

Seismological Bulletin of Syowa Station, Antarctica
1959 - 1962 and 1966 - 1967

Compiled by

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The seismological observation at Syowa Station was started in 1959 by the 3rd party of Japanese Antarctic Research Expedition using a HES seismograph of Z component. In 1961, added with HES seismographs of two horizontal components, the seismological observation at Syowa Station was made by a three-component seismograph.

Since 1966, the observations have been continued by JARE, using HES seismographs of three components.

In this bulletin the data of the respective seismic events interpreted on the vertical component seismograms are listed in chronological order.

1. Date.
2. Identified phase name with its sharpness indication (e or i) and ground motion direction (+: UP, -: Down). If a phase was identified by horizontal components, the phase is denoted with E (detected by E - W component) or N (detected by N - S component).
3. Arrival time in G. M. T.
4. Period of the phase in seconds.
5. Amplitude in millimeters.

The instrumental constants and magnification curve of HES seismographs are shown in Table 1 and Fig. 1. The seismographs are usually operated with the attenuation factor $\mu=1/5$ in the summer season and $\mu=1/2$ in the winter season.

Table 1. Instrumental constants of HES seismographs.

Component	Z	N - S	E - W
T_1 (s)	1.0	1.0	1.0
S_1 (A/mm)	2.80×10^{-5}	2.03×10^{-5}	2.03×10^{-5}
R_1 (Ω)	940	920	930
Ω_1 (Ω)	820	1160	920
h_1	1.0	1.0	1.0
1966 - 1967			
T_2 (s)	1.06	1.04	1.04
S_2 (A/mm)	1.47×10^{-9}	1.20×10^{-9}	1.34×10^{-9}
R_2 (Ω)	600	650	630
Ω_2 (Ω)	1200	1200	1200
h_2	1.0	1.0	1.0

T_1 : Period of the pendulum.

T_2 : Period of the galvanometer.

S_1 : Sensitivity of the transducer.

S_2 : Sensitivity of the galvanometer.

R_1 : Resistance of the pendulum coil.

R_2 : Resistance of the galvanometer coil.

Ω_1 : External damping resistance of the transducer.

Ω_2 : External damping resistance of the galvanometer.

h_1 : Damping constant of the pendulum.

h_2 : Damping constant of the galvanometer.

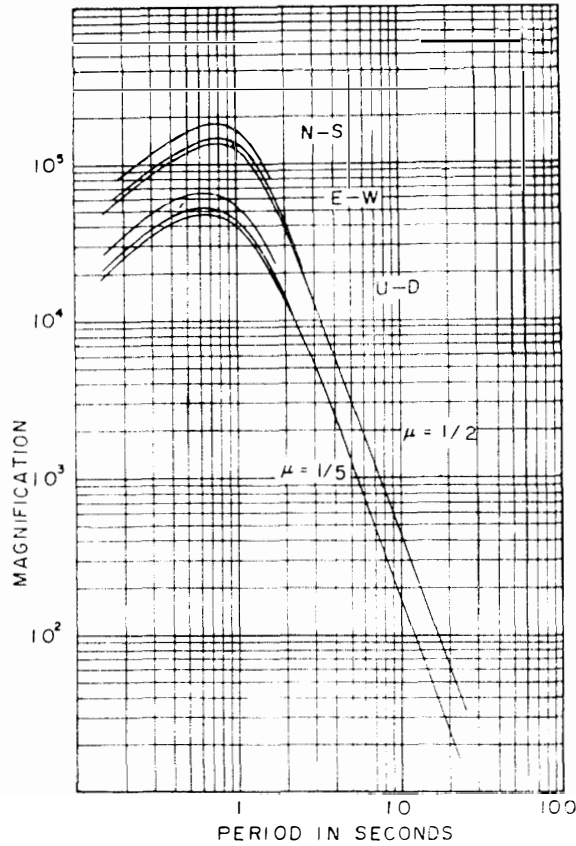


Fig. 1. Magnification curve of HES seismographs.

1959

HES seismograph of Z component was set in February and was been operated by Dr. S. MURAUCHI, a member of the 3rd Japanese Antarctic Research Expedition. The seismograph was observed with $\mu=1/5$ from February 13 to July 21 and with $\mu=1/2$ from July 22 to December 26.

Seismograms were read also by Dr. S. MURAUCHI.

February 1959

Date	Phase	Arrival time			Period s	Amplitude mm		
		h	m	s				
13	-iP	19	16	14.4	1.0	1.2		
14	+iP	04	18	21.9	1.5	1.9		
16	-iP	11	05	48.5	0.7	0.8		
	iS			51.7				
18	-iP	18	47	18.0	1.7	2.2		
	+iP			06.1				
19	eP	05	25	34.5	1.2	1.5		
	eP			06			27	35.5
	ePP						28	05.8
20	eS	03	41	55.7	0.9	1.1		
	eP			06			41	31.7
	eP			06			50	21.7
23	eS	06	53	50	1.5	1.8		
						0.9	1.1	
23	-iP	16	24	25.7	1.3	1.6		
	-iP	19	15	06.9	0.6	0.7		
25	eP	20	20	42.8	1.4	1.7		
	-iP	23	50	07.2	1.7	2.2		
27	+iP	05	33	09.2	1.3	1.7		
28	eP	11	52	25.8	1.5	1.9		
	eP	15	47	39.3	1.7	2.2		

March 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
01	-iP	01	20	57.3	1.5	1.8
02	eP	09	26	05.0	1.1	1.3
04	+iP	19	50	57.0	1.1	1.4
	eP	21	54	43.5	1.0	1.2
05	-iP	00	44	56.2	0.9	1.1
	iX		45	11.0		
06	eP	23	07	57.1	1.7	2.1
	-iP	03	46	03.1	0.3	0.5
	iS			15.1		
	iX		49	55.5	0.6	0.7
	eP	04	07	44.4		
15	eP	12	11	46.1	0.8	1.0
	iS			51.7		
	iX		14	46.8		
21	+iP	04	49	17.9	1.2	1.5
23	eP	07	30	09.6	2.1	2.7
26	eP	03	07	20.5	1.8	2.2
27	+iP	19	58	46.7	1.0	1.2
	iS	20	00	51.9		
	iX		08	14.9		

April 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
07	eP	15	33	50	1.2	1.6
	iX		36	35.8	1.4	1.7
08	-iP	08	14	33.8	1.3	1.6
	esP			50.1		
10	eP	06	15	05.0	2.5	3.0
	eS		27	54.9		
11	eP	11	41	51.3	1.0	1.2
	eS		42	02		
15	-iP	19	32	09.3	1.4	1.8
	iX			22.8		
22	-iP	20	38	03.7	1.4	1.8
27	-iP	10	00	39.5	1.9	2.5
	eP	14	00	08.7	1.1	1.4
30	-iP	14	02	01.5	1.2	1.5
	iX			44.9		
	iX		08	23.2		

May 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
07	+iP	20	34	55.0	1.0	1.2
11	iP	16	48	35.3	1.1	1.4
	iS			51.5		
12	ePKP	10	25	22.0	0.9	1.1
14	eP	12	01	51.4	1.0	1.3
	eP			57.9		
19	eP	15	47	12.6	1.5	1.5
21	eP	14	08	28.8	1.9	2.4
22	+iP	07	07	46.5	1.0	1.2
	iS			01.9		
	eP			15.2		
	eP	16	33	15.2	1.3	1.7

June 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
01	+iP	05	44	11.7	0.8	1.0
	eP	09	14	59.3		
	iP	09	15	00.0	0.7	0.8
	iX		16	05		
	eP	12	44	57.0	1.4	1.7
	iP	12	44	57.8		
iX	46	30				
02	eP	03	35	35.6	1.2	1.5
	-iP	03	35	37.2		
	-iP	03	44	18.3	1.4	1.8
	-iP	04	04	29.7	1.0	1.2
	-iP	05	52	11.9	1.6	2.0
06	eP	18	16	02.3	1.1	1.4
16	eP	17	04	43.8	1.0	1.3
	eP	19	03	49.6	1.2	1.5
26	eP	15	01	30	0.7	0.9
27	eP	03	47	17.8	1.4	1.8
29	eP	13	15	13	0.7	0.9

July 1959

Date	Phase	Arrival time			Period s	Amplitude mm	
		h	m	s			
01	eP	10	44	05.3	0.9	1.1	
	iS			29.4			
03	+iP	18	38	03.5	1.8	2.3	
	iS			45.0			
04	iP	05	06	33.4	1.0	1.3	
	eS			08.9			
05	eP	23	38	03.5	0.8	1.0	
	iS						39
06	+iP	08	50	23.4	1.0	1.3	
07	eP	11	46	32.5	0.8	1.0	
	-iP	12	16	58.5	0.6	0.8	
	eS		24	21.0			
	eP	16	47	27.6	1.7	2.1	
	eS			55			35.5
09	+iP	16	17	07.9	1.8	2.2	
11	eP	05	04	09.9	1.1	1.4	
12	-iP	00	06	28.6	1.6	2.0	
	iX		07	57.2			
13	eP	12	48	40.7	1.1	1.4	
	iX		52	50.5			
14	eP	13	13	09.9	1.3	1.6	
18	eP	19	38	38.6	1.4	1.8	
19	eP	03	23	15.3	1.2	1.5	
	eP	12	15	10.6	0.6	0.7	
	+iP	15	18	15.1	0.8	1.0	
20	eP	02	20	10.9	0.6	0.7	
	iX		21	31.9			
	+iP	02	52	15.1	1.3	1.6	
21	eP	01	39	25	1.0	1.2	
	iP		07	56			10.1
22	+iP	19	42	44.3	0.9	1.1	
23	-iP	15	09	06.6	2.0	2.7	
24	-iP	01	43	04.6	1.1	1.4	
	-iP		23	14			28.7
	iX			19			27.3
28	-iP	11	00	46.7	0.9	1.1	
30	-iP	13	05	49.4	0.9	1.2	
	iX		14	24.6			
31	+iP	02	03	52.0	0.9	1.1	

August 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
01	+iP	10	12	27.3	1.2	1.5
	iX		13	02.5		
	+iP	12	48	34.0	1.0	1.3
	iS			36.9		
	+iP	18	08	20.1	0.4	0.5
eP	18	38	10.6	1.3	1.6	
iX		40	07.5			
02	-iP	02	56	19.5	0.6	0.8
	eP	18	33	07.1	0.7	0.9
	iX		35	01.6		
	eP	20	21	28.7	1.1	1.4
	iX		29	02.5		
	eP	21	34	36.5	1.3	1.6
03	eP	00	33	43.8	0.8	1.0
04	-iP	03	11	02.0	1.4	1.8
	-iP	08	14	00.6	1.4	1.7
	+ipP		16	05.9		
	eP	08	23	31.7	0.8	1.0
	iX			43.6		
	-iP	15	54	57.8	0.9	1.1
	iX	16	01	48.4		
	-iP	21	24	18.6	0.9	1.1
iX		33	02.5			
05	eP	10	55	32.1	1.0	1.3
	+iP	14	02	00.9	0.6	0.8
	eP	23	03	53.0	0.8	1.0
08	eP	16	23	09.0	0.8	1.0
	eP	21	11	13.3		
09	eP	00	09	14.2	1.3	1.6
	-iP	02	48	23.0	1.4	1.7
10	-iP	00	45	24.6	2.1	2.6
	eP	02	45	18.5	1.3	1.6
	eP	16	13	36.2	0.9	1.2
11	eP	19	02	30.5	0.8	1.0
	iX			33.4		
	-iP	21	32	47.0	1.3	1.6
12	-iP	01	32	34.0	1.0	1.2
	+eP	04	14	51.5	2.7	3.3

August 1959

Date	Phase	Arrival time			Period s	Amplitude m m		
		h	m	s				
13	eP	00	25	26.0	0.7	0.9		
	iX			29.0				
	-iP	03	08	48.1				
	iS			51.7				
	iX			42.4				
eP	23	13	47.7	0.7	0.8			
14	-iP	01	11	32.2	0.9	1.2		
	-iP	04	51	01.8	1.0	1.2		
	eP	12	29	24.8	0.9	1.2		
15	eP	03	35	53.7	1.2	1.5		
	-iP	13	27	09.3	0.6	1.5		
17	eP	18	03	59	1.3	3.5		
19	eP	01	35	37.5	1.0	2.7		
	eP	04	24	02.5	1.7	4.5		
	eP	17	25	15.2	1.1	2.8		
20	eP	12	27	20.0	1.7	4.4		
24	+iP	07	04	27.9	1.0	2.5		
	eP	11	52	51.3	1.5	4.0		
	eP	15	54	46.8	2.2	6.0		
	-iP	12	49	06.0	1.1	3.0		
25	eP	06	20	04.2	0.9	2.5		
	-iP	12	35	48.5	1.4	3.7		
	-iP	13	53	20.1	1.5	4.0		
	iX			33.3				
	eP	18	03	10.8	1.1	3.0		
27	-iP	08	03	01.7	1.2	3.3		
	eS			51.0				
	iX	06	29.3					
	eP	13	46	47.0			1.2	3.2
	eP	19	14	02.9				
iX	41.3			0.8	2.0			
28	+iP	16	04	56.5	1.7	4.5		
	eS			16			57.1	
30	-iP	21	52	33.8	0.9	2.5		
	ePP			54			04.1	
	iX			57			05.6	
31	-iP	17	33	15.8	0.8	2.0		

September 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
01	eP	01	04	54.2	1.0	2.5
02	eP	08	01	52.9	0.7	2.0
03	- iP eS	16	08 11	51.3 51.6	1.1	3.0
04	eP	09	35	43.3	1.5	4.0
	eP	12	41	52.5	1.7	4.5
	+ iP	18	38	52.2	0.9	2.3
	- iP	23	32	31.5	0.9	2.5
05	- iP	07	08	19.2		
	iX		09	11.4		
	iX			58.2	2.3	6.0
	eP	15	47	51.4	1.7	4.5
06	+ iP	23	17	00.5	1.3	3.3
	iX		19	07.3		
07	- iP	00	41	21.4	1.0	2.5
	- iP iX	19	06 07	48.1 02.9	0.8	2.0
08	eP	03	57	45.2	1.4	3.7
	eP	19	18	57.5	1.4	3.7
09	- iP	13	16	14.4	1.5	4.0
	iX		19	12.3		
	+ iP	19	27	15.0	1.5	4.0
	iX		30	18.0		
10	eP	20	24	36.9	1.7	4.5
	- iP	02	10	02.2	0.8	2.0
	eP	02	00	05.2	1.3	3.5
11	eP	16	32	07.6		
	eS		33	07	0.6	1.6
	- iP	05	48	19.0	1.4	3.8
12	eP	10	47	37.9	1.5	4.0
	iX			46.6		
	eP	09	28	12.1	0.7	1.8
13	+ iP	01	52	47.7	0.8	2.2
	iX	02	07	04.1		
14	eP	22	53	42.8	2.0	5.0
	eP	20	07	33.8	1.2	3.2
	iX		08	12.1		
15	eP	04	24	53.8		
	iX		25	11.0	1.2	3.0
	eP	19	48	03.5	1.4	3.6

