

Geophysics Library

JESUIT SEISMOLOGICAL ASSOCIATION
CENTRAL STATION
1221 NORTH GRAND BOULEVARD
SAINT LOUIS, MISSOURI



地震報告

SEISMIC BULLETIN

OF THE

NIIGATA

METEOROLOGICAL OBSERVATORY

DURING

THE YEAR

1932

PUBLISHED BY

THE NIIGATA METEOROLOGICAL OBSERVATORY

INTRODUCTORY REMARKS

Distinctive name of station : The Niigata meteorological observatory lies on the west coast of Niigata port, at No 5932, Hamaura Nishifunami street at Niigata city and Niigata prefecture.

Lithologic foundation : Sands of the alluvial series—On the Northern slope of the sandy hill were founded in delta of the river Shinano.

Position of observatory :
 $L = 37^{\circ} 56'$ (North Latitude)
 $\lambda = 139^{\circ} 03'$ (From greenwich)
 $h = 7,9^m$ (From mean sea level)

SEISMOGRAPHICAL CONSTANTS

Instrument	Component	Mass	Dampper	T_0	$\frac{r}{T_0^2}$	ξ	V
Omori's	E - W	15 ^{kg}	—	3.2	0.05	—	30
	N - S	"	—	3.3	0.04	—	"
C. M. O.	E - W	2.19	Oil	7.1	0.003	2	2
	N - S	2.17	"	7.1	0.002	2	"
	u - D	0.21	"	1.2	0.012	2	"
Imamura's	E - W	2.4	Oil	8.0	0.004	2.58	1
	N - S	2.5	"	8.0	0.002	2.14	"
	u - D	0.4	"	2.5	0.002	1.55	"
* Mag Damping Seismograph	NE-SW	18.84	Mag	3.9	0.01	1.5	7
	NW-SE	18.82	"	4.0	0.01	1.5	"

* 改造式

SYMBOLS AND NOTATIONS

1. Phases of the seismogram.

P=First preliminary tremors. (longitudinal).

\bar{P} =Individual, or upper first preliminary tremors.

PR_n=Longitudinal waves n times reflected at the earth's surface.

S=Second preliminary tremors. (transverse).

\bar{S} =Individual, or upper second preliminary tremors.

SR_n=Transverse waves n times reflected at the earth's surface.

PS=Waves changed from longitudinal to transverse oscillation.

or vice versa, through reflection at the earth's surface.

L=Long waves at the beginning of the surface phase.

M=Maximum Amplitude in principal phase.

C=Prominent Waves among after tremors.

F=End of discernible movements.

2. Nature of the motion.

i=Sudden beginning of the motion.

e=Gradual beginning of the motion.

A=Amplitude of the earth's motion in microns.

A_E=E-W component of A.

A_N=N-S component of A.

Period=Time of one complete oscillation.

3. Distance of epicenter.

Δ = Distance of epicenter; for the near earthquakes calculated by the Omori's formula.

$\Delta = 7.42t$, for the distant earthquakes, by the Wiechert's, Zoeppritz's and Zeissig's time distance curve.

4. Time used Greenwich mean civil time is adopted for all determinations.

March, 1933.

T, Sasaki.

Director of the Niigata Meteorological observatory

NO	Date	Phase	Long 135°E Time			Period s	Amplitude			Δ km	Remarks
			h	m	s		HE	AN	AZ		
	Jan						M	M	M		
1	9	ep c eF	19	29	40.0 25.0 50						
2	24	P eS eF	12	54	41.1 40.0 09				437.1		
3	29	ep eF	22	51	33.0 13						
4	31	P S MIN MIE MZH MZE C F	18	19	08.5 21.5 04.2 19.5 10.5 30.0 06.1 18.5	3.0 3.3 3.0 3.5	+837 +637 ±460 +333		96.5		Local shock Near Fōkamaichi
"	" (改造式)	P S C eF	18	19	10.0 21.5 00.0 27				85.3		
5	February 9	ep S ME C eF	0	23	08.8 39.3 34.3 57.0 30	3.5	±167		226.3		
6	19	P S MN C eF	22	27	03.7 31.5 07.5 36.0 37	3.5	±143		206.2		Local shock
7	23 (改造式)	ep C eF	12	00	31.0 20.0 06						Local shock felt at the Jōishi district

