A.R. 1940

International
Seismological
Centre

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
January
1940

DOMINION OBSERVATORY
OTTAWA, CANADA

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SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent
M. J. S. Innes, Assistant Seismologist

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07!4 N. λ = 70°49!6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

S T A T I O N S (Cont'd)

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33!1 N. λ = 72°45!8 W. h = 60m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.
Time correction from radio time signals
Foundation: clay and sand
Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W. h = 320m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_0	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		
KL (Kirkland Lake)	1/30	2×10^4	at 30 cycles		

NOTE: Universal Time used throughout.

International
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CORRELATION TABLE

This tabulation not only provides a yearly numbered list of all earthquakes recorded in Canada but also correlates the seismic registrations of the eight Canadian stations. The seismograph at the Kirkland Lake rockburst station (Established Dec. 19, 1939) records only the bursts and those earthquakes originating very close to Kirkland Lake. Entries for this station in the Correlation Table will be confined to those earthquakes and rockbursts which registered at Kirkland Lake and also at one or more outside stations. Such entries will be indexed as notes. Entries for each station show in hours and minutes the time of beginning of the tremors in Greenwich Mean Time. The appearance of entries in two or more columns in the same line indicates that these are known to be concerned with the same earthquake even though the times of beginning may differ slightly. The figures after the plus sign show the duration of the record in hours and minutes. The earthquake number and the day of the month on which it occurred are listed in the first and second columns, respectively, while the extreme right hand column is reserved for index letters to a series of notes following the tabulation. Certain letters are reserved for the purpose of classifying the entries: these are as follows:-

d (domesticus) epicentre less than 100 km.

v (vicinus) epicentre between 100 and 1000 km.

r (remotus) epicentre between 1000 and 5000 km.

u (ultimus) epicentre beyond 5000 km.

(above lower-case letters apply to earthquakes of the lowest order of intensity on a scale of three.)

D, V, R, U : distance as above, intensity intermediate.

$\underline{D}$, $\underline{V}$, $\underline{R}$, $\underline{U}$: distance as above, intensity - top of scale.

L Long (or surface waves) alone recorded.

Q Questionable (may not be seismic).

T Time uncertain.

P Preliminary tremors alone recorded.

* Recorded only by short period seismograph.

International Seismological Centre

EARTHQUAKE CORRELATION TABLE

Month January, 1940.

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls		Shawinigan	**
							M. S.	W. A.		
1	2	11 20+1 10u	11 46+0 10L	....	....	....	11 43+0 28L	....	....	A
2	4	....	....	....	....	....	2 12+0 23L	....	....	..
3	5	0 35+0 02v	....	....	....	....	....	....	....	B
4	6	7 01+0 29L	....	....	....	....	7 02+0 14L	....	....	..
5	6	8 28+0 50u	....	....	....	....	8 54+0 23L	....	....	..
6	6	14 22+2 38U	14 17+1 43U	14 33+1 47U	....	14 25+1 35U	14 24+2 31U	....	....	C
7	6	19 16+0 04P*	....	....	....	....	19 45+0 06L	....	....	..
8	7	....	....	....	....	....	1 46+0 06L	....	....	..
9	7	4 12+0 24L	....	....	....	....	4 12+0 20L	....	....	..
10	7	21 44+0 03P*	....	....	....	....	....	....	....	..
11	10	4 27+0 02P*	....	....	....	....	....	....	....	..
12	10	....	....	....	....	....	12 02+0 33L	....	....	..
13	17	1 34+2 26U	1 26+2 49U	1 34+2 26U	1 28+1 32U	1 34+1 41U	1 36+2 30U	1 34+1 01U	1 34+0 57U	E
14	19	6 02+0 26L	....	....	....	....	6 08+0 21L	....	....	..
15	20	....	4 06+0 19u	....	....	....	....	....	....	..
16	20	10 33+1 27u	10 26+1 34u	....	....	....	10 33+1 41L	....	....	..
17	20	....	....	....	....	....	....	15 39+0 0.1d	....	F
18	24	....	....	....	....	....	2 32+0 28L	....	....	..
19	26	7 01+1 29u	7 05+0 45L	7 36+0 39L	....	....	7 20+1 04u	....	....	..
20	26	15 34+0 01P*	....	....	....	....	....	....	....	..
21	26	17 23+1 37u	17 26+0 54L	....	....	....	17 32+1 22u	....	....	..
22	27	10 21+0 35u	....	....	....	....	10 34+0 16L	....	....	..
23	28	7 38+0 22u	....	....	....	....	7 47+0 18L	....	7 38+0 03P	..
24	28	8 35+0 40u	8 30+0 20u	....	....	8 52+0 12u	8 48+0 06u	8 48+0 08u	8 36+0 23u	..
25	28	23 14+0 01v	....	....	....	....	....	....	....	..
26	30	12 07+0 04P*	....	....	....	....	....	....	....	..
27	30	12 07+0 01d	....	....	....	....	....	....	....	..
28	31	0 58+0 01P*	....	....	....	....	....	....	....	..

International Seismological Centre

CORRELATION OF EARTHQUAKES

January, 1940.

N O T E S

A	:	Ottawa	Δ = 8920 km.	H = $11^h07^m.5$	U.T.
B	:	Ottawa	Δ = 290 km.	H = $0^h34^m.2$	U.T.
		Slight tremor felt at Temiskaming, Quebec.			
C	:	Ottawa	Δ = 12900 km.	H = $14^h03^m.4$	U.T.
		Victoria	Δ = 9960 km.	H = 14 03.6	U.T.
		Seven Falls	Δ = 14000 km.	H = 14 03.3	U.T.
E	:	Ottawa	Δ = 11800 km.	H = $1^h15^m.1$	U.T.
		Victoria	Δ = 7020 km.	H = (1 15.4)	U.T.
		Toronto	Δ = 11500 km,	H = 1 15.3	U.T.
		Saskatoon	Δ = 9260 km.	H = 1 15.2	U.T.
		Halifax	Δ = 12000 km.	H = 1 15.3	U.T.
		Seven Falls	Δ = 11900 km.	H = 1 15.1	U.T.

F : Epicentre probably within 50 km. of the Seven Falls station.

Dominion Observatory,
Ottawa - Canada,
February 27, 1940.

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SEISMOLOGICAL BULLETINS RECEIVED

January, 1940

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED
Fordham	April to September, 1939	January 2
New Zealand Stations	October, 1939	" 2
India Stations	July to September, 1938	" 5
Weston	December, 1939	" 9
Algiers	October, 1939	" 10
Paris) Strasbourg) Bureau Central)	August, 1939	" 10
Ksara	November, 1939	" 11
Manila	October, 1939	" 11
Batavia	January to March, 1939	" 11
Rome	Years 1934 and 1936	" 15
New Zealand Stations	November, 1939	" 17
San Fernando	September and October, 1939	" 17
Brisbane	November, 1939	" 17
Riverview	October and November, 1939	" 19
Pittsburg	December, 1939	" 19
Pasadena	Local Shocks for August and September, 1939	" 20
India Stations	October to December, 1938	" 20
Ksara	August, 1939	" 22
Apia	October to December, 1939	" 25
Zurich	December, 1939	" 27
Saint Louis	May, 1939	" 29
Florissant	June to September, 1939	" 29
Saint Louis and Auxiliary Stations	Preliminaries for July 18, October 4,10, 17, 19, 20, 22, 30, 1939	" 29
Paris) Bureau Central)	September, 1939	" 30
Bucarest	December, 1939	" 30
Algiers	November, 1939	" 30
Pasadena	Preliminary report for Sept.-Oct. and Nov.-Dec., 1939	" 31

DOMINION OBSERVATORY,
OTTAWA - CANADA.

