17 44 28 U.S.C.G.S.
	S (Z)		53	01	
	e (E)			31	
	e (E)		58	15	
	e (E)		59	40	
	e (E)	18	01	57	
15	eP (N)	22	47	08	
	eS (E)			43	
	eL (E)		48	08	
19	P (Z)	10	06	55	33.3N., 116.1W. Santa Rosa Mountains, California. H=09 54 27 U.S.C.G.S.
	e (E)		18	09	
20	eP (Z)	14	07	41	47N., 154E. Kurile Islands. H=14 04 07 U.S.C.G.S.
	eS (E)		10	29	
	eL (N)		11	09	
21	e (E)	05	08	35	Weak.
	e (E)		15	37	
	e (E)		30	08	
21	eP (N)	06	14	15	52N., 158 $\frac{1}{2}$ E. Near southeast coast of Kamchatka. H=06 09 23 U.S.C.G.S.
	S (E)		17	55	
	eL (N)		18	16	
21	P (Z)	21	56	06	34.2N., 135.2E. Near Wakayama, Wakayama Pref. Japan. C.M.O.
	iS (Z)			42	
	i (Z)			55	
21	iP (NEZ)	23	49	20.2	24 $\frac{1}{2}$ N., 95E. Northwestern Burma. H=23 42 05 U.S.C.G.S.
	i (E)		50	11	
	PP (E)			49	
	SCP? (E)		54	55	
	iS (E)		55	04	
	M (E)		56	37	
	i (E)		58	00	
	i (E)	00	01	47	
	i (E)		06	28	
22	iP (Z)	07	00	58	27S., 176 $\frac{1}{2}$ W. Kermadec Islands region. H=06 49 05 U.S.C.G.S.
	eS (E)		10	50	
	e (E)		11	26	
	L (E)		21	37	

e	Phase (comp.)	Time G.M.T.			Remarks
		h	m	s	
2	iP (Z)	09	50	37	Z(+) 27S., 176 $\frac{1}{2}$ W. Kermadec Islands region. H=09 38 43 U.S.C.G.S.
	S (N)	10	00	31	
	eSS (E)		05	37	
	eL (E)		11	18	
	eL (E)		22	23	
2	e (N)	19	03	39	
	e (N)		08	00	
	L (N)		10	01	
	L (E)		10	55	
3	e (N)	22	22	14	Weak, uncertainty.
	e (E)		27	36	
	e (N)		29	33	
	e (N)		33	46	
24	e (E)	00	12	55	
	e (E)		15	02	
	e (N)		19	48	
	e (N)		20	32	
	e (E)		23	33	
24	eP (Z)	01	36	48	Marianas Islands. H=01 31 39 h: about 100km. U.S.C.G.S.
	ePP (Z)		37	52	
	eS (NE)		41	04	
	e (N)			30	
	eL (E)		42	55	
24	e (N)	05	59	07	
	e (N)	06	03	23	
	eL? (E)		05	26	
24	eP (NE)	12	32	07	
	eS (E)		36	17	
	eL (N)		38	08	
24	eP (NE)	17	26	42	
	eS (N)		30	46	
	eL (N)		32	34	
25	e (N)	17	01	21	Weak, uncertainty
	e (N)		05	24	
	e (N)		06	02	
	e (E)		07	02	
26	P (NE)	04	36	49	41.2N., 142.5E. h=50km. Off east coast of Aomori Pref. Japan. C.M.O. T=19.5sec.
	S (E)		37	44	
	i (E)			57	
	i (E)		38	24	
	M (E)		39	10	



te	Phase (comp.)	Time G.M.T.			Remarks
		h	m	s	
26	eP (E) eS (E)	10	49	50 51 25	43.7N., 147.0E., h=100km. Southern Kurile Islands. C.M.O.
26	eP? (NE) eS? (NE) eL (NE)	18	36	53 42 30 45 59	
27	eP (N) iS (E) i (E) i (NE)	09	05	00 05 45 06 20 07 18	
27	eP (NE) eS (NEZ) e (N)	11	35	58 37 28 39 17	43.9N., 141.7E., h=230km. Northwestern part of Hokkaido, Japan. C.M.O.
28	e (E) e (E) eL? (E)	17	24	24 27 49 30 15	
28	iP (NEZ)	20	42	37.4	52N., 176E. Rat Islands, Aleutian Islands. H=20 36 22 U.S.C.G.S. T=16sec.
	PP (NE)		44	14	
	e (Z)		46	17	
	S (N)		47	31	
	e (E)			40	
	L (N)		48	47	
	i (N)		49	58	
	M (N)		50	41	
	i (N)		51	44	
	i (E)		55	03	
29	iP (NEZ)	04	06	12	19 1/2 N., 121 1/2 E. Near north coast of Luzon Islands, Philippine. H=04 01 10 U.S.C.G.S.
	i (NE)			21	
	i (Z)			58	
	i (N)		09	30	
	S (NE)		10	11	
	i (NE)			21	
	L (E)		12	19	
	i (E)		17	46	
29	iP (Z)	06	29	40	37N., 3 1/2 W. Near south coast of Spain H=06 17 05 U.S.C.G.S.
	i (Z)		31	59	
	e (NE)		33	04	
	iP (NEZ)			52	
	pPPP? (Z)		36	54	
	i (N)		37	03	
	e (NE)		39	16	



Date	Phase (comp.)	Time G.M.T.			Remarks
		h	m	s	
29	SKS(E)	06	39	41	
	iSKKS(E)		40	13	
	sPS?(E)		43	47	
	SS (E)		47	19	
	SSS (N)		52	24	
	L (N)	07	00	15	
	L (E)		08	50	
	L (Z)		17	20	
30	iP (NEZ)	10	50	28	$\left\{ \begin{array}{l} N(+), \\ E(+), \\ Z(-) \end{array} \right.$ 46 $\frac{1}{2}$ N., 153 $\frac{1}{2}$ E. Kurile Islands. H=10 46 48 U.S.C.G.S.
	S (E)		53	35	
	L (E)		55	19	
30	eS (E)	16	31	11	Weak. 52N., 175 $\frac{1}{2}$ E. Rat Islands, Aleutian Islands. H=16 19 57 U.S.C.G.S.
	e (E)		33	45	
	e (E)		36	47	
30	iP (Z)	16	50	14	Z(+)
	eS (E)		58	29	
	eL (E)	17	05	41	
	eL (E)		07	46	
30	iP (EZ)	18	52	05	$\left\{ \begin{array}{l} E(-), \\ Z(+). \end{array} \right.$ 20N., 155W. Near northeast coast of Hawaii H=18 41 54 U.S.C.G.S.
	ePP(E)		54	42	
	ePPE(E)		55	45	
	S (NE)	19	00	27	
	L (NE)		07	24	
	L (N)		09	38	
31	iP (E)	18	37	29	$Z(-)$ 13 $\frac{1}{2}$ N., 58E. Alabian Sea. H=18 25 48 U.S.C.G.S.
	PP (E)		40	13	
	PPP(E)		42	01	
	iS ₁ (E)		47	06	
	iS ₂ (E)			10	
	SS (E)		51	51	
	SSS(E)		55	53	
	L (E)	19	02	17	
	L (N)		10	09	

K. Sagisaka

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Chief

Handwritten scribble

AUG-9 1954



SEISMOLOGICAL GEODETIC BULLETIN
SURVEY
of

The **MATSUSHIRO** SEISMOLOGICAL OBSERVATORY,
1954 AUG 9 AM 8 51
for
April , 1954.

Latitude $36^{\circ} 32' 30''$ N.
Longitude $138^{\circ} 12' 32''$ E.
Height(M.S.L.) 440 M.

Instrument	Comp.	M (Kg)	T (Sec)	V	v	P/T^2	M^2	Tg (Sec)	M_g^2
Wiechert	N	200	6.0	73	7.6	0.0080			
	E	200	5.2	66	7.1	0068			
	Z	80	3.3	65	5.5	0197			
1000 Kg. (C.M.O. type)	N	1000	27.5	104	2.6	0.0030			
	E	1000	27.5	104	3.5	0018			
	N		14.9				Near critical	15.3	Ordinary damping
	E		17.0				"	15.3	"
Galitzin	E		17.0				"	12.8	"
	Z		15						

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40
SEP 1 1954

SEISMOLOGICAL BULLETIN

The MATSUSHIRO SEISMOLOGICAL OBSERVATORY
JAPAN

for
May, 1954.

Latitude 36° 32' 30" N.
Longitude 138° 12' 32" E.
Height (M.S.L.) 440 M.

1954 SEP 1 PM 2 06

Instrument	Comp.	M (Kg)	T (Sec)	V	v	ρ/T^2	M^2	T_g (Sec.)	M^2 g
Wiechert	N	200	6.1	71	6.4	0.0037			
	E	200	5.1	71	8.5	0027			
	Z	80	3.6	55	3.5	0109			
1000 Kg. (C.M.O. type)	N	1000	27.5	104	2.6	0.0030			
	E	1000	28.1	104	3.9	0023			
	N		14.9				Near critical	15.3	Ordinary damping
Galitzin	E		17.0				"	15.3	"
	Z		15				"	12.8	"

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K. Sagisaka
chief



No	Phase (comp.)	Time (G.M.T.)			Remarks
		h	m	s	
1	1P (Z)	18	10	49	Unknown
	i (Z)			54	
	S (NE)?		14	36	Deep type
	L (E)		15	35	
1	eP? (E)	23	26	48	Unknown
	eS (E)		30	59	
	L (E)		33	01	Weak
2	S (E)	03	23	08	Marianas Is. region H=03 13 50 (U.S.C.G.S.)
	L (E)		25	38	
2	P (Z)	17	57	08	Off northwest coast of Sumatra 4N., 94 1/2 E. H=17 48 02 (U.S.C.G.S.)
	i (Z)		58	18	
	S (NE)	18	04	01	
	e (NE)		07	56	
	SS (NE)		08	47	
	Lq (E)		12	27	
	Lr (N)		15	43	
3	e (N)	06	06	47	Unknown
	e (N)		12	46	
	e (N)		15	23	Faint
	e (N)		18	22	
3	e (E)	09	35	57	Unknown
	e (E)		41	14	
	e (E)		44	00	
3	1P (NEZ)	15	34	35	Off southeast coast of Kamchatka 51 1/2 N., 159 1/2 E. H=15 29 40 (U.S.C.G.S.)
	PP (NE)		35	40	
	i (E)		38	37	
	S (NE)			41	
	Lq (E)		41	00	
	Lr (N)		42	39	
3	eS (NE)	18	34	35	P phase is disturbed by for shock <i>preceding shock</i> Sikang Province 31N., 98 1/2 E. (U.S.C.G.S.)
	L (E)		37	24	
	L (N)			47	
	L (N)		39	21	
4	eP (E)	01	34	21	Unknown
	eS (E)		38	25	
	L (E)		40	43	
4	P? (E)	07	08	58	Unknown
	S (E)		13	37	
	L (E)		16	51	

N(-)
 E(-)
 Z(+)

No	Phase (comp.)	Time (G.M.T.)			Remarks
		h	m	s	
4	e (E) e (E) e (E)	17	19	44	Unknown
4	eP (Z) eS (NE) L (E) L (N) L (N)	17	39	58	Off east coast of Kamchatka 52N., 159 $\frac{1}{2}$ E. disturbed by forshock preceding shock H=17 35 05 (U.S.C.G.S.)
5	eP (N) eS (NE) L (E)	03	18	18	Unknown
5	P (NZ) S (E) L (E)	11	40	21	Marianas Is. 15N., 147 $\frac{1}{2}$ E. H=11 35 13 (U.S.C.G.S.)
5	P (Z) ePP (Z) ePPP (N) S (NE) e (E) eSS (NE) SSS (E) i (N) L (Z) L (E)	13	22	44	Gulf of California H=13 09 46 (U.S.C.G.S.)
5	eP (Z) i (Z) ePP (Z) S (NE) L (NE) eL (Z)	17	17	39	Off south coast of Kamchatka 50N., 156 $\frac{1}{2}$ E. H=17 13 12 (U.S.C.G.S.)
5	eP (Z) eS (E) eL (E)	18	04	42	Unknown disturbed by forshock preceding shock
6	iP (NZ) ePPP (Z) i (Z) S (NE) eL (NE)	09	06	29	Off south coast of Kamchatka 50N., 155 $\frac{1}{2}$ E. H= 09 02 14 (U.S.C.G.S.)
7	eS (N) L (NE)	00	36	05	Unknown P phase no records, changing of records.
7	eP (N) eS (E) eL (N)	21	00	37	Marianas Is. (about 250 miles northeast of Guam) H=20 55 30 (U.S.C.G.S.)

