



DEPARTMENT OF MINES AND TECHNICAL SURVEYS

DOMINION OBSERVATORIES BRANCH

SEISMOLOGICAL SERVICE OF CANADA

WESTERN DIVISION

SEISMOLOGICAL BULLETIN

January to March

1952

000

DOMINION ASTROPHYSICAL OBSERVATORY

VICTORIA / CANADA

00

January, 1952

No. 2

DATE	STN.	PHASE	h	m	s	REMARKS
25	V	P	15	51	00.0	
		P	15	51	04.0	
		S	15	51	06.4	
	HB	P	15	51	10.6	
		S	15	51	20.8	
	A	P	15	51	20.7	
S		15	51	37.9		
25	V	P	17	43	25.0	
		S	17	43	36.5	
			17	43	43.8	
	HB	P	17	43	25.5	
		S	17	43	40.2	
	A	P	17	43	11.2	
26	V	P	04	57	44	Aleutian Islands
28	V	P	02	01	34.1	
		S	02	01	50.4	
	HB	P	02	01	41.6	
		S	02	02	01.6	
29	V	P	23	47	11.0	
		S	23	48	16.5	
	HB	P	23	47	25	
31	V	P	08	33	14.4	Fiji Islands
31	A	P	19	20	02.7	
		S	19	20	10.1	
31	V	P	22	43	23.8	
		S	22	43	35.7	
	HB	P	22	43	23.7	
		S	22	43	35.8	
	A	P	22	43	33.5	
		S	22	43	39.6	
		S	22	44	01.6	

W. G. Milne
Seismologist-in-charge

February, 1952

No. 4

DATE	STN.	PHASE	h	m	s	REMARKS
7	V	P	22	03	03.3	
		S	22	03	15.3	
	HB	P	22	03	00.1	
		S	22	03	09.7	
	A	P	22	03	16.1	
9	V	P	05	29	08.5	
		S	05	29	19.2	
	HB	P	05	29	09.6	
		S	05	29	21.6	
	A	P	05	29	47.3	
11	V	i	07	18	42	Java Sea
		e	07	19	05	
13	A	P	20	21	03.2	
		S	20	21	07.6	
14	S	P	03	58	19	
		PS	04	07	47	
14	A	P	17	13	54.0	
		S	17	13	56.7	
14	V	P	21	12	25	Columbia
15	V	P	08	39	57.8	
		S	08	40	10.9	
	HB	P	08	39	52.7	
		S	08	40	01.4	
	A	P	08	39	52.1	
S		08	40	01.3		
16	V	P	21	28	48	
16	V	P	22	31	36	
		A	P	22	31	
	S		22	32	06.9	
	S	P	17	45.0		
		S	17	52.2		
18	A	P	22	54	01.2	
		S	22	54	10.1	
20	V	P	09	21	50	Peru
20	V	P	19	07	13.4	Felt at Victoria, B.C.
		HB	P	19	07	
	S		19	07	33.8	
	A	i	19	07	36.2	
		P	19	07	31.4	
21	V	P	07	53	15.1	
			07	53	21.2	
21	V	P	23	35	51.5	Felt at Victoria
		S	23	35	54.2	
	HB	P	23	36	00.9	
	A	P	23	36	09.1	

February, 1952

No. 5

DATE	STN.	PHASE	h m s	REMARKS
22	V	P	09 39 37.0	Felt at Victoria
	HB	P	09 39 46.7	
		S	09 39 57.1	
	A	P	09 39 54.3	
23	V	P	09 07 05.2	
		S	09 07 19.3	
	HB	P	09 07 16.6	
		S	09 07 40.1	
	A	P	09 07 24.4	
		S	09 07 53.6	
23	V	P	09 17 27.4	
	HB	P	09 17 36.0	
		S	09 17 59.6	
23	V	P	09 28 25.5	
	HB	P	09 28 36.8	
		S	09 29 00.6	
	A	P	09 28 45.1	
		S	09 29 15.7	
23	V	P	09 54 52.3	
	HB	P	09 55 06.5	
		S	09 55 30.4	
	A	P	09 55 14.4	
		S	09 55 43.9	
23	V	P	22 49 31.7	
24	HB	P	05 57 17	
24	V	P	23 07 38	Mariana Islands
25	V	P	01 29 08	Tonga Islands
		S	01 39 07	
		SKS	01 39 21	
		L	01 50.9	
		S	01 40.7	
	S	S		
25	V	P	02 07 39	Santa Cruz Islands
25	V	P	02 14 58	
25	V	i	11 42 36	Peru-Bolivia border
		i	11 43 36	
		i	11 52 13	
	HB	P	11 42 42.8	
	A	P	11 42 47.6	
	S	P	11 42.1	
26	V	P	15 47 56	Nicaragua
		e	15 49 23	
26	V	P	22 53 42.9	
		S	22 53 45.8	
27	V	P	06 16 18	

February, 1952

No. 6

DATE	STN.	PHASE	h m s	REMARKS
27	V	P	11 45 50	
27	HB	P	22 54 08.7	
		S	22 54 18.8	
28	V	P	00 38 34	Japan
28	V	P	18 54 39	Kamchatka
28	V	P	21 21 36	
29	V	P	12 40 51.5	
		S	12 40 54.5	
	HB	P	12 40 48.0	
		S	12 41 02.4	

SEISMOLOGICAL SERVICE OF CANADA
WESTERN DIVISION
DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA

STATIONS:

V - Victoria
S - Saskatoon

A - Alberni
HB - Horseshoe Bay

March, 1952

No. 7

DATE	STN.	PHASE	h m s	REMARKS
1	V	P	15 41 20	Japan
2	V	P	00 12 07.4	
		S	00 12 19.6	
	HB	F	00 12 02.9	
	A	P	00 12 04.0	
	S	S	00 12 12.6	
2	V	P	00 33 21	
2	V	P	04 56 44.5	
		S	04 56 47.5	
2	V	P	19 01 35	Nicaragua
2	V	P	21 25 04	
3	V	P	07 25 11	Tonga Island
3	A	P	09 58 56.8	
		S	09 59 01.0	
		e	09 59 18.2	
3	A	P	14 39 02.5	
		S	14 39 07.3	
4	V	eP	01 33 10	Japan
		i	01 33 15	
		i	01 33 29	
		S	01 41 50	
		e	01 42 02	
	PS	01 42 42		
	A	P	01 33 10	
	S	P	01 33.9	
S	S	01 42.9		
4	V	P	03 22 18	Japan
4	V	P	04 03 46	Japan
4	V	P	04 21 30	Japan
4	V	F	07 22 10	
4	V	P	16 41 09	Japan
4	V	P	19 43 19	Solomon Islands
4	V	P	20 06 29	Japan
		S	20 07.2	
		S	20 16.0	
4	V	P	21 27 27	
5	V	P	01 30 30	Japan

March, 1952

No. 8

DATE	STN.	PHASE	h m s	REMARKS
5	V	P	03 59 23	Japan
5	V	P	09 27 18	Japan
5	V	P	15 51 42	Gulf of California
		e	15 57.2	
	S	P	15 52.1	
		S	15 57.2	
7	V	P	07 44 51	Japan
7	V	P	19 54 06	Japan
7	V	P	20 53 52.9	
		S	20 53 59.6	
8	V	P	07 38 56	Guam
9	V	P	17 14 08	Japan
		S	17 22 27	
		ScS	17 23 58	
		e	17 30.0	
	S	P	17 14.8	
		S	17 23.9	
9	V	e	20 03 27	Alaska-Canada border
		i	20 03 29	
		e	20 06 13	
	S	P	20 04.5	
		S	20 07.9	
10	A	P	19 30 12.6	
		S	19 30 18.3	
11	A	P	23 54 26.3	
		S	23 54 34.1	
13	V	e	14 09 19	China Sea
		i	14 10 27	
14	V	P	14 59 42.6	Felt in Victoria
		S	14 59 44	
	HB	P	14 59 51.5	
		S	15 00 01.8	
	A	P	15 00 00.1	
14	V	P	21 05 28	Japan
16	V	P	05 50 24.5	
		S	05 50 27.2	
	HB	P	05 50 37.5	
		S	05 50 47.4	
	A	P	05 50 40.0	
16	V	P	17 21 30.4	
		S	17 21 33.4	
18	V	P	11 09 04 c	Santa Cruz Islands