September 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
17	eP	03	51	30.4	1.2	3.0
	eP	05	40	29.7	0.9	2.5
	-iP	07	22	29.1	1.1	3.0
	-iP	08	51	16.2	1.1	3.0
	eP	11	49	49.8	0.8	2.0
	eP	15	03	49.2	1.5	4.0
	eP	15	20	19.2	1.4	3.7
	iX			27.3		
	eP	17	25	25.8	1.1	3.0
18	eP	03	16	35.7	0.8	2.0
	iX		17	20.0		
	+iP	09	36	52.2	0.8	2.2
	eP	10	55	01.8	0.9	2.5
	-iP	20	18	34.5	0.8	2.2
19	eP	03	26	29.4	0.8	2.0
	eP	10	20	53.1	1.1	3.0
	eP	18	59	21.4	0.7	1.8
20	+iP	23	29	08.3	0.8	2.2
	iS			34.1		
21	eP	02	21	20.0	1.4	3.5
	+iP	13	21	32.9	1.2	3.2
24	eP	19	56	30.1	1.0	2.5
25	-iP	00	26	21.1	1.5	4.0
	eP	01	43	12.3	0.9	2.4
	eP	13	13	03.4	0.8	2.0
26	eP	05	25	07.5	1.0	2.5
	eP	08	40	47.0	1.3	3.5
	iX		41	12.8		
	+iP	10	29	54.5	1.1	3.0
	iX		30	24.8		
27	-iP	10	32	54.8	1.0	2.5
	iX		43	06.8		
29	+iP	13	08	16.7	1.1	2.8
	iX		09	18.2		
	eP	14	43	06.3	1.3	3.5
30	-iP	17	19	56.3	1.3	3.8
	eP	05	08	45.8	1.4	3.6
	iX		15	53.3		
	eP	15	05	31.2	1.3	3.5
	eP	16	42	30.0	1.0	2.6
	-iP	20	38	41.4	1.4	3.8

October 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
01	+eP	17	13	28.0	0.8	2.2
03	eP	21	53	26.8	1.4	3.8
	iP	23	26	23.8	0.9	2.5
	eP	23	33	44.8	0.9	2.5
04	eP	13	23	19.9	0.7	1.8
07	eP	03	39	41.0	1.0	2.5
	iX			43.3		
	eP	07	18	26.6	0.9	2.4
08	eP	10	32	30.5	1.1	3.0
	iP	00	16	07.1	1.8	4.8
	eP	17	01	24.6	0.8	2.0
09	eP	22	04	56.6	0.6	1.5
	iP	22	22	05.2	0.6	1.5
	eP	02	00	41.0	0.6	1.5
iX		02	18.5			
11	eP	10	09	18.5	0.7	1.8
	eP	18	03	36.9	1.3	3.4
	eP	20	15	34.7	1.1	3.0
	-iP	03	34	12.0	1.3	3.5
12	+iP	03	55	37.7	1.4	3.8
	eP	13	56	41.7	0.8	2.1
14	+iP	15	22	05.7	0.6	1.5
	iP	15	59	30.3	0.8	2.1
	eP	17	49	48.6	1.1	3.0
	eP	00	01	36.0	0.7	1.8
15	eP	00	41	45.3	0.8	2.0
17	eP	01	31	41.1	1.3	3.5
	-iP	10	44	34.5	1.9	5.0
	eP	15	23	51.6	0.9	2.5

October 1959

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
18	eP	12	29	14.1	0.7	1.8
	+ iP	17	26	05.7	1.2	3.2
19	eP	00	01	17.7	1.1	2.8
	- iP	01	37	25.4	0.7	1.8
	- iP	02	25	17.0	1.7	4.5
	ipP		26	14.0		
	eP	09	27	32.1	1.2	3.2
	+ iP	13	04	16.3	1.0	2.5
	iX		06	26.0		
20	eP	17	52	34.3	0.8	2.2
	eP	19	30	15.8	0.7	1.8
	eP	23	27	08.1	0.6	1.5
	eP	01	04	52.5	0.8	2.0
	eP	03	02	30.9	0.6	1.6
	eP	05	37	44.8	1.0	2.8
	eP	06	28	10.7	1.6	4.2
	eP	10	10	09.1	1.0	2.6
	eP	19	01	11.9	0.8	2.0
	+ iP	21	33	58.2	0.7	1.8
	- iP	21	50	26.6	1.3	3.5
	eP	22	30	12.8	1.5	4.0
	eP	23	41	14.3	1.0	2.5
21	eP	01	48	57.5	0.7	1.8
	eP	03	42	15.6	0.4	1.0
	iS			39.1		
	eP	05	27	00.4	0.8	2.0
	eP	06	13	31.0	0.6	1.6
	eP	09	36	35.9	2.1	5.5
21	eP	22	22	30		
	iX		23	26.2	0.4	1.2

October 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
22	eP	01	12	46.3	0.7	1.8
	eP	04	57	01.4	1.5	4.0
	eP	05	03	45.8	1.1	3.0
	eP	05	27	23.3	0.8	2.0
	eP	10	31	50.4	0.8	2.2
	eP	10	42	29.4	0.8	2.0
	eP	12	38	51.0	0.7	1.8
	eP	23	00	41.8	0.6	1.5
	eP	23	46	41.8	0.7	1.8
23	+iP	03	56	40.3	1.3	3.5
	eP	06	29	39.0	1.3	3.5
	eP	09	28	14.6	1.3	3.4
	eP	12	54	32.9	0.7	1.6
	eP	18	02	44.5	1.3	3.5
24	eP	03	58	34.0	0.7	1.8
	eP iX	23 24	59 00	11.7 48.3		
25	-iP	01	58	46.8	0.6	1.5
	eP	03	37	10.0	1.4	3.6
	eP	05	17	07.3	0.6	1.5
	+iP	18	44	25.0	0.8	2.0
	eP	20	33	27.4	0.7	1.8
26	eP	12	18	41.3	1.1	3.0
27	eP	06	32	12.0	2.1	5.5
	-iP iS	09	53	03.8 31.1	0.8	2.0
	-iP	14	10	05.7	1.0	2.5
28	eP	17	52	06.7	0.2	0.5

October 1959

Date	Phase	Arrival time			Period s	Amplitude mm	
		h	m	s			
29	eP	00	26	59.2	1.1	2.8	
	eP	03	14	40.4	0.8	2.2	
	eP	19	54	12.8	1.1	2.8	
	eP	22	10	42.8	1.2	3.2	
30	eP	02	13	05.2	0.7	1.8	
	eP	04	20	10.9	1.1	3.0	
	eP	06	37	01.0	0.8	2.2	
	eP	11	23	28.8	1.5	4.0	
	eP	11	33	28.8	1.9	5.0	
	iX			42.0			
	iSP			57.3			
	iScP	40	17.7				
	-iP	14	10	57.4	1.5	4.0	
	epP			11			53.9
	ePP			14			18.7
	eP	15	35	35.8	0.5	1.4	
	iX		38	36.4			
+iP	21	49	27.7	1.1	2.8		
31	-iP	03	03	23.9	0.7	1.8	
	eP	07	55	57.0	0.8	2.0	
	+iP	21	24	11.0	0.7	1.8	

November 1959

Date	Phase	Arrival time			Period s	Amplitude mm	
		h	m	s			
01	eP	04	26	40.1	0.6	1.6	
	iX		27	06.2			
	eP	15	15	23.4			
	eP	23	18	38.7	0.7	1.8	
02	eP	07	50	53.2	1.1	3.0	
	eP	08	51	55.7	0.8	2.2	
	-iP	20	16	38.6	1.5	4.0	
	iX			49.1			
	ePP			20			47.3
	iX			28			35.9
-iP	22	05	38.4	1.4	3.8		
03	eP	08	58	48.7	0.7	2.0	
	+iP	09	51	38.0	1.1	2.8	
	iX		10	02.3			
	eP	09	17	31.7	1.0	2.5	
04	eP	01	29	09.3	0.8	2.0	
	-iP	18	34	53.7	1.0	2.6	
iX	36		42.0				
05	eP	05	58	33.6	0.8	2.2	
	eP	11	10	33.9	0.9	2.4	
	eP		59	01.3	1.1	2.8	
	-iP	12	03	11.8	1.6	4.2	
	-iPcP			22.6			
	ePP		06	48.4			
	eP	17	51	17.7	1.8	4.8	
	ePP			55			08.1
eP	22	06	17.5	0.9	2.4		
06	eP	01	20	40.1	1.4	3.8	
	ePP		24	44.6			
	+iP	11	55	41.9	1.1	3.0	
07	eP	22	28	48.9	1.1	3.0	

November 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
08	eP	14	13	46.6		
	+iPKP	14	14	16.6		
	ePP		16	45.7		
	eSKP		17	39.2	2.4	6.2
	eSKSP		26	22.0		
	eP	14	30	10.0		
	eP	14	40	28.6	1.1	3.0
09	eP	18	16	26.2	0.8	2.0
	eP	19	59	39.3	1.0	2.5
10	eP	05	06	52.5	1.0	2.8
	iS			56.1		
12	eP	02	35	47.5	1.1	3.0
	eP	05	09	03.6	1.1	2.8
	eP	07	18	56.6	1.2	3.2
	eP	08	14	01.1	0.8	2.2
	eP	09	49	44.8	1.0	2.5
13	-iP	10	17	45.0	0.8	2.2
	eP	17	05	23.0	1.1	3.0
	eP	18	20	46.4	0.8	2.2
14	-iP	00	05	00.8	1.3	3.5
	eP	04	35	53.8	0.7	2.0
	eP	15	08	25.8	1.2	3.2
	eP	17	09	43.2	0.8	2.0
	eP	21	59	14.1	1.9	5.0
15	eP	04	18	57.3	1.1	3.0
	eP	07	27	22.2	1.7	4.5
	eP	13	30		0.6	1.5
	eP iX	17	23 27	22.8 31.2	2.3	6.0

November 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
16	-iP	01	09	51.9	1.0	2.6
	eP	03	14	33.4	0.8	2.0
	iX		17	26.2		
	eP	08	18	03.1	0.7	2.0
	eP	09	18	21.7	1.0	2.6
	eP	10	33	42.1	2.2	6.0
eP	23	56	55.0	1.0	2.6	
17	eP	01	16	34.9	1.1	3.0
	eP	02	42	46.6	1.0	2.5
18	-iP	20	46	45.0	0.6	1.5
	iX		49	43.5		
19	+iP	05	38	28.8	0.8	2.0
	+iP	11	21	37.5	1.1	3.0
	eS		32	17.4		
eP	22	32	10.5	1.3	3.5	
20	-iP	00	32	33.0	1.1	2.8
	eP	00	13	45.6	0.9	2.5
	eP	15	20	32.1	1.1	2.8
	+iP	15	30	00.0	1.0	2.8
	eP	22	16	46.5	1.1	3.0
21	eP	08	22	33.0	0.6	1.6
22	-iP	02	46	10.5	0.8	2.0
	eP	09	21	08.4	0.9	2.4
	eP	13	00	58.2	1.1	2.8
	eP	16	36	16.5	1.2	3.0
	iX		37	24.0		
	+iP	19	46	19.5	0.8	2.0
iX	48		15.6			
eP	22	55	34.0	1.4	3.8	

November 1959

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
23	eP	16	27		1.5	4.6
	eP	22	07	57.8	1.0	2.6
24	eP	09	36	12.8	2.2	5.8
	eP	21	12	39.8	1.1	2.8
	iX		13	18.2		
26	eP	00	54	39.0	1.1	3.0
	eP	05	56	19.5	1.1	2.8
	- iP	06	06	16.0	1.2	3.0
	+ iP	07	18	04.0	1.4	3.6
	eP	13	19	23.8	1.1	2.8
	+ iP	16	18	43.0	1.2	3.0
	eP	23	21	09.5	1.3	3.4
	iX		24	33.2		
27	- iP	00	03	56.9	1.8	4.6
	eP	03	51	55.4	0.7	2.0
	- iP	05	21	55.0	0.6	1.8
	iX		22	04.3		
28	eP	00	28	13.3	1.1	2.8
	eP	02	58	29.2	1.5	3.8
	eP	06	44	07.3	1.5	3.8
	iX		45	23.2		
	- iP	12	46	10.3	1.5	4.0
	iX			18.4		
- iP	22	52	13.3	1.5	4.0	
iX		53	25.3			

December 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
01	eP	15	07	29.4	1.3	3.5
	iX			36.9		
	+ iP	15	48	47.1	1.0	2.8
	iX			15.6		
02	eP	01	32	30	0.8	2.0
	eP	03	12	12.7	0.7	1.8
	- iP	04	38	11.7	0.8	2.0
	- iP	07	17	01.9	1.0	2.8
	eP	07	42	35.7	1.8	4.8
	iX			46.7		
	- iP	09	47	50.8	1.3	3.5
	iX			59.0		
03	eP	02	01	20.2	1.2	3.2
	eP	03	34	37.5	0.5	1.4
	iP	10	18	30.5	0.7	1.8
	eP	14	20	44.6	1.3	3.4
	eP	18	35	35.9	1.0	2.6
	eP	19	40	54.1	1.5	4.0
05	eP	00	28	46.1	0.8	2.2
	iX			11.6		
	eP	08	33	38.5	0.8	2.2
	eP	08	58	26.2	0.9	2.5
	eP	13	04	11.8	0.7	1.8
	eP	04	37	46.8	1.3	3.4
06	iX	04	38	19.5		
	eP	00	46	30.5	0.8	2.0
07	iX	00	46	59.6		
	eP	08	03	00.0	1.1	3.0
08	iP	04	42	53.5	1.4	3.8
	iPcP			54.8		
	iX	43	01.0			
	eP	20	46	43.7	1.9	5.0