Epixenter
Long 137.9°E
Lat 37.1°N

NO	Date	Phase	Long. 135°E Time			Parrals	Amplitude			Δ Km	Remarks
			h	no	s		AE	AH	AZ		
							M	M	M		
8	March 19	P	20	00	59.9					2403	
		L	"	09	17.2						
		ME	"	"	23.3	3.4	±450				
		MN	"	"	40.0	3.4	±370				
		C	"	13	20.5						
		eJ	20	34							
9	26	eP	9	07	37.4						
		C	"	36	50.8						
		eJ	9	43							
10	26	P	19	00	31.0					3603	Near at Sakata city. Local shock
		PR ₁	"	"	47.0						
		PR ₂	"	01	29.5						
		S	"	03	00.0						
		SR ₁	"	04	24.5						
		L	"	07	51.8						
		C	"	15	42.0						
		eJ	19	33							
"	" (改造式)	P	19	00	33.3					3433	
		PR ₁	"	"	53.2						
		PR ₂	"	02	08.8						
		S	"	"	58.8						
		L	"	07	28.1						
		C	"	15	39.3						
		eJ	19	25							
11	April 4	P	12	18	29.8					611.4	
		S	"	19	52.2						
		MN	"	21	43.4	3.5	±820				
		ME	"	"	46.7	3.4	±1000				
		C	"	26	37.8						
		eJ	12	56							
12	12	P	3	13	47.0					274.5	
		P̄	"	14	06.2						
		S	"	"	24.0						
		ME	"	"	47.0	3.5	±150				
		MN	"	"	56.3	3.0	±200				

NO	Date	Phase	Long 135°E			Period	Amplitude			Δ	Remarks
			Time	h	m		s	AE	AN		
12	April 12 (改造式)	C	3	18	45.9	3.7	±120		κ 2634		
		eF	3	29							
		P	3	13	40.2						
		P	"	14	06.2						
		S	"	"	24.7						
		MNW	"	16	34.4						
		C	"	20	28.2						
eF	3	26									
13	15	P	2	03	49.1						
		C	2	07	00.9						
		eF	2	12							
14	23	P	1	56	23.5						
		C	"	58	10.0						
		eF	2	01							
15	26	P	22	37	32.6						
		S	"	"	45.0				κ 62.0		
		C	"	39	12.7						
		eF	22	43							
16	28	P	12	44	50.7						
		S	"	45	15.2				κ 181.8		
		MeI	"	"	45.7	3.2	+207				
		MNI	"	"	53.7	3.2	+143				
		C	"	48	58.4						
		eF	12	55							
"	" (改造式)	P	12	44	51.0						
		S	"	45	15.5				κ 181.8		
		C	"	48	31.0						
		eF	12	53							
17	May 3	eP	8	31	58.8						
		eL	"	34	35.3				κ 174.4		
		C	"	39	56.0						
		eF	8	47							

NO	Date	Phase	Long 135°E Time			Period s	Amplitude			Δ km	Remarks
			h	m	s		AE μ	AN μ	Az μ		
18	May 5	P	13	12	061				312.3		
		\bar{P}	"	"	135						
		S	"	"	482						
		ME	"	13	331	3.6	±622				
		MN	"	"	514	3.5	±450				
		C	"	18	420						
		$\bar{e}\bar{f}$	13	34							
18	" (改造式)	eP	13	12	070				293.1		
		S	"	"	465						
		C	"	18	510						
		$\bar{e}\bar{f}$	13	28							
10	11	P	15	55	563				376.1	W part off Japan Sea.	
		S	"	56	471						
		ME	"	57	529	3.1	±205				
		C	16	00	388						
		$\bar{e}\bar{f}$	16	23							
20	14	eP	22	18	360				323.6		
		\bar{P}	"	"	510						
		eS	"	19	19.6						
		MIN	"	"	450	3.5	-867				
		M1E	"	"	492	3.5	+750				
		M2E	"	20	464	3.7	+1133				
		M2N	"	"	519	3.6	-733				
		M3E	"	21	460	3.5	±1317				
		M3N	"	22	274	3.5	+1500				
		C	"	31	000						
		$\bar{e}\bar{f}$	0	17							
"	" (改造式)	eP	22	18	390				319.1		
		eS	"	19	220						
		MSE	"	20	56.2	4.7	-777				
		M1E	"	21	17.0	4.7	+1785				
		C	"	27	12.5						
		$\bar{e}\bar{f}$	23	16							