March, 1952

No. 9

DATE	STN.	PHASE	h m s	REMARKS
19	V	P	11 10 37	Philippine Islands
	S	P	11 11.3	
		SKS	11 21.7	
20	V	P	10 11 42.2	
		S	10 11 46.0	
	A	P	10 11 58.6	
		S	10 12 14.9	
20	V	P	21 36 27.2	
		S	21 36 32.3	
	HB	P	21 36 42.9	
	A	P	21 36 43.9	
21	V	P	04 41 47.1 d	
		S	04 41 49.9	
	HB	P	04 41 57.7	
		S	04 42 07.5	
	A	P	04 42 02.5	
		S	04 42 19.0	
21	V	P	16 23 15	Santa Cruz Islands
22	V	P	02 01 58.7 d	
		S	02 02 15.5	
	HB	P	02 02 08.9	
		S	02 02 32.8	
	A	P	02 02 15.9	
			02 02 46.3	
22	V	P	18 22 09	Aleutian Islands
	S	P	18 23.2	
		S	18 29.4	
25	V	P	04 20 00	Tonga Islands
27	V	P	19 30 12.7	
		S	19 30 27.8	

W. G. Milne
Seismologist-in-charge

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DEPARTMENT OF MINES AND TECHNICAL SURVEYS

DOMINION OBSERVATORIES BRANCH

SEISMOLOGICAL SERVICE OF CANADA

WESTERN DIVISION

SEISMOLOGICAL BULLETIN

April to June

1952

000

DOMINION ASTROPHYSICAL OBSERVATORY

VICTORIA / CANADA

.00

SEISMOLOGICAL SERVICE OF CANADA
WESTERN DIVISION
DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA

C. S. Beals, Dominion Astronomer

John H. Hodgson, Chief, Seismological Division

S T A T I O N S

VICTORIA

$\phi = 48^{\circ}31'14''$ N. $\lambda = 123^{\circ}24'56''$ W. h = 197 m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Milne-Shaw NS and EW components, each with magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Benioff vertical, short period, with paper speed of 60 mm. per min., mass 235 lbs.

SASKATOON

University of Saskatchewan

$\phi = 52^{\circ}08'$ N. $\lambda = 106^{\circ}38'$ W. h = 515 m.

Time correction from observed radio time signals

Foundation: clay and sand

Instruments: Milne-Shaw NE and NW components, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., 1 lb mass.

DETERMINED CONSTANTS

INSTRUMENT	Ts	Tg	V	ϵ	DISPLACEMENT FOR 1" ARC TILT
Victoria Benioff	1.0	0.1			
Victoria EW	12.0		300	20:1	50 mm.
Victoria NS	12.0		300	20:1	50 mm.
Saskatoon NW	10.0		150	20:1	18 mm.
Saskatoon NE	10.0		150	20:1	18 mm.

NOTE:- Universal Time used throughout

STATIONS (Cont' d)ALBERNI (Vancouver Island) $\varphi = 49^{\circ}16'14''$ N. $\lambda = 124^{\circ}49'18''$ W.

Time correction from recorded radio time signals

Foundation: volcanic rock

Instruments: Willmore-Sharpe NS, EW and vertical
short period with paper speed of
60 mm. per min. Ts approximately 1/3 sec.,
and Tg approximately 1/20 sec.

HORSESHOE BAY (Vancouver)

 $\varphi = 49^{\circ}22'39''$ N. $\lambda = 123^{\circ}16'33''$ W

Time correction from recorded radio time signals

Foundation: granitic rock

Instruments: Willmore-Sharpe EW and vertical
short period with Ts approximately
1/3 sec., and Tg approximately 1/20 sec.
Sprengnether NS short period with Ts
and Tg approximately 1.9 sec. All
three components are recorded at 60 mm.
paper speed.

SEISMOLOGICAL SERVICE OF CANADA

WESTERN DIVISION

DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA

STATIONS: V - Victoria A - Alberni
 S - Saskatoon HB - Horseshoe Bay

April, 1952

No. 10

DATE	STN	PHASE	h	m	s	REMARKS			
1	V	P e e	00	39	17.8	Alberta, Montana British Columbia border			
			00	40	54.6				
			00	41	02.1				
	HB	P e	00	39	17.6				
			00	40	57.5				
			A	P	00		39	27.1	
2	V	P	S	e	00	39.5	Mexico		
				i	00	40		45	
				P	18	42		08	
3	V	P	S	L	18	54.0			
			HB	P	02	14		23	
					02	14		22	
4	V	P	A	P	02	14	06	Kamchatka	
			V	P	03	01	32		
					08	02	18		
4	V	P S	20	51	10.5	Formosa			
			20	51	13.2				
			HB	P S	20		51	19.4	
	20	51	29.2						
	5	V	P	A	P S		20	51	28.9
				20			51	45.8	
5	V	P	01	14	05.8	Fiji Islands			
			01	14	09.8				
8	V	P	08	45	38	Brazil			
8	V	P	00	29	40				
8	V	P	00	31	45				
8	V	P	03	03	27	Kamchatka			
8	V	P	03	15	48	Kamchatka			
8	V	P	04	56	46				
8	V	P	15	28	39				
			A	P	15		28	21	

April, 1952

No.11

DATE	STN.	PHASE	h m s	REMARKS
9	V	P	16 34 29	Oklahoma
	S	e	16 34.2	
10	V	P	06 09 55	Ryukyu Islands
11	V	P	09 48 48.6	
		S	09 48 51.5	
	HB	P	09 48 56.5	
		S	09 49 11.6	
	A	P	09 48 51.3	
		S	09 49 02.7	
12	V	P	01 46 52	
12	V	P	02 58 11	Aleutian.. Islands
12	V	P	11 04 33.9	
	HB	P	11 04 44.7	
14	V	P	23 50 02	
15	V	P	00 02 06.7	
15	V	P	06 10 13	Hokkaido, Japan
15	V	P	09 27 27 d	Fiji Islands
15	V	P	13 47 53	
15	V	P	19 21 30	Sandwich Islands
16	V	P	03 49 38	Kurile Islands
16	V	P	17 56 18.1	
		S	22 25 41.1 c	
	HB	P	22 25 45.1	
		A	P	
16	V	P	22 25 58.8	
		S	23 31 15.6	
	HB	P	23 31 19.1	
		A	P	
16	V	P	23 31 35.0	
		S	23 35 45.6	
	A	P	23 35 48.9	
		S	23 36 04.9	
17	V	P	23 36 23.0	
		S	00 27 45.6	
	HB	P	00 27 55.0	
		S	00 27 37.6	
	A	P	00 27 56.9	
		S	00 28 02.2	
17	V	P	00 28 22.8	
17	V	P	18 57 38.3	