15 1954



SEISMOLOGICAL BULLETIN

of
The MATSUSHIRO SEISMOLOGICAL OBSERVATORY
JAPAN
for

1954 OCT 17 AM 10 07

June , 1954.

Latitude 36° 32' 30" N.
Longitude 138° 12' 32" E.
Height (M.S.L.) 440 M.

Instrument	Comp.	M (Kg.)	T (Sec.)	V	v	P/T^2	M^2	T_g (Sec.)	M_g^2
Wiechert	N	200	6.0	72	6.2	0.0063			
	E	200	5.2	66	6.6	.0021			
	Z	80	3.3	65	5.3	.0087			
1000Kg. (C.M.O.type)	N	1000	28.3	104	2.1	0.0043			
	E	1000	28.8	104	4.7	.0036			
Galitzin	N		14.9				near critical	15.3	ordinary damping
	E		17.0				"	15.3	"
	Z		15.				"	12.8	"

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e	Phase (comp.)	Time G.M.T.			Remarks.
1	eP (EZ)	08 ^h	51 ^m	13 ^s	
	e (EZ)			50	
	e (Z)			57	
	e (N)		52	10	
4	eP' (Z)	07	09	36	$\frac{1}{2}$ S., $91\frac{1}{2}$ W. Galapagos Islands
	PP (Z)		11	09	H=06 50 42 U.S.C.G.S.
	e (E)		22	46	
	SS (E)		27	54	
	SSS (E)		32	45	
	eL (Z)		47	52	
4	eP (Z)	10	49	27	Java Sea. H=10 41 37 U.S.C.G.S.
	PcP (Z)		50	56	
	e (Z)		56	36	
	ScS? (Z)		59	01	
	sSS (N)	11	00	50	
	e (N)		02	15	
	e (N)		12	18	
4	e (N)	16	25	24	Central Gulf of California?
	eL (NE)		38	56	H=16 01 45 U.S.C.G.S.
	e		46	10	
5	iP (NEZ)	13	14	51	36.2N., 140.1E., h=60km.
	S (E)		15	09	Near Mt. Tsukuba, Ibaragi Pref. Japan
	i (N)			15	C.M.O.
6	iP (NZ)	16	58	12	$3\frac{1}{2}$ S., $136\frac{1}{2}$ E. Western New Guinea.
	i (N)		59	57	H=16 50 33 U.S.C.G.S.
	e (N)	17	03	21	
	S (E)		04	14	
	Lq (E)		07	17	
	Lr (EN)		08	33	
	M (E)			35	T=18 ^{Sec} A* > 50 ^M
	i (N)		10	43	
	e (E)	19	39	05	
6	P (N)	21	59	59	Off south coast of Honshu, Japan.
	S (E)	22	00	52	
	S (Z)			54	

ie	Phase (comp.)	Time G.M.T.			Remarks
7	iP (NEZ)	10 ^h	22 ^m	48 ^s	3 $\frac{1}{2}$ S., 152 $\frac{1}{2}$ E. New Britain region h:450kmca. H=10 15 33 U.S.C.G.S.
	pP (Z)		24	29	
	i (N)		27	13	
	ScP (Z)			42	
	i(S?)(NE)			58	
	sS (NE)		31	01	
	SSorScS(N)			54	
	SSorScS(E)			58	
	e (NE)		33	13	
	e (E)		36	27	
8	eP (Z)	21	04	04	37.5N., 143.3E h=40km. Off coast of Fukushima Pref. Japan. C.M.O.
	eS (Z)			44	
9	eP (N)	10	08	13	18 $\frac{1}{2}$ N., 121 $\frac{1}{2}$ E. Near north coast of Luzon, Philippine Islands. H=10 02 51 U.S.C.G.S.
	e (NE)			37	
	i (E)			51	
	eS (NE)		12	35	
	eL (N)		17	04	
	e (E)		18	02	
9	P (Z)	13	21	28	Weak
	eS? (N)			44	
	e (EZ)			45	
10	iP (NZ)	18	46	52	19S., 179W. Fiji Islands. h:750kmca. H=18 36 49 U.S.C.G.S.
	S (N)			00	
	sS (NE)			58	
	SS (N)		19	00	
10	iP (Z)	22	39	44	29 $\frac{1}{2}$ N., 139 $\frac{1}{2}$ E. South of Honshu, Japan. h:400km.ca. H=22 37 56 U.S.C.G.S.
	S (Z)			02	
11	eP (Z)	17	01	41	52N., 172 $\frac{1}{2}$ E. Near Islands, Aleutian Islands. H=16 55 45 U.S.C.G.S.
	eS (NE)			06	
	eL (NE)			07	
	eL (Z)			34	
12	eP (NZ)	05	45	19	18S., 179W. Fiji Islands. h:550km.ca. H=05 35 13 U.S.C.G.S.
	eS (NEZ)			53	
	i (NEZ)			54	
	e (E)			25	
12	eP (EZ)	18	11	43	
	i(S?)(NE)			12	

Time	Phase (comp.)	Time G.M.T.		Remarks
13	eP (N) i (Z) eS (NE) eLq? (N) eLq? (E) eLr (E)	17	07 34 56 16 42 23 53 57 27 49	22S., 171E. Loyalty Islands. h:100km.ca. H=16 57 14 U.S.C.G.S.
13	eP (Z) eS? (N) i (NE) e (E)	17	29 31 35 40 38 23 47 52	
15	eP (E) eP' (NEZ) ePP (N) ePP (E) i (Z) sPPorPKS (NE) eSKS (N) eSKKS (E) ePSKS (N) sPSorsSP (E) SS (NE)	13	46 15 49 12 51 57 52 01 29 49 56 15 57 57 14 01 52 02 46 08 46	5S., 77W. Northern Peru. h:100km.ca. H=13 29 59 U.S.C.G.S.
16	e (N) e (E) e (N)	16	48 50 52 10 59 21	Weak
17	P (NEZ) i (NEZ) i (Z) S (NEZ) eL (NEZ) i (Z)	01	51 07 15 52 39 58 09 02 01 52 09 23	Z(-) 56N., 159 ¹ / ₂ W. Off south coast of Kodiak Islands. H=01 42 22 U.S.C.G.S.
17	ePP (NEZ) eS? (E) eL (NE)	09	50 59 55 02 56 17	
17	e (N) e (E) eL? (N)	18	54 32 59 52 19 03 11	
18	e (NE) e (N) e (E)	02	17 31 25 09 27 05	Weak

id	Phase (comp.)	Time G.M.T.		Remarks
18	P (NEZ)	18	03 58	Sunda Strait. H=17 54 40 U.S.C.G.S.
	ePP(Z)		05 57	
	eS (NE)		11 07	
	i(ScS)(NE)		13 41	
	eL (NE)		15 27	
	eL (E)		21 32	
	eL (N)		57	
19	iP(Z)eP(NE)	01	58 54	30 $\frac{1}{2}$ N., 130E. Off coast of Kyushu, Japan. H=01 56 30 U.S.C.G.S.
	eS (NEZ)	02	01 16	
	L (NE)		02 09	
	L (Z)		27	
	M (E)		46	T=16 ^{sec} A=24 ^M
	M (N)		58	T=14 ^{sec} A>24 ^M
	M (Z)	03	41	T=18 ^{sec} A=98 ^M
19	e (N)	12	54 08	
	e (Z)		55 21	
	i(L?)(N)		34	
	i(L?)(E)		40	
21	e(P?)(N)	02	09 20ca	23S., 68 $\frac{1}{2}$ W. Northern Chile. H=01 48 44 U.S.C.G.S.
	e(SKSP?)(E)		23 04	
	e (N)		24 40	
	e(PPS?)(E)		26 07	
	e(SS?)(NE)		32 15	
22	e (E)	04	12 22ca	
	e (N)		21 08	
	e (E)		22	
	e (NE)		26 01	
22	e (E)	19	54 35	
	e (E)	20	15 47	
	e (E)		29 35	
23	eP(NE)	08	58 06	39.9N., 142.7E. h=40km. C.M.O. Off east coast of Iwate Pref. Japan.
	e (NE)		34	
24	eP(NEZ)	08	02 20	18 $\frac{1}{2}$ N., 145 $\frac{1}{2}$ E. H=07 58 12 U.S.C.G.S. Marianas Islands. h:200km.ca.
	eS(NE)		05 42	
24	iP(NEZ)	07	31 02	35.4N., 135.7E H=20km. Near Mikunidake, Kyoto Pref. Japan. C.M.O.
	iS(NE)eS(Z)		32	

Mets

Date	Phase (comp.)	Time G.M.T.			Remarks
22	eP ₁ ? (N)	12 ^h	22 ^m	12 ^s	Sandwich Is.? 66 $\frac{1}{2}$ S., 26 $\frac{1}{2}$ W. H=12 03 23 (U.S.C.G.S.)
	eP ₂ ? (NE)			47	
	e ₁ (E)		23	21	
	e ₂ (N)			50	
	i ₁ (N)		24	35	
	e ₃		27	38	
	e ₄		31	58	
	e ₅		33	24	
	e ₆		34	42	
	e ₇		39	39	
	i (E)e (N)		47	08	
	i ₁ (N)		48	11	
	i ₃ (E)			33	
	i (E)e (N)		53	29	
	i ₁ (E)	13	02	56	
	i ₂ (E)		03	43	
	eL (NE)		13	50	
23	P (EZ)	06	48	09	Southeast of Tibet 28 $\frac{1}{2}$ N., 91 $\frac{1}{2}$ E. H=06 40 35 (U.S.C.G.S.)
	i ₁ (E)		49	46	
	PP? (Z)		50	05	
	e (NE)		53	52	
	S? (NE)		54	14	
	SS (NE)		57	18	
	i ₁ (Z)			24	
	i ₃ (Z)		58	46	
	i ₄ (Z)		59	48	
	L (E)	07	01	17	
	L (N)		03	03	
	L (Z)		06	04	
i ₅ (E)		07	05		
24	e ₁ (NE)	06	16	10	Unknown Faint
	e ₂ (NE)		19	24	
	e ₃ (NE)		31	02	
	L? (N)		47	25	
	L? (E)		50	19	
24	iP (NEZ)	17	28	25	35 $\frac{1}{2}$ N., 139 $\frac{1}{2}$ E. (Japan) H=02 27 52 (U.S.C.G.S.)
	i (Z)			43	
	S? (NE)			46	
	i (Z)			55	
i (N)		29	00		
24	P (NZ)	20	41	37	Marianas Is. 13N., 144E. H=20 36 51 (U.S.C.G.S.)
	i ₁ (N)			59	
	i ₂ (Z)		42	05	
	S (NE)		45	58	
	L (E)		47	42	
	L (N)		49	01	