NO	Date	Phase	Long 135° E			Period s	Amplitude			Δ km	Remarks
			h	m	s		AE	MN	ZZ		
21	May 28	P	20	55	00.9				146.2		
		S	"	"	20.6						
		C	"	58	25.0						
		eF	21	05							
22	27	P	1	20	06.1				667.8		
		P̄	"	"	32.1						
		S	"	21	36.1						
		ME	"	"	54.8	3.0	±433				
		MN	"	"	56.8	3.0	±333				
		C	"	33	40.0						
eF	1	59									
23	28	P	11	13	59.9				500.8		
		S	"	15	07.4						
		C	"	17	46.0						
		eF	11	21							
"	" (改造式)	eP	11	15	09.0						
		CC	"	17	37.0						
		eF	11	19							
24	28	P	11	23	50.5				364.8		
		PR1	"	24	24.5						
		PR2	"	26	27.0						
		S	"	29	11.6						
		L	"	31	18.2						
		C	"	43	40.0						
		eF	11	57							
"	" (改造式)	eP	11	23	51.7				361.4		
		SL	"	31	14.2						
		C	"	39	55.0						
		eF	11	49							
25	June 3	P	9	19	36.2				250.8		
		P̄	"	"	55.0						
		S	"	20	10.0						

NO	Date	Phase	Long 135°E			Period	Amplitude			Δ	Remarks
			hr	min	sec		AE	AN	Az		
	June	ME	9	20	43.2	3.5	+833		KBL		
		MN	"	"	44.2	3.5	-923				
		C	"	27	46.0						
		eF	9	49							
25	3	P	9	19	39.8						
	(改造式)	P	"	"	56.8				2508		
		S	"	20	13.6						
		MSE	"	"	47.8	4.0	±400				
		MNE	"	"	49.5	4.5	±427				
		C	"	24	42.0						
		eF	9	37							
26	3	P	19	50	43.1						
		PR ₁	"	51	24.0				12908		
		PR ₂	"	53	47.6						
		PR ₃	20	01	11.5						
		S	"	04	23.0						
		SR ₁	"	08	59.0						
		SR ₂	"	12	43.0						
		eL	"	22	00.5						
		eC	21	13	14.9						
		eF	22	27							
26	"	P	19	50	46.8						
	(改造式)	PR ₁	"	51	22.8				13023		
		PR ₂	"	53	07.6						
		S	20	05	03.6						
		SR ₁	"	09	51.3						
		SR ₂	"	12	34.8						
		eL	"	22	08.0						
		eF	21	30							
27	3	P	22	43	44.5						
		P	"	44	13.0				325.8		
		S	"	"	28.4						
		MN	"	"	49.4	3.0	±112				
		ME	"	"	50.4	3.2	±233				
		C	"	47	59.5						
		eF	23	01							

NO	Date	Phase	Long 135° E Time			Period s	Amplitude			Δ km	Remarks
			h	m	s		A _e	A _N	A _Z		
27	June 3	P	22	43	46.0				359.9		
		P	"	44	08.5						
		S	"	"	34.5						
		C	"	47	40.0						
		eF	22	54							
28	4	P	11	02	06.7				451.9		
		P	"	"	27.6						
		S	"	03	07.6						
		MN	"	04	30.2	33	±583				
		Mc	"	"	56.4	35	±883				
		C	"	09	12.0						
		eF	11	25							
29	5	P	11	02	07.1				226.5		
		S	"	03	04.5						
		C	"	07	20.5						
		eF	11	17							
		eF	5	42							
30	12	ep	2	05	17.7						
		C	"	11	30.0						
		eF	2	23							
31	13	ep	9	47	01.8				129.8		
		S	"	"	19.3						
		C	"	50	31.0						
		eF	9	56							
32	14	ep	15	05	00.9						
		C	"	09	31.0						
		eF	15	31							
33	16	ep	10	27	41.5						
		C	"	31	40.3						
		eF	10	44							