December 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
11	- iP + iPcP	00	44	23.5 31.9	1.5	4.0
	eP ePcP iX	01	51	10.0 22.3 07.0	1.1	3.0
	eP	07	15	36.7	1.1	2.8
	eP + iPcP	10	19 20	49.6 01.6	1.3	3.5
	iP iX	14	56 57	49.6 03.1	0.8	2.0
	eP	20	31	23.1	1.1	2.8
	eP	21	10	04.2	1.2	3.0
	eP	22	09	37.5	0.9	2.5
	eP	23	28	20.7	0.6	1.5
	12	- iP	17	20	32.5	1.2
13	eP	12	33	04.5	1.1	3.0
	eP iS	16	49	10.2 17.1	0.8	2.0
	eP	17	47	16.2	1.5	4.0
	eP	23	18	07.0	1.1	2.8
14	eP	10	24	05.9	1.1	3.0
	eP	12	08	51.5	1.1	2.8
	+ iP + iPP iX	18	11 15 17	32.9 12.8 47.3	0.8	2.0
	- iP iX	22	02 21	25.7 26.0	1.5	3.8
	- iP iX	23	27 36	52.4 09.7	3.2	8.6
	- iP iX	23	27 36	52.4 09.7	3.2	8.6
15	- iP iX	12	21 25	45.1 07.3	1.8	4.8
	+ iP	15	00	12.2	0.9	2.4
	+ iP iX	19	46 49	14.5 19.3	1.6	4.2

December 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
16	- iP	03	50	27.7	0.6	1.6
	eP	11	31	39.1	0.9	2.4
	eP iX	19	27 30	55.9 36.1	1.1	2.8
17	eP	02	39	44.5	0.9	2.5
	- iP	03	08	16.6	0.9	2.5
	eP	06	05	34.6	1.1	3.0
	eP	10	11	37.9	0.5	1.2
	eP iX	12	56	04.0 07.0	0.7	1.8
	+ iP	17	00	19.0	1.6	4.5
18	eP iX	16	44 45	42.1 25.0	1.5	4.0
	eP	20	17	20.0	1.0	2.6
21	eP	06	13	52.1	0.7	2.0
	- iP iX	10	02 12	46.4 48.8	1.1	3.0
	- iP	10	26	28.7	1.4	3.8
	- iP iX	10	31	42.8 52.7	1.6	
	eP iX	22	22	07.2 15.1	1.1	3.0
22	eP iX	01	16	21.7 23.8	0.7	1.8
	eP	02	58	46.6	1.6	4.5
	eP eS	14	25	02.9 11.9	0.6	1.7
	eP	23	01	06.2	0.8	2.2
23	eP	04	09	59.0	1.0	2.6
	eP	04	43	45.0	0.7	2.0
	+ iP	14	11	14.4	2.0	5.6
	- iP	18	14	38.8	0.8	2.0

December 1959

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
24	eP	00	01	36.5	1.3	3.5
	+ iP	07	23	35.4	1.4	3.8
	iX		24	39.9		
	eP	09	26	34.3	1.5	4.2
	iX			38.8		
	eP	13	03	15.4	1.3	3.4
+ iP	15	25	32.5	0.7	1.8	
iX		26	04.9			
25	eP	04	01	08.9	1.3	3.5
	iX		02	25.7		
	- iP	05	19	36.2	0.7	1.8
	iX			57.5		
+ iP	09	30	08.4	1.3	3.5	
iX		57	39.9			
- iP	16	07	04.5	1.1	2.8	
iX		10	56.4			
26	eP	12	17	51.5	0.7	2.0
	iX			54.5		
	eP	16	27	27.2	1.1	2.8
	iX			29.9		
	eP	16	00	19.7	0.5	1.2
iX			29.9			
- iP	17	08	58.1	1.0	2.8	
eP	18	39	12.7	1.1	3.0	
iX		40	25.6			

1960

The seismograph was operated by Dr. T. ISHIDA, a member of the 4th JARE. The seismograph was observed with $\mu=1/5$ from January to May and with $\mu=1/2$ from June to December. Seismograms were read by a member of the National Science Museum.

February 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
5	eP	02	43	18.6	0.7	0.5
	eP	05	53	06.5	1.0	1.5
8	-iP	12	52	40.7	1.5	0.5
	-iP	19	19	38.1	1.0	0.3
9	eP	12	38	52.8	2.0	2.0
10	eP	02	39	30.3	1.0	5.0
	eP	23	33	04.7	2.6	1.5
11	eP	03	49	43.2	1.6	1.8
	eP	13	04	34.0	1.0	2.2
13	eP	15	54	09.6	1.0	1.0
	-iP	20	57	20.5	0.9	0.8
14	+iP	05	31	54.9	1.2	2.0
	eP	13	34	06.9	1.2	1.1
	-iP	15	51	46.8	1.3	2.0
16	eP	00	51	32.2	1.0	0.9
	+iP	02	15	45.1	1.2	1.7
17	eP	11	12	25.5	1.2	1.9
18	-iP	21	24	56.3	0.9	1.5
19	-iP	10	54	54.2	1.2	2.6
21	+iP	00	57	25.2	1.1	5.6
	-iP	09	51	11.2	0.8	1.3
22	-iP	00	59	22.1	1.0	0.6
	-iP	05	32	12.4	1.0	0.8
23	-iP	13	56	38.7	1.4	1.3
24	-iP	08	43	43.9	1.0	1.2
	+iP	21	50	16.7	1.0	9.0
26	+iP	12	09	47.7	0.7	1.6
	+iP	14	24	19.5		0.8
	-iP	15	41	41.5	1.0	1.5

March 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	eP	05	38	43.0	0.7	1.8
2	eP	09	38	51.6	0.5	0.3
3	eP	11	32	09.6	1.1	0.9
8	eP	16	45	58.8		
	eP	17	32	31.5	1.7	2.5
9	-iP	15	06	36.2	0.9	4.5
10	eP	05	11	18.9	0.8	1.2
	eP	13	57	35.7	2.0	2.0
19	eP	17	28	41.4	0.7	1.0
21	eP	20	00	56.0	0.9	8.4
22	-iP	02	39	12.5	1.2	2.0
23	-iP	01	46	53.6	0.8	2.5
27	-iP	02	01	25.1	2.1	2.3
	eP	18	06	34.6	1.7	4.0
	-iP	18	06	34.6	1.7	4.0
29	-iP	12	50	27.7	1.5	3.5
29	+iP	00	22	21.7	1.2	2.1
	+iP	06	43	42.0	1.6	1.2
30	-iP	15	31	56.3	1.2	1.7

April 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
5	- iP	06	23	30.4	1.7	2.1
	+ iP	13	12	00.5	1.7	1.2
6	+ iP	02	17	09.6	1.3	1.1
7	+ iP	13	59	00.5	1.0	2.8
10	+ iP	07	05	11.8	1.3	1.2
15	+ iP	03	38	06.3	1.6	3.0
	- iP	22	18	05.2	2.2	6.4
22	+ iP	15	10	12.1	1.4	1.0
	- iP	20	39	10.3	0.9	1.6
24	+ iP	03	03	26.9	1.1	0.8
28	+ iP	02	16	08.2	1.3	1.7
29	+ iP	02	21	57.4	1.3	1.5
	+ iS		28	19.4	0.8	0.5
	eP	13	46	05.8	1.3	0.9
	- iP	13	50	16.0	0.8	6.5
	eP	14	58	47.1	1.3	1.5
	- iP	19	45	00.5	1.4	3.5
	- iP	20	57	15.0	1.3	5.5
30	eP	04	13	21.8	1.0	3.4

May 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
2	+iP	09	54	11.8	0.8	0.5
	-iP	13	23	00.1	0.6	2.2
3	eP	08	08	13.5	0.9	3.0
	-iP	13	34	54.4	0.6	0.8
5	-iP	11	45	40.6	1.2	1.2
6	-iP	02	20	46.8	1.0	1.2
8	-iP	05	41	26.1	0.9	3.7
9	eP	18	48	50.1		
13	-iP	07	46	34.1	1.1	2.0
	eP	20	58	15.1	1.0	1.4
18	eP	12	56	35.6	1.9	1.2
19	eP	08	22	24.0	1.0	2.9
21	eP	10	34	07.8	3.0	7.5
	eS		42	24.3	1.4	9.0
	eP	11	04	21.8	0.8	3.2
	eP	13	10	28.4	1.9	5.0
22	eP	10	41	12.7	1.4	5.0
	+iS		43	06.1	2.0	8.3
23	-iP	00	14	45.3	1.3	1.9
	-iP	00	39	51.9	1.1	1.5
	+iS		48	36.5	1.5	2.0
	-iP	08	18	42.6	2.0	4.3
	-iP	11	47	51.2	0.7	1.3
24	eP	15	56	42.6	1.5	1.2
25	eP	08	44	20.4	1.5	2.2
26	+iP	12	04	45.7	1.2	1.5
	-iP	19	44	15.2	1.7	1.2
27	+iP	00	45	55.0	1.2	0.8
	+iP	01	09	32.5	0.8	0.9
	+iP	23	16	39.5	1.8	2.0
28	+iP	06	16	09.9	0.9	1.0
	-iP	09	15	42.7	0.9	2.5
	-iP	11	16	04.5	2.0	1.7

May 1960

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
29	-iP	07	49	54.3	2.3	3.0
	-iP	08	44	46.3	1.4	1.5
	+iP	21	33	52.3	0.7	0.6
	-iS		50	04.8	1.3	1.2
30	+iP	07	10	47.4	1.3	0.8
	+iP	08	41	14.8	1.0	1.4
31	+iP	02	50	21.1	1.7	8.0
	-iP	13	24	15.0	1.0	3.0
	-iP	16	29	56.0	1.2	1.3
	+iP	21	11	41.8	0.4	1.0

June 1960

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
1	eP	05	13	20.4	2.4	1.8
	eP	23	34	50.9	1.5	3.6
2	+iP	06	07	37.1	1.6	6.0
	+iP	19	10	54.0	0.6	3.0
	-iS		20	41.9	1.3	1.5
3	-iP	03	34	27.0	1.3	2.5
	eP	13	35	33.6	1.2	2.8
5	+iP	19	42	20.8	1.0	5.4
6	+iP	01	37	43.8	1.3	12.5
	+iP	06	05	18.9	1.0	2.5
	-iP	16	33	40.0	2.0	3.2
7	-iP	11	01	19.1		8.0
	-iP	13	06	14.2	1.1	7.0
	+iS		17	01.2		2.5
	+iP	14	12	09.7	1.3	2.0
8	-iP	19	40	01.1	1.4	2.9
9	-iP	11	36	34.8	0.9	6.0
15	eP	16	55	55.5	0.7	1.6
	eP	09	50	18.7	0.8	4.0
	-iP	23	01	25.0		8.1
	-iP	23	40	46.7	0.9	3.6
	iS		42	09.3		

June 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
16	+ iP	03	11	46.1	0.9	5.2
17	- iP	05	14	31.1	0.9	6.2
	- iP	05	33	38.5	0.7	2.1
	+ iP	17	51	29.8	0.4	2.1
18	- iP	02	44	27.7	1.1	6.9
19	- iP	02	49	55.7	0.9	8.2
21	+ iP	15	11	59.9	0.9	2.9
	- iP	21	39	19.3	0.9	5.1
22	- iP	02	09	18.3	2.5	1.6
	+ iP	02	31	15.2	3.7	4.0
	- iP	06	20	26.7	0.9	4.9
	- iP	09	07	53.3	2.1	1.8
	eP	20	23	41.8	1.0	3.0
23	- iP	12	20	37.3	0.9	3.2
24	+ iP	04	31	16.3	0.9	2.8
25	- iP	02	14	33.0	0.9	2.8
	- iP	14	53	04.8	1.1	3.0
	- iP	15	10	56.2	0.7	1.0
	iP	19	46	35.2		
26	- iP	16	57	12.8	1.2	1.7
27	+ iP	17	02	05.5	0.7	2.4
	+ iP	17	10	27.8	0.9	3.2
	- iP	18	15	21.6	0.7	3.1
28	+ iP	14	18	44.5	0.8	3.8
29	- iP	02	07	09.8	0.9	4.0
	eP	02	27	19.6	0.6	0.8
	eP	09	56	07.5	0.4	1.0
30	+ iP	22	20	38.0	0.9	3.6

July 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
2	eP	14	18	57.2	1.6	3.0
4	eP	03	53	10.8	2.6	6.0
	eP	20	08	32.9	1.0	2.2
5	eP	05	55	47.3	1.2	4.1
	eP	08	16	52.0	0.7	0.9
	-iP	21	45	52.0	0.3	2.3
	iX		48	47.7	0.6	3.8
6	eP	15	16	15.4	1.0	3.1
	eP	19	38	02.0	0.2	1.0
7	-iP	14	57	10.8	0.7	2.0
	-iP	18	36	13.1	0.6	1.2
10	eP	09	19	13.7	0.9	1.4
11	eP	08	13	26.8	1.2	4.9
	eP	12	08	21.1	1.2	7.1
13	eP	07	45	21.3	1.4	2.1
15	+iP	05	11	51.2	0.6	3.8
20	eP	10	23	31.8	1.0	3.0
22	eP	17	15	49.9	0.5	2.0
23	-iP	03	15	49.4	0.6	1.0
	+iP	07	43	17.1	0.5	5.8
25	+iP	13	31	34.3	0.9	3.8
26	+iP	17	19	28.9	0.9	2.0
27	+iP	10	14	41.6	0.9	7.0
29	-iP	00	36	45.2	1.2	20.2
	+iP	16	23	39.7	0.6	2.0
	+iP	15	59	01.3	0.8	1.9
	-iP	18	50	49.6	0.9	3.0
31	-iP	03	08	53.4	0.6	4.6
	eP	03	45	36.3	0.7	4.0

August 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
2	eP	22	21	57.0	0.6	2.1
	eP	23	50	20.2	0.3	0.9
3	eP	00	20	56.3	0.6	1.9
	eP	01	20	43.1	0.9	1.7
4	-iP	07	54	37.8	1.5	2.8
5	-iP	05	39	31.4	1.2	3.1
6	eP	14	59	45.1	1.1	2.2
9	-iP	07	59	13.4	1.0	2.0
	-iP	16	58	48.8	0.9	2.0
10	eP	12	36	25.8	0.3	1.0
11	-iP	03	06	00.6	0.4	1.1
	-iP	05	03	58.7		12.0
13	eP	14	54	23.8	0.7	3.1
14	eP	22	57	17.6		
15	-iP	14	43	30.6	1.3	3.0
16	-iP	02	59	27.4	1.1	3.2
21	eP	13	02	30.2		
22	-iP	23	58	10.3	1.3	1.5
25	eP	03	51	29.0	0.9	1.2
	eP	18	02	24.3	0.7	1.9
	eP	18	55	56.8	1.2	1.1
27	eP	18	35	25.0		