April, 1952

No.12

DATE	STN	PHASE	h m s	REMARKS
17	V	P	19 06 27.5	
	V	P	22 45 03.8	
18	V	P	16 11 52	Mariana Islands
19	V	P	01 30 55.6	
19	V	P	03 25 30	
19	V	P	10 08 56.7	Columbia-Venezuela border
		S	10 17 01	
	S	P	10 08.2	
		e	10 15.9	
19	HB	P	19 05 21.0	
	A	P	19 06 22.2	
		S	19 06 32.2	
19	V	P	19 48 43	
19	V	P	22 14 01.2	
		S	22 14 03.4	
20	V	P	00 07 13.5	
		S	00 07 18.0	
20	V	P	07 19 58	Tonga Islands
21	V	P	02 09 04	
22	V	P	06 33 17 d	
22	V	P	16 56 48.2	Montana
		e	16 59 02.4	
	S	P	16 56 36	
		S	16 58.2	
23	V	P	19 28 20.3	
		S	19 28 56.6	
24	V	P	11 04 36.9	
		e	11 05 45.3	
		e	11 05 48.1	
24	V	P	12 24 17	
25	V	P	23 16 18.1	
	HB	P	23 16 08.2	
	A	P	23 16 27.5	
26	V	P	02 04 43	Kamchatka
27	V	P	05 27 37.1	
		S	05 27 42.8	
	A	P	05 27 32.2	
27	V	P	08 25 27	Kermadec Islands

April, 1952

No. 13

DATE	STN.	PHASE	h m s	REMARKS
27	V	P	15 06 23	Mariana Islands
28	V	P	11 04 40	Hohhaido, Japan
29	V	iP S	02 47 39 d 02 57 49	Formosa
29	V	P	03 26 59 c	Mozambique Channel
30	V	P	02 10 00.8	

SEISMOLOGICAL SERVICE OF CANADA
WESTERN DIVISION
DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA

STATIONS: V - Victoria A - Alberni
 S - Saskatoon HB - Horseshoe Bay

May, 1952

No. 14

DATE	STN.	PHASE	h m s	REMARKS	
1	V	P	13 09 07.6		
		S	13 09 30.2		
	HB	e	13 09 45		
	A	e	13 09 23.1		
1	V	P	15 12 41	Aleutian Islands	
1	V	P	16 21 11	North Atlantic	
1	V	P	20 12 40.7		
		S	20 12 43.2		
	HB	P	20 12 56.1		
	A	P	20 13 00.1		
2	V	P	11 24 46	Japan	
2	V	P	16 07 33		
3	V	P	00 10 00.6		
		S	00 10 06.1		
	A	P	00 10 05.6 00 10 21.4		
4	V	P	13 39 13.8		
4	V	P	14 28 09.6	Tonga Islands	
		e	14 38 31		
		e	14 39.1		
5	V	P	04 58 37	Bonin Islands	
6	A	P	15 11 31.6		
		S	15 11 38		
6	V	P	17 22 47	California	
		e	17 23.1		
	S	L	17 29.9		
7	V	L	16 17.2		
7	A	P	16 15 36.2		
	HB	P	16 15 50.2		
8	V	P	00 09 39		
8	V	P	21 20 35	Molucca Passage	
		S	21 28 40		
9	V	P	15 33 53	California-Nevada border	
9	V	P	18 00 34 d	Solomon Islands	
		SKS	18 11 15		
		S	18 11 52		
		PS	18 13 31		
		eZ	18 18 14		
		eZ	18 26 22		
		L	18 27.7		
		S	e		18 01.5
			e		18 05.6

MAY, 1952

No.15

DATE	STN.	PHASE	h m s	REMARKS
9	V	P	18 28 13 d	
10	V	e	02 42.6	
10	V	P	09 32 25	
10	V	P	14 33 06	
10	V	P	17 18 00	
12	V	P	05 42 29.0	
		S	05 42 55.7	
		e	05 42 57.4	
		HE P	05 42 48.4	
		S	05 43 24.2	
12	V	P	17 47 05.3	
12	V	P	18 06 12.7	
			18 06 14.3	
12	V	P	19 11 47	
13	V	P	03 17 21	
13	V	P	19 40 21	Costa Rica
		S	19 47 45	
		P	19 39.9	
		e	19 41.7	
		e	19 42 25	
14	V	e	00 46 59	Japan
		S	00 47.9	
		e	00 56.8	
14	V	P	21 19 35	Honduras
		e	21 23.6	
		e	21 29.7	
14	V	P	23 28 21	
			e	23 29 52
15	V	P	09 38 32 d	
15	V	P	11 15 00	Aleutian Islands
15	A	P	18 50 33.3	
		S	18 50 40.2	
15	V	P	18 51 54	
15	V	P	21 19 27	Chile
15	V	P	21 44 06	Aleutian Islands
16	V	P	05 50 08.9 c	Guatemala
		S	05 56 41	
16	V	P	10 59 35	Mexico

MAY, 1952

No.16

DATE	STN.	PHASE	h m s	REMARKS	
16	V	P	20 55 22	Panama	
		e	21 03 22		
	S	P	20 54 14		
		e	21 02.0		
16	V	P	22 32 12	Tonga Islands	
17	V	P	06 09 28	Sea of Okhotsk	
17	V	P	06 31 12 c		
17	HB	P	07 36 18.1		
		S	07 36 26		
	A	P	07 36 20.8		
		S	07 36 30.4		
17	V	P	09 58 31	Japan	
19	V	P	18 36 16.7	Felt Victoria	
		HB	P		18 36 32.3
			S		18 36 35.8
	A	P	18 36 37.2		
		S	P		18 36 51.2
			S		18 36 51.2
19	V	eP	18 43 05	Japan	
		S	18 50 59		
	S	P	18 43 33		
		S	18 52 20		
20	V	P	11 09 55		
20	V	P	13 44 23	Fiji Islands	
20	V	P	14 55 12		
20	A	P	22 03 23.6		
22	V	P	23 20 13 d	Ryukyu Islands	
23	V	P	04 32 16 d	Japan	
23	V	P	15 31 43		
23	V	P	16 33 43		
23	V	P	20 36 00	Tonga Islands	
23	V	P	22 19 58 c	Hawaii	
		e	22 20 02		
24	V	P	02 11 40	Chile	
24	V	P	16 24 48	Sumatra	
28	V	iP	08 09 48	Japan	
		S	08 18 38		
	A	P	08 09 42		
		P	08 10 29		
	S	S	08 19 45		

MAY, 1952

No.17

DATE	STN.	PHASE	h m s	REMARKS
30	V	e	01 30 01	Formosa
30	A	P	16 16 06.1	
30	V	P	23 31 12.2	
		S	23 31 33.6	
31	V	P	12 03 53.2	Loyalty Islands
		S	12 04 21.2	

SEISMOLOGICAL SERVICE OF CANADA
WESTERN DIVISION
DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA

STATIONS: V - Victoria A - Alberni
 S - Saskatoon HB - Horseshoe Bay

June, 1952

No. 18

DATE	STN.	PHASE	h m s	REMARKS
2	V	P	08 59 38.8	
		S	08 59 43.4	
	HB	P	08 59 46.6	
		S	08 59 56.3	
	A	P	08 59 56.4	
		S	09 00 12.8	
3	V	P	13 31 18.1	Japan
4	V	P	06 31 26	Kashmir - Tibet border
		e	06 33 03	
4	V	P	21 40 39	Colombia
5	V	P	06 06 24	Colombia
5	V	P	18 44 27.3	
		S	18 44 43.6	
	A	P	18 44 26.8	
5	V	P	19 05 55.6	
	A	P	19 05 55.2	
5	V	P	20 26 36.2	
		S	20 26 46.7	
5	V	P	21 14 50.2	
		S	21 15 07.6	
5	V	P	21 36 55.3	
	A	P	21 36 53.7	
5	V	P	23 52 28.7	
		S	23 52 42.5	
	HB	P	23 52 26.8	
6	A	P	15 00 31.9	
6	V	P	18 27 57	
7	V	P	16 51 42	
7	V	P	18 49 35	
7	V	P	19 07 14.9	
		S	19 07 15.3	
10	V	P	10 10 43	Fiji Islands
		e	10 20 58	
	S	e	10 11.5	
		S	10 22 40	
11	V	P	00 44 53	Argentina
	S	e	00 55 16	
11	V	P	14 54 31.1	