Date	Phase (comp.)	Time G.M.T.	Remarks
1	P (NEZ) eS (NE) e ₁ (N) e ₂ (E) L ₁ (E) L ₂ (N)	01 ^h 10 ^m 02 ^s 12 35 13 00 14 03 29	Volcano Is. 24 $\frac{1}{2}$ N., 142 $\frac{1}{2}$ E. H=01 06 51 (U.S.C.G.S.)
1	eS (E) eL (NE)	05 52 33 54 32	Volcano Is. (aftershock) H=05 46 41 (U.S.C.G.S.) P phase unknown
3	eS (E) L ? (E)	18 28 44 31 23	Kurile Is. h: about 100km H=18 23 53 (U.S.C.G.S.)
5	iP (NEZ) i (EZ) PP (Z) PPP (E) i (E) e (E) S (E) S (N) Lq ScS? (N) ScS (EZ) Lr (E) L (N) Lq L (Z)	09 27 52 06 29 43 58 31 19 33 08 45 34 02 37 18 51 38 06 39 05 41 41 44 19 45 01	Off coast of New Britain 4 $\frac{1}{2}$ S., 153E. H=09 19 42 (U.S.C.G.S.)
5	ePP (NE) eSKS (E) e ₁ (N) SS (E) G (NE)? L (E)	15 37 26 43 06 48 29 52 12 16 03 31 10 01	Chapas (Mexico) h: about 100km. H=15 17 59 (U.S.C.G.S.)
6	e ₁ (NE) e ₂ (N) e ₃ (E)	18 19 01 22 01 23 01	unknown weak
7	P (NZ) S (NE) esSS? (E) L (NE)	06 25 26 33 09 37 53 39 49	{ N(+) Z(+) New Hebrides Is. h: about 100km. H=06 15 21 (U.S.C.G.S.)
7	L ₁ (E) L ₂ (E)	22 25 42 43 02	About 300 miles south of Kermadec H=21 38 10 (U.S.C.G.S.)

te	Phase (comp.)	Time G.M.T.	Remarks	
8	P ₁ ' (Z)	14 ^h 38 ^m 50 ^s	Northern Chile-Bolivia border 22 $\frac{1}{2}$ 'S., 68W. h:about 150km. H=14 19 09 (U.S.C.G.S.)	
	P ₂ ' (EZ)	39 10		
	pP (Z)	50		
	iPP (Z)	42 42		
	e ₁ (N)	51 53		
	e ₂ (E)	15 01 01		
	SS (N)	02 36		
8	eP (NZ)	17 47 19	Fox Is. . . 53N., 166 $\frac{1}{2}$ W. h:about 100km. H=17 39 40 (U.S.C.G.S.)	
	PPorPcP	49 11		
	S (E)	53 31		
	Lq (NE)	56 35		
	Lr (NE)	58 00		
10	eP? (E)	11 39 22	Marianas Is. H=11 33 43 (U.S.C.G.S.)	
	S (NE)	43 30		
	L (E)	44 42		
	L (N)	45 35		
11	iP (NEZ)	00 36 15	Ningsia Province (China) H=00 30 16 (U.S.C.G.S.)	
				$\left. \begin{matrix} N(-) \\ E(+) \\ Z(+) \end{matrix} \right\}$
	iPP (NEZ)	37 11		
	S (N)	40 54		
	Lq (E)	43 24		
	L (N)	44 00		
	L (E)	45 00		
	L (Z)	46 42		
12	e ₁ (NE)	01 56 47	Ningsia (after shock)? H=01 47 41 (U.S.C.G.S.)	
	e ₂ (NE)	02 00 59		
	e ₃ (NE)	02 02 11		
17	eP (NE)	01 43 48	Off southeast coast of Kamchatka H=01 38 50 (U.S.C.G.S.)	
	S (NE)	48 01		
	L (NE)	50 44		
	i ₁ (E)	52 29		
	i ₂ (E)	54 47		
17	eP (E)	11 42 02	Kurile Is. 46 $\frac{1}{2}$ N., 151E. h:about 100km H=11 36 18 (U.S.C.G.S.)	
	i (E)	21		
	L (E)	44 18		
19	PP (E)	00 00 26	Off coast of Nicaragua H=00 40 25 (U.S.C.G.S.)	
	PS (NE)	01 09 17		
	i (NE)	10 13		
	L (NE)	29 36		
19	S (NE)	13 44 02	Sinking (China) 45N., 91 $\frac{1}{2}$ E. H=13 28 26 (U.S.C.G.S.)	
	L? (NE)	46 40		

Date	Phase (comp.)	Time G.M.T.			Remarks
19	P(NEZ)	19 ^h	19 ^m	48 ^s	Kermadec Is. distict H=19 07 44 (U.S.C.G.S.)
	PP(NEZ)		23	01	
	PPP(Z)		25	36	
	S(NE)		29	39	
	ScS?		30	27	
	SS(NE)		35	06	
	SSS(NE)		40	51	
	Lq(E) Lr(E)		42 47	02 48	
20	P(NEZ)	18	42	35	Flores Sea 7S., 124 ¹ / ₂ E. h: about 600km H=18 35 05 (U.S.C.G.S.)
				{N(-) E(-) Z(-)}	
	pP(NE)		44	10	
	PP(NE)			56	
	sP(NE)		45	11	
	sPP		47	00	
	PcS?(N)			56	
	S(NEZ)		48	40	
	i ₁ (E)		50	23	
	ScSorsS(E)		51	27	
	SS(L)		52	18	
	i ₂ (E)		54	26	
20	P(Z)	21	40	27	Kermadec Is. 28S., 177 ¹ / ₂ W. H=21 28 28 (U.S.C.G.S.)
	sP(Z)		42	22	
	PP(Z)		43	35	
	PPP(Z)		45	20	
	S(NEZ)		50	07	
	pS(NE)		51	07	
	esS?(Z)			23	
	i ₁ (Z)		53	22	
	i ₂ (Z)		54	22	
	SS(NE)		55	29	
	eL(NE)	22	00	00	
	eL(E)		08	37	
21	e ₁ (S?)(N)	04	29	50	Northern Kurile Is. H=04 21 55 (U.S.C.G.S.)
	e ₂ (L?)(N)		32	45	
21	eP(E)	16	16	16	Andrenof Is. 52N., 175 ¹ / ₂ E. H=16 09 11 (U.S.C.G.S.)
	ePP(E)		17	39	
	eS(E)		21	52	
	e(N)		24	45	
	L(NE)?		26	26	

Date	Phase (comp.)	Time G.M.T.	Remarks
26	eS (N) L? (N)	03 ^h 25 ^m 39 ^s 27 04	Kurile Is. 45N., 148E. h:100km H=03 21 12
27	P (NE) e (N) i (NE) L (E)	23 44 17 47 07 52 03 59 17	New Hebrides Is. 23S., 166 $\frac{1}{2}$ E. H=23 34 32 (U.S.C.G.S.)
28	P (NE) S (E) i (E) i (E)	00 58 09 {N(-) E(-)} 01 00 22 02 05 03 05	Ryuku Is. region 27N., 131E. (U.S.C.G.S.)
28	S? (NE) L (NE)	18 57 29 19 01 10	Unknown

218 NE 12
 1924 JUN 1
 1924 JUN 1
 1924 JUN 1

K. Sagisaka
K. Sagisaka.
Chief.

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SEISMOLOGICAL BULLETIN
of
The MATSUSHIRO SEISMOLOGICAL OBSERVATORY
JAPAN
for
JULY , 1954

Latitude 36° 32' 30" N.
Longitude 138° 12' 32" E.
Height (M.S.L.) 440 M.

Instrument	Comp.	M (Kg.)	T (Sec.)	V	v	ρT^2	M^2	T_g (Sec.)	M^2
Wiechert	N	200	6.1	67	6.6	0.0064			
	E	200	4.9	70	7.7	.0039			
	Z	80	3.1	67	6.0	.0248			
1000Kg. (C.M.O.type)	E	1000	27.5	104	3.1	0.0058			
Galitzin	N		14.9				Near	15.3	Ordinary
	E		17.0				Critical	15.3	damping
			15.				"	12.8	"

EAST & GEODETIC SURVEY
 21 9 12 AM 10 NOV 1954

COPY

No	Phase (comp.)	Time (G.M.T.)			Remarks
		h	m	s	
1	P (NE) S (NE) i (N) L (NE)	03	20	44	Unknown
1	P (NE) S (NE) L (NE)	05	28	02	Off east coast of Formosa. 23 1/2 N., 122E. H=05 23 57 (U.S.C.G.S.)
1	P? (N) S? (E) L (NE)	08 09	56 00	23 53 11	Unknown
2	P (NEZ) ePP(Z) esPP(Z) PcP (EZ) i (Z) i (Z) S (NE) sS? (E) L (NE)	02	50	47	Southeastern Luzon. 13 1/2 N., 123 1/2 E. H=02 45 09 (U.S.C.G.S.)
2	P? S? L	22	23	51 17 43	Unknown
3	e (E) e (E) e (E) e (E)	00 01	57 01	45 15 57 50	Uganda-Belgian Congo border region Weak H=00 55 10 (U.S.C.G.S.)
3	P (E) S (E)	21	20	04 16	Near northeast coast of Luzon. 18N., 121 1/2 E. H=21 14 56 (U.S.C.G.S.)
3	P (E) e (E) S? (E) e (E)	22	40	33 25 29 29	Unknown
5	P (NE) S (NE) L (NE)	13 14	56 00	36 09 05	Near south coast of Kamchatka 50 1/2 N., 156 1/2 E. H=13 52 18 (U.S.C.G.S.)

ite	Phase (comp.)	Time (G.M.T.)			Remarks
6	P(NEZ)	04	07	54	Bismarek Sea. 3S., 148E. H=04 00 13 (U.S.C.G.S.)
				$\left\{ \begin{array}{l} N(-) \\ E(-) \\ Z(-) \end{array} \right.$	
	PP (Z)		09	58	
	ePPP(Z)		10	33	
	SPP (Z)			38	
	S(NEZ)		14	04	
	sS (EZ)			34	
	SSorScS(N)		17	18	
	L (NE)			44	
	L (NE)		22	23	

6	P(NEZ)	08	08	01	$\left\{ \begin{array}{l} N(-) \\ E(-) \\ Z(+) \end{array} \right.$	Kurile Is. 46 $\frac{1}{2}$ N., 153 $\frac{1}{2}$ E. h: about 100 km. H=08 04 42 (U.S.C.G.S.)
	S (E)		11	07		
	L			51		
	L		13	43		
	M		14	00ca	235 ^M	