NO.	Date	Phase	Long 135°E Time			Period	Amplitude			Δ km	Remarks
			h	m	s		AE μ	AN μ	Az μ		
34	June 16	P	17	33	067				282.7		
		P	"	"	24.1						
		S	"	"	44.8						
		MN1	"	34	37.3	3.2	±390				
		ME1	"	"	46.7	3.7	±44.0				
		MN2	"	35	39.6	3.2	+350				
		ME2	"	"	51.1	3.7	±467				
		C	"	38	32.3						
		2F	17	50							
34	16 (改造式)	P	17	33	067				282.7		
		P	"	"	24.3						
		S	"	"	44.8						
		C	"	36	59.2						
		2F	17	48							
35	17	P	5	17	48.1				471.2		
		P	"	18	17.6						
		S	"	"	51.6						
		ME	"	19	01.2	3.5	±217				
		C	"	21	43.8						
		2F	5	32							
35.	" (改造式)	P	5	17	48.3				237.4		
		2S	"	18	20.3						
		C	"	21	01.8						
		2F	5	27							
36	18	2P	10	35	19.2				233.7		
		S	"	"	50.7						
		MN	"	36	52.8	3.5	±73				
		C	"	39	17.5						
		2F	10	48							
37	18	2P	19	26	08.1				1717.4		
		PR1	"	27	55.8						
		PR2	"	30	27.1						
		PR3	"	34	13.8						
		S	"	39	26.7						
		SR1	"	45	44.0						
		2SR2	"	52	18.8						
		2SR3	20	00	14.0						

NO	Date	Phase	Long 135°E Time			Period	Amplitude			Δ KM	Remarks
			h	m	s		A _E H	A _N H	A _Z H		
	June	eL	20	08	04.0						
		eC	"	48	30.8						
		eF	21	42							
37	18 (改造式)	eP	19	26	11.1						
		PR	"	30	16.0						
		eS	"	39	31.0						
		eC	20	39	10.0						
		eF	21	08							
38	22	P	9	36	45.8				383.6		
		P	"	"	56.6						
		S	"	37	37.5						
		ME	"	"	53.6	3.4		-1367			
		ME	"	38	20.6	3.4		±1867			
		C	"	46	39.0						
		eF	10	10							
39	23	eP	12	30	59.0				312.7		
		S	"	31	46.0						
		C	"	35	10.3						
		eF	12	44							
40	25	P	0	55	36.8				246.4		
		S	"	56	10.0						
		ME	"	56	48.0	3.4		-67			
		ME	"	57	00.0	3.4		±137			
		C	1	00	13.0						
		eF	1	09							
41	27	eP	4	26	32.3						
		eF	4	44							
42	30	P	3	16	52.8				291.6		
		S	"	17	32.1						
		ME	"	18	24.2	2.8		±600			
		ME	"	19	27.0	3.2		+800			
		C	"	25	23.6						
		eF	3	49							

NO	Date	Type	Long 135°E Time			Period s	Amplitude			Scale	Remarks
			h	m	s		AE	AN	A		
42	June 30 (改造式)	eP	3	17	11.0	3.7	±470		1500	289.6	
		S	"	00	50.0						
		M1E	"	10	06.0						
		C	"	24	36.5						
		eF	3	38							
43	July 10	P	16	46	33.2	3.0	±1202		353.2		
		P̄	"	"	4.57						
		S	"	47	20.8						
		M1N	"	"	52.4						
		M1E	"	48	15.1						
		M2E	"	49	02.8						
		M2N	"	"	08.8						
		M3N	"	50	12.4						
		M3E	"	51	19.4						
		C	"	53	51.0						
		eF	17	23							
"	"	P	16	46	37.6	3.0	±1000		331.7		
		S	"	47	22.3						
		C	"	53	18.0						
		eF	17	10							
44	16	P	8	19	08.7	3.0	+200		295.3		
		P̄	"	"	38.0						
		S	"	"	48.5						
		M1E	"	20	20.4						
		C	"	24	32.3						
eF	8	35									
45	21	P	21	48	04.9	3.5	±40		331.0	P tremors reduced about 21 ^h 42 ^m epicenter, near the islands of New guinea.	
		S?	21	49	49.5						
		M1E	21	53	49.5						
		C	21	55	22.0						
"	"	(改造式)	eF	22	07			319.0			