June, 1952

No.19

DATE	STN.	PHASE	h m s	REMARKS	
12	V	P	13 28 59.6		
		S	13 29 11.5		
	HB	P	13 29 13.2		
S		13 29 32.8			
	A	e	13 29 32		
12	V	P	19 00 31.5		
		S	19 00 45.7		
	HB	P	19 00 33.7		
14	V	P	02 10 04.7 d	Alaska	
14	V	P	02 17 48.2		
15	V	P	15 16 52	Yukon	
		S	15 20 25		
	S	e	15 20 35		
		L	15 23.2		
16	V	P	03 50 16.5	Fiji Islands	
17	V	P	20 36 03.8		
		S	20 36 21.1		
	HB	P	20 36 12.3		
		S	20 36 26.0		
	A	P	20 36 00.2		
18	V	P	01 09 28		
18	A	P	05 11 45.2		
		S	05 11 53.3		
18	A	P	07 25 05.0		
		S	07 25 14.2		
18	V	P	10 58 57.0		
		S	10 59 10.3		
19	V	P	01 47 12		
19	V	P	12 37 28	China	
20	V	P	05 59 05 c	Formosa	
		S	06 09 43		
	S	L	06 39		
21	V	P	06 37 57	Kurile Islands	
22	V	P	03 45 29	Kermadec Islands	
22	V	P	04 18 22	Ecuador	
22	V	P	10 19 36	Kurile Islands	
22	V	P	16 19 44		
			16 19 46		
22	V	P	21 51 15	Kurile Islands	
			21 58 48		
	S	P	21 52 01		
			22 00 12		
			22 01 44		
			22 04.2		

June, 1952

No. 20

DATE	STN.	PHASE	h m s	REMARKS
23	V	P	12 15 55.6	Formosa
23	V	P	17 38 01.0	
		S	17 38 06.0	
	HB	P	17 38 15.5	
23	V	P	23 52 56.5	
		S	23 53 07.8	
	HB	P	23 52 51.3	
	A	P	23 52 53.2	
24	V	P	03 28 36	New Hebrides
24	V	P	13 55 27	
25	V	P	23 20 04.1	
		S	23 20 05.7	
27	V	P	21 38 58.5	
		S	21 39 00.6	
28	V	P	05 09 46 c	Kamchatka
28	V	P	10 56 50 d	
28	V	P	16 20 11	
28	V	P	19 19 52	Molucca Passage
29	V	P	10 06 19	Colombia - Venezuela border
		e	10 06 56	
29	V	P	16 02 33	Japan
29	V	P	16 51 58	Kamchatka

W. G. Milne
Seismologist-in-charge



DEPARTMENT OF MINES AND TECHNICAL SURVEYS

DOMINION OBSERVATORIES BRANCH

SEISMOLOGICAL SERVICE OF CANADA

WESTERN DIVISION

SEISMOLOGICAL BULLETIN

July - September

1952

000

DOMINION ASTROPHYSICAL OBSERVATORY

VICTORIA / CANADA

00

SEISMOLOGICAL SERVICE OF CANADA
 WESTERN DIVISION
 DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA

C. S. Beals, Dominion Astronomer

John H. Hodgson, Chief, Seismological Division

S T A T I O N S

VICTORIA

$\phi = 48^{\circ}31'14''$ N. $\lambda = 123^{\circ}24'56''$ W. h = 197 m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Milne-Shaw NS and EW components, each with magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Benioff vertical, short period, with paper speed of 60 mm. per min., mass 235 lbs.

SASKATOON

University of Saskatchewan

$\phi = 52^{\circ}08'$ N. $\lambda = 106^{\circ}38'$ W. h = 515 m.

Time correction from observed radio time signals

Foundation: clay and sand

Instruments: Milne-Shaw NE and NW components, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., 1 lb mass.

DETERMINED CONSTANTS

INSTRUMENT	Ts	Tg	V	ϵ	DISPLACEMENT FOR 1" ARC TILT
Victoria Benioff	1.0	0.1			
Victoria EW	12.0		300	20:1	50 mm.
Victoria NS	12.0		300	20:1	50 mm.
Saskatoon NW	10.0		150	20:1	18 mm.
Saskatoon NE	10.0		150	20:1	18 mm.

NOTE:- Universal Time used throughout

S T A T I O N S (Cont' d)ALBERNI (Vancouver Island)

$\varphi = 49^{\circ}16'14''$ N. $\lambda = 124^{\circ}49'18''$ W.

Time correction from recorded radio time signals

Foundation: volcanic rock

Instruments: Willmore-Sharpe NS, EW and vertical short period with paper speed of 60 mm. per min. Ts approximately 1/3 sec., and Tg approximately 1/20 sec.

HORSESHOE BAY (Vancouver)

$\varphi = 49^{\circ}22'39''$ N. $\lambda = 123^{\circ}16'33''$ W

Time correction from recorded radio time signals

Foundation: granitic rock

Instruments: Willmore-Sharpe EW and vertical short period with Ts approximately 1/3 sec., and Tg approximately 1/20 sec. Sprengnether NS short period with Ts and Tg approximately 1.9 sec. All three components are recorded at 60 mm. paper speed.

SEISMOLOGICAL SERVICE OF CANADA

WESTERN DIVISION

DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA

STATIONS: V - Victoria A - Alberni
 S - Saskatoon HB - Horseshoe Bay

July, 1952

21

DATE	STN	PHASE	h m s	REMARKS
2	V	P	17 05 31	Kamchatka
3	V	P	01 02 17	Colombia
4	V	P	04 57 35	Fiji Islands
4	V	Pn	22 54 57.6	Felt at Hope, B. C.
		e	22 55 00	
		S	22 55 15	
		e	22 55 19	
	HB	P	22 54 50.4	
		S	22 55 05	
	A	P	22 55 07	
4	HB	P	23 00 35	
		S	23 00 50	
7	V	iP	02 58 35 d	Unimak Island, Aleutians
7	V	iP	14 56 01 d	Mariana Islands
8	V	iP	01 09 29 c	Sea of Japan
8	V	P	15 52 22	Tonga Islands
9	V	iP	18 24 41	Panama
9	V	P	20 46 12	Panama
10	V	iP	06 13 24 d	
10	V	iP	15 56 52 c	Fiji Islands
12	V	Pn	19 16 34 c	
		Sn	19 16 46	
	HB	Pn	19 16 28	
		S	19 16 36	
13	V	iP	12 11 04 c	New Hebrides
		S	12 21 03	
		e	12 23 09	
	S	P	12 11 55	
		L	12 22.0	
13	V	P	17 52 52	Ceram Sea
15	V	iP	06 14 18 d	Guatemala
		S	06 20 52	
		L	06 29.8	
	S	L	06 15.4	
15	V	Pn	10 08 37	Felt at Powell River, B. C.
		S	10 08 56	
	HB	P	10 08 30	
		S	10 08 42	