September 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	-iP	05	47	49.4	1.8	3.1
	-iP	07	46	47.3	0.8	1.5
	+iP	09	41	04.0	0.9	4.1
	eP	12	10	03.9	0.6	2.0
	+iP	20	15	00.8	1.0	1.8
2	-iP	11	04	55.6	0.9	4.8
5	eP	10	47	02.7	0.8	1.6
	-iP	12	17	59.2	0.4	1.0
9	+iP	17	57	12.1	0.4	2.9
10	+iP	10	56	54.3	0.6	4.8
	+iS	11	07	31.3	1.0	1.4
11	-iP	08	06	17.4	1.0	4.0
	-iP	09	23	53.3	0.4	1.2
	+iP	11	03	16.7	0.9	4.2
	-iP	12	31	23.1	0.9	2.0
	+iP	13	13	12.0	0.6	2.0
12	eP	22	27	58.1	0.8	1.6
14	-iP	00	27	44.8	1.3	2.0
	+iP	05	08	39.8	0.8	6.6
	-iP	23	31	22.4	0.8	1.6
16	-iP	07	24	11.7	0.5	1.4
	-iP	11	45	50.6	1.0	1.7
17	-iP	08	12	20.5	0.2	4.0
	-iP	13	11	57.6	0.2	2.1
	+iP	13	27	50.0	0.5	1.0
	-iP	20	08	54.6	1.0	2.0
20	+iP	00	53	34.7	0.8	3.0
	-iP	03	15	52.0	1.0	5.2
	-iP	03	47	34.0	0.3	0.9
21	-iP	08	05	19.1	1.0	1.2
23	-iP	23	16	03.1	0.8	1.8
26	-iP	23	02	04.1	0.7	1.0
27	+iP	02	23	31.8	0.9	3.0
28	-iP	02	27	14.2	1.2	2.0
	-iP	08	10	02.9	1.0	1.2
29	+iP	06	40	01.2	0.7	5.0
	-iPKP	11	36	41.6	0.6	2.0
	eP	22	23	08.8	0.3	1.1
30	-iP	07	46	54.2	0.7	1.8

October 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	eP	21	45	16.8	1.3	4.0
4	-iP	10	04	15.1	1.4	3.8
	eP	14	02	04.2	0.4	1.9
6	-iP	06	19	32.9	0.4	5.0
	+iP	13	53	42.1	0.8	1.9
	-iP	14	53	24.7	0.8	1.0
	-iP	16	26	59.4	1.4	8.0
	-iP	19	01	57.1	1.6	2.7
7	+iP	20	14	07.0	0.9	1.8
8	+iP	20	52	40.6	1.2	8.8
9	-iP	08	49	41.4	1.0	5.2
13	eP	00	53	33.3	0.9	1.2
	eP	06	15	29.8	1.0	0.8
14	-iP	00	34	14.9	1.2	2.2
	eP	01	39	52.9	0.5	1.4
	-iP	21	39	03.0	2.2	11.0
17	-iP	22	56	09.2	0.7	2.0
20	+iP	11	19	02.6	0.8	15.2
21	-iP	08	57	45.6	0.8	1.2
22	-iP	08	35	57.6	1.0	10.0
24	-iP	04	09	08.0	1.3	1.6
	-iP	10	26	07.2	0.8	4.2
	+iP	22	40	11.3	0.8	2.0
25	eP	12	24	36.3	0.6	1.0
	-iP	18	38	58.7	0.4	2.0
	eP	19	34	18.5	1.0	1.1
	eP	20	47	24.0	1.0	1.2
27	eP	00	28	27.2	0.4	0.9
	-iP	13	38	22.6	0.9	2.0
	iP	22	46	39.5	0.7	4.0
28	+iP	04	38	13.2	0.3	1.0
	-iP	13	37	45.7	1.0	3.0

November 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
2	eP	10	54	01.2	0.7	1.8
	eP	17	32	20.7	1.0	0.2
	-iP	19	00	05.7	1.0	1.0
	eP	19	56	48.6	0.3	1.0
3	eP	10	01	58.0	0.7	1.3
	-iP	10	38	30.2	1.0	1.0
4	-iP	18	06	34.4	1.0	3.0
	+iP	18	26	20.2	0.4	3.0
5	-iP	08	19	43.8	0.8	2.1
	-iP	08	44	29.0	0.2	1.0
	-iP	15	10	05.4	0.5	1.2
6	-iP	04	57	56.0	1.0	4.8
	-iP	06	26	38.7	0.2	2.0
	-iP	07	34	25.9	1.0	1.0
	eP	14	18	52.6	1.0	2.0
13	+iP	06	50	05.1	0.3	1.7
	+iP	09	40	27.0	2.0	8.0
14	-eP	09	47	45.3	0.9	1.2
16	+iP	16	21	39.7	1.0	3.8
	-iP	19	09	06.1	1.0	2.3
21	+iP	04	41	49.2	0.5	2.0
23	eP	02	01	37.5	0.2	0.8
	-iP	04	19	01.8	0.6	3.0
	-iP	17	05	15.2	0.4	2.1
	-iP	18	09	00.6	1.0	8.0
	-iP	20	24	32.3	0.9	1.2
	eP	22	06	44.6	0.9	1.2
24	-iP	05	03	26.0	1.2	2.0
	eP	05	37	02.0	1.0	1.7
	eP	08	29	12.8	0.8	2.0
	-iP	09	40	38.8	0.6	1.0
	-iP	12	35	28.9	0.5	1.2
25	-iP	21	45	16.2	1.0	2.2
26	eP	04	26	04.2	0.7	1.0
	+iP	14	39	09.4	1.0	1.8
27	-iP	21	34	54.5	1.0	2.0
28	eP	14	10	33.6	0.6	2.6

December 1960

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	eP	09	50	45.2	0.3	1.0
	eP	10	52	53.2	0.6	1.0
2	-iP	22	41	37.7	1.0	1.0
3	-iP	04	43	09.8	0.4	15.0
	+iP	19	07	27.8	0.3	1.0
	+eP iX	21	07 27	39.5 38.9	0.5 2.5	1.4 4.0
4	eP	07	14	03.4	0.8	1.9
	-iP	16	00	10.1	1.0	3.2
5	+iP	00	07	15.6	0.8	3.0
	-iP	18	09	33.2	0.8	4.0
	-iP	18	27	20.0	0.8	7.0
6	-iP	09	08	03.4	1.0	20.0
9	eP	00	39	34.0	0.8	3.0
	+iP	03	11	18.4	0.7	3.0
11	-iP	19	05	47.6	0.8	4.0
12	+iP	10	15	44.0	0.8	3.0
	eP	11	44	30.1	0.3	2.0
14	-iP	15	02	29.7	0.7	5.0
18	-iP	14	32	18.7	0.8	2.0
23	-iP	09	53	30.7	0.7	4.0
24	eP	04	04	54.1	1.2	4.0
26	+iP	04	38	39.6	0.5	5.0
30	-iP	11	17	00.9	0.4	3.0
31	-iP	00	19	59.8	0.5	5.0

1961 – 1962

Two horizontal components of HES seismograph were set by Dr. T. ETO, a member of the 5th JARE.

The seismographs were operated by Mr. Z. SEINO, a member of the wintering party of the 5th JARE, and were observed with the attenuation factor $\mu=1/5$ from January to May and with $\mu=1/2$ from June to January in 1962. Seismograms were read by a member of the National Science Museum.

As Syowa Station was closed in January of 1962, the seismological observation was suspended until 1966.

February 1961

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
9	iP	02	20	17.3		
11	- iP + iS	21	13 22	09.1 59.2	1.8	1.0
12	+ iP	01	30	45.5	1.1	1.0
20	+ iP	18	36	39.1	0.4	4.0
22	+ iP + iSN	22	05 15	32.6 24.3	1.9 2.8	2.5 2.1
26	+ ePN	06	00	38.1	1.8	1.1

March 1961

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
2	ePE	18	34	21.1		
7	+ iP eSE iXE	10	22 32	42.5 13 57.1	4.0	20.0
9	+ iP PN	15	21	57.9		
10	+ iP PN	16	42	15.8	0.7	1.2
13	- iP	20	11	35.7		
20	+ eP	23	55	03.6	0.8	2.2

April 1961

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
29	+ iP	09	39	21.8	1.3	3.1

May 1961

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
6	-iP	23	26	06.3		
8	-iP	19	35	10.4	1.0	1.9
10	+eP	18	50	00.0	0.9	0.5
11	-iP	08	48	52.0		
13	+iP	14	30	50.1	1.5	1.0
15	-iP	19	54	56.6		
	-iS	20	01	59.6	1.4	1.0
	+iP	21	35	39.5		
17	-ePN	19	49	19.3	0.9	0.5
18	-iP	17	27	01.1	1.3	1.2
22	-ePN	17	44	56.2	1.4	2.9
	+eSN		55	14.1	1.7	4.0
	iXN			44.7	3.3	5.0
24	+ePN	18	00	33.2	1.0	0.2
26	eP	11	50	50.8		

June 1961

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	+iP	05	03	16.7	1.8	1.3
	+iP	23	41	28.9	2.8	2.9
7	+ePE	14	26	43.1	2.5	1.0
8	-iP	15	56	10.0		
13	+iP	21	50	13.7	1.1	1.5
	iXN			33.9	1.3	2.5
	eXN	22	00	32.0		
16	-iSN			41.0	3.5	3.5
	+iP	10	55	29.5	2.3	2.0
	+iPN	14	06	18.0	0.7	0.2
18	+eSN		15	19.3	1.5	0.3
	+iPN	22	22	51.2	2.1	1.9
20	+ePN	08	39	02.3	0.5	0.5
	iXN		40	09.3	1.6	3.0
21	iP	06	36	32.0		
24	-iP	16	52	08.9	0.6	0.9
	-eP	19	47	22.0	1.4	1.0
26	-iP	15	07	18.8	1.2	1.2
27	+iP	08	12	09.6		
29	+iP	09	35	50.2	1.5	2.0
30	-eP	21	20	10.4	0.6	2.0

July 1961

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	-iP	13	23	06.7	1.6	8.3
	-eP	22	11	54.9	0.7	1.1
	eX		12	34.4	2.1	2.0
2	-iP	08	57	52.7	1.3	1.0
	-eP	17	00	17.7	2.0	2.0
3	+iP	01	56	13.1	1.3	0.9
	+iP	15	02	31.4	1.3	2.0
4	-iP	20	06	40.0	2.3	3.1
5	-iP	02	36	39.9	1.7	2.1
	-iP	02	31	45.6	0.9	1.0
	+eP	19	31	27.1	1.0	1.0
6	-iP	03	32	56.7	1.3	2.0
	eP	13	20	57.4		
	ePE	16	36	08.3		
	-iP eSN	22	01 12	56.2 13	1.8	25.0
7	+iP	13	23	48.9	1.5	2.0
	iX		24	04.4	2.2	12.0
	+eSE		34	38.8	1.0	1.2
	-iP	15	40	46.6	1.2	5.0
	-iP	22	31	59.6	1.9	5.0
8	-iPN	15	47	06.5	1.5	7.0
	+eSN		53	03.7	1.6	5.0
	+ePN	22	00	10.5	1.5	1.7
9	+iPN	04	01	52.9	1.5	2.9
	+iSN		11	38.4	3.1	5.0
10	+eP	11	42	31.2	1.0	2.0
	-ePE	15	50	57.2	1.1	1.0
11	-iP	06	04	48.3	1.0	2.0
	-iP	09	44	21.1	1.3	2.0
	+iP	18	47	20.8	0.7	2.0

July 1961

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
13	- iP	21	09	17.9	0.8	2.0
	+ iP iXE	21	36 37	53.5 52.7	1.3	3.0
14	+ iP	10	42	02.5	1.3	0.9
15	+ iP	14	06	36.8	1.0	2.0
	- iSN		15	49.5	1.5	1.5
16	- eP	13	55	57.6	1.0	2.0
	+ iS	14	13	54.7	1.6	2.0
	- eP	19	22	42.0	1.6	2.5
	+ iP	20	11	33.3	1.7	2.0
	- iP	21	28	17.7	1.2	2.6
18	+ ePE	14	22	43.7	1.5	2.0
19	+ ePE	03	56	26.2	2.2	7.0
23	+ iP	14	16	14.1	1.7	5.0
	+ iP	15	42	50.8	1.4	6.1
	- iP	22	03	42.9		
25	- iP	18	52	14.2	1.6	3.5
26	+ iPE	09	29	41.8	1.4	4.0
	- iPE	19	51	55.2	1.2	5.4
28	- iP	01	18	46.3	1.2	1.5
	+ iSN		29	12.5	2.9	8.5
	+ ePN + eSN	13	33 43	29.0 55.0	1.0 3.3	2.0 1.0
29	- iP	16	39	47.4	1.7	7.5
	+ iSN		50	03.0	2.6	2.1
31	- eP	23	44	31.8	1.3	2.7

August 1961

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	-iP	05	52	56.2	2.2	7.5
	-iSE	06	03	58.8	2.4	4.0
	-iP	07	27	22.0	1.0	5.0
	-iSN		32	15.6	2.5	7.0
	-iP	10	10	39.2	0.6	1.5
-eSN	15		49.2	3.2	6.0	
2	-eP	03	37	45.8	1.0	4.2
	+eP	10	34	15.9	1.3	0.9
5	+iP	09	39	40.9	1.9	5.7
6	+iP	04	34	57.3	1.7	0.9
7	+iP	12	34	28.8	1.2	3.3
	-iP	17	09	51.9	1.2	3.0
8	-iP	12	38	14.3	1.3	5.1
	-iP	20	38	26.0	0.9	1.1
	-eP	23	50	11.4	1.5	1.2
9	-iP	16	14	57.1		
11	+iP	10	37	33.9	1.4	1.8
	-iP	11	17	15.9	1.2	3.5
	-eP	16	10	49.6	1.2	8.2
	-iSE		14	19.4	3.6	14.2
	+iP	22	49	56.2	1.6	1.7
+iSN	23	00	12.5	3.6	9.0	
14	-eP	02	27	28.7	1.1	1.5
	+iP	18	59	18.3	1.7	3.8
	-iP	23	41	10.4	1.0	3.0
+iSE	51		23.6	1.9	3.9	
15	-iP	18	52	53.0	1.3	3.9
16	-iP	03	45	32.4		3.8
	-eP	16	26	39.9	1.3	2.9