NO	Date	Phase	Long 135°E Time			Period S	Amplitude			Δ km	Remarks
			h	m	s		AE μ	AN μ	Az μ		
45	July 21 (改造式)	P	21	48	06.0				319.5		
		S	"	"	49.0						
		eF	22	05	44.5	35					
46	25	iP	17	25	46.9				393.3	Gulf of Wakasa.	
		S	"	26	39.9						
		MIN	"	27	17.0	3.4		-467			
		MIE	"	"	22.0	3.4		-757			
		MZE	"	28	33.7	3.3		-500			
		M4E	"	30	52.8	2.9		+130			
		C	"	31	24.0						
		eF	17	49							
"	"	P	17	25	47.5				373.4		
		S	"	26	38.5						
		(改造式) MIE	"	27	45.5	4.5		+271			
		MZE	"	29	46.0	4.0		+300			
		C	"	33	21.0						
		eF	17	47							
47	27	P	9	33	04.4				389.5		
		S	"	"	56.9						
		C	"	37	13.5						
		eF	9	44							
48	28	eP	6	27	53.0						
		eF	6	57							
49	28	eP	12	44	05.1				266.4		
		eS	"	"	45.0						
		C	"	48	06.0						
		eF	12	57							

NO	Date	Phase	Long 135°E			Period	Amplitude			Δ	Remarks		
			h	m	s		AE	AN	Az				
									km				
50	July 29	iP	7	06	57.9	3.0	±33				Local shock Near Miyota city. & faint record.		
		MN	"	08	07.9								
		C	"	09	33.0								
		eF	7	20									
51	30	P	1	36	54.5				296.8				
		eS	"	37	31.5								
		C	"	39	28.0								
		eF	1	49									
52	30	P	6	54	52.5				341.3				
		S	"	55	33.5								
		MIE	"	"	53.5							3.5	*240
		MIN	"	"	58.0							3.5	±163
		C	"	57	59.0								
eF	7	08											
53	August 4	P	3	58	58.4				260.4		Near Wajima, Noto Prefecture		
		eS	"	59	33.5								
		C	4	02	68.0								
		eF	4	08									
54	4	P	8	50	01.0				427.4				
		S	"	"	58.6								
		C	"	53	10.3								
		eF	8	58									
55	4	eP	15	42	21.1				218.9				
		eS	"	"	50.6								
		C	"	48	17.0								
		eF	15	53									
56	7	P	7	46	14.2				232.2				
		S	"	"	45.5								
		ME	"	"	58.6								
		C	"	49	51.0								
		eF	7	55									

NO	Date	Code	Long 135°E Time			Period s	Amplitude			Δ km	Remarks
			h	m	s		AE	AN	Az		
57	August 8	eP	13	25	19.0				222.6		
		eN	"	"	49.0						
		C	"	26	47.0						
		eF	13	32							
58	12	eP	12	31	24.5						
		C	"	35	06.0						
		eF	12	50							
59	14	eP	7	30	52.8				267.8		
		S	"	31	28.9						
		C	"	32	46.0						
		eF	7	38							
60	14	P	13	46	49.1				367.3		
		S	"	47	38.6						
		ME1	"	"	53.1	3.6	+173				
		MN1	"	48	29.1	3.5	+127				
		ME2	"	49	27.1	3.5	±207				
		MN2	"	50	15.0	3.3	+140				
		C	"	59	08.6						
		eF	14	25							
"	" (改造式)	eP	13	46	49.1				361.4		
		eS	"	47	37.8						
		C	"	57	43.5						
		eF	14	19							
61	14	eP	21	58	54.2				162.5		
		eS	"	59	16.1						
		C	22	01	28.0						
		eF	22	09							
"	" (改造式)	eP	21	58	57.5						
		eF	22	10							
62	20	iP	18	40	21.5				66.8	Local shock Near Takata city	
		S	"	"	30.5						
		MN	"	41	35.5	4.0	±300				
		ME	"	"	40.6	3.5	+250				
		MZ	"	43	28.6	3.5	±470				
		C	"	45	30.0						
		eF	18	58							