6	P (NE)	22	19	35	Near Fallon. 39 $\frac{1}{2}$ N., 118 $\frac{1}{2}$ W. H=22 07 41
	S (NE)		29	24	
	e		37	17	
	e		40	14	
	e		51	00	

7	P (Z)	01	26	42	Northern Kurile Is. H=01 21 24 (U.S.C.G.S.)
	S (Z)		29	14	
	PcP?(Z)			52	
	L (Z)		31	39	

9	P (Z)	12	31	40	Tonga Is. region h: about 100 km. H=12 20 38 (U.S.C.G.S.)
	epP(Z)		32	06	
	SP (Z)			20	
	i (Z)		33	31	
	i (Z)		36	39	
	i (Z)		39	22	
	S (NE)		40	31	
	i (EZ)			41	
	i (NZ)		45	06	
	Lq(E)		48	26	
	Lr(E)		52	56	

10	eP (NE)	23	06	27	Unknown
	eS (NE)		13	00	
	eL (E)		18	46	

11	eP (Z)	15	01	33	Unknown
	eS (N)		05	15	
	eL (E)		06	47	

	Phase (comp.)	Time (G.M.T.)			Remarks
11	P(NEZ)	17	35	44	Kurile Is. 46N., 153E. H=17 32 10 (U.S.C.G.S.)
	eS (E)		38	25	
	eL (E)		42	25	
12	eP (E)	21	58	31	Kurile Is. 46N., 153E. H=21 55 02 (U.S.C.G.S.)
	eS (N)	22	01	15	
	eL (E)		02	16	
13	P ₁ (Z)	08	12	30	New Britain region 3S., 151E. H=08 04 44 (U.S.C.G.S.)
	P ₂ (NEZ)			37	
	PP(N)		14	15	
	S (N)		18	39	
	L (E)		21	56	
	L (NZ)		24	52	
13	P (EZ)	22	11	50	Northern Kurile Is. region H=22 07 40 (U.S.C.G.S.)
	eS (NE)		15	01	
	i (E)			20	
	i (N)			42	
	L		16	24	
	L		17	22	
14	eP (NE)	23	43	48	Kurile Is. region H=23 43 48 (U.S.C.G.S.)
	eS (N)		52	00	
	L (E)		54	10	
18	P(NEZ)	06	40	04	Near east coast of Kamchatka. 55N., 161 ¹ / ₂ E. H=06 34 35 (U.S.C.G.S.)
	eS (E)		44	20	
	L (N)		46	41	
	L (E)		48	12	
18	eP (E)	11	02	43	Unknown
	eS (E)		07	05	
	eL (E)		10	58	
18	e (Z)	20	04	39	Kermadec Is. 30S., 180 h: about 400 H=19 53 22 (U.S.C.G.S.)
	S?(N)		14	19	
19	e (N)	17	26	24	Unknown Weak
	e (E)		30	22	
	eL?(E)		31	58	
20	e (E)	02	42	32	Unknown
	eL?(E)		47	28	
	eL?(E)		57	51	

te	Phase (comp.)	Time (G.M.T.)			Remarks
21	eP (E)	04	45	26	Szechwan Province 27 1/2 N., 101 E. H=04 38 51
	e (Z)		46	31	
	PP (Z)			38	
	eS (E)		50	39	
	eLq (NE)		54	12	
	eL (E)		56	38	
21	eP? (E)	13	04	19	Unknown Weak
	eS (N)		07	43	
	eL (N)		10	27	
21	eP (N)	16	39	28	<i>Unknown</i>
	e (N)		41	13	
	eS (E)		43	46	
	eL (E)		46	31	
23	P' (Z)	04	53	21	Central Chile-Argentina border h: about 60 km H=04 33 26
	PP (N)		57	05	
	SKS? (E)	05	00	22	
	SKKS (E)		03	42	
	e (Z)		06	33	
	eSKSP		07	40	
	e (E)		12	33	
	e (E)		15	24	
	sSS (E)		17	33	
	eSSS (E)		20	32	
	e (E)		23	07	
	L (E)		30	23	
	L (E)		38	36	
L (E)		44	40		
23	e (N)	15	02	30	Unknown
	e (N)		04	10	
	e (N)		06	10	
	e (E)		09	41	
	e (E)		15	34	
24	e (E)	06	53	52	Unknown Weak
	e (N)		58	41	
	e (N)	07	13	13	
	e (N)		29	44	
25	eP (N)	04	23	33	Unknown Weak
	eS (N)		27	58	
	eL (N)		30	08	
26	e (N)	09	07	02	Unknown
	e (N)		15	19	
	eL? (N)		18	44	
	eL? (N)	10	01	37	

tr	Phase (comp.)	Time (G.M.T.)	Remarks
26	P ₁ (Z)	20 ^h 35 ^m 38 ^s	Central Chile
	P ₂ (Z)	36 26	
	PP(Z)	39 42	41S., 73W.
	SKS?(Z)	43 44	
	SKKS(Z)	46 03	H=20 15 45 (U.S.C.G.S.)
	SKKS(NE)	18	
	PSKS(Z)	49 59	
	PSKS(E)	50 22	
	SKSP(Z)	52 42	
	SKSP(E)	53 12	
	PPS (Z)	26	
	PPS (NE)	54 16	
	SS (N)	59 34	
	i (N)	06 00 41	
	Lq(N)	18 40	
	Lr(E)	27 18	
	Lr(Z)	26	
27	e (E)	07 50 02	Unknown
	e (E)	56 08	
	e (E)	59 02	Weak
	e (E)	08 02 31	
29	iP(NEZ)	03 38 52	Off south coast of Kamchatka.
			49 ¹ / ₂ N., 158E.
	PP(Z)	39 33	H=03 34 20 (U.S.C.G.S.)
	PPP(Z)	40 08	
	iS(NEZ)	42 29	
	L (E)	44 30	
	L (Z)	41	
29	e (NE)	06 39 55	Unknown
	e (N)	42 57	
	e (E)	46 30	Microseisms
	e (E)	49 22	
29	e (E)	09 28 41	Unknown
	e (N)	34 13	Weak and Microseisms
	e (E)	39 30	
30	P ₁ (Z)	09 05 39	Pacific Ocean.
	i (Z)	08 55	
	PKS(Z)	09 56	36 ¹ / ₂ S., 97W.
	e (Z)	11 11	
	eSKS?	12 58	
	eSKKS	14 28	
	SKSP (Z)	18 26	H=08 46 00 (U.S.C.G.S.)
	PPS(Z)	20 14	
	SS?(Z)	25 05	
	PSPS(E)	26 22	
	PSPS(Z)	33	
	SSS(Z)	30 35	
	Lq(NE)	40 28	
	Lr(Z)	45 54	
	Lr(E)	46 01	

COAST & GEODETIC SEISMOLOGICAL BULLETIN
SURVEY

of
The MATSUSHIRO SEISMOLOGICAL OBSERVATORY,
1954 DEC 6 AM 9 15
JAPAN.

for
August, 1954

Latitude 36° 32' 30" N.
Longitude 138° 12' 32" E.
Height (M.S.L.) 440 M.

Instrument	Comp.	M (Kg)	τ (Sec)	V	ν	β	μ^2	Tg (Sec)	γ^2
Wiechert	N	200	6.1	67	6.8	0.0062			
	E	200	6.1	71	7.2	.0062			
	Z	80	3.0	75	6.0	.0130			
1000kg. (C.M.O.type)	N	1000	25.4	104	3.7	0.0057			
	N		14.9				Near critical	15.3	Ordinary damping
	E		17.0				"	15.3	"
Galitzin	Z		15.				"	12.8	"

COPY

Time	Phase (comp.)	Time (C.G.S.)	Remarks
1	eP? (Z) iS? (NEZ) i (Z)	00 ^h 24 ^m 05 ^s 26 44	
1	iP (N) e (N) e (N)	02 24 18 35 25 06	
1	eP (N) ePP (N) e (N) eS (N) L (E) L (N)	03 30 09 31 38 32 52 36 09 39 03 41 14	3S., 140E. Northern New Guinea. H=03 22 38 U.S.C.G.S.
1	e (N) e (N) e (NE) e (Z) L (N) L (Z) L (NZ)	13 25 33 30 09 32 51 33 24 36 16 37 00 59 25	
2	eP (NE) e (N) eS (NZ) i (NEZ)	00 49 06 14 39 50	37.7N., 141.7E. h=60km. Off east coast of Fukushima Pref. Japan. C.M.O.
3	e (N) e (Z) e (N) eL (N) eL (E) e (Z) eL (Z)	18 52 53 19 00 20 26 03 23 41 04 18 06 54	40N., 25E. Northern Greece.? H=18 18 11 U.S.C.G.S.
4	eP (NZ) eS (E) eS (N) e (N) e (E) eL (N) eL (E) eL (Z)	13 59 33 14 05 15 18 08 37 44 10 55 11 05 54	54N., 169W. Fox Islands. Aleutian Islands. h:200 km. H=13 52 25 U.S.C.G.S.

e	Phase (comp.)	Time (C.G.S.)	Remarks
5	eP (Z)	08 ^h 55 ^m 58 ^s	Z(+)?
	iP (NEZ)	56 02.7	{ N(-) E(-) Z(+)
	e (N)		37
	e (N)	57	46
	e (N)	59	33
	S? (E)	19 00	58
	e (N)	01	17
	i (Z)	02	05
	i (N)		06
	L (N)	03	11
	L (E)		18
	L (Z)		52
5	iP (N)	23 52	31.5 N(+)
	iP (Z)		32.3 Z(+)
	eP (E)		35
	i (NZ)		48 Z(+)
	PP (N)	54	20
	PP (Z)		21
	e (Z)	58	22
	S (NZ)		51
	eS (E)		58
	e (Z)	00 01	30
	Lq (NE)	02	01
	Lr (NZ)	05	40
	Lr (E)	06	32
6	P? (NEZ)	16 37	07
	P' (Z)		39 18
	PP (Z)		42 09
	e (E)		58
	e (N)		47 14
	SKSP? (N)		52 32
	SS (NE)	17 00	40
	eL (N)		33 11
	e (Z)		44
	eL (E)		35 03
	eL (Z)		38 15
7	eS (NE)	18 06	54
	e (E)		08 37
	eL (N)		54
	eL (Z)		11 43
	eL (NE)		31 00

Near northeast coast of New Guinea.
H=23 43 45 U.S.C.G.S.

1S., 23 1/2 W. Mid Atlantic Ocean.

H=16 19 45 U.S.C.G.S.

East central Kamchatka.
H=17 57 00 U.S.C.G.S.