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SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM January 1, 1940 to January 6, 1940 No. 1

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
1	H	11 07.5	8920	USCGS. gives:
Jan.	iP_Z	11 19 35		ϕ = 31° S.
2	S	11 29.7		λ = 108° W.
	L	11 41		
	F	12 30		
		Ottawa		
3	H	0 34.2	290	Slight tremor felt at Temiskaming, Quebec.
Jan.	iP_2	0 34 58		
5	iS_n	0 35 26		
	iS_2	0 35 30		
	F	0 37		
		Ottawa		
5	i_Z	8 27 50		
Jan.	L	9 00		
6	F	9 18		
		Ottawa		
6	H	14 03.4	12900	USCGS. gives:
Jan.	iP'_Z	14 22 07		ϕ = 22° S.
6	PP_Z	14 22 45		λ = 170° E.
	S	14 31		
	PPS	14 34		
	SS	14 39		
	SSS	14 43		
	L	15 00		
	F	17 00		
		Victoria		
	H	14 03.6	9960	
	P	14 16 33		
	PP	14 20.0		
	S	14 27.4		
	PS	14 28.0		
	PPS	14 28 43		
	SS	14 34.2		
	L	14 45		
	F	16 00 ca.		
		Toronto		
	i	14 33 16		
	i	14 34 20		
	e	14 39.0		
	e	14 40.3		
	e	14 42.8		
	e	14 49.8		
	L	14 53		
	F	16 20		
		Halifax		
	e	14 25.3		
	i	14 26 29		
	e	14 35.3		
	L	15 06		
	F	16 00		

Double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM January 6, 1940 to January 17, 1940 No. 2

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
6 Jan. 6 (Cont'd)	H	14 03.3	14000	
	PP	14 24 08		
	SKP	14 25 32		
	PS	14 34 03		
	e	14 37 15		
	SS	14 41.8		
	L	15 03		
	F	16 55		
		Ottawa		
13 Jan. 17	H	1 15	11800	USCGS. gives:
	PP	1 33 32		ϕ = 17° N.
	SKS	1 39.9		λ = 148° E.
	PPS	1 43.7		
	SS	1 48.5		
	SSS	1 53		
	L	1 58		
	F	4 00 ca.		
		Victoria		
	H	(1 15.4)	7020	
	P	(1 25 45)		
	PPP	(1 28.2)		
	S	(1 34 24)		
	SS	(1 38.7)		
	SSS	(1 40.5)		
	L	(1 45)		
	F	4 15 ca.		
		Toronto		
	H	1 15.3	11500	
	PP	(1 33.9)		
	SKS	1 39 57		
	S	1 40.1		
	PPS	1 43.8		
	SS	1 48.2		
	SSS	1 53		
	L	1 56		
	F	4 00 ca.		
		Saskatoon		
	H	1 15.2	9260	
	P	1 27 38		
	i	1 28 14		
	SKS	1 37.7		
	S	1 38 00		
	SKKS	1 38 08		
	i	1 38 34		
	PPS	1 39.0		
	SS	1 44		
	L	1 49		
	F	3 00 ca.		

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double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM January 17, 1940 to January 26, 1940 No. 3

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Halifax		
13 Jan. 17 (Cont'd)	H	1 15.3	12000	
	PP	1 34.2		
	SKKS	1 41.2		
	SS	1 49.5		
	L	2 00		
	F	3 15		
		Seven Falls		
	H	1 15.1	11900	
	PP	1 33 44		
	PPP	1 35.9		
	SKS	1 39.9		
	PS	1 42 57		
	SS	1 48 53		
	SSS	1 52.9		
	L	1 59		
	F	4 06		
		Shawinigan Falls		
	e	1 33.7		
	L	2 04		
	F	2 31		
		Victoria		
15 Jan. 20	e	4 06		
	L	4 14		
	F	4 25		
		Ottawa		
16 Jan. 20	e	10 33		
	L	10 56		
	F	12 00 ca.		
		Victoria		
	e	10 26		
	e	10 33		
	e	10 43		
	L	10 48		
	F	12 00		
		Ottawa		
19 Jan. 26	iZ	7 00 31		
	e	7 03.4		
	e	7 07.5		
	e	7 09		
	e	7 12.4		
	e	7 26.5		
	L	7 36		
	F	8 30		
		Seven Falls		
	e	7 19.7		
	L	7 36		
	F	8 24		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM January 26, 1940 to January 31, 1940 No. 4

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
21 Jan. 26	iZ	17 22 37		
	e	17 26.7		
	S?	17 31 40		
	L	17 50		
	F	19 00 ca.		
		Seven Falls		
	e	17 31.7		
	e	17 37,2		
	L	17 50		
	F	18 54		
		Ottawa		
22 Jan. 27	iZ	10 21 29		
	L	10 34		
	F	10 56		
		Ottawa		
23 Jan. 28	iZ	7 37 39		
	L	7 48		
	F	8 00 ca.		
		Ottawa		
24 Jan. 28	iZ	8 35 25		
	i	8 48 30		
	F	9 15		
		Victoria		
	e	8 30 02		
	iS	8 36 30		
	i	8 37 06		
	F	8 50		
		Halifax		
	i	8 52 07		
	i	8 52 30		
	i	8 54 52		
	F	9 04		
		Seven Falls		
	e	8 48.2		
	F	8 56		
		Shawinigan Falls		
	e	8 35 31		
	e	8 48 39		
	F	9 00 ca.		
		Ottawa		
27 Jan. 30	iZ	12 07 24		Nearby quake.
	iZ	12 07 36		
	iZ	12 07 40		
	F	12 08.5		

W. W. Doxsee

EARTHQUAKE CORRELATION TABLE
Month February, 1940

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
29	2	6 38+0 16L	6 48+0 20L	....	....	....	....	....	....	..
30	7	17 27+2 33U	17 23+2 37R	17 27+1 43U	17 24+0 56R	17 27+1 03U	17 27+2 05U	17 27+0 46U	17 27+0 41U	A
31	8	8 13+0 47u	8 08+0 52L	8 19+0 21L	8 10+0 22u	8 26+0 17L	8 24+0 33L	8 25+0 05L	8 27+0 04L	..
32	8	23 45+0 15L	23 40+0 20L	....	....	....	23 47+0 11L	....	....	..
33	9	13 33+0 05P	....	....	....	....	....	....	....	..
34	9	14 07+0 05P	....	....	....	....	....	....	....	..
35	10	20 58+0 05v	....	....	....	....	....	21 00+0 0.2v	20 59+0 01v	B
36	12	0 13+1 00u	0 20+1 10u	0 13+0 57u	....	....	0 13+1 00u	0 13+0 04P	0 13+0 06P	C
37	12	5 36+0 35u	....	....	....	....	6 03+0 07L	....	....	..
38	12	8 39+0 39u	8 33+0 42u	8 47+0 25u	8 24+0 26L	....	8 48+0 27u	....	....	E
39	12	8 50+0 01P*	....	....	....	....	....	....	....	..
40	12	9 27+1 13u	9 23+1 07r	9 34+0 56u	....	....	....	9 27+0 04P	9 27+0 05P	F
41	14	0 07+0 19u	0 08+0 17L	0 09+0 10L	....	....	0 13+0 08L	....	....	..
42	14	2 17+1 39u	....	....	....	....	3 10+0 34L	....	....	..
43	14	10 53+1 47u	11 15+0 45L	11 20+0 06L	....	....	11 13+1 17L	....	....	..
44	15	2 06+0 03v	....	....	....	....	....	....	....	..
45	15	9 00+0 01d	....	....	....	....	....	....	....	G
46	15	10 59+0 01v	....	....	....	....	....	....	....	..
47	16	14 35+0 11u	14 25+0 35L	....	....	....	14 37+0 08L	....	....	..
48	17	16 24+0 0.6d	....	....	....	....	....	....	....	..
49	19	7 20+0 28u	7 30+0 15L	....	....	....	7 40+0 14L	....	....	..
50	20	2 37+2 30u	2 31+2 44u	2 38+1 35u	2 37+1 01u	2 39+1 21u	....	3 02+0 04P	2 37+0 28u	J
51	20	14 20+0 58L	14 16+1 00L	....	....	....	....	....	....	..
52	20	21 41+0 42L	21 24+0 47L	....	....	....	21 47+0 27L	....	....	..
53	21	....	17 48+0 16L	....	....	....	....	....	....	..
54	22	6 03+0 15L	....	6 03+0 08L	....	....	6 07+0 05L	....	....	..
55	23	0 51+0 02P*	....	....	....	....	....	....	....	..
56	23	1 15+0 01P*	....	....	....	....	....	....	....	..
57	23	9 38+0 02P*	....	....	....	....	....	....	....	..
58	24	11 55+0 21u	....	12 06+0 06L	....	....	....	....	....	..
59	24	12 19+1 41u	12 21+1 04u	12 55+0 43u	....	....	12 31+1 54L	....	....	..
60	25	8 06+0 01P*	....	....	....	....	8 19+0 10L	....	....	..
61	26	19 05+0 01d	....	....	....	....	....	....	....	K
62	27	12 20+0 05P*	....	....	....	....	....	....	12 20+0 01P	..
63	28	13 16+0 0.5P*	....	....	....	....	....	....	....	..
64	29	16 19+0 45u	16 31+0 51u	....	....	....	16 46+0 12L	....	16 19+0 07P	N
65	29	23 23+0 01P*	....	....	....	....	....	....	....	..

double

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Seismological
Centre

CORRELATION OF EARTHQUAKES
February, 1940.