NO	Date	Phase	Long 135°E Time			Period s	Amplitude			Δ km	Remarks
			h	m	s		AE	AN	Az		
63	August 22	P	20	16	08.0				286.8		
		PR ₁	"	"	43.5						
		PR ₂	"	18	03.7						
		S	"	19	36.0						
		SR	"	20	21.1						
		L	"	21	36.4						
		C	"	27	58.0						
		eF	20	49							
64	28	P	17	36	31.1			118.0	W off the mouth of Mogami river, Yamagata Prefec- ture.		
		S	"	"	47.0						
		C	"	37	35.0						
		eF	17	42							
65	Sept 2	P	11	42	59.9			67.5			
		S	"	43	09.0						
		C	"	44	29.0						
		eF	11	47							
66	2	eP	22	00	20.0			389.5			
		S	"	01	12.5						
		C	"	04	17.0						
		eF	22	13							
67	3	eP	9	58	02.0						
		C	10	"	04.9						
		eF	10	08							
68	3	P	21	00	04.1			398.5			
		P	"	"	33.4						
		S	"	"	57.8						
		M/E	"	01	41.5	3.5	-21000				
		M/N	"	"	"	3.5	+15670				
		C	"	11	14.0						
		F	-	-	-						
"	"	P	21	0.0	04.4			382.9			
		(改造式) S	"	"	56.0						
		M/E	"	01	40.0	3.5	±1900				
		M/N	不	明							

NO	Date	Phase	Long 135°E Time			Period	Amplitude			Δ km	Remarks
			AE	At	Az						
68	3 (今村式)	C	21 ^h	10 ^m	00 ^s					385.8	
		F	21	29							
		P	21	00	04.0						
		P̄	"	"	33.0						
		S	"	"	56.0						
		M1E	"	01	41.5	4.0	±4000				
		M1N	"	"	"	"	+3800				
		M2E	"	02	41.0	4.5	+4700				
		M2N	"	"	"	3.7	+3700				
		C	"	08	01						
		F	-	-	-						
		Pz	21	00	04.0						
		Cz	"	03	30						
Fz	21	09									
69	4	P	10	03	42.1						
		C	"	06	08.3						
		F	10	10							
70	4	P	21	30	10.7				472.7		
		P̄	"	"	47.9						
		S	"	31	17.1						
		M1E	"	32	33.3	3.4	±133				
		C	"	34	07.7						
		F	21	39							
71	5	P	11	43	31.1				456.3		
		P̄	"	44	04.6						
		S	"	"	32.6						
		C	"	47	11						
		F	11	51							
72	5	P	12	09	24.2				623.3		
		P̄	"	10	19.9						
		S	"	"	48.2						
		M1E	"	"	55.7	3.1	-360				
		M1N	"	"	59.0	"	-600				
		M2E	"	11	59.7	3.2	-600				
		M2N	"	12	10.3	"	±527				
		C	"	16	12.4						
		F	12	26							

NO	Date	Phase	Long 135°E Time			Period s	Amplitude			Δ km	Remarks
			h	m	s		AE μ	AN μ	Az μ		
72	5 (改造式)	P	12	09	26.5	4.0	±322		601.0		
		P	"	"	56.0						
		S	"	10	47.5						
		Me	"	11	55.0						
		eF	"	15	02.5						
		eF	12	26							
73	"	iP	21	08	19.6						Local shock Near Teradomari Weak shocks were felt at Teradomari.
		C	"	09	00.7						
		eF	21	11							
74	"	P	21	57	47.9				125.8		
		S	"	58	05.0						
		C	22	01	07.4						
		eF	22	05							
75	8	eP	3	23	04.0				181.8		
		eS	"	"	28.5						
		C	"	25	54.5						
		eF	3	30							
76	9	eP	22	47	07.5						
		eF	23	12							
77	19	P	3	19	22.6				175.9		
		S	"	"	46.3						
		C	"	21	12.1						
		eF	3	27							
78	23	P	23	23	54.6				593.6	N, sea off Japan Sea.	
		P	"	24	29.6						
		S	"	25	14.6						
		Me	"	26	39.6	5.5	+1357				
		MN	"	"	49.6	5.3	±1476				
		C	"	30	27.1						
		eF	23	48							