July, 1952

DATE	STN	PHASE	h m s	REMARKS
16	V	P	01 36 06	California
16	V	P ₁ S ₁	18 59 04 18 59 12	
17	V	iP i S	16 21 07 c 16 21 29 16 30 19	Japan
18	A	P S	11 54 29 11 54 45	
18	A	P S	11 55 21 11 55 39	
19	V	P ₁ S ₁	11 54 22 11 54 25	felt in Victoria, B. C.
19	V	P ₁ S ₁	11 55 14 11 55 17	
21	V	iP i i iS i	11 55 32 c 11 55 35 11 55 38 11 58 38 11 58 58	California
	HB	P	11 55 45	
	A	P	11 55 48	
	S	P S	11 56 42 12 00 16	
21	V	P	12 08 49	
21	V	P	12 10 33	
21	V	P	12 43 06	
21	V	P	15 17 20	
21	V	P	19 44 43	
22	V	P	08 53 46	
22	V	P	11 46 10	
22	V	P	13 35 04	
23	V	P S S L	00 41 47 00 42 58 00 46 25 00 48.7	California
23	V	P	01 07 24	Guatemala
23	V	P	04 42 53	Fiji Islands
23	V	Pn Sn	06 50 11 06 50 19	
23	V	P	07 56 36	

July, 1952

23

DATE	STN	PHASE	h m s	REMARKS		
23	V	P	10 42 02			
		S	10 42 05			
	A	P	10 42 12			
		S	10 42 26			
23	V	P	13 20 24			
		S	13 21 35			
		S	13 25 02			
		L	13 27.3			
24	V	P	22 19 29	Japan		
25	V	P	19 13 03			
		S	19 16.0			
		L	19 17.5			
	S	e	19 17 37			
		L	19 19.7			
25	V	P	19 46 43			
25	V	P	20 09 24			
26	V	P	14 14 07			
			14 14 09			
			14 14 18			
	HB	P	14 13 58			
			S		14 14 06	
	A	P	14 14 03.4			
			S		14 14 12.2	
	26	V	P		21 03 27	
					S	
HB		P	21 03 23			
			S	21 03 34		
A		P	21 03 18			
	S		21 03 23			
27	V	P	08 35 07	Fiji Islands		
			S		08 44 46	
	S	e	08 46 33			
			e		08 53.0	
27	V	P	19 52 37 d			
			19 52 39			
			S		19 52 51	
			i		19 52 55	
	HB	P	19 52 46			
			S		19 53 08	
	A	P	19 52 56			
27	V	P	20 14 13			
			S		20 14 30	
	HB	P	20 14 21			
			S		20 14 44	
	A	P	20 14 31			
S			20 15 00			
28	A	P	08 25 04			
			S		08 25 16	
28	V	P	19 01 49			
			S		19 02 03	



July, 1952

DATE	STN	PHASE	h m s	REMARKS
29	V	P	07 07 04	California
		S	07 10 11	
	S	P	07 08 07	
		S	07 11 42	
29	V	P	20 01 01	Aleutians
29	A	P	23 50 31	
		S	23 50 40	
30	V	P	01 23 08	
30	HB	P	07 47 10	
		S	07 47 21	
	A	P	07 47 20	
		S	07 47 33	
30	HB	P	09 41 12	
		S	09 41 27	
30	A	P	23 34 22	
		S	23 34 30	
31	V	P	12 12 28	California
		P	12 13 31	
		S	12 17 02	
31	V	P	18 18 02	
29	V	P	07 07 04	California
		S	07 10 11	
	S	P	07 08 07	
		S	07 11 42	
29	V	P	20 01 01	Aleutians
29	A	P	23 50 31	
		S	23 50 40	
30	V	P	01 23 08	
30	HB	P	07 47 10	
		S	07 47 21	
	A	P	07 47 20	
		S	07 47 33	
30	HB	P	09 41 12	
		S	09 41 27	
30	A	P	23 34 22	
		S	23 34 30	
31	V	P	12 12 28	California
		P	12 13 31	
		S	12 17 02	
31	V	P	18 18 02	

SEISMOLOGICAL SERVICE OF CANADA

WESTERN DIVISION

DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA

STATIONS: V - Victoria A - Alberni
S - Saskatoon HB - Horseshoe Bay

August, 1952

25

DATE	STN	PHASE	h m s	REMARKS
2	V	P	15 50 00.8	
		S	15 50 21.8	
	HB	P	15 50 08.8	
		S	15 50 33.9	
6	V	P	17 32 17.5	5 mi. South of Seattle
		e	17 32 20.3	
		S	17 32 38.0	
	HB	P	17 32 31.6	
		S	17 32 56.8	
6	A	P	21 43 17.7	
7	V	P	03 48 35.2	felt Victoria
		S	03 48 38.2	
	HB	P	03 48 49.2	
		S	03 49 01.4	
	A	P	03 48 52.0	
		S	03 49 07.3	
7	HB	P	14 35 46.6	
7	V	P	22 03 43	Japan
9	HB	P	03 42 31.5	
		S	03 42 34.7	
9	V	P	07 48 27.3	
	HB	P	07 48 25	
	A	P	07 48 06.3	
9	A	P	13 16 58.6	
		S	13 17 05.0	
10	V	P	00 28 04.7	Aleutians
		S	00 28 08.7	
10	V	P	02 08 05	
10	A	P	14 58 03.8	
		S	14 58 21.4	
11	V	P	22 52 12.5	
		S	22 52 15.4	
11	V	P	22 59 31.3	
		S	22 59 39.2	
11	V	P	23 01 09.1	
		S	23 01 13.0	
12	V	P	07 37 11.7	
		S	07 37 15.4	
14	V	P	22 30 10.6	
		S	22 30 11.6	

August, 1952

26

DATE	STN	PHASE	h m s	REMARKS
14	V	P	23 29 40.5 c	Solomon Islands
		S	23 40 08	
		L	23 57	
15	V	P	01 48 36 d	Fiji Islands
15	V	P	20 09 51	Japan
16	V	e	14 15 22 c	
17	V	P	04 44 18	Indian Ocean
17	V S	P	10 01 52	
		e	10 26 21	
		L	10 43	
17	V	P	14 19 46.8	
		S	14 20 10	
17	V	P	16 15 33	Tibet
		PP	16 19 35	
		SKS	16 26 29	
		PS	16 28 15	
		L	16 36	
18	V A	P	06 39 21	
		P	06 39 33	
19	HB	P	03 07 09	
		S	03 07 12	
19	V	P	14 13 08 c	Leeward Islands
20	V	P	05 57 01	Mexico
20	V	P	15 26 32.3	Off coast of Oregon
		e	15 26 39.3	
		S	15 27 44	
		e	15 27 49	
		A	15 26 38.9	
	S	P	15 26 44.6	
		S	15 27 51.9	
		P	15 28 52	
		S	15 31 57	
		L	15 33.6	
21	V	P	05 00 58.2	
		S	05 01 02	
21	V	P	09 46 20	Oregon Coast
21	A	P	12 54 21.8	
		S	12 54 24.3	
21	V	P	19 09 56	Oregon Coast
		e	19 11 01	
22	V S	P	22 44 41	California
		P	22 45 48	
		e	22 49 20	
		L	22 51.5	
23	V	P	14 32 02	Panama

August, 1952

27

DATE	STN	PHASE	h m s	REMARKS
24	V	P	12 57 17	Bonin Islands
24	HB	P	17 24 12.8	
25	V	P	02 16 19	
	HB	P	02 16 21.2	
		S	02 16 57	
	A	P	02 16 01.6	
26	V	P	09 51 50.4	
		S	09 52 04.6	
26	V	P	10 25 48	Japan
26	HB	P	20 05 07.0	
		S	20 05 12.5	
26	V	P	23 12 48.8	
		S	23 12 49.8	
27	V	P	11 33 00	Alaska
27	V	P	17 10 22	Puerto Rico
27	V	P	19 23 31	
27	V	P	20 48 40	
27	V	P	21 24 01.1	
		S	21 24 21.1	
27	V	P	22 04 38	Aleutians
27	V	P	22 22 50	
28	V	i P	10 57 57 c	Alaska
		e	11 02 12	
	S	e	11 04 04	
28	V	P	13 09 34	Easter Islands
28	V	P	15 31 53	Mexico
29	V	P	19 10 09.6	
		S	19 10 13.6	
29	V	P	21 23 58	
30	V	P	19 44 11	
30	V	P	19 47 34.5	
	A	P	19 47 34.2	
		S	19 47 36.0	
30	V	P	21 29 08.0	
		e	21 29 10.7	
		S	21 29 24.7	
	A	P	21 29 08	