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N O T E S

A :	Ottawa	Δ = 7120 km.	H = $17^h16^m.3$	U.T.
	Victoria	Δ = 4100 km.	H = 17 16.2	U.T.
	Toronto	Δ = 6940 km.	H = 17 16.5	U.T.
	Saskatoon	Δ = 4980 km.	H = 17 16.2	U.T.
	Halifax	Δ = 7750 km.	H = 17 16.4	U.T.
	Shawinigan Falls	Δ = 7140 km.	H = 17 16.3	U.T.
B :	Ottawa	Δ = 150 km.	H = $20^h57^m.3$	U.T.
C :	Ottawa	Δ = 8060 km.	H = 0 01.5	U.T.
	Toronto	Δ = 7940 km.	H = 0 01.4	U.T.
	Seven Falls	Δ = 8120 km.	H = 0 01.6	U.T.
E :	Ottawa	Δ = 6380 km.	H = $8^h29^m.5$	U.T.
F :	Ottawa	Δ = 5640 km.	H = $9^h18^m.0$	U.T.
G :	Ottawa	Δ = 98 km.	H = $8^h59^m.7$	U.T.
J :	Victoria	Δ = 10,000 km.	H = 2^h18^m	U.T.
K :	Ottawa	Δ = 94 km.	H = $19^h05^m.3$	U.T.
N :	Ottawa	Δ = 8060 km.	H = $16^h07^m.8$	U.T.

Dominion Observatory,
Ottawa, Canada,
April 23, 1940.

Double

International
Seismological
Centre

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
February
1940

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DOMINION OBSERVATORY
OTTAWA, CANADA

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Double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent
M. J. S. Innes, Assistant Seismologist

International Seismological Centre

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07'.4 N. λ = 70°49'.6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

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S T A T I O N S (Cont'd)

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33'.1 N. λ = 72°45'.8 W. h = 60m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.
Time correction from radio time signals
Foundation; clay and sand
Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W. h = 320m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		
KL (Kirkland Lake)	1/30	$2x10^4$ at 30 cycles			

NOTE: Universal Time used throughout.

double

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SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM February 1, 1940 to February 7, 1940 No. 5

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
30	H	17 16.3	7120	USCGS. gives:
Feb.	iP	17 26 44		ϕ = 52° N.
7	i_Z	17 27 37		λ = 174°5 E.
	iPP_Z	17 29 12		
	iS	17 35 28		
	PS	17 36 08		
	SS	17 40.0		
	SSS	17 43.0		
	L	17 46		
	F	20 00 ca.		
		Victoria		
	H	17 16.2	4100	
	P	17 23 23		
	PP	17 24 51		
	PPP	17 25 19		
	S	17 29 17		
	PS	17 29 39		
	SS	17 31.8		
	SSS	17 32.6		
	L	17 34		
	F	20 00 ca.		
		Toronto		
	H	17 16.5	6940	
	P	17 26 46		
	PPP	17 30 33		
	S	17 35 20		
	PPS?	17 36 22		
	SS	17 39 33		
	L	17 45		
	F	19 10		
		Saskatoon		
	H	17 16.2	4980	
	P	17 24 25		
	S	17 31 08		
	SS	17 34 15		
	L	17 37		
	F	18 20		
		Halifax		
	H	17 16.4	7750	
	P	17 27 29		
	S	17 36.7		
	PS	17 37 21		
	SS	17 41.2		
	SSS	17 44.7		
	L	17 50		
	F	18 30		

Daub

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SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM February 7, 1940 to February 12, 1940 No. 6

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
30 Feb. 7 (Cont'd)	H	17 16.3	7140	
	P	17 26 48		
	S	17 35 33		
	L	17 49		
	F	18 08		
		Seven Falls		
	H	17 16.4	7120	
	P	17 26 54		
	S	17 35 38		
	SS	17 39 47		
	SSS	17 42 10		
	L	17 45		
	F	19 32		
		Ottawa		
31 Feb. 8	i_Z	8 12 37		
	e	8 18.2		
	e	8 23		
	F	9 00 ca.		
		Saskatoon		
	e	8 09.8		
	L	8 14		
	F	8 32		
		Ottawa		
35 Feb. 10	H	20 57.3	150	Δ and H based on Leet's Travel Time Chart.
	P_2	20 57 40.7		
	P_1	20 57 41.5		
	i	20 57 43.5		
	S_2	20 57 58.5		
	S_1	20 57 59.5		
	F	21 03		
		Shawinigan Falls		
	e	20 58 45		
	e	20 58 51		
	F	21 00		
		Seven Falls		
	e	20 59 36		
	F	21 00		
		Ottawa		
36 Feb. 12	H	0 01.5	8060	
	iP	0 12 51		
	iS	0 22 20		
	PS_E	0 22 38		
	L	0 33		
	F	1 15		

double

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM February 12, 1940 to February 12, 1940 No. 7

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
36 Feb. 12 (Cont'd)	eS	(0 20.0)		
	L	(0 43)		
	F	(1 30)		
		Toronto		
	H	0 01.4	7940	
	P	0 12 38		
	PP	0 15 32		
	S	0 22.0		
	L	0 36		
	F	1 10		
		Seven Falls		
	H	0 01.6	8120	
	P	0 13 06		
	e	0 13 40		
	S	0 22 38		
	PS	0 23 00		
	L	0 35		
	F	1 13		
		Ottawa		
37 Feb. 12	iZ	5 36 10		
	L	5 56		
	F	6 11		
		Ottawa		
38 Feb. 12	H	8 29.5	6380	
	iPZ	8 39 16		
	eS	8 47.3		
	SS	8 51.0		
	L	8 56		
	F	9 18		
		Victoria		
	i	(8 33.4)		
	i	(8 34.5)		
	iS?	(8 43.5)		
	F	(9 15)		
		Toronto		
	e	8 47.2		
	e	8 48.8		
	e	8 56.5		
	F	9 12		
		Seven Falls		
	e	8 47.7		
	e	8 51.6		
	L	8 59		
	F	9 15		

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SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM February 12, 1940 to February 15, 1940 No. 8

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
40 Feb. 12	H	9 18.0	5640	
	iP_Z	9 26 57		
	eS	9 34 17		
	e_N	9 35.6		
	SS	9 38.0		
	L	9 42		
	F	10 40		
		Victoria		
	i	(9 23.0)		
	iS?	(9 27.6)		
	F	(10 30)		
		Toronto		
	e	9 34.0		
	e	9 41.5		
	e	9 42.6		
	F	10 30		
		Seven Falls		
	e	9 27 04		
	e	9 28.6		
	S	9 34.7		
	L	9 43		
	F	10 29		
		Ottawa		
41 Feb. 14	e_N	0 06.7		
	L	0 11		
	F	0 26		
		Ottawa		
42 Feb. 14	i_Z	2 17 10		
	i_Z	2 19 53		
	L	2 58		
	F	3 56		
		Ottawa		
43 Feb. 14	e_N	10 53		
	L	11 12		
	F	12 40		
		Ottawa		
44 Feb. 15	i_Z	2 06 07		Rockburst at Lake Shore Mines, Kirkland Lake, Ont.
	i_Z	2 06 38		
	F	2 09		

double

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM February 15, 1940 to February 20, 1940 No. 9

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
45 Feb. 15	H	8 59.7	98	Δ and H based on Leet's Travel Time Chart.
	P_{1Z}	8 59 57		
	i_Z	8 59 58		
	i_Z	8 59 59.5		
	S_{1Z}	9 00 09		
	F	9 01		
		Ottawa		
46 Feb. 15	i_Z	10 59 01		Nearby quake.
	i_Z	10 59 09.5		
	i_Z	10 59 13.5		
	i_Z	10 59 45		
	i_Z	10 59 54		
	F	11 00.5		
		Ottawa		
47 Feb. 16	e	14 35.0		
	L	14 37		
	F	14 46		
		Ottawa		
48 Feb. 17	i_Z	16 23 52		Nearby quake.
	i_Z	16 24 02.5		
	F	16 24.5		
		Ottawa		
49 Feb. 19	i_Z	7 20 02		
	e_N	7 31.6		
	L	7 38		
	F	7 48		
		Ottawa		
print 50 Feb. 20	i_Z	2 36 48		USCGS. gives:-
	e	2 38.1		ϕ = 12° S.
	e_Z	2 38.4		λ = 167° E.
	i_Z	2 47 06		
	i_Z	2 47 10		
	e	2 47.4		
	e	2 48.5		
	e_E	2 50.2		
	e	2 55.3		
	i	3 02 50		
	F	5 07		
		Victoria		
	H	2 18ca.	10,000ca.	
	P	2 30 48		
	PP_E	2 34.2		
	PPP_E	2 36 40		
	SKS	2 40 58		
	PS_E	2 42 38		
	SS_N	2 47 10		
	e_N	2 53.2		
	L	3 00		
	F	5 15		

double

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SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM February 20, 1940 to February 26, 1940 No. 10