August 1961

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
17	+ eP	01	16	20.0	1.6	3.0
	- eP	05	15	21.8	0.8	1.7
	+ eP - iS	22	05 07	28.3 58.0	0.8 1.0	1.0 5.0
18	+ eP	04	01	53.0	1.4	1.0
	- iP	11	12	57.8	1.2	5.0
19	+ iPE - iSE	05	21 30	32.2 57.2	1.8	8.0
	+ iP	15	30	56.2	1.5	1.8
	+ iP	16	13	07.2	0.9	4.9
	20	- eP	02	12	59.2	1.6
+ iP - iS		05	46 48	11.4 18.5	1.4 1.8	3.2 10.0
21	- iP + iSE	16 16	19 30	48.9 02.7	1.5 2.5	3.5 1.0
	- iP	09	12	24.6	2.4	5.5
23	+ iP	12	11	01.1	0.8	3.0
24	- iP	20	40	01.0	1.5	2.1
28	+ iP	06	40	29.0		
	+ iP	19	38	40.5	2.2	5.0
	+ iP	20	39	42.1	1.7	1.4
29	+ iP	21	56	32.8	1.2	2.8
31	+ iP + iS	02	00 09	22.1 01.3		
	+ iPN	03	18	23.2	1.8	4.5

September 1961

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
2	-iP	11	01	32.5	1.6	2.5
	-eP	17	10	54.0	1.8	1.5
3	-iP	09	13	30.0	0.9	2.9
4	+iP	10	09	01.4	1.4	7.9
5	+eP	03	27	28.8	2.0	2.9
	-iP	11	54	37.6	2.9	5.5
	-iP	11	55	53.7	1.1	12.1
	-eP	22	49	22.6	0.9	1.8
6	-iP	15	43	16.5	1.5	3.1
8	iP	11	32	41.9		
	iSN		37	42.6		
10	iP	04	56	08.6		
	-iSN	05	04	54.4	2.2	14.0
	+iP	11	53	26.2	1.5	4.0
	-iP	15	52	34.1	1.4	0.9
11	-iP	18	20	56.3	0.9	3.0
	-iP	14	57	33.7	1.1	2.1
	-iP	23	49	38.1	1.3	-1.9
12	-iP	00	29	11.3	0.7	4.5
	-iP	05	15	28.4	1.5	2.7
	-iP	19	35	13.1	2.4	3.5
	eSN		40	11.7		
13	+iP	21	29	20.4	1.8	7.0
14	+iP	11	32	19.9	1.3	4.0
	+eP	18	18	16.8	1.3	1.2
17	-iP	23	35	05.4	2.0	3.7
18	iP	03	06	35.1		
	-iS		15	30.1	2.0	3.2
19	-iP	21	40	26.5	1.0	3.0
	+iSE		45	05.6	3.5	8.0
20	+iP	19	16	52.2	1.8	1.2
22	-eP	19	06	01.6	1.0	4.8
	-iP	21	35	50.5	0.7	1.3
23	-iP	08	28	22.9	1.3	2.2
25	+eP	22	28	06.5	1.7	1.8
26	-iP	08	24	15.9	0.7	1.0
27	+iP	06	46	03.8	1.2	10.3
	-iP	12	13	19.4	2.4	11.0
	iS		18	08.0		
28	+iP	05	05	48.2	1.2	8.0

October 1961

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
2	-eP	05	49	06.5	1.8	4.0
	-iP	17	14	04.1	1.3	6.0
8	-iP	23	54	24.6	1.8	8.9
	+eS	24	04	44.0	1.5	2.5
9	+iP	03	28	14.1	1.8	1.2
11	+iP	00	41	36.4	1.4	5.3
	+eP	10	51	01.5	1.0	0.8
12	-iP	05	05	27.0		
13	+eP	08	23	55.8	0.8	0.7
	-iP	10	52	57.8	1.4	4.0
	+iP	17	40	40.3	1.2	3.2
16	+iP	04	32	26.7	1.3	1.5
	+eSN		36	37.0	1.8	7.0
18	+eP	00	22	00.4	0.7	0.9
	-iP	17	02	25.7		
	-iP	18	20	57.4	1.3	3.0
19	-iP	11	29	28.4	1.8	10.0
	-eS		37	44.0	1.4	3.0
	-iP	19	34	48.1	1.9	6.5
23	+iP	00	14	48.9	2.1	4.0
	-eP	14	52	47.0	2.4	1.5
	iX		56	48.1	2.4	3.0
24	+iP	07	49	13.8	1.6	4.0
25	-eP	12	16	40.7	0.8	0.5
	-eP	14	33	09.3	1.0	2.0
26	+eP	05	21	36.6	1.8	4.0
	+iP	15	39	06.7	0.7	0.8
	iX			15.6	3.8	26.2
	-iS		49	03.0	3.5	4.5
	-iP	19	40	45.1	2.5	6.0
28	-iP	14	59	32.8	1.4	5.0
	+iP	22	57	22.5	1.2	1.1
29	+iP	06	01	11.0	1.0	1.0
	-eP	09	32	15.3	2.0	1.5
30	-eP	02	36	18.3	2.8	2.7
	-iP	17	46	42.4	0.7	1.3

November 1961

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
2	+ eP	03	18	57.6	1.4	2.1
3	- iP	21	57	09.5	1.8	2.1
4	- iP	03	58	03.2	1.0	2.5
6	- iP	00	05	56.7	1.6	2.0
	iP	05	42	13.4		
	+ iP	15	06	49.0	0.8	3.0
7	- iP	00	51	42.4	1.0	3.1
	- iP	12	07	12.8	1.8	3.9
	- iP	21	21	14.6	1.0	1.5
8	- iP	11	01	41.6	1.0	3.0
	- eP	19	21	23.9	1.2	1.9
	- iP	20	47	14.0	1.7	2.9
9	- eP	01	21	36.1	1.0	1.1
	+ iP	04	11	15.0	1.5	6.1
	- iP	18	49	37.5	1.1	2.1
10	+ iP	02	20	00.3	1.5	4.0
	iX			25.5	1.4	3.1
	+ iP	11	44	43.8	0.8	0.9
	+ iP	18	12	47.5	1.8	6.0
	+ iS		14	54.1	1.2	9.0
	+ eP	23	55	44.4	0.8	1.1
12	+ iP	02	26	27.2	1.7	6.8
	- iP	10	25	14.1	1.3	3.1
	- iP	18	23	54.8	1.1	4.0
14	+ iP	12	50	19.9	0.6	5.0
	- iP	21	51	09.9	1.1	3.5

November 1961

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
15	+iP	07	36	26.7	2.3	2.8
16	+eP	00	58	05.7	1.4	1.3
17	+iP	22	30	05.1	1.3	3.5
18	-iP	11	29	05.1	1.7	5.9
19	+iP	22	34	32.0	0.9	10.5
	+iSKS		44	40.5	2.1	2.5
	-iS			59.9	2.3	4.5
22	+eP	12	28	18.4	0.7	1.1
	-iP	15	12	20.4	1.1	1.0
	+iP	16	19	21.1	2.2	3.1
	-iP	20	51	24.9	1.5	1.1
23	-eP	14	32	45.8	1.7	4.3
25	+iP	13	17	59.4	1.4	4.0
	-iP	14	24	27.6	1.4	3.4
	-eP	22	21	05.0	1.7	2.1
27	iP	02	00	27.3	2.0	
	+eS		04	56.1	1.4	0.9
	-iP	17	23	31.1	0.9	4.5
29	-iP	09	36	13.7	1.9	5.5
30	-iP	10	29	01.7	1.2	1.0

December 1961

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	+ iP	07	54	11.0	1.2	4.0
3	+ iP	12	16	20.4	2.3	5.5
5	+ iP	13	10	34.0	1.0	6.0
6	+ iP	13	47	54.0	1.0	2.1
	- iP	16	59	05.5	1.0	1.7
9	- iP	04	11	28.2	1.4	9.9
	- iP	04	37	09.3	1.0	4.9
	+ iP	11	27	56.8	2.3	3.5
	+ iP	20	01	16.0	1.3	3.9
11	- iP	20	40	39.5	0.7	2.0
	- eS		43	32.7		
13	- eP	12	02	12.6	2.3	3.5
14	- iP	07	23	25.8	1.8	3.1
16	+ iP	10	11	43.0	1.9	2.0
17	+ eP	21	44	32.0	1.6	3.9
	- eS		50	44.2	2.4	5.0
20	+ eP	13	39	15.5	1.8	3.2
24	+ iP	02	53	09.1	2.7	5.7
	- eP	23	53	44.1	1.8	6.0
25	+ eP	08	13	36.8	2.5	6.0
26	+ iP	04	36	00.2		
	+ iP	06	22	59.2	1.8	7.7
27	+ iP	02	27	35.2	1.3	2.5
	+ iP	16	58	15.2	2.7	3.5
	+ iP	23	58	41.6	1.5	5.1
28	+ iP	22	30	20.0	4.3	4.8
29	+ iP	00	08	46.3		
30	- iP	00	59	14.7	3.1	4.2

January 1962

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	+ iP	05	35	46.2	1.5	3.5
2	+ cP	12	42	32.9	1.4	1.5
	- iP	23	18	34.2	1.2	3.5
3	+ cP	11	33	39.9	0.8	2.9
	- cP	18	13	01.3	1.1	2.5
4	+ iP	00	32	48.3	2.2	3.5
	- iP	05	53	33.8	1.2	2.1
	- iP	08	17	58.3	1.5	5.5
5	+ cP	00	36	42.6	2.5	3.5
	- iP	12	04	13.2	1.6	3.1
	+ cP	14	43	48.0	1.8	1.5
8	- cP	01	19	03.4	1.6	1.9
	+ iP	05	55	14.8	1.0	2.5
9	- iP	09	51	55.8	1.3	3.1
	+ iP	13	00	03.6	2.5	4.0

1966

Syowa Station was reopened in January of 1966 and seismological observation was begun in February.

The HES seismographs of three components were reset by Dr. H. Hotta and Mr. E. Inbe, members of the 7th JARE, and were operated also by Mr. E. Inbe. Seismographs were observed with $\mu=1/5$ from February 15 to May 14 and with $\mu=1/2$ from May 15 to January 24 in 1967.

Seismograms were read by a member of the National Science Museum. Earthquakes with magnitude larger than 5.5 were listed in this bulletin.

February 1966

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
22	+ iPE	18	18	36.4	1.0	5.0

March 1966

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
4	-ePN	00	09	56.8	2.2	2.1
8	- iP iX	20	57 58	59.0 40.8	1.8	1.8
17	+ iP N	16	02	07.4	0.9	2.0

April 1966

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	+ iP + iSN	03	38 43	53.0 22.8	2.2	3.3
10	- iPE	16	47	05.2	1.4	3.5
22	- iPE	03	17	01.7	0.1	2.0
	-ePKPE	12	23	04.9	3.0	1.8

May 1966

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
11	+ iP	03	55	29.7	0.8	8.0
	+ iPP		56	29.6	0.6	1.0
	- eS	04	00	30.0	1.4	1.9
	+ iPKP	14	37	07.1	1.0	4.8
15	+ iPKP	15	05	54.7	1.2	1.4
17	+ iP	17	08	03.3	1.6	2.0
	+ iPcPE		08	50.9	1.6	2.4
	- iPP		10	10.4	2.2	2.1
	+ iSN		16	00.7	0.6	1.6
19	- iPKP	07	26	24.1	1.8	3.0
22	- eP	03	05	14.7	1.6	5.5
25	+ iP	08	41	28.2	2.0	4.0
	+ ePP		44	47.9	2.0	3.0
	- iSN		51	42.6	1.0	2.0
	+ iP	12	19	25.6	2.1	3.5
	iP + iS	13	29 37	55.0 24.4	5.2	2.0

June 1966

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
2	+iP	07	17	44.5	1.4	2.8
6	+iP	01	58	33.8	1.2	2.2
	-iP	08	01	27.0	1.6	3.6
	+iPP		05	38.0	2.6	3.2
	+iSKS		12	07.2	4.0	13.8
7	+iP	01	12	16.0	2.0	2.0
	-eP	14	13	36.7	2.5	3.5
	eX		16	32.6	2.5	4.0
13	+iP	07	45	40.5	0.9	1.5
	+iP	18	21	13.1	1.0	7.6
	+iPP		25	05.1	2.0	4.1
	+iPPP		27	14.3	1.6	5.4
	+iS		31	20.9	1.6	2.7
16	+iP	20	43	49.9	0.8	2.0
21	-iPKP	23	26	02.2	0.6	1.0
22	iP	20	40	26.7		
	-iS		49	53.5		
27	-iPE	11	05	40.0	2.3	3.0
	-iPN	11	14	20.1	3.0	2.0
	-iSN		23	48.3	2.2	4.0
29	+iP	21	59	48.5	2.0	3.6
	-eS	22	10	43.2	3.4	3.0

July 1966

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
4	-iPKP	18	45	29.2	2.0	2.2
	-iPP		49	37.1	1.2	5.6
10	+iP	10	21	27.7	1.8	5.2
	-iS		31	10.5	2.0	1.2
11	+iP	22	58	46.7		
21	+iP	18	44	17.4	2.7	3.4
27	+iP	05	00	35.3		11.2
	-iPP		03	22.7	1.2	2.0
	-iS		10	07.9	2.4	4.8

August 1966

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	-iP	23	05	00.0	1.2	2.6
	+iP	21	16	54.3	2.0	3.0
	-iPP		20	57.3	1.4	2.4
7	-iPKP	02	32	52.5	2.0	2.4
	-iPP		37	00.9	1.4	4.3
	-iPPP		40	34.0	2.0	2.6
8	-iP	10	08	38.1	0.8	3.7
10	-iP	05	13	46.4		10.0
	-iS		24	04.0	0.8	1.2
11	+iP	05	25	32.0	1.6	6.0
16	+iP	18	22	40.3	1.4	5.3
18	+iP	14	45	46.3	0.8	2.0
	+iPP		49	37.3	2.0	10.0
	-iS		52	12.2	1.6	1.6
20	-iP	21	07	28.0	1.2	1.6
21	+ePN	05	14	01.0	1.6	2.4
22	ePE	17	54	29.1		
	-iS	18	04	45.7	2.7	6.5
24	+iPN	07	29	07.0	1.2	1.0
	iX		30	04.7	1.6	5.0
	-iS		38	52.8	3.8	5.8
26	ePN	09	19	10.0		
	eS		29	36.0		
28	-eP	07	40	42.0		
	-iS		49	45.6	1.4	1.2
	+iPN	10	15	28.0	1.4	3.4
	-iSKS		25	14.0	1.2	2.9
29	+iP	13	18	24.3	0.8	1.8
	-iPP		20	10.5	2.0	1.4