Date	Phase (comp.)	Time (C.G.S.)	Remarks
9	iP (Z)	19 21 53.9	53N., 161E. Off east coast of Kamchatka. H=19 16 48 U.S.C.G.S.
	iP (NE)	54.7	
		Z(+)	
		N(-)	
		E(-)	
	i (E)	23 56	
	i (N)	25 03	
	iS (NEZ)	26 04.2	
10	i (N)	27 43	About 400 miles south of Japan. H=05 33 40 U.S.C.G.S.
	L (E)	28 36	
	L (N)	46	
	L (Z)	29 05	
	iP (NZ)	05 36 04	
		N(+)	
11	i (Z)	37 00	Near south ^{coast} of Hokkaido, Japan. H=07 27 04 U.S.C.G.S.
	iS (EZ)	22	
	iS (N)	25	
	i (N)	38 34	
14	eP (N)	07 28 42	51N., 160 ^{1/2} E. Off southeast coast of Kamchatka. H=01 36 43 U.S.C.G.S.
	eS (NE)	29 46	
	P (Z)	01 41 44	
	P (NEZ)	46	
	S (NEZ)	45 46	
	eL (N)	47 43	
14	eL (E)	50 57	Ceram Sea. H=22 56 08 U.S.C.G.S.
	eP (NZ)	23 03 48	
	S (N)	09 49	
	S (E)	52	
	Lq (N)	12 57	
	Lq (E)	13 06	
	e (N)	39	
	e (E)	56	
18	Lr (E)	15 38	21 ^{1/2} S., 176W. Tonga Islands. h: about 150 km. H=04 42 20 U.S.C.G.S.
	i (N)	18 46	
	P (E)	04 53 33	
	e (E)	54 35	
	S (E)	05 02 39	
18	ScS (E)	03 28	P: unknown Off southeast of Kamchatka. H=17 58 06 U.S.C.G.S.
	sSPorsPS (E)	04 46	
	e (N)	18 03 17	
	eS (E)	07 14	
18	eS (N)	24	Off southeast of Kamchatka. H=17 58 06 U.S.C.G.S.
	eL (E)	10 09	
	eL (N)	24	
	L (E)	13 38	

	Phase (comp.)	Time (C.G.S.)			Remarks
		h	m	s	
21	P (Z) isP(NZ) iPP(E) eS?(NE) eS?(Z) i (NE) iL(N)eL(Z) L (Z)	06 ^h	44 ^m	54 ^s 01 07 32 50 34 02 21	7N., 126½E. Near east coast of Mindanao. H=06 38 33 U.S.C.G.S.
21	eS?(E) eSS?(N) eL (NE) eL (Z)	23	11	50ca 40" — —	72N., 13W. Jan Mayen Island region. H=22 51 00 U.S.C.G.S.
22	eP (Z) iS(E)eS(N) L (NE) Lq (Z)	18	17	51 04 10 20	21N., 145E. Marianas Islands. H=18 13 43 U.S.C.G.S.
23	P (NZ) S (NE) L (E) L (N) L (Z)	08	34	11 {N(+) Z(+)} 28 39 04 00	
24	eP (NE) ePP(Z) pPP(N) PPP(NZ) i (NE) i (E) i (N) S (NEZ) SS?(E) L (Z) L (E) PP?(Z) L (Z) L (N) L (E)	06	03	24 17 51 19 24 37 38 13 13 30 36 47 14 ca " "	39.5N., 118.5W. Near Fallon, Nev. H=05 51 31.5 U.S.C.G.S.
27	P ^{NE} (Z) PP?(Z) S (EZ) i (N) L (E) Lq (N) L (Z) Lr (NZ)	10	58	03 {N(-) E(+) Z(-)} 58 25 54 13 40 04 21	24½N., 143E. Volcano Islands. h: about 100 km. H=10 55 02 U.S.C.G.S.

	Phase (comp.)	Time (C.G.S.)	Remarks
28	eP (Z) S (NE) L (Z) L (NE)	03 ^h 50 ^m 48 ^s 53 55 04 09	24N., 142E. Volcano Islands. H=03 47 58 U.S.C.G.S.
28	iP (NEZ) i (E) iS (NE)	10 02 02.2 02 15.5 29.0	36.5N., 141.0E. h=40 km. Kashimanada, C.M.O.
30	iP (NEZ)	07 59 47.7	42.1N., 147.8E. h=40 km. Off southeast of Nemuro, Hokkaido, Japan. C.M.O.
	i (NZ)	08 01 12	
	iS(N)eS(E)	39.9	
	L (NZ)	02 35	
	L (E)	03 29	
30	L (N)	04 17	
	P (Z)	21 20 13	
	eS (NE) L (NEZ)	23 38 26 12	
31	P (Z)	22 32 24	39 $\frac{1}{2}$ N., 118 $\frac{1}{2}$ W. Near Fallon, Nev. H=22 20 32 U.S.C.G.S.
	eS (E)	42 05	
	S (N)	18	
	sSSS(N)	47 53	
	e (E)	49 12	
	eSSS(N)	50 52	
	L (N)	53 01	
	L (Z)	14	
L (E)	54 14		

K. Sagisaka

K, Sagisaka
chief.

0150075 A 12400
 020421 A 020421
 020421 A 020421

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Phase (comp.)	Time (G.M.T.)			Remarks
	h	m	s	
P (2)	01	05	40	Ningsia Province.
i (2)			45	
i (2)		06	03	39 N., 104 E.
i (2)		08	10	Horizontal
iS (2)		10	55	Vertical component no record
Lq (2)		14	22	H=00 59 57
Lr (2)		16	01	

K. Sagisaka
K. Sagisaka
Chief

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SEISMOLOGICAL BULLETIN
of
The MATSUSHIRO SEISMOLOGICAL OBSERVATORY
for

September, 1954.

COPY

Latitude 36° 32' 30" N.
Longitude 138° 12' 32" E.
Height (M.S.L.) 440 M.

Instrument	comp.	M (kg)	T (sec)	V	v	f/T^2	μ^2	T_D (Sec)	μ^2
Wiechert	N	200	6.1	82	5.8	0.0037			
	E	200	6.2	65	6.4	.0060			
	Z	80	3.3	62	5.7	.0151			
1000Kg. (C.M.O. Type)	N	1000	27	104	1.7	.0030			
	E	1000	25	104	3.9	.0017			
	N		14.9				near critical	15.3	ordinary damping
Galitzin	E		17.0				"	15.3	"
	Z		15.				"	12.8	"

SS 8 W - IMP 55

Phase (comp.)	Time G.M.T.			Remarks
eP (Z)	05	30	40	Fallon aftershock
e (E)		40	00	
eS (N)			34	H=05 18 46.5
e (E)		49	18	(U.S.C.G.S.)
e (N)		50	01	
eP (Z)	12	25	40	North Kurile Is.
e (N)		33	09	
e (N)		34	03	H=12 25 40
e(N)L?		35	49	(U.S.C.G.S.)
P(NEZ)	06	19	07	Kante-district (Japan) 35.9N 140.2E h=50km (C.M.O.)
S(NE)			26	
e (Z)	19	00	38	Santa Cruz Is. 10S., 166E. H=18 51 29 (U.S.C.G.S.)
e (Z)		01	16	
e (Z)		07	37	
eL		14	40	
P (NZ)	03	36	03	Northern New Guinea 3S., 139 $\frac{1}{2}$ E. H=03 20 52 h=600km (U.S.C.G.S.)
PPP(N)?		38	19	
S (N)		42	10	
L (E)		44	56	
L (N)		45	10	
eP (Z)	06	52	05	Nepal 28N., 83 $\frac{1}{2}$ E. H=06 43 46 (U.S.C.G.S.)
eS (N)		58	49	
e(N)L?	07	02	08	
eP (EZ)	06	53	42	Nepal aftershock H=06 45 14 (U.S.C.G.S.)
eS (N)	07	00	15	
P(NEZ)	08	58	06	Southeast of Formosa 21 $\frac{1}{2}$ N., 122 $\frac{1}{2}$ E. H=08 53 20 (U.S.C.G.S.)
S (N)	09	02	01	
L (Z)		04	56	
L (N)		06	39	
eP(NEZ)	13	21	25	Santa Cruz Is. 11 $\frac{1}{2}$ S., 166E. H=13 11 49 (U.S.C.G.S.)
eS (N)		28	54	
eL (E)		37	43	
P(NEZ)	07	56	28	Fiji Is. region 19S., 176E. H=07 45 31 (U.S.C.G.S.)
S (N)	08	05	17	
S (E)			24	
L (E)		12	52	

	Phase (comp.)	Time G.M.T.			Remarks
5	eP (Z)	17	22	29	Molucca passage 2 $\frac{1}{2}$ N., 127E. H=17 15 20 (U.S.C.G.S.)
	e (Z)			44	
	e (N)		24	01	
	eS (E)		27	53	
	L (E)		30	36	
5	eP (Z)	19	00	00	Off south coast of Kamchatka H=18 55 00 (U.S.C.G.S.)
	eS (E)		04	00	
	eL (E)		06	29	
6	eP (NZ)	06	34	39	Unknown
	eS (NEZ)		39	08	
	L (N)		41	12	
	L (EZ)			14	
6	eP? (Z)	11	30	19	Luzon (Philippine) foreshock 20 $\frac{1}{2}$ N., 122E. H=11 25 23 (U.S.C.G.S.)
	eS? (Z)		34	25	
	eL (Z)		37	11	
6	eP (Z)	14	11	12	Luzon H=14 06 31 (U.S.C.G.S.)
	i (NEZ)			23	
	eS (NE)		15	24	
	eL (N)		17	29	
6	iP (NEZ)	15	39	52	North of Kanto district 36.8E., 139.3E. h=20km (C.M.O.)
	i (EZ)			56	
	eS (N)		40	03	
6	iP (Z)eP (NE)	16	51	50	Off north coast of Luzon (P.I.) 21N., 121E. H=16 46 58 (U.S.C.G.S.)
	S (NE)		55	50	
	i (Z)			58	
	eL (N)		58	35	
	eL (E)			42	
	eL (Z)	17	01	22	
	eL (N)			29	
	eL (E)			31	
6	iP (NEZ)	18	30	48	Near southeast coast of Kamchatka h=60km H=18 30 48 M(N)39, M(E)20, M(Z)35 (U.S.C.G.S.)
				$\begin{matrix} N(-) \\ E(-) \\ Z(+) \end{matrix}$	
	S (NE)		39	10	
	M (N)			44	
	M (Z)			47	
	L (NE)		40	54	
	L (Z)		41	20	
	M (E)		44	16	
7	iP (Z)	00	13	14	Near south coast of Formosa 22N., 121E. H=00 08 26 (U.S.C.G.S.)
	PP (Z)		14	07	
	iS (NEZ)		16	50	
	eL (N)		18	22	

	Phase (comp.)	Time G.M.T.	Remarks
7	eP (Z) PP (Z) iS (Z) eL (N) eL (E)	00 40 07 41 02 44 15 45 22 45	Luzon. aftershock 21N., 121 $\frac{1}{2}$ E. H=00 35 13 (U.S.C.G.S.)
9	P (NZ) Lr (E)	01 13 19 34 42	Tonga Is. 20 $\frac{1}{4}$ S., 177W. H=01 02 16 (U.S.C.G.S.)
9	eP (Z) PP (NZ) ePPP (Z) PS (NEZ) SS (E) SSS (E) i (E) i (L) i (N) L (Z) L (E)	01 18 07 22 13 24 23 31 11 36 21 39 56 43 52 52 31 55 34 56 15 57 15	Northern Algeria 36N., 1 $\frac{1}{2}$ E. H=01 04 37 (U.S.C.G.S.)
9	e (E) e (E) e (N) eL (E)	06 07 15 19 24 29 36 36 57	Algeria aftershock?
12	eP (NE) eS (E) eS (N) eL (N) eL (Z)	07 45 23.0 46 34.9 47 01.9 09.9	Off east coast of Sanriku (Japan) 40.8N., 143.7E. h=00km (C.M.O.)
13	iP (NEZ) epPP iS (NE) iPS (NE) eSS (N) eSSS (E) eL (N) i (E)	02 21 07 25 00 30 11 31 06 34 39 37 56 39 29 47 31	Tonga Is. 21S., 175 $\frac{1}{2}$ W. H=02 09 55 h=about 150km (U.S.C.G.S.)
13	eP (N) e (NE) eS (N) eL (NE)	18 24 18 27 40 28 24 29 36	Luzon aftershock S phase indistinct H=18 19 16 (U.S.C.G.S.)
13	eP (NE) eS (NE) eL (E)	18 17 42 21 35 23 16	Luzon aftershock H=18 12 37 (U.S.C.G.S.)
14	eP (NEZ) iS (NE) L (N) L (Z) L (E)	00 53 11 57 16 01 02 44 03 16 30	Luzon aftershock H=00 48 16 (U.S.C.G.S.)