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Toronto		
50 Feb. 20 (Cont'd)	e_E	2 37.7		
	e	2 47.2		
	e_E	2 53.4		
	L	3 08		
	F	4 13+		
		Saskatoon		
	e_E	2 37.4		
	e_E	2 46.3		
	e_E	2 47.7		
	e	2 54.6		
	L	3 01		
	F	3 38		
		Shawinigan Falls		
	e	2 37		
	e	2 47		
	e	3 01.3		
	F	3 05		
		Ottawa		
58 Feb. 24	i_Z	11 54 33		
	e_N	12 08.3		
	F	12 16		
		Ottawa		
59 Feb. 24	i_Z	12 19 10		
	L	13 04		
	F	14 00ca.		
		Victoria		
	e_E	(12 21)		
	e_E	(12 30)		
	L_E	(12 45)		
	F	(13 25)		
		Toronto		
	e	12 55		
	L	13 04		
	F	13 38		
		Ottawa		
61 Feb. 26	H	19 05.3	94	Δ and H based on Leet's Travel Time Chart.
	iP_{1Z}	19 05 24		
	iS_{1Z}	19 05 35.5		
	S_1S_{1Z}	19 05 37		
	$2(S_1S_1)_Z$	19 05 40.5		
	F	19 06		

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SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM February 26, 1940 to February 29, 1940 No. 11

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
64	H	16 07.8	8060	
Feb.	iP	16 19 13		
29	e_N	16 20		
	eS?	16 28.7		
	L	16 43		
	F	17 04		
		Victoria		
	e	16 31.3		
	L	16 49		
	F	17 22		

W. W. Doxsee.

International Seismological Centre

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
March
1940

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DOMINION OBSERVATORY
OTTAWA, CANADA

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SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent

International Seismological Centre

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07'.4 N. λ = 70°49'.6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33!1 N. λ = 72°45!8 W. h = 60m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.
Time correction from radio time signals
Foundation: clay and sand
Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W. h = 320m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		
KL (Kirkland Lake)	1/30	$2x10^4$ at 30 cycles			

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM March 1, 1940 to March 6, 1940 No. 12

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
67 March 3	i_Z	0 24 29		
	e_E	0 31.5		
	e_E	0 36		
	e_E	0 42.5		
	e_N	0 45.8		
	L	0 58		
	F	2 45		
		Victoria		
	i	0 29 12		
	e_E	0 49.5		
	L	0 57		
	F	1 27		
		Ottawa		
71 March 4	H	19 59.5	4080	
	P_Z	20 06 40		
	S	20 12 32		
	L	20 16		
	F	21 ca.		
		Seven Falls		
	e	20 08.0		
	e	20 12.0		
	L	20 15		
	F	20 40		
		Ottawa		
73 March 5	i_Z	23 08 20		
	L	23 23		
	F	23 54		
		Ottawa		
74 March 6	i_Z	0 02 40		
	e_N	0 11.8		
	L	0 18		
	F	1 10		
		Victoria		
	i	0 03 16		
	i	0 05 46		
	F	0 16 ca.		
		Saskatoon		
	e?	0 04.5		
	L	0 08		
	F	0 20 ca.		
		Seven Falls		
	e	0 16.7		
	L	0 18		
	F	0 41		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM March 6, 1940 to March 14, 1940 No. 15

International Seismological Centre

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
75 March 6	i_Z	5 59 34		
	L	6 12		
	F	6 28		
		Ottawa		
77 March 6	i_Z	18 42 19		
	L	19 33		
	F	20 15		
		Ottawa		
79 March 7	H	7 10.8	9360	
	iP_Z	7 12 13		
	iS_N	7 31 40		
	SS	7 37		
	L	7 49		
	F	8 10		
		Ottawa		
80 March 9	i_Z	5 12 57		
	L	5 28		
	F	5 37		
		Victoria		
	e	5 13 38		
	i	5 16 06		
	F	5 28 ca.		
		Victoria		
81 March 9	e	11 06 46		
	L	11 17		
	F	11 20 ca.		
		Ottawa		
82 March 9	i_Z	15 54 54		
	L	15 58		
	F	16 23		
		Ottawa		
84 March 12	i_Z	19 56 25		Nearby quake.
	F	19 56 48		
		Ottawa		
86 March 14	i_Z	18 42 31		
	i_Z	18 42 37		
	e	18 49.8		
	eL	19 26		
	F	21 21		
		Victoria		
	e	18 46		
	e	19 01 12		
	eL	19 16		
	F	21 32		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM March 14, 1940 to March 19, 1940 No. 14

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Toronto		
86	e_E	18 40.7		
March	e_E	18 44 06		
14	e_N	19 02		
(Cont'd)	L	19 28		
	F	20 46		
		Seven Falls		
	e	18 51		
	e	19 13		
	L	19 41		
	F	21 05		
		Ottawa		
87	i_Z	21 31 58		
March	L	21 43		
14	F	21 55		
		Toronto		
	e	21 26.5		
	L	21 42		
	F	21 55		
		Ottawa		
92	i_Z	20 49 31		
March	L	21 05		
16	F	21 27		
		Victoria		
	e_E?	20 46		
	e	20 49.5		
	L	20 51		
	F	21 14		
		Ottawa		
93	i_Z	5 57 50		
March	e_E	6 09		
18	e_E	6 16		
	L	6 29		
	F	7 38		
		Victoria		
	e_E	6 02.7		
	e_N	6 03 30		
	L	6 22		
	F	7 32		
		Victoria		
94	e	4 59.6		
March	L	5 25		
19	F	6 12		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM March 19, 1940 to March 27, 1940 No. 15

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
99 March 21	iP	14 12 29		
	e_Z	14 15 43		
	L	14 57		
	F	16 31		
		Seven Falls		
	e	14 34.3		
	L	14 55		
	F	16 14		
		Ottawa		
101 March 22	e_N	20 47.5		
	e_E	20 49.5		
	e	20 55.4		
	eL	21 11		
	F	22 17		
		Victoria		
	e	20 43.4		
	L	21 04		
	F	22 20		
		Seven Falls		
	e	20 49.8		
	L	21 19		
	F	22 37		
		Ottawa		
102 March 22	i_Z	21 04 04		Nearby quake.
	i_Z	21 04 10		
	F	21 04.5		
		Victoria		
104 March 24	e	3 05.2		Nearby quake.
	F	3 07		
		Ottawa		
106 March 27	H	12 31.6	6860	USCGS. gives:-
	P	12 41 50		ϕ = 51° N.
	S	12 50 20		λ = 180°
	SS	12 54.8		
	SSS	12 57.0		
	L	13 01		
	F	15 19		
		Victoria		
	H	12 31.5	3830	
	P	12 38 19		
	PPP	12 40		
	iS	12 43 56		
	SSS	12 47 09		
	L	12 49		

FROM	March 27, 1940	to	March 28, 1940	No. 16

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Toronto		
106 March 27 (Cont'd)	H	12 31.4	6910	
	P	12 41 41		
	S	12 50 14		
	SSS	12 56 26		
	L	13 01		
	F	14 32+		
		Saskatoon		
	e?	12 40		
	i	12 49 16		
	e	12 51 35		
	L	12 57		
	F	13 45		
		Shawinigan Falls		
	P	12 41 54		
	L	13 03		
	F	13 32		
		Seven Falls		
	H	12 31.6	6960	
	P	12 41 58		
	S	12 50 33		
	SSS	12 57.4		
	L	13 01		
	F	15 00		
		Ottawa		
107 March 27	P_Z	21 08 48		
	L	21 24		
	F	22 03		
		Victoria		
	e	21 11.0		
	L	21 20		
	F	21 47		
		Ottawa		
108 March 28	e_Z?	11 44 17		Nearby quake.
	i_Z	11 44 20		
	L	11 44 32		
	F	11 45.5		
		Ottawa		
109 March 28	H	15 48.5	13,400	
	P'_Z	16 07 20		
	PP	16 08 35		
	PS	16 18 30		
	SS	16 24.5		
	SSS	16 30.4		
	L	16 49		
	F	17 56		
		Victoria		
	e	16 01 25		
	e	16 05		
	e	16 11.6		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM March 28, 1940 to March 31, 1940 No. 17