September 1966

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
12	-iP	11	40	51.9	1.6	1.4
13	-iP	23	06	24.0	1.4	2.2
14	-iP	23	24	31.9	1.2	3.2
18	-iP	18	04	09.5	1.8	3.8
20	+iP	09	29	50.6	1.0	2.8
23	+iP	18	31	46.0	0.8	1.4
29	+iP	02	56	39.0	1.2	1.7
	+eS	03	06	43.0	2.0	3.2

October 1966

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
7	-iP	16	07	19.2	3.9	12.0
	iS		17	21.6		
8	+iP	00	25	18.1	1.2	3.6
11	-eP	06	31	42.0	2.0	3.4
12	-iP	00	18	21.8	1.4	1.8
16	-iPN	13	01	44.0	1.2	1.6
	+iS		06	43.7	1.4	2.2
26	+iP	18	41	28.4		
27	-iPP	14	39	45.0	1.8	3.8

November 1966

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
5	+iP	02	20	36.9	2.0	3.3
10	+ePN -eS	03	13 21	11.5 50.5	2.0 1.6	3.0 1.8
12	+iPN +iS	12	01 11	53.2 22.3	0.8 1.6	3.4 1.8
22	-ePN +iS +iScS	07	07 12 17	20.1 00.3 47.3	0.8 3.4 2.8	1.3 2.5 8.4
23	+iPN -eS	02	32 42	01.0 23.2	1.4 2.2	1.8 2.2
26	+iP	02	29	44.3	1.2	3.3
27	+iPKP	20	32	46.2	1.8	4.0

December 1966

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
1	-iPN +iS	05	09 19	40.7 58.0	2.4 4.0	-14.0 8.2
2	+iP	09	45	20.2	1.0	4.0
10	-iP	18	21	24.0	2.0	1.0
14	-iPN -iSN	21	20 31	42.3 26.2	1.6 2.6	2.5 4.0
16	eP	21	16	14.1	2.2	3.6
20	eP +iS	12	36 44	12.4 23.0	3.0	6.1
21	-iP -iS	09	04 14	05.2 03.0	2.8	5.0
23	-iP -iS -iScS	16	02 12 13	16.8 40.1 38.3	4.3 2.8	10.1 6.0
28	-iPN	08	29	36.2		

1967

A new seismological room was built and a three-component long period seismograph was set at Syowa Station. Then the regular seismological observation was started on the 1st of March. The seismographs were operated by Dr. K. KAMINUMA of the 8th JARE. Seismograms were observed with $\mu=1/5$ from March to May and with $\mu=1/2$ from June to December. The reading data were sent to USCGS throughout the wintering period.

March 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	ePE	22	31	35.0		
3	ePE	04	50	29.4		
5	iPE	06	37	42.0		
7	+ePE	21	45	10.3	0.9	0.5
	iPE	07	56	05.1		
	+iPE	19	22	26.6	1.0	1.2
8	ePE	01	05	12.0		
	eP	07	38	13.0		
	eP	08	12	38.5		
	+iP	08	23	19.6	1.0	2.2
	eP	13	49	46		
	iX		50	09.0		
	eP	14	28	05.0		
	+iP	22	26	36.0	1.0	4.5
9	eP	09	56	41		
	eP	11	54	26.3		
	+iP	20	08	55.0	0.7	0.8
	+iP	21	07	11.0	0.8	2.0
	eP	21	48	55.0		
	iX		49	16.4	0.6	2.6
11	eP	00	02	34.5		
12	+iP	02	13	28.5	1.0	1.4
	iX			43.6	1.0	4.5
	iP	03	18	20.3		
	eS			25.0		
	+cP	11	01	18	0.8	1.8
	-eP	18	05	48.4	1.0	3.5
	eP	17	53	25		
	ePE	19	05	47.5		
	+iP	21	33	29.0	1.0	3.0

March 1967

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
12	eP	21	46	27		
	iP	22	22	40.2		
	eS			44.5		
13	iP	16	17	05.1		
14	ePE	03	01	41		
	ePE	19	56	36		
15	eP	16	52	31		
	ePN	17	29	28		
	eP	21	00	52		
16	eP	23	25	07		
17	eP	22	47	52		
18	eP	01	26	06.5		
	eP	16	47	10.0		
19	iP	01	23	11.0	1.8	9.0
	-eS		33	21.0		
	eP	04	21	01.5		
21	ePN	06	59	32.5		
	-iP	11	37	13.5	1.1	-4.2
	iP iS	20	34	12.6 17.0		
22	-iP	00	01	24.0	0.7	-3.2
	eS		06	37.0		
	eP	14	38	40.8		
28	ePN	14	58	29		
30	+iPE	05	19	38.7	1.3	2.5

April 1967

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
4	eP	15	47	28		
9	+iP	18	54	12.9	1.0	9.5
10	-iP	15	15	53.1	1.4	5.0
	iX		16	13.6	1.6	11.5
	+iP	16	56	13.6	1.8	4.0
	iX		57	01.7	1.8	6.5
15	-iPE	22	40	42.1	0.3	0.8
16	+ePE	12	39	16.0	1.0	2.1
	iP	14	33	46.6		
17	eP	04	58	07.2		
	iP	11	31	20.9		
22	-iP	19	54	21.0	1.5	4.3
23	ePN	10	03	43.0		
24	+iP	16	39	26.8	1.2	1.8
	eS		44	25.3		
26	iP	11	53	00.2	1.0	
	eP	17	52	42		
	ePE	18	47	58		
	eP	20	21	19		
27	iP	00	16	34.3		
	eS			39		
	eP	10	26	09.5		
	eP	17	00	05.2		
	eP	20	25	59.5		
	iX	26	03.5			
	eP	20	52	05		
	iP	20	55	16.1		
	eS			20		
	iP	21	40	40.1		
28	iP	00	54	01.0		
	iP	01	23	28.0		

April 1967

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
28	+iP	02	39	57.1	0.9	2.1
	eP	02	57	41		
	+iP	04	00	56.1	1.4	3.2
	eP	13	37	11.0		
	eP	15	16	19		
	iP	22	30	59.1		
29	iP	01	56	38.0	1.4 1.3	2.2 2.9
	+iPKP	04	15	11.6		
	iX		17	12.5		
	eP	12	04	45		
	ePKP	12	45	42		
	eP	19	58	50		

May 1967

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
1	ePE	08	09	37	0.7	3.1
2	iPE	12	44	53.5		
3	ePE	03	38	50		
	-iP	16	18	02.0	1.0	2.2
	ePE	13	52	20		
	iX			26.3		
	8	-iP	18	56		
	iX		57	38.6	1.5	6.0 5.5
	ePE	20	06	04.5		
	eP	22	41	43		
	iX			50.6	1.5	6.0
	9	+iP	21	43		
10	-iP	10	05	42.8	0.8	1.5
11	eP	14	32	03		

May 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
11	iP	15	17	06.9		
	iX		18	56.2		
	iS		27	09.3	2.0	5.0
12	-iP	00	01	00.6	0.6	5.5
	-iP	19	12	02.9	0.9	2.1
13	iPE	21	44	27.2		
14	ePE	01	47	41		
15	iPE	05	48	07.5		
16	-iP	23	23	08.2	0.9	7.5
19	eP	04	16	32		
	iX		17	02.8	0.9	6.0
	+iP	05	20	35.2	1.1	4.8
	iX			45.0	1.0	14.0
20	+iP	12	14	12.1	1.4	3.8
	iX			40.3	1.0	6.0
	iP	20	13	48.8		
20	iP	13	05	12.8		
	+iPN	15	19	39.0	1.2	1.2
	eP	17	31	13.0		
21	-iPE	18	57	01.1	1.8	3.5
	ePcPE			09.8	1.2	4.8
	iPPE	19	00	03.0	2.0	7.5
	eSE		06	47.0		
	iSKSE			57.3	3.0	15
	iScSN		07	08.6	2.5	9.0
23	ePSE			33		
	iPN	14	19	40.1		
	iP	19	23	59.5		
	iS		28	57.2	2.3	9
	ePcS		30	43.9	2.0	6.5
	iScSN		34	15.2	2.1	6.0
26	+eP	02	09	51	0.9	2.0
	iPE	15	19	42.3	1.0	1.0
	eP	21	29	45.5	1.2	2.0
	eP	22	00	55.0		
27	iPKP	17	42	54.3		
28	+iP	15	14	25.5	1.2	19
29	+iP	15	19	50.8	0.8	2.5
31	-iP	01	15	27.3	0.2	1.9
	iS			31.6		

June 1967

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
1	-iPKP	03	56	12.8	1.6	5.5
2	-iPE	10	42	55.8	0.7	4.5
	+iPE	11	13	41.5	1.5	5.5
	+ePE	15	45	45.5	2.0	4.5
	ePE	17	24	30		
3	ePE	04	48	11.5		
	-iPE	07	48	05.0	1.4	4.9
4	+iPKP	05	46	27.8	0.3	2.8
	iP	11	44	18.9		
	ePE	12	19	38		
	-iPE	16	25	26.5	1.4	1.5
	ePE	17	13	10.5	2.0	3.0
	ePE	18	27	27.5		
	+iP	19	13	41.5	1.0	1.1
	ePE	20	36	49		
	ePE	22	06	28		
5	-iP	01	34	04.1	2.0	3.5
	ePE	05	55	31		
	ePE	06	23	33.5		
	iXE		24	05.5	1.0	5.0
	iPE	15	26	24.9	1.3	1.9
	ePE	16	04	07.2		
	+iPE eSE	17	37 54	00.9 28	2.0	5.0
6	iP	06	48	21.0		
	ePE	14	32	09		
	ePE	21	35	21		

June 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
8	iP	13	34	31.6		
	+iPE	19	30	05.5	1.4	4.5
	iPPE		31	59.1	1.7	8.5
	iPPPE		32	47.7	1.3	5.0
	-iSE		37	03.8	1.0	8.0
	ePE	21	16	22.3		
	+ePE	22	40	37.5	1.6	5.5
9	iP	20	17	14.2		
10	iP	05	36	49.4		
	iP	14	10	40.4		
	iX		19	09.8		
	+eSE		20	29.2	2.1	3.5
11	eP	04	20	44		
	ePN	22	06	55		
12	iP	00	42	29.2	0.9	2.1
	iP	05	26	26.0		
	+iSN		30	47.0	3.5	8.2
	ePN	22	30	57		
13	iP	15	52	13.0		
	-iPE	16	02	22.8	1.3	2.5
14	+iPN	05	19	32.5	1.5	4.0
16	+iP	05	52	16.5	1.7	4.5
17	-iPE	05	05	07.2	1.8	7.5
	iPPE			55.5		
	ePcPE		08	29.1	1.0	36.0
	iSE		09	50.1		
	iSSE		11	10.5	2.5	28.0
	iScSE		14	33.2	3.6	12.5
19	eP	15	16	47.5		
20	ePE	00	26	21.5		
21	ePE	07	59	35		
23	+iP	21	42	45.9	1.8	9.0
	iX			57.2	1.2	13.5

June 1967

Date	Phase	Arrival time			Period s	Amplitude mm		
		h	m	s				
24	+ iP	02	11	26.7	1.0	2.2		
	eP	08	38	33.5				
	eP	11	23	35				
	eP	13	47	25				
26	+ iP	01	03	55.9	0.8	4.0		
	iPE	10	46	20.6				
	ePE	13	16	26.5				
	- iP	16	19	32.8	1.3	4.0		
	ePE	22	28	18.6				
27	ePE	07	54	57	1.0	3.0		
	+ ePE	13	18	19				
	eP iS	21	49 54	34.5 49.0				
28	eP	00	27	49	0.9	13.5		
	iPE	10	25	58.4				
	+ iPN	12	38	18.8				
	- iP	14	43	57.8				
	- iPE	18	58	34.0			0.5	2.8
29	iP	04	38	21.3	1.5	5.5		
	+ iPE	16	48	32.5				
	+ iSE		58	34.0			2.5	2.5
	+ iPE	18	57	15.7			0.9	1.9
	ePE	21	55	32				
30	+ iP	23	29	31.5	1.4	6.0		
	iPE	03	04	01.5	0.7	1.2		
- iPE	17	33	20.6					

July 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	iP	07	41	02.6		
	+iP	14	38	43.2	1.2	3.0
	iX		39	07.4	1.2	6.5
	ePE	15	24	07.5		
	ePKPE	23	30	12		
2	eP	07	16	35		
	+iPKP	12	44	36.1	1.7	4.5
	ePE	14	18	29.5		
	+iPE	19	44	43.4	1.6	4.5
	iX		52	43.5	1.5	4.5
	+iPE	21	06	20.1	1.6	4.5
	iP	23	41	57.1		
3	iP	01	45	40.8		
	iPE	10	16	01.0		
	+iPKP	12	55	34.7	1.4	1.0
	+iPE	17	03	22.3	1.7	3.5
	ePE	17	29	12.5		
4	+iP	13	13	29.9	0.4	0.5
	+iP	14	27	16.6	1.6	7.5
5	ePE	18	31	06		
	-iPE	19	54	14.1	1.0	1.0
	iP	21	26	56.3		
9	-iPE	17	03	18.9	0.9	2.5
10	+iPN	08	42	08.2	1.0	2.0
	-iPE	12	12	32.3	1.3	4.2
	iXE			59.7	1.2	4.5
	iPPE		14	41.0	1.0	6.0
	-iSE		20	35.6	2.4	3.5
	iP	19	31	19.4		
11	iPE	00	03	46.8		
	iSE		07	06.8	0.8	3.5