Phase (comp.)	Time G.M.T.			Remarks
eP (NZ)	07	23	20	Ryukyu Is region
eS (NE)?		26	20	
eLg (E)		27	16	H=07 20 07 (U.S.C.G.S.)
i(Z)(L)		28	00	
eLr (N)			40	
5 iP (NEZ)	18	06	13	Fiji Is. 18S., 178 $\frac{1}{2}$ E.
				$\left. \begin{matrix} N(+) \\ E(-) \\ Z(+) \end{matrix} \right\}$
PcP (Z)			32	
epP (Z)		08	00	H=17 56 08
ePP (Z)			52	h: about 600km
PP (E)			56	
PP (N)			58	Microseisms (U.S.C.G.S.)
epPP (Z)		10	30	
esPP (Z)		11	41	
iS (E)		14	29	
ScS (NE)		15	26	
esS (E)		17	52	
ess (N)		18	02	
eSSSor,SS (NE)		22	38	
7 eP (NE)	07	38	03	Near north coast of Formosa
eS (NE)		41	34	
eS (Z)			36	H=07 33 25 (U.S.C.G.S.)
eL (E)		43	06	
seL (N)			10	
7 eP (NEZ)	11	14	18	Fiji Is. region
pP (NEZ)		15	43	
PP (EZ)		17	07	20 $\frac{1}{2}$ S., 177 $\frac{1}{2}$ E.
pPP (NE)		18	30	
eS (NE)		23	16	H=11 03 19
eSP (NE)		24	10	
i (Z)			25	Microseisms
i (N)		25	28	
eSS (E)		28	37	
eSS (N)			40	
eL (E)		32	57	
eL (Z)		33	09	
20 eP (Z)	00	47	17	Celebes. 1 $\frac{1}{2}$ S., 120 $\frac{1}{2}$ E.
eS (E)		53	31	H=00 39 28 (U.S.C.G.S.)
eL (E)		56	30	
21 eP (Z)	09	46	58	Mariannas Is.
ePP (Z)		47	51	
eS (NE)		51	19	H=09 41 50 (U.S.C.G.S.)
eL (E)		52	47	
23 e (N)	17	20	09	Unknown
e (N)		25	00	
e (E)		27	39	

	Phase (comp.)	Time G.M.T.			Remarks
3	iP(NEZ)	21	47	47	Unknown
	i (NEZ)			53	
	PP(Z)		49	04	
	eS (NE)		51	19	
	L (E)		52	35	
5	e (E)	13	25	43	Unknown
	e (E)		37	29	Indistinct
	e (E)		40	56	
7	iP(NEZ)	16	40	01.0	South Hokkaido (Japan)
	i (NE)			20.9	
	PP(NZ)			33.8	H=16 38 20 (U.S.C.G.S.)
	iS(NEZ)		41	15.8	
7	eP (NE)	17	20	10	Hokkaido (Japan) 42.7N., 142.8E.
	eS (NE)		21	16	h:80km. (C.M.O.)
8	iP (N)	03	32	59.7 (-)	South Kanto district (Japan)
	iS (N)		33	18.2	36.8N., 139.3E. h:130km (C.M.O.)

K. Sagisaka

K. Sagisaka

Chief

1962 01 22 10 22

SEISMOLOGICAL BULLETIN

of

The MATSUSHIRO SEISMOLOGICAL OBSERVATORY

JAPAN

for

Oct. , 1954

Latitude 36° 32' 30" N.

Longitude 138 12 32 E.

Height(M.S.L.) 440 M.

Instrument	Comp.	M (Kg)	T (sec)	V	v	δ/T^2	M^2	T_0 (Sec)	M^2 δ
Wiechert	N	200	6.3	71	4.4	0.0063			
	E	200	6.4	68	4.9	.0061			
	Z	80	2.8	71	7.4	.0150			
1000 Kg. (C.M.O. type)	N	1000	27.5	104	1.6	0.0056			
	N		14.9				Near critical	15.3	Ordinary damping
	E		17.0				"	15.3	"
Galitzin	Z		15.				"	12.8	"

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e	Phase (comp.)	Time G.M.T.			Remarks
		h	m	s	
1	iP(NEZ)	03	05	04	11S., 166E.
	ePP(Z)		07	04	
	e (Z)		08	30	Santa Cruz Is.
	S (NE)		12	36	H=02 55 31
	SS(E)		16	20	(U.S.C.G.S.)
	eLq(NE)		17	58	
	eLq(Z)		20	31	
1	eP (Z)	07	01	25	14 1/2 S., 173W.
	e (N)		04	28	
	eS (NE)		10	31	Samoa Is.
	SS (N)		15	12	h: about 60 km.
	eLq (N)		18	43	H=06 50 24
	Lr (NZ)		21	53	(U.S.C.G.S.)
2	eP (NZ)	100	02	53	29N., 140E.
	e (Z)		04	08	Bonin Is. region
	eS (N)			15	h: about 450 km.
	eS (E)			19	H= 10 00 52
					(U.S.C.G.S.)
3	iP (NZ)	02	56	44	10S., 166E.
	i		59	44	
	PPP(N)	03	00	10	Santa Cruz Is.
	S (NE)		04	27	H=02 47 19
	Lq (NE)		09	42	(U.S.C.G.S.)
	Lr (E)		12	20	
3	e (E)	13	42	47	17 1/2 N., 145E. Marianas Is.
	e (N)		49	22	h: about 200 km.
					H= 13 34 14
					(U.S.C.G.S.)
					weak
3	iP (Z)	11	27	36	60N., 151W.
	eS (E)		34	24	Kenai Peninsula (Alaska)
	e (E)		37	26	h: about 100 km.
	eL (E)		39	34	H= 11 18 46
	eL (E)		43	43	(U.S.C.G.S.)
3	P (NE)	23	29	08	1/2 S., 127E.
	ePP(Z)		30	44	
	PcP(N)			59	Molucca Is.
	eS (N)		35	12	H= 23 21 39
	eS (E)			18	(U.S.C.G.S.)
	Lq (E)		38	08	
	eLr(Z)		40	54	
	eP (Z)	01	37	16	25N., 122E.
	i (NEZ)			37	Formosa
	eS (N)		41	05	H= 01 33 29
	e (E)			12	(U.S.C.G.S.)
	e (N)		43	45	

te	Phase (comp.)	Time G.M.T.			Remarks
4	P (N) eS (E) eS (N) e (N) eL (E) eL (N)	09 ^h	42 ^m 49 50 51 55 57	34 ^s 56 10 52 13 36	11S., 166E. Santa Cruz Is. H= 09 32 56 (U.S.C.G.S.)
5	iP (NZ) eS (E)	04	19	17 ^h {N(-) Z(-)} 59	33.5N., 141.0E. 110km. Off northeast coast of Hachijo (Japan) h: about 60 km. (C.M.O.)
5	eP (N) eS (N) L (E) L (N)	11	34 38 42 44	29 50 24 42	55N., 109E. Lake Baikal H=11 28 17 (U.S.C.G.S.)
5	eP (Z) S? (E) e (N) eL (E)	18	42 43 44	15 33 05 10	Unknown
6	eP (NEZ) S (E) eL (E) eL (N) eL (E)	08	25 29 30 34 35	05 11 54 49 02	52N., 160E. Off southeast coast of Kamchatka H= 08 20 09 (U.S.C.G.S.)
7	eP (Z) eS (N) eS (E) eSS (E) eL (E)	08	09 19 24 34	17 03 06 07 32	Indian Ocean. H= 07 57 23 (U.S.C.G.S.)
7	P (NEZ) S (N) S (E) e (N) e (E) eL (N)	19	26 34 37 39 40	55 00 05 21 10 43	Off east coast of New Guinea H= 19 18 08 (U.S.C.G.S.)
8	eP (N)? S (NE) eL (N)	10	48 50 51	46 35 21	42.6N., 147.5E. Off southeast coast of Nemuro Hokkaido (Japan) (C.M.O.) shallow
9	eP (Z) PPP (Z) eS (N) eL (Z)	19	24 28 33 43	07 10 09 23	15 ¹ / ₂ S., 173 ¹ / ₂ E. Tonga Is. region H= 19 12 53 (U.S.C.G.S.)

te	Phase (comp.)	Time G.M.T.			Remarks
11	iP (Z) pP (Z) PP (Z)§ PPP(Δ)? S (E)	16 ^k	16 ^m	53 ^s Z(+)	52N., 162E. Off southeast coast of Kamchatka H= 16 11 45 (U.S.C.G.S.) after S phase superpose on next shock
11	S (NE) ScS(E)?	17	29	39 30 51	New Hebrides Is. h: about 150km. H=1711 17 (U.S.C.G.S.) microseisms
13	iP(NEZ) S (Z) L (NZ)	01	40	31 N(+) E(+) Z(-)	60km Off east coast of Kinkazan, Honshu (Japan) (C.M.O.)
13	e (NE) e (NE) e (Z)	22	34	50 41 22 46 13	Unknown
14	iP (NZ) ipP (Z) sPP (Z)? PcS (NE) i (Z) S (NEZ) i (NEZ)	01	43	18 K(+) Z(+) 39 45 41 48 53 49 04 53 53 21	7S., 128E. Banda Sea H= 01 35 00 (U.S.C.G.S.)
17	S (N) SS (NE) eSSS(NE) Lr (E) eLq(NE)	23	19	51 24 35 28 44 34 14 31 14	31½N., 116½W. Lower California H= 22 57 18 (U.S.C.G.S.)
20	eS (N)? L (NE)	14	03	11 04 47	Central Formosa H= 13 54 51 (U.S.C.G.S.)
21	eP?(E) eS (NE) L (NE)	07	14	06 18 32 20 35	Unknown weak
24	ePP (Z) e (E) S (E) SS (E) Lq (NE)	10	00	00 03 27 06 55 12 30 18 42	31½N., 116W. Lower California H= 09 44 05
27	S (E) L (E) L (N)	03	34	12 38 25 39 15	51N., 176½W. Andreanof Is. H= 03 22 54 (U.S.C.G.S.)