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
109 March 28 (Cont'd)	e	16 08.4		
	e	16 16		
	e	16 24.4		
	L	16 41		
	F	17 53		
		Ottawa		
110 March 28	P_Z	17 55 21		
	e	18 01.2		
	L	18 07		
	F	18 29		
		Seven Falls		
	e	18 02.4		
	L	18 09		
	F	18 31		
		Ottawa		
113 March 29	i_Z	4 36 07		Nearby quake.
	i_Z	4 36 13		
	F	4 36.5		
		Ottawa		
114 March 29	P_Z	23 40 23		
	L	0 36		
	F	1 26		
		Ottawa		
115 March 30	P_Z	4 53 11		
	L	5 06		
	F	5 24		
		Ottawa		
117 March 31	H	16 52.6	7060	
	P	17 03 05		
	S	17 11 46		
	L	17 26		
	F	18 05		
		Victoria		
	H	16 52.8	9010	
	P_E	17 05		
	S	17 15 06		
	L	17 38		
	F	18 20		

W. W. Doxsee.

EARTHQUAKE CORRELATION TABLE

Month March, 1940

o.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
6	1	10 59+0 01P*	....	....	....	....	....	....	....	..
7	3	0 24+2 20u	0 29+0 58u	1 04+0 23L	....	....	1 06+1 28L	....	....	..
8	3	9 36+0 02P*	....	....	....	....	....	....	....	..
9	4	12 17+0 03P*	....	....	....	....	....	....	....	..
0	4	16 04+0 01P*	....	....	....	....	....	....	....	..
1	4	20 07+0 53r	20 35+0 20L	20 15+0 15L	....	20 13+0 15L	20 08+0 32r	....	20 07+0 04P	A
2	5	9 03+0 01P*	....	....	....	....	....	....	....	..
73	5	23 08+0 46u	23 12+0 04P	....	23 14+0 04P	....	23 23+0 05L	....	....	..
74	6	0 03+1 07u	0 03+0 13u	0 16+0 14L	0 05+0 15u	0 21+0 10L	0 17+0 25u	0 17+0 05L	....	..
75	6	6 00+0 28u	6 03+0 06P	....	6 05+0 05P	....	6 15+0 08L	....	....	..
76	6	6 34+0 01P*	....	....	....	....	....	....	....	..
77	6	18 42+1 33u	....	....	....	....	19 37+0 23L	....	....	..
78	6	20 27+0 01P*	....	....	....	....	....	....	....	..
79	7	7 21+0 49u	....	7 50+0 10L	....	....	7 52+0 11L	....	....	B
80	9	5 13+0 24r	5 14+0 14r	....	....	....	5 28+0 08L	....	....	..
81	9	11 04+0 01P*	11 07+0 13u	....	....	....	....	....	....	..
82	9	15 55+0 28u	16 17+0 06L	....	....	....	....	....	....	..
83	11	10 38+0 01P*	....	....	....	....	....	....	....	..
84	12	19 56+0 01v	....	....	....	....	....	....	....	..
85	14	17 40+0 01P*	....	....	....	....	....	....	....	..
86	14	18 43+2 38U	18 46+2 46U	18 41+2 05U	....	19 49+0 34L	18 51+2 14U	19 46+0 16L	18 42+0 02P	..
87	14	21 32+0 23r	21 38+0 10L	21 26+0 30r	....	21 47+0 02L	21 46+0 06L	21 44+0 05L	21 44+0 05L	..
88	14	22 51+0 08L	22 46+0 07L	22 41+0 15L	....	....	22 54+0 04L	....	22 52+0 04L	..
89	15	0 10+0 01P*	....	....	....	....	....	....	....	..
90	15	....	5 49+0 23L	....	....	....	....	....	....	..
91	15	13 55+0 01P*	....	....	....	....	....	....	....	..
92	16	20 49+0 38u	20 46+0 28u	....	....	....	21 08+0 16L	....	....	..
93	18	5 58+1 40u	6 03+1 29u	6 39+0 30L	....	6 44+0 16L	6 36+0 47L	....	....	..
94	19	....	5 00+1 12u	....	....	....	....	....	....	..
95	19	....	8 29+0 06L	....	....	....	....	....	....	..
96	20	....	0 23+0 09L	....	....	....	....	....	....	..

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EARTHQUAKE CORRELATION TABLE

Month March, 1940

o.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
7	20	0 54+0 16L	0 37+0 26L	0 55+0 05L	0 43+0 07L	....	0 56+0 23L	....	0 55+0 03L	..
8	20	3 04+0 22L	2 47+0 56L	3 03+0 13L	2 52+0 10L	....	3 05+0 14L	....	3 04+0 05L	..
9	21	14 12+2 18u	....	....	....	....	14 34+1 40u	14 13+0 05P	14 12+0 05P	..
0	22	....	8 51+0 09L	....	....	....	....	....	....	..
1	22	20 48+1 29u	20 43+1 37u	21 16+0 39L	....	....	20 50+1 47u	....	....	..
2	22	21 04+0 0.5v	....	....	....	....	....	....	....	..
3	23	9 22+0 21L	....	9 13+0 14L	....	....	9 16+0 21L	....	....	..
4	24	....	3 05+0 02d	....	....	....	....	....	....	..
5	24	11 59+0 01P*	....	....	....	....	....	....	....	..
6	27	12 42+2 37U	12 38+1 22R	12 42+1 50U	12 40+1 05R	13 06+0 39L	12 42+2 18U	12 51+0 38U	12 42+0 50U	C
7	27	21 09+0 54u	21 11+0 36u	....	....	....	21 31+0 34L	....	....	..
8	28	11 44+0 01v	....	....	....	....	....	....	....	..
9	28	16 07+1 49u	16 01+1 42u	....	....	....	16 09+1 44u	....	16 07+0 03P	E
0	28	17 55+0 34u	18 14+0 12L	....	....	....	18 02+0 29u	....	17 56+0 03P	..
1	28	....	....	....	....	....	....	....	20 10+0 03P	..
2	29	3 46+0 32L	....	....	....	....	3 48+0 38L	....	....	..
3	29	4 36+0 0.5	....	....	....	....	....	....	....	..
4	29	23 40+1 46u	0 24+0 16L	....	....	....	....	....	....	..
5	30	4 53+0 31u	....	....	....	....	....	....	....	..
6	30	6 41+0 05P*	6 50+0 12L	....	....	....	....	....	....	..
7	31	17 03+1 02u	17 05+1 15u	....	....	....	....	....	....	F

International Seismological Centre

CORRELATION OF EARTHQUAKES

March, 1940.

NOTES

A :	Ottawa	Δ = 4080 km.	H = $19^h59^m.5$ U.T.
B :	Ottawa	Δ = 9360 km.	H = $7^h10^m.8$ U.T.
C :	Ottawa	Δ = 6860 km.	H = $12^h31^m.6$ U.T.
	Victoria	Δ = 3830 km.	H = 12 31.5 U.T.
	Toronto	Δ = 6910 km.	H = 12 31.4 U.T.
	Seven Falls	Δ = 6960 km.	H = 12 31.6 U.T.
E :	Ottawa	Δ = 13400 km.	H = $15^h48^m.5$ U.T.
F :	Ottawa	Δ = 7060 km.	H = $16^h52^m.6$ U.T.
	Victoria	Δ = 9010 km.	H = 16 52.8 U.T.

Dominion Observatory,
Ottawa, Canada,
May 15, 1940.

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN

April,

1940.

DOMINION OBSERVATORY

OTTAWA, CANADA.

International Seismological Centre

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent

S T A T I O N S

OTTAWA

$\phi = 45^\circ 23' 38''$ N. $\lambda = 75^\circ 42' 57''$ W. h = 83m.
Time correction within 0.10s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

$\phi = 44^\circ 38'$ N. $\lambda = 63^\circ 36'$ W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

$\phi = 47^\circ 07'.4$ N. $\lambda = 70^\circ 49'.6$ W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

$\phi = 48^\circ 31' 14''$ N. $\lambda = 123^\circ 24' 56''$ W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

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SHAWINIGAN FALLS

Shawinigan Water and Power Company

ø = 46°33!1 N. λ = 72°45!8 W. h = 60m. ca.

Time correction from recorded radio time signals

Foundation: solid granite of Canadian Shield

Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ø = 52°08' N. λ = 106°38' W. h = 515m.