July 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
11	-iPE	01	45	45.3	1.0	3.0
	-iPE	03	37	45.7	1.0	2.5
	+iPE	08	16	59.2	1.2	4.5
	-iPE	10	12	24.9	1.5	2.5
	ePE	19	00	37		
12	ePE	10	54	50.2		
	iX		55	18.5	1.2	5.0
	-iPE	13	55	02.7	1.2	3.5
15	+iPE	12	37	19.3	1.2	4.5
	iP	13	38	54.3		
	+iP	14	53	52.9	0.9	1.5
	eP	23	53	16.5		
16	eP	03	00	26.0		
	ePE	09	24	52.8		
	+iP	09	53	26.8	0.9	4.0
	iX		54	11.7	1.4	3.5
	eP	13	47	29		
	iX		48	01.7	2.1	16.5
	+iPE	16	52	41.0	1.1	1.5
	iXE		59	06.9		
17	-iP	09	26	16.3	1.1	1.5
19	-iPE	18	21	54.7	1.8	7.5
	iX		22	14.0	1.4	7.5
20	+iP	01	45	39.7	1.2	3.5
	+iPE	13	22	30.9		
	iPcPE			57.2	0.9	8.5
	iSN		31	23.8	2.0	7.5
	eP	15	50	03		
	eSE	16	00	36		
22	-iP	13	58	38.1	0.8	3.3
	iX		59	19.5	1.5	4.0
	eSE	14	03	34		
	eP	17	15	31.0		
	iX		16	10.7	2.8	14.5
	iX		26	55.2	3.0	6.0

July 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
22	-iPE	20	50	24.2	0.9	1.2
	+iPE	21	27	01.2	1.1	1.2
	ePE	21	51	51.5		
23	eP	03	21	30.5		
	eP	04	22	03		
25	eP	14	09	36.5		
26	+iP	06	42	53.4	1.3	3.0
	-iPE	19	58	54.3	1.2	3.0
27	-iP	01	24	51.1	1.5	1.5
	+iP	11	50	54.6	0.9	1.5
28	+iP	14	37	34.9	0.8	2.2
	+iSE		47	18.0	1.5	3.0
	+iP	18	45	06.1	0.8	3.8
	+iP	20	18	44.7	1.3	4.0
	-iP	23	51	55.3	0.9	5.0
29	eP	00	23	51.5		
	iP	01	09	10.0		
	+eP	05	07	56.0	1.0	1.2
	eP	08	27	54.5		
	+iP	10	38	12.8	3.0	1.5
	iX		42	34.9	2.9	9.0
	-iSE		48	34.2	2.0	5.5
	iXE		49	16.8	2.6	7.5
30	ePKP	00	17	55		
	-iP	06	29	25.3	1.6	1.5
	eP	08	25	27		
	+iP	10	57	41.7	1.1	8.5
	iX		59	32.7	1.4	13.0
	-iPE	13	48	27.3	1.4	1.5
	iX		49	12.6	1.6	4.5
	iP	17	36	39.1		
	eSE		46	12		
	-iPE	22	27	53.3	1.0	0.8
	iX		29	26.5	1.8	4.0
	-iS		32	53.4	2.0	4.0
31	eP	14	21	38.5		
	ePE	18	13	24.5		
	eSE		17	16		
	iP	19	13	20.7		
	+iPE	19	30	29.1	1.0	2.2
	ePE	21	03	16		

August 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	+iP	01	26	23.4	1.1	4.5
	eP	03	38	19.5		
	iP	03	41	19.4		
	eP	09	13	57	1.2	2.5
	-iPE	11	53	10.6		
	+iPE	14	38	53.6		
	ePE	16	15	53.5		
	-iPE	17	13	58.2		
	-iPE	19	57	26.0		
2	+iPE	03	42	06.9	0.9	2.0
	-iPE	12	28	14.6	1.0	1.1
	+iPE	17	14	21.4	1.0	1.0
	-iP	22	22	47.7	0.8	2.2
3	iP	03	06	08.5		
4	-iPE	04	00	24.4	1.4	2.1
	ePE	09	05	06.5		
6	-iPE	09	42	58.3	1.7	2.5
	eP	15	08	06		
	+iPE	17	58	16.6	1.6	2.5
	ePN	18	19	13.2		
	eP	19	38	04		
	eP	23	12	04		
7	-iPE	15	54	25.7	1.3	2.5
	-iPN	17	19	03.7	1.3	1.5
	ePE	23	30	05		
8	ePE	14	17	10		
	-iP	20	24	31.1	1.5	1.0

August 1967

Date	Phase	Arrival time			Period s	Amplitude mm	
		h	m	s			
9	+ iP	08	32	27.4	1.1	3.5	
	iPcP			34.6	0.9	10.5	
	iSE			42			36.6
	eScSE				53		
	eP	20	52	17.5			
	iP	22	27	04.0			
	iP	22	53	19.5			
	ePP			31.4			
	ePPP			39.0			
	-iS			56	19.6	0.6	3.5
iX			26.0	1.0	14.0		
10	eP	16	16	03			
11	-iPE	03	08	47.6	2.0	1.5	
	-iPE	13	33	15.0	1.2	2.5	
12	iP	00	09	40.8			
	eP	02	56	41			
	-iPE	06	21	25.6	1.0	1.5	
	ePKPN	07	01	25			
	+iPE	09	51	54.2	1.5	6.0	
	iPPE			54	1.4	13.5	
	+iSE	10	01	58.8	3.8	18.5	
	eScSE			02	19		
	iPPS			03	03.3	3.3	15.5
	-iP	12	43	48.5	1.8	5.0	
	+iPE	13	16	03.2	1.1	1.5	
	iP	19	02	18.6			
	+iP	20	15	33.4	1.3	1.5	
13	-iP	01	46	04.1	0.9	1.5	
	eS			56			35
	eP	04	37	31.5			
	+iPE	04	58	51.4	1.3	2.0	
	iPE	06	06	34.4			
	iP	16	37	22.1			
	iS			40	35.2		
iPE	23	55	09.2				

August 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
14	+iPE	12	41	11.3	0.6	1.0
	eP	17	49	41.5		
15	-iPE	07	32	49.1	0.9	1.7
	+iPE	15	07	09.0		
16	iP	01	01	11.3	1.2 2.1	3.0 1.5
	iP	15	50	26.0		
	-iPE	17	49	05.8		
	+iSE		54	03.6		
	ePE	19	09	48		
	-iP	19	31	07.3		
17	iX		33	34.2	1.4	5.0
	+iPE	03	04	00.4	1.3	3.0
	+iPE	16	53	24.6	1.1	2.0
	ePE	17	51	08	0.9	2.5
	ePE		59	11		
	-iP	19	23	52.2		
	ePN	19	39	31.5		
	eP	20	29	44	1.3	2.0
	eS		34	15		
	-iPE	23	03	32.0		
-iP	23	31	37.1	0.8	2.0	
iX		32	12.2	1.2	3.5	
18	+iPE	18	04	02.8	1.2	1.5
	+iPE	19	03	07.9	1.0	2.0
	+ePE	19	36	39	1.1	2.0
19	iX		42	42.8		
	-iP	08	34	44.8	0.8	4.5
	+iP	15	41	40.6	1.8	5.0
	-iSN		52	12.1	1.8	4.5
	iP	15	54	47.7	2.4	6.0
	-iSE	16	05	34.8		
ePN	16	14	32.5			

August 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
19	iP	23	34	08.3		
20	+iP	11	27	53.2	1.1	2.5
	iP	15	14	55.5		
21	+iPE	07	45	18.1	1.1	1.5
	+iSE		55	30.2	5.4	5.5
	iScSN			47.2	4.4	1.1
	-iP	12	30	48.9	0.9	0.3
	eP	13	55	47.5		
	-iPE	17	05	44.1	0.7	1.0
22	ePE	13	07	45		
23	iP	11	27	07.7		
	eS		30	28.5		
24	+iPN	13	45	46.2	1.6	1.5
25	+iP	17	10	33.1	0.8	2.5
26	iPE	07	37	02.4		
	+iPE	11	38	25.5	1.1	1.0
	+iPE	14	16	42.3	0.8	2.0
27	-iPE	00	34	54.0	1.6	1.3
	iP	14	29	47.8		
	iP	19	22	48.9		
	-iPE	19	49	18.6	1.3	-2.2
28	iPE	00	33	47.1		
	+iPE	01	08	39.1	0.8	2.5
30	-iPE	12	07	25.6	1.2	3.5
31	iP	19	05	55.7		

September 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	eP	00	41	05.5		
	+iP	03	43	55.0	2.1	2.5
	-iSE		54	08.6	2.1	2.5
	iXE			36.0	1.9	6.0
	iP	06	40	45.1		
	-iP	15	30	50.8	0.6	0.5
	ePE	18	12	50		
	eP	18	33	50		
	-iPE	19	03	38.4	0.8	1.5
	+iPE	19	36	10.8	1.4	1.5
	iP	23	50	25.6		
2	-iP	01	35	44.4	1.3	4.5
	iX		36	04.2	0.8	9.0
	+iP	02	04	06.5	1.1	2.0
	+iP	07	08	19.8	1.0	1.0
	iP	14	22	15.8		
	iP	19	09	14.2		
	eS		13	33.8		
	+iPE	20	48	29.6	0.9	1.0
eP	23	12	15			
3	+iP	03	42	12.6	1.2	1.5
	iP	16	27	49.5		
	iP	16	39	34.5		
	iP	19	07	43.3		
	+iPE	20	12	07.9	1.0	1.5
	iP	21	20	27.6		
	iPPE		23	52.5		
	iSE		30	56.6		
eScSE		31	08			
4	iP	04	03	19.8		
	iPcPN			40.8	1.5	1.0
	-iSE		12	38.1	1.7	2.5
	iXE		14	13.5	2.9	6.0

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
4	eP	04	42	52		
	ePN	14	23	38.5	1.3	5.0
	iXE		24	12.2		
	ePE	15	19	28		
	+iPE	18	49	08.3	1.6	1.6
	-iPKPE	19	49	41.4	0.8	1.0
6	-iP	07	43	15.9	1.8	3.5
	eS		53	39		
	iPE	09	49	03.6		
	ePE	20	22	25		
	iPE	21	14	18.3		
7	-iP	07	25	08.6	2.0	6.0
	+iPPE		28	29.5		6.5
	ePPP		30	23		
	+iSE		35	38.7	2.5	7.0
	+iP	09	45	04.3	1.2	1.5
	-iP	11	19	13.1	0.8	4.5
	+iP	14	04	39.5	0.9	1.5
8	iP	03	17	16.9		
	+iP	03	48	31.1	0.9	5.5
	eP	05	37	14		
	-iP	08	17	38.9	1.0	2.5
	iP	09	10	40.2		
	eP	16	03	25.0		
	eP	19	22	58		
	eP	22	56	05		
9	iP	10	16	52.6		
	iX		18	49.8		
	iS		25	11.6		
	eP	16	53	49.5		
	eP	17	01	39		
10	-iPE	13	10	39.6	0.9	2.0
11	+iP	04	49	43.1	1.2	1.0

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
11	iP	10	05	29.9		
	iPN	22	19	02.2		
12	+iP	00	03	03.1	1.5	7.5
	eP	12	17	17.5		
	+iPE	15	25	11.6	1.0	1.5
	-iP	17	08	24.1	1.0	2.5
	+eP	22	02	55.1	1.8	1.2
	+iPKP	19	01	08.8	0.9	2.5
	iP	20	03	57.8		
	iS		07	57.0		
14	+iP	00	53	16.1	1.1	2.2
	eP	04	57	37		
	iPE	10	35	19.5		
	-iPN	15	47	52.2	1.7	4.0
	iPE	18	41	10.6		
	iPN	19	37	27.8		
	ePE	20	44	19.5		
	iPE	20	47	58.2		
15	+iP	19	03	14.1	0.9	3.0
	iP	20	31	06.5		
16	iP	00	18	32.9		
	iS			37.2		
	eP	03	53	42		
	iSN	04	04	22.1		
	iPE	07	56	57.5		
	ePE	12	24	39		
	eSE		29	25.5		
	+iPE	15	06	27.2	1.6	1.5
	iPE	19	29	54.8		
	+iPE	20	00	22.1	1.2	1.5

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
16	iP	22	58	08.4		
	iP	23	47	16.1		
17	iP	00	38	31.1		
	iP	08	17	43.6		
	+iPE	18	46	33.6	1.5	4.0
18	iP	15	46	05.6		
	iSE		56	55.5		
	ePE	22	51	22		
19	iP	00	57	39.5		
	ePKP	11	15	08		
	-iP	12	51	32.4	3.4	6.5
	+iSE		56	24.5		6.5
20	-iPE	09	48	41.3	1.5	2.5
	eS		55	26		
	iPE	10	40	21.4		4.5
	-iSE		48	34.5		
	ePN	15	16	19		
	iPE	16	42	40.6		
	iSE		47	17.1		
iPN	19	41	42.6			
23	+iPN	07	08	17.8	1.1	4.2
	+iPN	07	11	34.0	2.1	4.0
	ePE	22	05	48		
	+iPE	23	03	54.0	1.3	1.5
24	ePE	23	43	58		
25	ePE	17	38	04		
	ePN	18	06	16		

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Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
26	ePE	01	23	38	1.5	11.5
	iXE		24	51.0		
	-iPE	11	22	01.8	1.6	3.5
	iPcPE			34.9	1.0	10.0
	-iS			30	41.7	2.0
	-iPE	12	30	31.6	0.9	2.5
-iPE	16	22	27.7	1.1	5.0	
ePPE		24	40.3	2.3	6.0	
-iSE		30	33.3	2.8	4.0	
27	ePN	10	46	32.5		
	-iPN	17	19	39.4	1.3	5.5
28	iPN	05	20	05.1		
29	iP	15	03	40.8		
	+iP	17	37	01.8	0.9	3.0
	-iP	22	30	40.8	1.3	3.0
30	eP	05	03	21.5		
	eP	14	27	40		
	+iPE	15	43	16.3	1.6	3.0
	iP	17	26	40.9		
	-iPE	17	44	23.3	0.9	2.5
eS	54		02			

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	eP	04	22	05		
2	+iPE	17	15	27.7	3.1	4.0
3	eP	13	31	27		
	eP	18	33	33.5		
4	iP	08	57	05.1		
	iP	10	16	08.6		
	ePE	14	19	24.5		
	iP	17	34	30.1		
	iSN		45	36.7		
5	ePE	06	42	18.0		
	+iPE	07	13	04.6	0.9	1.0
	-iSE		16	31.5	0.9	3.0
	+iPE	08	07	53.1	0.7	3.2
	+iPE	08	22	15.1	1.0	2.5
	+iPE	09	07	41.4	0.6	2.0
	eP	12	06	47		
6	iP	09	06	41.2		
	iP	10	35	03.3	0.8	2.0
7	-iP	01	25	09.9	1.2	2.0
	+iP	01	53	14.1	1.4	3.5
	+iPKPN	08	47	32.4	1.0	1.0
	+iPKPE	09	26	21.5	1.0	1.5
	+iPE	11	16	10.4	1.0	2.0
	iPE	13	30	22.4		
	ePN	16	41	10.5		
8	iP	18	21	26.2		
	+iPKP	21	28	43.6	1.0	1.5
9	+iPE	02	27	30.2	0.9	2.5