Time	Phase (comp.)	Time G.M.T.	Remarks
29	eP?(Z) eS (E)	11 ^h 20 ^m 08 ^s 28 17	20S., 170E. Loyalty Is. region H= 11 09 10 (U.S.C.G.S.)
30	L?(E) L (E)	16 13 28 15 31	50N., 157E. Northern Kurile Is. H= 16 05 02 (U.S.C.G.S.)
30	e (E) S (E) L	22 05 48 07 40 11 01	38N., 104E. Ningsia Province (China) H=21 56 50 (U.S.C.G.S.)
	eL(N) L (N) L (E)	08 16 05 18 28 19 30	51N., 176 $\frac{1}{2}$ W. Andreanof Is. H= 08 01 39 (U.S.C.G.S.)
31	iP (Z) PP (Z) S (Z) L (Z)	23 23 21 Z(-) 27 36 33 07 42 19	18 $\frac{1}{2}$ S., 170E. New Hebrides Is. H= 23 12 52 Horizontal components no records

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K. Sagisaka

K. Sagisaka
chief.

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SEISMOLOGICAL BULLETIN
of
The MATSUSHIRO SEISMOLOGICAL OBSERVATORY,
for
November , 1954.

Latitude 36° 32' 30" N.
Longitude 138° 12' 32" E.
Height (M.S.L.) 440 M.

COPY

Instrument	Comp.	M (Kg.)	T (Sec.)	V	v	ρ/T^2	M^2	T_f (Sec)	M_f
Wiechert	N	200	6.0	75	4.9	0.0044			
	E	200	6.3	70	5.5	.0086			
	Z	80	3.9	67	8.5	.026			
1000 Kg. (C.M.O.type)	N	1000	27.5	104	1.6	0.0056			
	E	1000	29.4	104	3.0	.0037			
Galitzin	N		14.9				near critical	15.3	ordinary damping
	E		17.0				"	15.3	"
	Z		15				"	12.8	"

Date	Phase (comp.)	Time (G.M.T.)	Remarks
2	P (Z)	08 ^h 32 ^m 52 ^s	7 1/2 S., 119 E. Sumbawa Is. region? H=08 24 08 U.S.C.G.S.
	e (E)	33 10	
	e (Z)	37 02	
	S (Z)	39 47	
	LorSS(E)	43 33	
	L (Z)	44 06	
5	eP (N)	13 11 54	Northern Kurile Is. H=13 07 05 U.S.C.G.S.
	eL (N)	16 54	
5	P (NEZ)	09 11 35	38.7N., 143.8E. Off coast of Sauriku, Japan. h=40km. C.M.O.
	i (E)	12 05	
	S (N)	28	
	i (E)	55	
5	P (Z)	22 51 52	52 1/2 N., 160 1/2 E. Off east coast of Kamchatka. H=22 46 44 U.S.C.G.S.
	e (NE)	52 31	
	ePP(Z)	53	
	ePPP(Z)	53 11	
	S (E)	56 04	
	e (N)	11	
	L (E)	58 23	
	L (N)	59 27	
6	iP (Z)	13 11 30	23 1/2 N., 124E. Southern Ryukyu Is. H=13 07 14 U.S.C.G.S.
	iS(NE)	14 57	
	L (E)	16 30	
7	eS (E)	05 39 57	24 1/2 S., 176W. Tonga Is. region. H=05 18 57 U.S.C.G.S.
	eSS(E)	45 05	
	e (E)	53 58	
	e (E)	06 37 27	
7	eP (Z)	07 11 08	52 1/2 N., 160 1/2 E. Near coast of Kamchatka. H=07 06 00 U.S.C.G.S.
	S (E)	15 19	
	eL (E)	18 31	
7	eP (Z)	08 44 44	
	S (E)	48 47	
	e (E)	50 56	
	eL (E)	52 55	
7	eP (Z)	14 37 28	
	eS (E)	38 31	
	eL (E)	39 18	
9	eP (N)	11 36 34	42.0 N., 142.6 E. h= 40 km. Off southwest coast of Urakawa, Hokkaido, Japan. C.M.O.
	eS (N)	38 11	
	eL (N)	39 34	

Time	Phase (comp.)	Time (G.M.T.)	Remarks
10	eP (Z) e (Z) eS (N) eL (E)	07 ^{h.} 29 ^{m.} 54 ^{s.} 30 16 34 09 36 45	56 1/2 N., 160 E. Kamchatka. h: about 100 km. H=07 24 52 U.S.C.G.S.
10	eP (Z) eS (E) eL (E)	15 42 53 46 42 49 17	
11	eS? (N) e (E) eL? (NE)	20 36 20 41 12 46 01	
12	eP ₁ (N) eP ₂ (NE) i (Z) e (E) iScS? (NE) eSP? (Z) i (N) isSS? (E) Lq (NE) Lr (EZ)	12 38 57 39 10 17.3 41 28 49 37 50 07 40 55 00 13 01 08 05 34	31 1/2 N., 116 W. Lower California. H= 12 26 47 U.S.C.G.S.
12	eS? (NE) eSSS? (NE) eL (E) eL (N)	22 08 55 16 44 20 59 21 02	15 1/2 S., 174 W. Tonga Is. H=21 48 40 U.S.C.G.S.
15	e (E) eS? (NE) eL (E) eL (N)	09 51 35 56 02 58 34 59 21	
15	iP (NE) eS? (N) i (E) i (N) iL? (N) iL? (E)	11 31 25.3 { N(-) E(+) 32 07 26 44 33 18 30	34.0 N., 141.0E. h=40 km. Off southeast coast of Boso Peninsular C.M.O.
15	iP (NE) iPP? (NE) i (E) e (NE) iS (N) iS (E)	16 30 48.9 { N(-) E(+) 31 39 { N(-) E(+) 32 36 E(-) 33 58 34 05.2 07.5	19 1/2 N., 145 1/2 E. Marianas Is. h: about 200 km. H= 16 26 44 U.S.C.G.S.

Date	Phase (comp.)	Time (G.M.T.)			Remarks
17	eP (NE)	13 ^h	10 ^m	24 ^s { N(-) E(+)	36.1N., 139.7E. h= 40km.
	eS (NE)			38	Ibaragi Pref. Japan.
	e (N)			41	C.M.O.
17	eP? (N)	17	22	01	19N., 145E. Marianas Is.
	e (E)			11	
	e (N)		24	35	H=17 18 15 U.S.C.G.S.
	S? (NE)			57	
	i (N)		25	01	
	eL (N)		26	42	
	eL (E)			55	
18	P (N)	05	23	54 N(-)	49N., 155E. Kurile Is.
	P (E)			57	h: about 100km. H=05 20 04
	i (NE)		24	02	
	i (NE)			11	U.S.C.G.S.
	iS (E)		27	15	
	iS (N)			20	
	Lq? (E)		28	11	
	iLr? (N)		29	15	
	iLr (E)			33	
18	P (NEZ)	20	45	59.9	38.9N., 141.7E., h= 50km.
	e (NE)		46	14	
	e (Z)			20	Hirota Bay Iwate Pref. Japan.
	S (E)			45	
	S (N)			46	C.M.O.
	S (Z)			47	
19	iP (NE)	05	57	44.1 { N:+21.3M E:-15.7	41.0N., 132.1E. h>500km.
	i (NE)		58	00.1	Sea of Japan. U.S.C.G.S.
	iS (N)		59	07.5	
	iS (E)			09.4	
	i (NE)			23	
	ScS (NE)	06	09	45	
21	iP (NEZ)	07	49	32	29S., 178W. Kermadec Is.
	eS (NE)		59	27	H=07 37 27 U.S.C.G.S.
23	eP (E)	02	25	19	
	eL (N)		49	32	
23	P (NE)	10	04	35	53N., 159 ¹ / ₂ E. Off coast of Kamchatka.
	S (NE)		08	40	H=09 59 45 U.S.C.G.S.
	eL (E)		11	23	
23	iP (NEZ)	10	22	30 Z(+)	52 ¹ / ₂ N., 160E. Off coast of Kamchatka.
	S (NE)		26	35	H= 10 17 35 U.S.C.G.S.
	eL (E)		29	17	

Date	Phase (comp.)	Time (G.M.T.)	Remarks
23	iP(NEZ)	21 ^h . 17 ^m . 52 ^s .	52N., 160.5E. Off southeast coast of Kamchatka. H=21 12 55 U.S.C.G.S.
	i (NE)	18 36	
	iS (E)	21 58	
	eL(E)	24 14	
25	P (N)	11 28 01	Off Cape Mendocino California. H=11 16 36 U.S.C.G.S.
	S (N)	37 18	
	SS (N)	41 48	
	Lq (N)	46 31ca.	
	Lr (N)	49 58	
25	iP(NEZ)	21 43 54.1	21.5S., 179E. Fiji Is region. h: about 650 km. H= 21 33 38 U.S.C.G.S.
	iPP(E)	47 10	
	i (N)	52 08	
	iS (E)	53 08	
	e (E)	56 11	
	i (I)	26	
	L (N)	22 00 14	
29	iP (Z)	01 44 22	53.5N., 160E. Near east coast of Kamchatka. H=01 39 02 U.S.C.G.S.
	iS (NE)	48 29	
	eL (NE)	51 20	

K. Sagisaka

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chief.

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SEISMOLOGICAL BULLETIN

of

The MATSUSHIRO SEISMOLOGICAL OBSERVATORY,

for

December , 1954.

Latitude 36° 32' 30" N.
 Longitude 138° 12' 32" E.
 Height(M.S.L.) 440 M.

Instrument	Comp.	M (Kg.)	T (Sec.)	V	v	ρ/T^2	μ^2	T_0 (Sec)	M_0
Wiechert	N	200	5.9	74	7.2	0.0079			
	E	200	5.8	66	5.1	.0083			
	Z	80	3.7	55	5.3	.0219			
1000 Kg. (C.M.O.type)	N	1000	27.0	104	2.8	0.0048			
Galitzin	N		14.9				near critical	15.3	ordinary damping
	E		17.0				"	15.3	"
	Z		15				"	12.8	"

Date	Phase (comp.)	Time G.M.T.			Remarks
2	S (NE)	17 ^h	24 ^m	09 ^s	Off east coast of Kamchatka H=17 15 01 (U.S.C.G.S.)
	L (E)		27	08	
	L (N)		29	27	
3	eP(NE)	02	48	15	Near southwest coast of $\{N$ Urakawa (Hokkaido, Japan), weak 42.0N., 142.5E. (C.M.O.)
	eS(NE)		49	27	
	eL(E)		50	29	
	eL(N)		51	14	
3	S (NE)	09	06	21	44N., 127E. Off coast of Oregon. H=08 46 02 (U.S.C.G.S.)
	SS(E)		10	36	
	sSS(N)			58	
	e (EZ)		12	13	
	eLq(N)		13	58	
	L (E)		14	28	
	iL(N)		15	26	
4	iP(NZ)	07	08	36	5S., 152 $\frac{1}{2}$ E. New Britain Is. region H=07 00 29 (U.S.C.G.S.)
				{ N(+)	
				{ Z(+)	
	i (Z)		09	46	
	PcP(Z)?		10	29 ⁶	
	PPP(Z)			53	
	PcS(ZE)		14	14	
	S (NE)		15	05	
	i (E)		18	09	
	sSS(E)			36	
	L (E)		19	27	
L (Z)		21	45		
L (N)			58		
4	P' (Z)	18	50	19	11N., 61W. Near Trinidad. h=about 60 km. H=18 31 07 (U.S.C.G.S.)
	PP(EZ)		52	24	
	pPP(Z)?			46	
	e (NE)		53	26	
	i (Z)			35	
	ePPP(Z)		55	21	
	e (N)		56	18	
	SKS(EZ)		57	22	
	SKKS(N)		59	13	
	e (Z)	19	01	51	
	SKSP(Z)		02	15	
	PSKS(NE)			30	
	SP (Z)		03	04	
	SS(NE)		09	44	
	L(NE)		34	00	
L (Z)		35	00		
5	eP(NZ)	00	31	34	Unknown
	iS(NE)		34	32	
	L (E)		36	28	
	L (Z)		37	28	
	L (N)			58	