Time correction from radio time signals

Foundation: clay and sand

Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ø = 43°40' N. λ = 79°24' W. h = 111m.

Time correction from radio time signals

Foundation: sand and clay

Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ø = 48°09' N. λ = 80°03' W. h = 320m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		
KL (Kirkland Lake)	1/30	$2x10^4$ at 30 cycles			

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM April 1, 1940 to April 8, 1940 No. 18

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
118 Apr. 1	H	11 19.3	14,000	
	P'_Z	11 38 23		
	PP	11 40 04		
	SKKS	11 47 00		
	PS	11 50 21		
	SS	11 57 16		
	L	12 14		
	F	14 12		
		Victoria		
	H	11 20	10,000	
	PP	11 36 26		
	SKS	11 43 08		
	PPS	11 45 18		
	SS_N	11 50 36		
	SSS_E	11 53 47		
	L	12 03		
	F	14 14		
		Toronto		
	H	11 19	14,000	
	PP	11 40		
	SKKS	11 47		
	PS	11 50		
	SS	11 57		
	L	12 16		
	F	13 57		
		Saskatoon		
	e	11 37 40		
	e	11 47.0		
	L	12 09		
	F	12 38		
		Seven Falls		
	H	11 19	14,500	
	PP	11 40.2		
	SKKS	11 47.1		
	PPS	11 52.2		
	SS	11 57.5		
	SSS	12 02.5		
	L	12 12		
	F	14 08		
		Ottawa		
121 Apr. 7	e_Z	9 55 57		
	L	10 04		
	F	10 22		
		Ottawa		
123 Apr. 8	e_Z	9 01 23		
	e_E	9 11		
	L	9 20		
	F	10 05		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM April 8, 1940 to April 14, 1940 No. 19

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
123 Apr. 8 (Cont'd)	e	9 13		
	L	9 38		
	F	10 13		
		Seven Falls		
	e	9 11.6		
	L	9 35		
	F	10 01		
		Ottawa		
124 Apr. 10	P	20 26 01		
	e_N	20 35.4		
	e_E	20 41.4		
	L	21 00		
	F	21 44		
		Ottawa		
125 Apr. 11	e_Z	9 16 01		
	e_E	9 25.8		
	L	9 42		
	F	10 14		
		Ottawa		
128 Apr. 12	e_Z	20 14 11		
	L	20 24		
	F	20 46		
		Ottawa		
129 Apr. 13	e	6 49.7		
	L	7 03		
	F	7 30		
		Ottawa		
130 Apr. 13	i_Z	8 15 28		Nearby quake.
	i_Z	8 15 45		
	F	8 16.5		
		Seven Falls		
	e	8 13 54		
	F	8 14.5		
		Shawinigan Falls		
	e	8 13 32		
	F	8 14		
		Ottawa		
131 Apr. 13	i_Z	8 23 41		Nearby quake.
	i_Z	8 23 52		
	F	8 24.5		
		Ottawa		
132	e_E	9 57.7		
		10 01.2		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM April 14, 1940 to April 16, 1940 No. 20

International Seismological Centre

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
133 Apr. 14	e_Z	15 08 32		
	L	15 38		
	F	16 14		
		Ottawa		
134 Apr. 15	i_Z	21 21 20		Nearby quake.
	i_Z	21 21 23		
	F	21 21.7		
		Ottawa		
135 Apr. 16	i_Z	0 05 39		Nearby quake.
	i_Z	0 05 41		
	F	0 06.4		
		Ottawa		
136 Apr. 16	H	6 08.0	7100	USCGS. gives:
	P	6 18 29		ϕ = 52°.6 N.
	PP	6 21.1		λ = 173°.8 W.
	e	6 23.0		
	S	6 27 12		
	PS	6 27 52		
	SS	6 31 40		
	i	6 34 51		
	L	6 38		
	F	10 40		
		Victoria		
	H	6 08.4	3900	
	P	6 15.3		
	e	6 16.1		
	PPP	6 17		
	e	6 20.0		
	S	6 21.0		
	e_E	6 22.2		
	SSS	6 24		
	L	6 28		
	F	11 09		
		Toronto		
	H	6 08.0	7140	
	P	6 18 27		
	PPP	6 22		
	S	6 27 12		
	SSS	6 34 27		
	L	6 38		
	F	9 00+		
		Saskatoon		
	H	6 07.9	5050	
	P	6 16 13		
	S	6 23.0		
	SS	6 26 06		
	SSS	6 26 50		
	L	6 31.6		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM April 16, 1940 to April 19, 1940 No. 21

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s		
		Halifax		
136 Apr. 16 (Cont'd)	H	6 08.0	7750	
	P	6 19 04		
	S	6 28 17		
	e_N	6 31.0		
	SSS	6 36.4		
	L	6 40		
	F	8 44		
		Seven Falls		
	H	6 08.0	7210	
	P	6 18 36		
	PPP	6 22 51		
	S	6 27 25		
	PS	6 28 05		
	SS	6 31 51		
	i	6 35 05		
	L	6 38		
	F	10 40		
		Shawinigan Falls		
	H	6 08.0	7180	
	P	6 18 42		
	S	6 27 19		
	L	6 41		
	F	8 01		
		Victoria		
139 Apr. 17	e	21 58		
	L	22 16		
	F	22 50		
		Ottawa		
141 Apr. 18	i_Z	20 02 18		
	L	20 13		
	F	21 06		
		Ottawa		
142 Apr. 19	i_Z	0 07 35		
	L	0 27		
	F	1 21		
		Victoria		
	e	0 20 18		
	L	0 25		
	F	1 37 ca.		
		Ottawa		
143 Apr. 19	i_Z	14 51 33		
	L	15 16		
	F	15 51		

FROM April 19, 1940 to April 27, 1940 No. 22

International Seismological Centre

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
144	i_Z	14 50 47		Nearby quake.
Apr.	i_Z	14 50 49		
20	i_Z	14 50 52		
	F	14 51.6		
		Ottawa		
146	i_Z	18 52 37		Nearby quake.
Apr.	F	18 53		
20				
		Ottawa		
147	i_Z	19 39 42		Nearby quake.
Apr.	F	19 40.3		
20				
		Ottawa		
149	i_Z	20 31 26		Nearby quake.
Apr.	F	20 31.7		
20				
		Victoria		
152	e	10 46		
Apr.	L	11 06		
24	F	11 37		
		Ottawa		
154	i_Z	19 29 54		Nearby quake.
Apr.	i_Z	19 30 00		
25	F	19 30.5		
		Ottawa		
155	e_Z	9 54 12		
Apr.	e_E	10 01 20		
27	e_E	10 05 12		
	e_E	10 11 48		
	L	10 27		
	F	10 53		
		Victoria		
	i	9 58 38		
	e	10 04 32		
	L	10 14		
	F	10 59		
		Seven Falls		
	e	10 05.6		
	e	10 12.3		
	L	10 33		
	F	10 48+		
		Ottawa		
156	e_Z?	10 44 06		
Apr.	i_Z	10 44 16		
27	e_Z	10 46 17		
	e	10 53.0		
	e	11 00.0		
	L	11 06		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM April 27, 1940 to April 27, 1940 No. 23

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
156 Apr. 27 (Cont'd)	e	10 56		
	e	11 03		
	L	11 14		
	F	13 06		
		Toronto		
	e	10 30		
	e	10 53.2		
	L	11 01		
	F	11 57		
		Halifax		
	e	10 42		
	e	10 51.4		
	L	10 58		
	F	11 39		
		Seven Falls		
	e	10 44		
	e	10 49.6		
	e	10 52.8		
	e	11 00 04		
	L	11 15		
	F	13 27		
		Shawinigan Falls		
	e	10 44		
	L	11 00		
	F	11 29		
		Ottawa		
158 Apr. 27	e_Z	18 23.7		
	e_E	18 34.5		
	e_E	18 41.3		
	L	19 00		
	F	20 35		
		Victoria		
	e	18 28 02		
	e	18 34.0		
	L	18 43		
	F	20 43		
		Toronto		
	e_E	18 34		
	e_N	18 45		
	L	19 01		
	F	20 23		
		Seven Falls		
	e	18 34.9		
	e	18 41.8		
	L	19 01		
	F	20 26		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM April 27, 1940 to April 30, 1940 No. 24

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
162 Apr. 29	i_Z F	16 21 28 16 21 36		Nearby quake.
		Ottawa		
163 Apr. 29	i_Z F	16 32 22 16 32 40		Nearby quake.
		Ottawa		
164 Apr. 29	i_Z F	17 49 40 17 49 51		Nearby quake.
		Ottawa		
165 Apr. 29	i_Z F	17 53 07 17 53 16		Nearby quake.