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
11	iPE	18	23	29.0		
	iP	20	09	58.7		
12	eP	00	51	20		
	eP	02	44	38		
	iP +iSE	06	46 56	41.4 02.5	2.7	7.5
	iPKP	13	12	29.1		
	iP iS	18	44 53	02.1 12.4		
	iP iSE	19	10 13	24.0 54.2		
	13	iP	06	03	56.9	
14	iP	17	15	09.5		
16	-iPE	12	55	25.4	1.1	3.0
	+iPE	16	22	25.9	1.0	3.0
	-iP	17	00	36.6	1.6	2.5
	iP	17	10	53.5		
	-iPE	20	26	27.5	1.5	1.5
17	eP	09	39	15.5		
	eP eSE	13 14	56 05	50.5 50.5		
	iP	14	20	32.9		
	iP	20	08	26.5		
	iP	21	59	45.5		
	18	iPKP	01	31	32.4	
iP		14	49	38.9		
+iPE		19	30	20.8	1.4	1.0
iP +iSE		22	17 27	53.8 24.8	2.2	1.5
+iP		23	47	58.1	2.0	2.5

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
19	- iP	02	49	39.9	1.0	1.5
	ePE	03	01	48		
	- iP	15	15	13.0	2.7	3.5
	eP	19	44	50		
20	iPE	00	15	10.1	2.4 3.5	2.0 4.5
	+ iP	01	08	42.0		
	iX		13	46.7		
	iP	03	40	35.3		
	+ iPE iXE	16	17 18	48.8 05.2		
21	- iPE	00	21	38.4	1.5 1.9	2.8 3.5
	- iP	02	46	35.8		
	iPKP	05	19	29.0		
	+ iPE	17	14	26.9		
	+ iP	18	51	52.2		
	+ iPE	22	02	46.1		
22	- iPE iSE	01	03 12	24.1 39.2	1.0 2.4	1.0 6.5
	iPE	05	36	09.3		
	eP	12	04	36		
23	iP	05	38	51.0		
24	+ iP	11	03	17.0	1.7 1.6 1.3	1.5 1.5 1.5
	- iP	12	16	28.3		
	+ iP	12	49	48.1		
	iP	14	35	09.6		
	eP	15	48	55.5		
	+ iPE	15	57	41.1		
25	+ iP iSE	01	17 25	46.6 43.1	1.0 3.8	1.0 5.5
	eP	03	26	38.5		

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
25	iP	03	33	51.1		
	iP	05	21	48.3		
	iPE	09	27	08.1		
	iP	16	23	07.3		
26	+iPE	02	15	57.3	1.5	3.0
	iPE	08	10	11.3		
	+iP	09	30	59.7	1.1	3.0
	iP	17	04	54.3		
	iX		05	11.4	1.0	10.0
	-iS		15	17.6	2.1	5.5
	iPE	18	24	43.4		
27	iP	20	37	50.7		
28	+iP	00	35	34.6	0.6	2.0
	eP	02	39	07		
	eP	10	56	34		
	-iP	18	34	51.6	0.7	1.5
	iP	23	03	29.8		
29	iPE	00	49	53.2		
	-iP	05	30	42.2	0.8	1.0
	+iPE	12	43	00.2	0.8	1.5
	iX		47	24.8	1.5	4.0
	+iP	13	10	47.2	1.1	1.5
	+iP	16	41	45.1	1.0	0.5
	eP	21	20	19		
	-iPE	21	22	53.1	1.5	1.5
	-iPE	22	59	38.3	1.7	1.0
31	iPN	08	32	09.3		
	iP	08	33	29.3		
	-iPE	09	54	19.6	1.6	5.0
	iP	17	38	11.5		

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	iPE	01	33	02.8		
	+iPE	05	47	30.9	1.7	1.5
	+iP	15	12	17.7	0.8	1.5
	iP	17	32	00.6		
	eS		41	38.5		
	iP	19	09	44.3		
2	iP	05	30	38.9		
	iXE		31	19.5	2.9	9.0
	+iPE	06	07	16.6	0.9	0.5
	iP	07	03	42.3		
	+iP	08	36	08.8	1.0	2.5
	iP	08	47	49.7		
3	+iPE	10	44	17.1	1.8	2.0
	-iP	07	28	49.9	0.9	1.5
	iP	07	45	02.7		
	-iSE		55	07.1	2.6	2.5
	-iPE	08	25	20.9	1.1	3.0
	-iP	08	28	50.8	1.6	1.5
	eP	08	41	08		
	+iPE	11	36	18.5	0.5	1.5
	-iPE	17	36	36.7	0.6	2.5
	iP	22	44	03.9		
iSE		48	57.3			
4	iPE	01	38	24.3		
	ePE	08	05	07		
	ePN	08	23	03		
	+iPE	09	40	33.5	1.0	2.0
	iP	14	40	09.9		
	iS		50	54.5		
iX		53	28.9			
5	eP	08	17	47		

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
5	iP	14	01	15.1		
6	+iPE	07	44	33.2		
7	eP	21	14	40.5		
8	iP	04	05	03.7		
	iP	06	20	04.4		
	+iPE	21	04	30.8	0.7	0.5
9	+iPN	01	19	21.0	0.8	3.5
	-iPE	02	30	03.7	1.2	4.5
10	-iPE	03	05	10.8	1.5	2.0
	+iP	18	49	23.7	1.4	3.0
11	-iP	12	25	41.6	1.4	1.5
15	+iPE	08	20	49.1	0.8	1.0
	iP	21	43	05.7		
	-iSN		52	13.7	3.0	3.5
	-iPE	22	11	01.3	2.0	1.5
16	iP	01	29	21.1		
	ePN	02	11	54		
	iXN		12	40.8		
	iPE	08	36	58.0		
	+iPE	09	17	57.8	1.2	2.0
17	eP	13	45	38		
	iP	03	27	58.6		
	iPE	05	52	29.6		
	+iPE	06	46	53.3	1.1	1.0
	eP	07	06	43		
	-iPE	07	13	32	1.2	1.5
	iP	08	00	25.8		
	+iP	08	30	26.6	1.4	3.0
	+iP	10	22	38.9		2.5

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
17	eP	12	16	34		
	iP	18	12	50.1		
	-iPN	18	52	37.6	1.8	1.5
18	-iPE	07	32	18.7	0.7	1.2
	iP	15	51	36.7		
	-eP	22	35	05.0	1.2	2.5
19	iP	17	19	42.8		
	eP	17	41	40		
20	ePN	01	33	09		
	iPN	02	32	54.6		
	+iPE	07	39	32.3	0.5	1.0
	-iPE	08	02	44.0	1.8	1.5
21	iP	08	44	40.8		
	-iPE	11	00	48.3	1.1	1.0
	+iPE	11	44	43.6	1.1	2.5
	eP	14	26	48		
	eP	17	02	07		
	+iP	18	45	59.1	1.0	2.5
	iP	20	12	30.9		
22	iP	20	24	45.7		
	-iPE	04	10	22.1	1.1	1.9
	+iPE	04	52	24.6	1.1	1.5
	+iPE	06	19	48.6	0.8	1.2
	-iPE	09	08	48.5	1.1	1.5
	ePN	09	24	38		
	ePE	15	31	41		
23	iP	21	16	23.2		
	ePE	04	50	33		

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Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	s		
23	iP	08	48	26.1	2.6	12.5
	iX		49	19.1		
	-eS		58	45.6		
	ePN	11	39	37		
	+iPE	13	08	35.9	1.2	3.0
	iP	13	31	54.0		
	eP iXE	15	08 10	04 50.0		
24	+iPE	00	04	38.3	1.0	1.2
	+iP	05	01	15.0	1.2	2.8
26	iP	11	06	17.7		
	+iPE	11	16	18.7	1.0	2.0
27	ePE	05	24	36		
	+iPE	16	31	34.8	2.0	2.5
	+iPE	21	38	03.9	1.5	3.0
28	iP	07	43	55.8		
	ePE	11	45	15		
	-iPE	12	32	57.9	1.3	1.0
	-ePN	13	39	04	1.5	1.5
29	ePN	12	13	28		
	iP iX eS	15	08 09 12	26.9 52.5 29.5	1.7	14.0
	+iPN	15	52	47.0	0.6	0.5
30	eP	06	05	25.5		
	iP	07	10	57.1		
	+iPKP	07	42	28.1	1.3	1.0
	+iP	14	26	23.8	1.0	0.5
	iP +iS	15 16	59 09	40.1 07.7	1.8	4.5
	+iP	21	18	32.7	1.1	1.5

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Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	-iPE	07	13	20.5	1.2	2.0
	+iPE	07	19	05.2	1.0	1.5
	iP	07	26	04.5		
	-iPE	08	26	06.6	1.1	1.2
	iPKP	14	16	24.9		
	iPE	15	13	01.2		
	+iPE	16	46	34.2	1.3	2.0
	+iPE	21	50	53.3	0.6	3.5
2	ePE	00	53	56		
	-iPE	07	33	59.9	1.0	1.2
	-iPE	09	24	39.7	1.5	3.6
	+iPE iSE	16	34 37	05.0 09.3	0.8	1.8
	-iPE	21	55	50.7	0.7	4.0
3	-iPE	08	57	08.3	1.0	1.5
4	iPE	00	52	14.5		
	iPN	09	55	13.7		
	iP	10	30	07.7		
	iP	11	03	47.9		
	iP	15	37	35.9		
5	eP	04	43	34.5		
	-iPE	07	08	41.6	0.9	6.5
	-iP	19	49	10.7	1.5	1.2
6	iP	01	18	47.3		
	iP	03	14	36.1		
	-iP	05	15	28.2	1.0	3.2
	iP	09	53	52.5		
	iP	13	22	55.2		
	+iPE	14	53	32.2	1.2	5.5

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Date	Phase	Arrival Time			Period s	Amplitude mm
		h	m	s		
6	-iPN	21	06	19.7	1.0	2.5
7	iP	10	02	21.6		
	+iPE	12	05	18.1	0.6	1.5
	iP	15	34	14.5		
	-iPE	18	22	10.6	0.5	2.0
	-iPE	19	21	17.3	1.0	1.0
8	iP	08	13	17.7		
10	eP	12	04	27		
	ePE	23	04	28		
11	+iP	13	28	52.0	1.0	4.5
	+iP	19	53	26.5	1.8	3.5
	+iP	22	42	49.9	1.2	2.5
12	+iPE	10	43	10.0	1.6	2.5
	-iPE	23	16	38.0	1.9	1.5
13	iP	15	49	14.7		
	iP	19	19	52.8		
14	ePE	08	29	33		
	-iPE	10	54	49.0	1.1	2.1
	+iPE	11	15	22.1	1.8	1.3
	-iP	14	52	35.2	1.5	5.0
	iP	18	45	10.8		
15	iP	04	03	54.3		
	-iPE	08	06	30.8	1.7	1.5
	+iPE	16	31	48.5	1.5	1.5
	iP	19	59	16.3		
	+iPE	20	39	06.3	2.0	2.0
16	eP	22	27	32		
	+iPE	15	35	33.1	1.6	3.0

December 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
16	iPKP	21	13	44.1		
20	-iPE	11	47	24.6	1.2	1.5
	-iPN	11	21	36.8	1.3	2.5
21	iP	02	37	18.0		
	-iPE	16	32	08.9	1.4	2.2
	+iPE	17	57	52.5	1.6	2.5
22	eP	23	15	31.5		
	iP +iSE	23	21 30	10.1 55.4	2.0	1.5
23	iPN	10	33	14.9		
	ePE	12	34	21		
24	-iPE	18	48	00.6	1.1	3.0
	eP +iSE	20	22 31	36 59.3	3.0	6.0
25	iP -iSN	01	36 48	54.2 02.3	3.0	13.0
	iP +iSN	10 11	53 03	30.2 14.5	5.0	3.5
	iP	12	22	56.1		
	eP	14	53	23.0		
	iP	07	37	36.7		
26	+iP	09	06	02.7	2.0	2.5
	-iPE	06	07	26.4	1.2	1.0
27	iP eS	06	33 36	55.8 53.5		
	ePN	08	57	56.5		
	iP iS	09	29 39	43.4 20.2		
	eP	10	26	46		
	ePE	11	10	59		
	eP	12	05	40		

December 1967

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
27	-iP	16	35	33.7	2.3	3.0
	+eSE		46	05.5	4.5	7.5
	eP	22	44	02		
28	eP	00	49	39		
	-iPE	11	25	07.0	1.6	3.0
29	iP	20	42	18.7		
30	-iPE	01	10	52.7	0.8	3.5
	iP	07	58	49.0		
	-iPE	13	52	35.9	1.3	1.5
	-ePE	14	24	01.7	1.5	4.5
	-iPE	15	26	35.7	1.6	3.5
31	iP	02	38	50.3		
	-iPE	08	12	03.8	0.9	4.5
	iP	09	47	06.7		
	+iPE	16	54	03.7	0.6	1.0
	iP	22	02	51.4		

January 1968

Date	Phase	Arrival time			Period s	Amplitude mm
		h	m	s		
1	iPE	21	42	26.3		
2	+iPE	00	34	34.7	1.5	4.5
	ePE	10	56	02		
	iXE		57	34.8	1.0	5.5
	iP	22	56	35.6		
3	+iPE	02	08	23.2	1.3	6.5
	eP	07	54	04		
	iPE	10	19	33.5		

January 1968

Date	Phase	Arrival time			Period s	Amplitude m m
		h	m	m		
4	+ iPE	01	48	21.3	2.0	3.0
	- iPE	07	29	29.1	1.1	4.5
5	eP	09	32	30.9		
6	iPE	23	38	51.5		
7	+ iPE	12	46	08.5	1.4	2.5
	iP	13	09	58.2		
8	- iP	06	32	36.5	1.6	2.5
	eP	12	26	51.5		
	iP	18	56	35.9		
	iP	21	26	34.9		
9	ePE	16	09	27		
10	ePE	04	20	08		
	iP iS	09	43 54	48.4 01.8		
11	+ iPE	07	43	39.4	1.4	1.2
	iP	17	35	14.4		
	- iPE	19	21	56.9	1.4	2.0
12	iP	03	17	20.9		
	- iPE	11	44	34.7	1.1	4.0
	+ iPE	22	11	28.1	0.8	1.2
13	iPN	16	18	17.4		
	iSN		27	29.6		