August, 1952

23

DATE	STN	PHASE	h m s	REMARKS
31	V	P	00 52 08	
31	V	P	01 22 44	
31	V	P	10 05 59.2	
		S	10 06 14.2	
	HB	P	10 06 03.5	
		S	10 06 13.0	
	A	P	10 05 48.4	
		e	10 05 52	
		S	10 05 55	
31	V	P	16 19 58	Japan

SEISMOLOGICAL SERVICE OF CANADA

WESTERN DIVISION

DOMINION ASTROPHYSICAL OBSERVATORY, Victoria

STATIONS: V - Victoria A - Alberni
 S - Saskatoon HB - Horseshoe Bay

September, 1952

29

DATE	STN	PHASE	h m s	REMARKS
1	HB	P	03 14 41.9	
1	V	P	08 03 13.4	
		S	08 03 38	
2	V	P	03 51 20.0	
		S	03 51 37	
2	V	P	07 36 55	
2	V	P	08 11 25	
3	V	P	22 09 28.0	
		S	22 10 06	
6	HB	P	10 41 28.8	
		S	10 41 43.4	
	A	P	10 41 42.5	
		S	10 42 00	
9	A	P	08 17 57.1	
		e	08 18 12.4	
		i	08 18 17.4	
9	S	P	13 03 20	Costa Rica
		S	13 09 40	
		L	13 13.0	
12	V	P	14 37 24	
		S	14 37 42	
13	V	P	22 58 57	
		S	22 59 12	
	HB	P	22 58 59.8	
		S	22 59 15	
	A	P	22 59 14.6	
		S	22 59 40	
14	V	P	06 03 33	Fiji Islands
14	V	P	08 30 59	
14	V	P	09 47 32	China
15	V	P	06 54 53	
17	V	P	01 28 17 c	Fiji Islands
18	V	P	08 52 55.3	
		S	08 53 02.3	
21	V	P	02 42 49 d	Argentina - Bolivia border
		e	02 43 54	
		iS	02 52 48	
	S	P	02 43 36	
		S	02 51 19	

September, 1952.

30

DATE	STN	PHASE	h m s	Remarks		
22	A	P	02 50 44.4			
		S	02 50 53.7			
22	V	P	07 21 52.7			
		S	07 21 59.7			
	HB	P	07 22 01.0			
		S	07 22 13.8			
	A	P	07 22 12.5			
		S	07 22 33.5			
22	V	P	11 43 25	California		
	S	L	11 50.2			
24	V	P	22 10 45 d			
27	V	P	19 14 28 c	Kamchatka		
30	HB	e	00 54 33.2			
		i	00 54 40			
		e	00 54 55			
	A	P	00 54 36.6			
		e	00 54 43.1			
		e	00 55 00.6			
	V	P	00 54 18 c			
		S	00 54 23			
	30	V	P		13 05 18	China
			S		13 16 48	
30	A	P	17 34 49.8			

 W. G. Milne
Seismologist-in-charge



DEPARTMENT OF MINES AND TECHNICAL SURVEYS

DOMINION OBSERVATORIES BRANCH

SEISMOLOGICAL SERVICE OF CANADA

WESTERN DIVISION

SEISMOLOGICAL BULLETIN

October, November and December

1952

000

DOMINION ASTROPHYSICAL OBSERVATORY

VICTORIA / CANADA

00

SEISMOLOGICAL SERVICE OF CANADA
 WESTERN DIVISION
 DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA

C. S. Beals, Dominion Astronomer

John H. Hodgson, Chief, Seismological Division

S T A T I O N S

VICTORIA

$\phi = 48^{\circ}31'14''$ N. $\lambda = 123^{\circ}24'56''$ W. $h = 197$ m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Milne-Shaw NS and EW components, each with magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Benioff vertical, short period, with paper speed of 60 mm. per min., mass 235 lbs.

SASKATOON

University of Saskatchewan

$\phi = 52^{\circ}08'$ N. $\lambda = 106^{\circ}38'$ W. $h = 515$ m.

Time correction from observed radio time signals

Foundation: clay and sand

Instruments: Milne-Shaw NE and NW components, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., 1 lb mass.

DETERMINED CONSTANTS

INSTRUMENT	Ts	Tg	V	ϵ	DISPLACEMENT FOR 1" ARC TILT
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Victoria EW	12.0		300	20:1	50 mm.
Victoria NS	12.0		300	20:1	50 mm.
Saskatoon NW	10.0		150	20:1	18 mm.
Saskatoon NE	10.0		150	20:1	18 mm.

NOTE:- Universal Time used throughout

STATIONS (Cont' d)ALBERNI (Vancouver Island)

$\phi = 49^{\circ}16'14''$ N. $\lambda = 124^{\circ}49'18''$ W.

Time correction from recorded radio time signals

Foundation: volcanic rock

Instruments: Willmore-Sharpe NS, EW and vertical short period with paper speed of 60 mm. per min. Ts approximately 1/3 sec., and Tg approximately 1/20 sec.

HORSESHOE BAY (Vancouver)

$\phi = 49^{\circ}22'39''$ N. $\lambda = 123^{\circ}16'33''$ W

Time correction from recorded radio time signals

Foundation: granitic rock

Instruments: Willmore-Sharpe EW and vertical short period with Ts approximately 1/3 sec., and Tg approximately 1/20 sec. Sprengnether NS short period with Ts and Tg approximately 1.9 sec. All three components are recorded at 60 mm. paper speed.

SEISMOLOGICAL SERVICE OF CANADA

WESTERN DIVISION

DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA

STATIONS V - Victoria A - Alberni
 S - Saskatoon HB - Horseshoe Bay

N.B. All locations and distances shown for earthquakes are taken from the United States Coast and Geodetic Survey Epicenter Cards with the exception of local shocks.

October, 1952

31

DATE	STN	PHASE	h m s	REMARKS
1	V	P	00 13 22	
1	V	P	01 48 01	local
	A	P	01 47 50.2	
1	V	P	01 54 31	local
	A	P	01 54 19.7	
	HB	P	01 54 33.5	
1	V	P	03 53 03	
1	V	P	08 10 39	
1	V	P	09 13 39	
1	V	P	11 41 03	
1	V	P	13 34 10	
3	V	P	07 46 17	M 6 1/2 off coast of Panama
4	V	P	12 18 44.3	local
		S	12 19 13	
	A	P	12 18 32.9	
		S	18 53	
	HB	P	12 18 30.2	
		S	12 18 48.1	
4	V	S	12 48 00	local
	A	P	12 47 15.0	
		S	47 25.0	
5	V	P	11 07 52	near west coast of Greece
5	V	P	22 17 25	China
6	V	P	01 40 30	Alaska
6	V	P	14 18 40	Peru
6	V	P	22 37 59	5050 km Kamchatka
7	V	P	06 46 29	
7	V	P	07 05 22	off Oregon
7	V	P	07 32 16	off Oregon
7	V	P	08 00 41	