W. W. Doxsee.

EARTHQUAKE CORRELATION TABLE

Month April, 1940.

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
18	1	11 38+2 34u	11 36+2 38u	11 40+2 17u	11 38+1 00u	....	11 40+2 28u	12 23+0 13L	....	A
19	1	19 07+0 01P*	19 21+0 07L	....	....	....	....	....	....	..
20	6	14 39+0 31L	14 35+0 16L	....	....	....	14 40+0 24L	....	....	..
21	7	9 56+0 26u	10 16+0 14L	....	....	....	10 08+0 14L	....	....	..
22	8	....	....	....	....	....	1 54+0 07L	....	....	..
23	8	9 01+1 04u	9 13+1 00u	....	....	....	9 12+0 50u	....	....	..
24	10	20 26+1 18u	....	....	....	....	....	....	....	..
25	11	9 16+0 58u	....	....	....	....	....	....	....	..
26	12	....	....	....	....	....	....	2 18+0 0.2d	....	B
27	12	20 10+0 06L	....	....	....	....	....	....	....	..
28	12	20 14+0 32u	20 31+0 10L	20 22+0 19L	....	....	20 28+0 15L	....	....	..
29	13	6 50+0 40u	7 18+0 18L	7 12+0 08L	....	....	7 00+0 37L	....	....	..
30	13	8 15+0 01v	....	....	....	....	....	8 14+0 0.6v	8 14+0 0.5v	..
31	13	8 23+0 0.8v	....	....	....	....	....	....	....	..
32	14	9 58+0 42u	....	....	....	....	....	....	....	..
33	14	15 09+1 05u	....	....	....	....	15 35+0 36L	....	....	..
34	15	21 21+0 0.3v	....	....	....	....	....	....	....	..
35	16	0 06+0 0.7v	....	....	....	....	....	....	....	..
36	16	6 18+4 22U	6 15+4 54R	6 18+2 42U	6 16+2 44U	6 19+2 25U	6 19+4 21U	6 19+1 49U	6 19+1 42U	C
37	16	6 54+0 14P*	....	....	....	....	....	6 54+0 10P	6 54+0 08P	..
38	16	7 59+0 06P*	....	....	....	....	....	....	....	..
39	17	22 32+0 44L	21 58+0 52u	....	....	....	22 32+0 44L	....	....	..
40	18	....	....	....	....	....	7 03+0 15L	....	....	..
41	18	20 02+1 04u	....	....	....	....	20 43+0 24L	....	....	..
42	19	0 18+1 03u	0 20+1 17u	....	....	....	0 31+0 47L	....	....	..
43	19	14 52+1 00u	14 59+0 25L	....	....	....	15 18+0 28L	....	....	..
144	20	14 51+0 0.7v	....	....	....	....	....	....	....	..
145	20	16 05+0 04P*	....	....	....	....	....	....	....	..
146	20	18 53+0 0.4v	....	....	....	....	....	....	....	..

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EARTHQUAKE CORRELATION TABLE

Month April, 1940

Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
20	19 40+0 0.6v	....	....	....	....	....	....	....	..
20	20 01+0 01P*	....	....	....	....	....	....	....	..
20	20 31+0 0.3v	....	....	....	....	....	....	....	..
22	....	0 44+0 04L	....	....	....	....	....	....	..
22	....	6 36+0 09L	....	....	....	....	....	....	..
24	....	10 46+0 51u	....	....	....	11 29+0 11L	....	....	..
24	....	11 59+0 06L	....	....	....	....	....	....	..
25	19 30+0 0.6v	....	....	....	....	....	....	....	..
27	9 54+1 00u	9 59+1 00u	....	....	....	10 06+0 42u	....	....	..
27	10 44+2 29U	10 56+2 10U	10 30+1 27U	....	10 42+0 57U	10 50+2 37U	10 44+0 46U	10 44+0 45U	..
27	13 27+0 01P*	....	....	....	....	....	....	....	..
27	18 24+2 11u	18 28+2 15u	18 34+1 49u	....	19 10+0 30L	18 35+1 51u	....	....	..
28	1 57+0 01P*	....	....	....	....	....	....	....	..
28	....	....	23 18+0 06L	....	....	....	....	....	..
29	15 24+0 02P*	....	....	....	....	....	....	....	..
29	16 21+0 0.1v	....	....	....	....	....	....	....	..
29	16 32+0 0.1v	....	....	....	....	....	....	....	..
29	17 50+0 0.2v	....	....	....	....	....	....	....	..
29	17 53+0 0.2v	....	....	....	....	....	....	....	..
30	5 17+0 01P*	....	....	....	....	5 39+0 14L	....	....	..

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CORRELATION OF EARTHQUAKES

April, 1940.

N O T E S

A :	Ottawa	Δ = 14,000 km.	H = $11^h 19^m.3$	U.T.
	Victoria	Δ = 10,000 km.	H = 11 20	U.T.
	Toronto	Δ = 14,000 km.	H = 11 19	U.T.
	Seven Falls	Δ = 14,500 km.	H = 11 19	U.T.

B : Origin probably within 50 km. of Seven Falls station.

C :	Ottawa	Δ = 7,100 km.	H = $6^h 08^m.0$	U.T.
	Victoria	Δ = 3,900 km.	H = 6 08.4	U.T.
	Toronto	Δ = 7,140 km.	H = 6 08.0	U.T.
	Saskatoon	Δ = 5,050 km.	H = 6 07.9	U.T.
	Halifax	Δ = 7,750 km.	H = 6 08.0	U.T.
	Seven Falls	Δ = 7,210 km.	H = 6 08.0	U.T.
	Shawinigan Falls	Δ = 7,180 km.	H = 6 08.0	U.T.

Dominion Observatory,
Ottawa - Canada,
June 3, 1940.

International Seismological Centre

SEISMOLOGICAL BULLETINS RECEIVED

April, 1940.

We acknowledge , with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED
Trieste	October to December, 1939	April 1
Batavia	April to June, 1939	" 2
Manila	January to June, 1939	" 2
Manila	January, 1940	" 3
Richmond	February, 1940	" 3
Weston	March, 1940	" 3
Strasbourg) Paris) Bureau Central)	January, 1940	" 9
Brisbane	February, 1940	" 10
Algiers	February, 1940	" 10
Ksara	February, 1940	" 10
Harvard	January, 1937 to December, 1939	" 12
Saint Louis	Preliminary Supplement for months of September and December, 1939	" 12
Little Rock	January to May, 1939	" 12
Saint Louis	Preliminaries for January 17 and February 12, 1940	" 17
Saint Louis	July to September, 1939	" 17
Santiago	Years 1935, 1936, 1937	" 19
New Zealand Stations	February, 1940	" 20
Perth	February, 1940	" 22
Helwan	December, 1939	" 23
United States Coast and Geodetic Survey	November and December, 1937 and January, 1938	" 23
Bucarest	March, 1940	" 23
Richmond	March, 1940	" 24
La Paz	March 16 to August 18, 1938	" 24
Upsala	July, 1938 to June, 1939	" 29
Ksara	Year 1939	" 30

Dominion Observatory,
Ottawa - Canada.

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
May,
1940.

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DOMINION OBSERVATORY
OTTAWA, CANADA.

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SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent

International Seismological Centre

S T A T I O N S

OTTAWA

$\phi = 45°23'38''$ N. $\lambda = 75°42'57''$ W. h = 83m.
Time correction within 0.10s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

$\phi = 44°38'$ N. $\lambda = 63°36'$ W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

$\phi = 47°07!4$ N. $\lambda = 70°49!6$ W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

$\phi = 48°31'14''$ N. $\lambda = 123°24'56''$ W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

S T A T I O N S (Cont'd)

International Seismological Centre

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33!1 N. λ = 72°45!8 W. h = 60m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.
Time correction from radio time signals
Foundation: clay and sand
Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W. h = 320m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_0	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		
KL (Kirkland Lake)	1/30	$2x10^4$ at 30 cycles			

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM May 1, 1940 to May 4, 1940 No. 25