Date	Phase (comp.)	Time G.M.T.			Remarks
6	eP (Z)	02 ^h	59 ^m	39 ^s	3 $\frac{1}{2}$ S., 151E.
	PP(NE)	03	01	14	Near Ireland region
	i (Z)			26	
	S (Z)		05	34	H=02 51 40 (U.S.C.G.S.)
	S (NE)			46	
	Lq(E)		09	05	
	Lr(E)		10	00	
	L (NZ)		11	38	
6	eP(NZ)	12	01	45	54 $\frac{1}{2}$ N., 161E.
	e (N)		03	32	Near coast of Kamohatka. H=11 56 24 (U.S.C.G.S.)
	S (NE)		06	01	
	L (E)		08	30	
6	e (NE)	22	54	00	Unknown weak
	e (N)	23	07	00	
	e (E)		08	00	
	e (N)		19	00	
6	eP(NEZ)	23	55	22	Santa Cruz Is. region
	S (NE)	24	09 ⁰²	46	H=23 45 51 (U.S.C.G.S.)
	SS(E)		06	31	
	L (E)		11	30	
7	e (N)	06	34	16	54N., 164 $\frac{1}{2}$ W.
	S (NE)		36	16	Near Unimak Is. (Alaska)
	L (E)?		39	59	H=06 21 33 (U.S.C.G.S.)
	eL(N)		42	59	
7	iP(Z)	14	55	19	3 $\frac{1}{2}$ N., 125 $\frac{1}{2}$ E.
	sP(Z)			57	Celebes Sea region
	ePP(Z)		56	17	
	e (Z)			39	h: about 100Km. H= 14 48 30 (U.S.C.G.S.)
	iPPP(NE)			47	
	e (NE)		59	41	
	S (Z)	15	00	30	
	Lr(NE)		02	52	
	Lr(Z)		03	29	
9	e (N)⊗	14	37	09	15 $\frac{1}{2}$ S., 76W.
	iSKS		40	26	Off coast of Peru.
	e (E)		41	49	
	SKKS(EZ)		42	48	H=14 13 27 (U.S.C.G.S.)
	SKKKS(N)		44	35	
	L (E)	15	00	17	
	L (N)		25	00	
10	e (NE)	13	29	50	18 $\frac{1}{2}$ N., 81W.
	e (N)		31	08	West of Jamaica.
	e (E)		33	53	
	PSPS(N)		37	00	H=13 00 27 (U.S.C.G.S.)
	L (E)		47	55	
	L (E)	14	01	00	
	L (N)		04	13	

Date	Phase (comp.)	Time G.M.T.	Remarks
11	ePP(N)	03 ^h 54 ^m 35 ^s	Off coast of Liberia.
	ePPP(N)	57 15	
	ePPS(E)	04 06 26	H=03 32 48 (U.S.C.G.S.)
	ePSPS(N)	12 22	
	eSSS(NE)	17 30	
11	eP(NEZ)	13 10 20	52 $\frac{1}{2}$ N., 32W
	i (E)	34	
	e (Z)	13 22	North Atlantic Ocean.
	SKS(N)	20 50	
	iS (NE)	21 14	H=12 57 07 (U.S.C.G.S.)
	SS(NE)	27 12	
	Lq(E)	34 09	
Lr(E)	38 41		
12	e (N)	05 42 14	Unknown
	e (N)	45 07	
	e (N)	49 50	
12	e (NE)	10 54 34	Kermadec Is.
	e (N)	11 01 08	H=10 39 32 (U.S.C.G.S.)
	e (E)	22 02	
13	eP(NE)	01 35 04	Southern Kurile Is.
	eS(NE)	39 43	H=01 29 50 (U.S.C.G.S.)
	eL(E)	42 19	
13	e (E)	04 23 03	Unknown
	e (E)	25 46	
	e (E)	32 57	
13	P(NEZ)	08 49 16	36.1N., 140.1E. h=40Km.
	S(NEZ)	35	Near Tsukuba-yama (C.M.O.)
13	eP(Z)	22 45 51	2N., 126E.
	ePP(N)	47 34	Molucca Passage.
	eS(NZ)	51 21	H=22 38 43 (U.S.C.G.S.)
	L(NE)	53 53	
14	eP(N)	02 03 11	Tonga Is.
	ePP(N)	05 56	
	eS(N)	13 11	H=01 51 55 (U.S.C.G.S.)
	e (N)	14 06	
	e (E)	18 43	
	eL(N)	24 44	
14	e (N)	06 39 26	Unknown.
	e (N)	44 33	
	e (N)	48 56	

Date	Phase (comp.)	Time G.M.T.			Remarks
16	eP(N)	07 ^h	09 ^m	45 ^s	24S., 175W. Tonga Is. region. H=06 57 57 (U.S.C.G.S.)
	ePPP(NE)		14	38	
	eS(NE)		19	21	
	ePS(NE)		20	15	
	eSS(NE)		24	04	
	eL(NE)		29	03	
16	eP(NE)	11	19	03	39 $\frac{1}{2}$ N., 118W. Near Fallon. H=11 07 10 (U.S.C.G.S.)
	eP(Z)			06	
	i(NE)		20	42	
	PPP(N)?		23	40	
	iS(NE)			55	
	PS(N)?		29	53	
	PPS(N)?		30	53	
	SS(NE)		33	54	
	i(NE)		35	55	
	i(Z)		38	21	
	Lq(NEZ)		39	44	
	Lr(Z)		41	51	
	Lr(NE)		42	00	
17	e(NE)	05	35	11	Unknown.
	e(NE)		37	49	
	e(NE)		41	40	
17	e(N)	20	28	39	Unknown.
	e(N)		30	52	
	e(N)		36	28	
17	P(NE)	21	48	20	34.2N., 132.9E. h=0-10Km. Middle part of Seto-naikai. (Japan, Proper) (C.M.O.)
	S(NE)		49	23	
	L			45	
17	e(E)	22	36	47	Unknown.
	e(E)		41	12	
	e(E)		44	40	
18	P(NE)	09	14	17	35.7N., 140.1E. h=85Km. North part of Chiba-prefecture. (Japan, proper) (C.M.O.)
	S(NE)			39	
18	e(N)	15	50	04	Unknown.
	e(E)		55	53	
	e(E)		59	40	
	e(E)	16	07	05	
19	iP(N)	05	15	28	N(+) Unknown.
	PP(N)		16	35	
	iS(NE)		19	17	
	L(NE)		20	50	

Date	Phase (comp.)	Time G.M.T.	Remarks
19	P ₁ ' (Z)	10 ^h 43 ^m 12 ^s	23S., 66 $\frac{1}{2}$ W. Jujuy Province (Argentina) h=about 250km. H=10 23 40 (U.S.C.G.S.)
	P ₂ '(NEZ)		
	pP' (Z)	44 23	
	ePP(E)	47 44	
	pPP(Z)	48 06	
	pPP(N)		
	epPPP(E)	51 24	
	SKKS(E)	53 43	
	e (N)	55 43	
	SS (NE)	11 06 29	
20	e (NE)	18 22 30	Unknown. Microseisms.
	e (N)	27 39	
	e (E)	40 44	
21	eP (NE)	01 27 25	20N., 121 $\frac{1}{2}$ E. Off north coast of Luzon Is. H=01 22 17 (U.S.C.G.S.)
	eS (NE)	31 23	
21	eP (NZ)	12 04 54	3 $\frac{1}{2}$ S., 145 $\frac{1}{2}$ E. Bismark Sea. H=11 57 19 (U.S.C.G.S.)
	ePPP(Z)?	06 47	
	eS (NE)	11 09	
	e (Z)		
	eL (E)	14 33	
	eL (N)		
21	iP (NE)	20 08 01	41N., 124W. Humboldt County. (California) H=19 56 25 (U.S.C.G.S.)
	e (N)	15 08	
	iS (NE)	17 19	
	eSS(E)	21 44	
	eLq(N)	25 54	
	eLr(N)	29 51	
22	e (E)	04 31 13	5 $\frac{1}{2}$ S., 154 $\frac{1}{2}$ E. Solomon Is. H=04 18 16 (U.S.C.G.S.)
	L (NE)	36 40	
23	eP?(NE)	17 07 24	Unknown.
	eS?(NE)	12 00	
	eL (E)	14 12	
	eL (N)		
24	e (Z)	01 04 27	Unknown.
	e (Z)	09 07	
	eL?(N)	12 21	
	L (E)		
24	eP (NZ)	02 36 51	Bonin Is. H=02 34 53 (U.S.C.G.S.)
	e (E)	38 07	
	eS (N)		
	eL (E)	39 07	
	eL(NZ)		

Date	Phase (comp.)	Time G.M.T.	Remarks
24	eP(NEZ)	19 ^h 58 ^m 46 ^s	Unknown.
	e(N)	59 25	
	eS(N)	37	
	eS(EZ)	40	
	eL(NE)	20 00 06	
27	e(E)	14 35 59	Solomon Is. H=14 18 27 (U.S.C.G.S.) weak
	e(E)	37 14	
	e(N)	39 22	
28	eP(NEZ)	01 08 41	45S., 152 $\frac{1}{2}$ E. New Britain region H=01 00 37 (U.S.C.G.S.)
	ePP(Z)	10 05	
	i(PP?)(E)	12	
	e(N)	41	
	PPP(Z)	11 03	
	eS(NE)	15 08	
	i(N)	16 21	
	eLq(NE)	18 14	
	Lr(EZ)	19 17	
	Lr(N)	20 24	
	eLq(E)	24 43	
28	e(E)	09 29 25	Unknown
	e(N)	31 09	
	e(NE)	34 07	
	e(Z)	36 09	
29	e(N)	09 46 11	56N., 160 $\frac{1}{2}$ E. Kamohatka region. H=09 39 59 (U.S.C.G.S.)
	e(E)	49 34	
	e(N)	50 44	
	e(NE)	52 26	
29	e(Z)	11 49 20	Unknown.
	e(N)	29	
	e(E)	50 47	
	e(Z)	55 52	
	i(E)	57 46	
	e(Z)	59 10	
	e(Z)	12 02 41	
	e(Z)	12 18	
	i(N)	17 00	
	e(Z)	03	
30	eP(Z)	11 40 01	53N., 168W. Fox Is. (Aleutian Is) h=about 60Km. H=11 32 28
	i(Z)	38	
	ePPP(Z)	42 20	
	eS(Z)	46 18	
	eLq(Z)	49 18	
	eLr(Z)	51 03	
	eLr(N)	29	

Date	Phase (comp.)	Time G.M.T.	Remarks
31	e (NE) eL (E) eL (W)	13 ^h 10 ^m 15 ^s 13 26 56	Unknown.
31	eP (N) eS (NE) eL (N) eL (E)	14 32 17 36 14 38 31 36	52N., 159E. Near east coast of Kamohatka. H=14 27 21 (U.S.C.G.S.)

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chief

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