No	Date	Type	Long 135° E			Periods	Amplitude			Δ	Remarks
			h	m	s		AE	AN	AZ		
	Sept					S	μ	μ	μ	km	
78	23 (今村式)	P	23	23	54.6					593.6	
		P̄	"	24	29.1						
		S	"	25	14.6						
		MN	"	"	59.6	5.0		-2600			
		ME	"	26	47.6	6.0	+2100				
		C	"	30	02.6						
		eF	23	45							
		Pz	23	23	54.6						
		Cz	"	27	21.6						
		eFz	23	33							
79	27	eP	4	33	21.7					1369.5	
		PR ₁	"	34	47.8						
		PR ₂	"	36	51.9						
		PR ₃	"	39	33.7						
		S	"	44	38.8						
		SR ₁	"	49	34.1						
		L	5	06	25.7						
		eC	"	24	23.4						
		eF	5	51							
		80	30	eP	2	50	19.4				
ePR ₁	"			51	53.3						
ePR ₂	"			52	54.0						
eS	"			56	07.8						
eSR ₁	"			57	48.5						
eL	3			0	25.3						
C	"			27	0.5						
eF	4			19							
81	Oct 2	eP	0	11	06.7					427.4	
		S	"	12	04.3						
		C	"	14	17.0						
		eF	0	23							
82	" (改造式)	eP	0	11	08.5					426.6	
		eS	"	12	06.0						
		eF	0	23							

NO	Date	Phase	Long 135° E Time			Period	Long. Amplitude			Δ	Remarks		
			h	m	s		AE	AN	Az				
82	Oct 2	P	23	36	58.5	5	μ	μ	μ	km			
		C	"	38	42.7								
		eF	23	43									
83	10	eP	18	03	40.0	3.4	±168						
		Min	"	04	31.7								
		M2E	"	05	38.1							3.0	±182
		C	"	07	01.8								
		eF	18	13									
84	14	eP	14	36	43.7				170.7				
		eS	"	37	06.7								
		eC	"	40	43.0								
		eF	14	43									
85	16	P	9	10	39.3	3.2	±77		2300				
		S	"	11	10.3								
		Min	"	12	15.8							3.5	+150
		M1E	"	"	17.8								
		C	"	15	55.4								
		eF	9	26									
85	" (改造式)	eP	9	10	42.5				1966				
		S	"	11	09.0								
		C	"	14	08.								
		eF	9	20									
86	17	eP	11	03	03.8				763.5	Local shock Near Niigata city, very faint record.			
		C	"	06	41.3								
		eF	11	13									
87	26	eP	2	04	29.3	3.2	±373		782.8				
		eS	"	06	12.2								
		M1E	"	"	55.2							3.1	±183
		M3N	"	08	30.5								
		C	"	11	35.6								
		eF	2	19									
87	" (改造式)	eP	2	04	31.6				782.8				
		S	"	06	17.1								
		C	"	11	18.1								
		eF	2	15									

NO	Date	Phase	Long 135°E Time			Period s	Amplitude			Δ km	Remarks
			h	m	s		A _E μ	A _N μ	A _Z μ		
58	30	eP	10	02	35.2						
		C	"	04	06.0						
		eF	10	10							
89	31	P	5	55	10.0				2704		
		S	"	"	49.4						
		C	"	57	44.0						
		eF	6	15							
90	Nov 4	eP	4	47	46.7						
		C	"	54	25.0						
		eF	5	09							
91	6	eP	21	53	17.1				1744	local shock	
		S	"	"	40.6					Near Niigata	
		C	"	56	07.1					city. perceptible	
		eF	22	01						NW Sea of Niigata.	
92	10	eP	19	59	03.0				2931		
		eS	"	"	42.5						
		C	20	03	21.7						
		eF	20	10							
93	13	P	13	48	34.1				3369		
		S	"	49	19.5						
		MERN	"	極大							
		C	"	56	29.5						
		eF	14	20							
		"	"	"	"	"					
"	(改造式)	P	13	48	33.0				2894		
		S	"	49	12.0						
		MN1	"	"	39.8	5.0		+2000			
		ME1	"	"	49.0	"		-2276			
		ME2	"	50	45.0	"		+3114			
		MN2	"	"	47.5	4.9		+3400			
		C	"	57	10.0						
		eF	14	14							