October, 1952

32

DATE	STN	PHASE	h m s	REMARKS
7	V	P	08 45 39	off Oregon
7	V	P	14 20 40.0	local
		S	14 21 21	
9	A	P	09 24 36.0	local
		S	24 42.0	
10	V	P	21 28 34	
10	V	P	21 59 27	Alaska
10	V	P	22 49 27	
10	V	P	22 53 57	Mexico
11	V	P	01 43 28	Bechuanaland, Africa
11	A	P	08 53 45.1	local
		S	52.5	
11	V	P	10 01 12	local
		S	10 01 57	
	HB	P	10 01 12.5	
		S	01 46.3	
12	V	iP	17 06 23.8 d	local
		S	06 42.1	
	A	P	17 06 41.7	
		S	07 10.2	
	HB	P	06 38.3	
		S	07 01.8	
14	V	P	21 51 26.0	local
		S	51 38.0	
	HB	P	21 51 34.8	
		S	51 46.6	
14	V	P	22 21 42	
15	V	P	00 05 21	5750 km Costa Rica
15	V	P	00 21 25	Japan
15	V	P	02 25 09	Chile
15	V	P	02 59 08	
15	V	P	13 39 11	
15	V	P	17 51 18	
15	V	P	18 04 08	Cyprus
15	S	e	22 16 00	
17	V	P	07 45 21	Samoa Islands
17	V	P	09 03 27	
18	V	P	05 35 28	9800 km New Hebrides
	S	L	06 10 00	

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DATE	STN	PHASE	h m s	REMARKS
18	V S	P L	12 08 59 12 25.0	7900 km Atlantic Ocean
18	A	P S	14 00 48.5 00 55.7	local
18	V	P	19 56 52	
18	V	P	20 45 14	Samoa
18	V	P	21 22 36	
19	A	P S	12 21 11.6 21 28.1	local
20	HB	P S	03 20 01.7 20 16.2	local
20	V	P	14 40 10	
20	V	P	16 26 27	Kamchatka
21	V	P	03 20 41	
21	A	P S	15 36 36.8 36 43.5	local
21	V	iP S	21 10 37.3 d 10 40.3	local
	A	P S	21 10 54.2 11 10.4	
	HB	P S	21 10 45.7 10 55.5	
22	V	P	19 50 50	Arizona, New Mexico
25	V	P	14 36 27	California
26	V	P	08 51 48	7800 km Japan
26	V	P	13 30 50	Japan
26	V	P	14 40 34	Japan
26	V	P	15 56 48	7050 km Japan
26	V	P	16 03 39	
26	V	P	18 12 37	7050 km Japan
26	V	P	19 29 53	7050 km Japan
28	V S	P P e L	04 38 47 04 44 06 47 06 53 00	5500 km Haiti
28	V	P	06 41 34	6950 km Japan
28	V	P S	15 55 30.6 55 35.1	local
	A	P S	15 55 47.7 56 05.2	
	HB	P S	15 55 39.5 55 48.7	

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DATE	STN	PHASE	h m s	REMARKS
28	V	P	16 55 57	Japan
29	V	P S	03 41 58.5 43 05.0	local
29	V	P S	04 39 30.9 40 35.4	local
29	V	P S	06 57 56.4 59 03.7	local
	A	P S	06 57 57.4 59 04.2	
	HB	P S	06 58 09.5 59 21.0	
29	V	P S	07 10 10 11 17	local
29	V	iP S	09 35 20.8 d 36 28	local
	A	P S	09 35 21.3 36 27.0	
	HB	P S	09 35 31.3 36 43.3	
29	V	P	14 58 31	
29	V	iP	19 46 09 d	8750 Apia
29	V	P S	20 04 06 05 14	local
	A	P S	20 04 07.0 05 16.8	
	S		19 57 18	
31	V	P	16 47 53	7100 Japan
31	V	iP S	19 12 11.6 c 12 15.4	local
	A	P	19 12 30.9	
	HB	P	19 12 28.3	
31	V	iP S	19 12 54.2 d 13 00.9	local
	HB	P	19 13 11.0	
31	V	iP S	19 14 09.0 c 14 12.9	local
	A	P	19 14 26.8	
	HB	P	19 14 25.6	
31	V	iP S	19 20 50.0 c 20 54.0	local
	A	P	19 21 07.4	
	HB	P	19 21 05.6	
31	V	iP S	19 21 49.5 c 21 53.5	local
	A	P	19 22 06.5	
	HB	P	19 22 05.0	
31	V	iP S	19 22 56.5 c 23 00.5	local
	A	P	19 23 14.5	
	HB	P	19 23 12.6	
31	V	iP	19 26 18.5 c	local

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DATE	STN	PHASE	h m s	REMARKS
1	V		23 58 08	9600 km Fiji Islands
4	V	eP	17 06 55	5250 km Kamhatka M=8 1/4 φ=52 1/2N λ=159E
		iP	07 07	
		i	08 12	
		eS	14 03	
		iS	15 00	
		iL	18 08	
		i	18 44	
		i	19 51	
	A	P	17 06 54.5	
		e	29 22.5	
		e	45 03.8	
		e	47 10.8	
	HB	P	17 07 04	
	S	iP	17 08 04	
		i	09 50	
		iS	15 15	
		L	19 30	
4	V	P	17 45 06	
4	V	P	18 37 25	Kamchatka
	A	P	18 37 16	
4	V	iP	19 49 14 d	Kamchatka
4	V	P	20 57 35	Kamchatka
	A	P	20 57 26	
4	V	P	21 09 26	Kamchatka
4	V	P	21 38 54	
4	V	iP	22 01 36 d	Kamchatka
4	V	iP	22 21 23 d	Kamchatka
4	V	P	22 25 35	
4	V	P	22 27 50	
4	V	P	22 40 45	
4	V	iP	23 37 48 d	Kamchatka
4	V	P	23 50 01	
5	V	P	00 19 29	
5	V	P	00 25 08	
5	V	P	00 52 50	
5	V	P	02 28 51	Kamchatka
5	V	P	03 38 24	Kamchatka
5	V	P	04 19 28	
5	V	P	04 24 15	
5	V	P	06 06 47	Kurile Islands

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DATE	STN	PHASE	h m s	REMARKS
5	V	P	07 14 52	
5	V	P	09 07 10	
5	V	P	09 38 37	
5	V	P	11 43 16	Kamchatka
5	V	F	11 55 26	Kamchatka
5	V	F	14 35 00	
5	V	P	14 57 35	
5	V	P	16 49 56	
5	V	F	19 16 46	Kamchatka
5	V	F	19 21 07	
5	V	F	19 43 58	
5	V	F	20 39 19	Kamchatka
5	V	P	21 17 25	
5	V	P	22 03 01	
5	V	P	22 54 45	
	S	L	23 13 30	
6	V	P	01 07 02	
6	V	P	02 32 22	
6	V	P	04 03 08	Kamchatka
6	V	P	05 57 37	
	S	L	06 09	
6	V	F	11 05 47	Kamchatka
6	V	F	14 15 18	
6	V	F	14 30 41	
6	V	F	17 58 30	
6	V	F	19 54 33	Kamchatka
6	V	P	20 00 42	10450 km New Guinea
	S	eP	20 02 56	
		L	20 11	
6	V	P	20 59 36	
6	V	P	21 28 17	
6	V	P	22 39 57	
6	V	P	23 37 42	
7	V	F	00 23 06	