NO	Date	Phase	Long 135°E Time			Period s	Amplitude			Δ km	Remarks
			h	m	s		AE	AN	AZ		
93	13 (今村式)	P	13	48	33.0					290.1 N off Japan Sea.	
		S	"	49	12.1						
		MN	"	50	42.0	5.8		+2250			
		ME	"	"	44.3	6.0		+2250			
		C	"	57	10.1						
		eF	14	11							
		(E F 動)	P	13	48	32.6					
		C	"	50	49.1						
		eF	13	56							
		94	23	eP	17	58	26.2				
C	18			00	40.0						
eF	18			08							
95	26 (改造式)	iP	13	25	21.3					589.9	
		P	"	"	44.3						
		S	"	26	40.8						
		MN1	"	"	47.8	5.3		-2000			
		MN2	"	27	38.3	"		-2571			
		ME2	"	28	02.8	5.2		-1714			
		MN3	"	"	33.3	5.0		-3886			
		ME3	"	29	02.8	"		-1856			
		C	"	33	19.3						
		eF	13	43							
"	26 (今村式)	P	13	25	22.0					585.2	
		P	"	"	45.0						
		S	"	26	41.0						
		ME	"	28	04.0	6.5		-3000			
		MN	"	"	38.0	5.5		+3300			
		C	"	33	42.5						
		eF	13	41							
96	27	eP	12	41	02.0						
		eF	12	41							

NO	Date	Phase	Long 135°E Time			Period s	Amplitude			Δ km	Remarks
			h	m	s		AE	AN	AZ		
97	2	eP	2	41	31.7 [?]					224.8	
		eS	"	42	02.0						
		MIE	"	"	12.1	3.5	±572				
		MIN	"	"	14.7	2.6	-247				
		MZE	"	43	24.4	3.5	±418				
		C	"	47	59.1						
		eF	2	54							
"	" (改造式)	P	2	41	36.1					252.3	
		S	"	42	10.1						
		MN	"	"	34.6	4.0	±207				
		C	"	45	37.6						
		eF	2	51							
98	4	eF	17	19	00.6 [?]					293.3	
		eS	"	"	41.0						
		ME1	"	20	32.5	3.0	±120				
		MN1	"	"	43.8	3.3	-107				
		ME2	"	21	34.0	3.3	-230				
		C	"	23	58.0						
		eF	17	38							
"	" (改造式)	P	17	19	02.0					306.5	
		S	"	"	42.5						
		C	"	25	36.0						
		eF	17	39							
99	5	eP	7	42	29.3					265.6	
		S	"	43	05.1						
		MIE	"	44	14.2	3.3	±167				
		C	"	46	35.0						
		eF	7	56							
100	5	eP	9	21	32.0					166.2	
		S	"	"	54.4						
		C	"	24	02.0						
		eF	9	32							

NO	Date	Phase	Long 135°E Time			Period s	Amplitude			Δ km	Remarks
			h	m	s		AE	HN	Az		
101	Dec 17	eP	23	04	29.0	3.0	-57		207.8		
		eS	"	"	57.0						
		ME	"	05	36.4						
		C	"	06	54.3						
		eF	23	11							
102	20	eP	21	35	14.5						
		C	"	39	12.3						
		eF	21	42							
103	25	P	11	11	51.8				4388		
		PR ₁	"	13	10.8						
		S	"	16	26.8						
		L	"	21	12.7						
		C	"	41	37.0						
		eF	12	14							
"	"	eP	11	11	52.0			4409			
(改造式)	PR	"	13	25.0							
L	"	21	16.0								
C	"	44	53.0								
eF	12	16									
104	26	eP	15	09	26.0	3.0	±137		126.1		
		S	"	"	43.0						
		ME	"	"	57.5						
		C	"	11	52.9						
		eF	15	23							
105	27	eP	6	18	52.0						
		eF	6	43							
106	27	eP	7	34	46.5	2.9	±250		1273.3		
		S	"	37	38.1						
		ME	"	38	15.3						
		C	"	42	47.4						
		eF	8	01							

昭和八年三月二十日印刷
昭和八年三月三十日發行 (非賣品)

發行所 新潟縣新潟測候所
新 潟 市 西 船 見 町
電 話 一 〇 五 番

發行兼者 新潟縣新潟測候所長
新 潟 市 西 船 見 町 官 舎