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DATE	STN	PHASE	h m s	REMARKS
7	V	P	01 19 27	
7	V	P	02 30 48	
7	V	P	03 14 58	
7	V	P	04 04 04	
7	V	P	05 24 46	
7	V	P	06 00 17	
7	V	P	06 34 33	
7	V	P	06 58 32	
7	V	P	07 35 47	
7	V	P	07 50 54	
7	V	P	11 16 13	
7	V	P	12 17 39	Kamchatka
7	V	P	13 50 14	Kamchatka
7	V	P	14 17 24	Kamchatka
	S	e	14 26 04	
7	V	P	15 49 44	
7	V	P	17 03 07	
7	V	P	18 50 59	
7	V	P	19 30 06	
7	V	P	21 00 21	2600 km California
		S	04 49	
		L	07 25	
	S	P	21 05 06	
		i	05 15	
		L	09.2	
7	V	P	22 14 33	Kurile Islands
	S	e	22 23 16	
		L	39	
7	V	P	23 25 19	10250 km Kermadec Islands
8	V	P	00 49 35	
8	V	P	02 23 32	
8	V	P	04 23 32	
8	V	P	04 38 33	
8	V	P	05 08 28	
8	V	P	15 45 20	
8	S	P	19 55 00	Kurile Islands
		L	20 05.5	
8	V	P	22 34 31	

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DATE	STN	PHASE	h m s	REMARKS
8	V	P	23 40 57	
9	V	iP	00 31 20 c	Kurile Islands
9	V	P	01 26 10	Kamchatka
9	V	P	01 45 34	
9	V	P	04 44 04	Kamchatka
9	V	P	05 07 25	
9	V	P	05 14 59	Kamchatka
	S	L	05 31	
9	V	iP	05 41 12 c	Kamchatka
9	V	iP	06 05 51 d	Kamchatka
9	V	P	15 31 39	
9	V	P	16 10 57	
9	V	P	16 56 29	
9	V	P	20 50 58	
10	V	iP	01 03 47 d	Kamchatka
10	V	P	03 36 40	
10	V	P	05 33 30	
10	V	P	06 14 47	
10	V	P	20 35 05	Kamchatka
10	V	P	22 54 30.7	local
		S	50.2	
	A	P	22 54 48.8	
		S	55 22.9	
	HB	P	22 54 40.4	
		S	55 07.6	
13	V	P	08 07 37	5450 km Kamchatka
	S	P	08 16.2	
		S	23.5	
15	V	P	05 07 30	
16	V	P	02 56 49	
16	V	P	04 19 14	
17	V	P	12 12 24	
18	V	P	07 51 19	
18	V	P	08 22 22	Kamchatka
18	V	P	08 51 27	Kamchatka

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DATE	STN	PHASE	h m s	REMARKS
19	V	iP	07 39 26 c	Fiji Islands
19	V	P	12 28 03.2	local
		S	17.7	
	A	P	12 28 00.9	
		S	28 10.5	
	HB	P	12 28 10.4	
		S	17.6 ?	
20	V	iP	15 45 46 d	5150 km Nicaragua
20	V	P	21 31 42.8	local
		S	32 07.8	
	A	P	21 31 45.7	
		S	53.7	
	HB	P	21 31 45.2 ?	
21	S	L	17 44.2	Alaska
21	V	P	19 53 34.7	local
		S	49.3	
	HB	P	19 53 15.7	
		S	35.6	
21	V	P	21 34 29.6	local
		S	33.9	
	A	P	21 34 46.6	
		S	35 05.1	
	HB	P	21 34 44.1	
		S	35 00.1	
21	V	P	21 35 56.2	local
		S	36 00.3	
	A	P	21 36 13.1	
		S	30.6	
	HB	P	21 36 10.6	
		S	25.6	
21	V	P	21 36 31.8	local
		S	36.0	
	A	P	21 36 48.6	
		S	37 16.6	
	HB	P	21 36 45.9	
		S	37 01.6	
21	V	P	21 37 20.5	local
		S	24.4	
	A	P	21 37 37.6	
		S	54.0	
	HB	P	21 37 35.1	
		S	50.3	
21	V	P	21 37 35.1	local
		S	40.0	
22	V	P	07 49 43	1450 km California
	S	iP	07 51 02	
		iS	54 45	
		L	56.5	

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DATE	STN	PHASE	h m s	REMARKS
23	V	P	00 16 50.7	local
	A	P	00 16 51.1	
	HB	P	00 16 43.7	
		S	49.0 ?	
24	V	iP	00 22 53 d	
24	V	P	02 26 21	
24	V	P	07 57 18	
24	A	P	20 46 36.9	local
		S	49.5	
24	V	iP	21 44 24 d	
24	V	P	22 24 09	
24	V	P	23 17 46.7	local
		S	57.7	
	A	P	23 17 38.4	
		S	43.2	
	HB	P	23 17 24.4 ?	
		S	46.2	
26	V	P	06 30 21.2 ?	local
		S	40.7	
	A	P	06 31 09.1	
		S	25.1	
HB	P	06 31 03.3		
	S	14.9		
26	V	P	13 33 46	
26	V	P	23 14 45	
27	V	P	07 34 19	10400 km Afghanistan
27	V	P	15 26 14	
28	V	P	01 22 43	6100 Panama
28	V	P	08 14 10	Kamchatka
28	V	P	21 14 16	9800 Solomon Islands
29	V	P	08 31 09	5150 Kamchatka
		PP	33 14	
		S	37 57	
		SS	44.8	
		L	43.3	
	S	P	08 32 31	
		S	39 22	
		e	41 37	
		L	45.8	
29	V	P	23 51 05	2300 Alaska
		S	54 47	
		L	55.7	
	S	P	23 52 29	
		S	56 57	
		L	59.2	

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DATE	STN	PHASE	h m s	REMARKS
3	V	P	00 39 48	
4	V	iP	03 58 37 d	4050 km Aleutians
6	S	i	10 59 22	Solomon Islands
		e	11 08.4	
		i	09 23	
		e	14.1	
		e	16.2	
		L	23.5	
7	V	P	00 57 44	4300 km Aleutians
	S	i	00 58 45	
		e	01 05 30	
		L	01 12.0	
8	V	P	16 41 17.8	local
		S	35.3	
	HB	P	16 41 28.2	
		S	53	
9	A	P	09 20 30.7	local
		i	09 20 36.6	
		i	09 20 39.4	
10	S	P	06 16 19	5800 Jan Mayen Island
		L	19.7	
10	V	P	13 55 19.0	local
		S	21.8	
		S	48.8	
	A	P	13 55 16.2	
	A	S	13 55 39.2	
	HB	P	13 55 07.2	
		S	24.8	
11	V	P	08 07 18	
11	S	e	09 16 02	Kurile Islands
		L	09 24.5	
12	V	P	00 52 31	2350 km Alaska
	S	e	00 58.8	
		L	01 03.1	
12	A	P	17 36 13.1	local
		S	37.1	
12	V	P	20 40 41	
16	V	P	05 43 40.9	local
		S	46.8	
16	V	P	23 32 52	
17	V	P	05 25 56	
17	V	iP	23 17 10 c	10200 km Crete
		S	27 42	
		L	49	
	S	P	23 16 29	
		S	26 42	
		L	45.5	

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DATE	STN	PHASE	h m s	REMARKS
18	V	P	09 28 47	Kamchatka
18	V	P	10 39 25	
18	V	P	23 23 58	
20	V	P	04 14 17	Kamchatka
21	V	P	01 25 13	Bismarck Sea
22	V	iP	22 33 06 d	5050 km Kamchatka
	S	e	22 41 07	
		L	49	
23	V	P	23 10 31	
24	V	P	08 46 31	10000 km New Britain
24	V	P	15 58 27	Kamchatka
24	V	P	18 52 39	10000 km New Britain
		L	19 21	
	S	e	19 05 27	
		L	19 21	
26	V	P	11 26 48	Fiji Islands
26	V	P	21 35 47.6	local
		S	36 04.1	
	A	? S	21 36 36.2	
	HB	P	21 35 53.9	
		S	36 20.7	
28	S	L	05 12.5	Seward Peninsula

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