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
171 May 4	H	7 24.5	7120	USCGS. gives:
	P	7 34 56		ϕ = 53° N.
	S	7 43 40		λ = 173° E.
	SSS	7 51.3		
	L	7 57		
	F	10 00 ca.		
		Victoria		
	e	7 32.0		
	S	7 37 40		
	L	7 41		
	F	10 10		
		Toronto		
	e	7 43 39		
	e	7 51.3		
	L	7 57		
	F	9 30		
		Saskatoon		
	e	7 39 30		
	eL	7 48		
	F	8 55		
		Halifax		
	e	7 45		
	e	7 53		
	L	8 01		
	F	8 35		
		Seven Falls		
	H	7 24.4	7200	
	P	7 35.0		
	iS	7 43 48		
	e	7 47.8		
	e	7 51.5		
	L	7 58		
	F	10 10		
		Shawinigan Falls		
	H	7 24.4	7200	
	P	7 34 57		
	S	7 43 45		
	L	7 59		
	F	8 33		
		Ottawa		
172 May 4	e	17 01		
	L	17 06		
	F	17 36		
		Victoria		
	e	17 05		
	L	17 18		
	F	17 30		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM May 4, 1940 to May 5, 1940 No. 26

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
172 May 4 (Cont'd)	e	17 02		
	L	17 08		
	F	17 31		
		Ottawa		
174 May 4	H	21 02.4	9620	
	P_Z	21 15.1		
	PP_Z	21 18.1		
	S	21 25 44		
	L	21 45		
	F	23 13		
		Toronto		
	e	21 26.2		
	L	21 45		
	F	22 47		
		Seven Falls		
	e	21 25 08		
	L	21 37		
	F	23 03		
		Ottawa		
175 May 5	H	2 04.0	5600	
	P	2 12 55		
	e	2 13 11		
	eS	2 20 14		
	e_E	2 22 42		
	L	2 28		
	F	3 40		
		Victoria		
	H	2 04.0	7280	
	P	2 14.6		
	S	2 23 28		
	L	2 35		
	F	3 35		
		Toronto		
	H	2 03.7	5580	
	P	2 12 37		
	S	2 19.9		
	e	2 22.5		
	L	2 27		
	F	3 09		
		Seven Falls		
	H	2 03.9	5940	
	P	2 13 13		
	S	2 20 50		
	L	2 27		
	F	3 37		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM May 5, 1940 to May 10, 1940 No. 27

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
176 May 6	iZ	14 21 23		Nearby quake.
	F	14 21 35		
		Ottawa		
177 May 6	iZ	14 59 21		Nearby quake.
	F	14 59 30		
		Ottawa		
178 May 6	iZ	16 37 10		Nearby quake.
	F	16 37 22		
		Ottawa		
179 May 6	iZ	16 39 56		Nearby quake.
	F	16 40 06		
		Ottawa		
180 May 6	iZ	17 37 01		Nearby quake.
	F	17 37 11		
		Ottawa		
181 May 6	iZ	18 28 10		Nearby quake.
	F	18 28 17		
		Ottawa		
182 May 6	iZ	19 37 42		Nearby quake.
	F	19 37 50		
		Ottawa		
183 May 7	H	22 23.8	8630	
	PZ	22 35 40		
	S	22 45 35		
	SSE	22 50.3		
	eL	22 58		
	F	23 56		
		Toronto		
	e	22 46		
	L	23 06		
	F	23 51		
		Seven Falls		
	H	22 23.8	8140	
	P	22 35 19		
	S	22 42 52		
	L	22 57		
	F	23 54		
		Ottawa		
185 May 10	H	1 25.3	3720	
	PZ	1 32 00		
	SE	1 37.5		
	L	1 43		
	F	2 01		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM May 10, 1940 to May 11, 1940 No. 28

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
185	e	1 36		
May	L	1 40		
10	F	1 56		
(Cont'd)				
		Ottawa		
186	Pz	1 50 34		
May	L	2 02		
10	F	2 37		
		Ottawa		
189	H	13 54.9	7140	USCGS. gives:
May	P	14 05 25		ϕ = 53°.2 N.
11	S	14 14 10		λ = 172.0 E.
	SSS	14 21.3		
	eL	14 27		
	F	16 35		
		Victoria		
	H	13 55.1	4100	
	P	14 02 15		
	S	14 08 09		
	SS	14 10 52		
	L	14 14		
	F	16 40		
		Toronto		
	e	14 14 03		
	e	14 21 38		
	L	14 26		
	F	16 00		
		Saskatoon		
	H	13 54.9	5060	
	P	14 03.2		
	PP	14 05.2		
	S	14 10.0		
	SS	14 13.1		
	L	14 16		
	F	15 00		
		Halifax		
	e	14 15 14		
	e	14 24		
	L	14 32		
	F	15 13		
		Seven Falls		
	H	13 54.9	7200	
	P	14 05 30		
	iS	14 14 18		
	SS	14 19.0		
	SSS	14 22.3		
	L	14 28		
	F	16 32		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM May 11, 1940 to May 17, 1940 No. 29

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
189	H	13 54.9	7140	
May	P	14 05 28		
11	eS	14 14 13		
(Cont'd)	L	14 29		
	F	14 47		
		Ottawa		
190	e_Z	20 10 05		
May	L	20 22		
11	F	20 28		
		Ottawa		
196	e_Z	20 51.0		
May	e_E	20 56.6		
12	L	21 03		
	F	21 35		
		Victoria		
	e	20 55		
	L	21 02		
	F	21 38		
		Ottawa		
199	H	14 00.3	220	
May	P_2	14 00 48		
16	S_2	14 01 13		
	F	14 03		
		Seven Falls		
	e	14 01 23		
	F	14 01 43		
		Shawinigan Falls		
	H	14 00.3	90	
	P_1	14 00 33		
	S_1	14 00 44		
	F	14 02		
		Ottawa		
202	H	1 59.8	4160	USCGS. gives:-
May	P	2 07 02		ϕ = 7°.0 N.
17	PPP	2 08 39		λ = 81°.8 W.
	S	2 13 00		
	SSS	2 16.0		
	L	2 18		
	F	3 30		
		Victoria		
	H	1 59.8	5960	
	P	2 09 06		
	S	2 16 45		
	eN	2 18 54		
	L	2 26		
	F	3 43		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM May 17, 1940 to May 19, 1940 No. 30

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Toronto		
202 May 17 (Cont'd)	PP_N	2 08 06		
	S	2 12 32		
	L	2 17		
	F	3 12		
		Seven Falls		
	H	2 00.0	4300	
	P	2 07 29		
	PPP	2 09 09		
	S	2 13 35		
	SS	2 16.6		
	L	2 20		
	F	3 12		
		Shawinigan Falls		
	P	2 07 17		
	i	2 07 22		
	F	2 25		
		Victoria		
203 May 18	e_E	5 09 58		
	L	5 12		
	F	5 59		
		Ottawa		
208 May 19	H	4 36.8	3620	USCGS. gives:-
	P	4 43 23		ϕ = 32°50' N.
	PPP	4 44.7		λ = 115°30' W.
	S	4 48 47		
	i	4 49 42		
	SS	4 51 04		
	L	4 53		
	F	9 06		
		Victoria		
	H	4 37.1	1660	
	P	4 40 41		
	S	4 43 37		
	L	4 44		
	F	9 30		
		Toronto		
	H	2 36.8	3380	
	P	4 43 02		
	S	4 48 10		
	L	4 50		
	F	8 45		
		Saskatoon		
	H	4 36.7	2250	
	P	4 41 18		
	S	4 45 03		
	L	4 46		
	F	7 39		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM May 19, 1940 to May 19, 1940 No. 31

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Halifax		
208 May 19 (Cont'd)	e	4 44.6		
	e	4 50.5		
	e	4 54		
	L	4 56		
	F	7 10		
		Seven Falls		
	H	4 36.9	3980	
	P	4 43 55		
	PPP	4 45 20		
	S	4 49 42		
	SS	4 51 42		
	SSS	4 52 52		
	L	4 53		
	F	8 45		
		Shawinigan Falls		
	H	4 37.3	3680	
	P	4 43 56		
	S	4 49 23		
	SS	4 51 24		
	L	4 53		
	F	7 03		
		Ottawa		
209 May 19	e_Z	5 58.2		Aftershock of No. 208.
	L	6 09		
	F	6 18+		
		Ottawa		
210 May 19	i_Z	6 41 55		Aftershock of No. 208.
	L	6 51		
	F	7 07		
		Ottawa		
212 May 19	i	15 28 49		USCGS. gives:-
	e	15 30 52		ϕ = 51° N.
	e	15 31 45		λ = 148° E.
	i	15 37 46		
	e	15 41 22		
	L	15 47		
	F	17 00 ca.		
		Victoria		
	e	15 26 24		
	e	15 28 13		
	e_E	15 31 08		
	i	15 33 19		
	i_N	15 35 15		
	F	17 27		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM May 19, 1940 to May 21, 1940 No. 32

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Toronto		
212 May 19 (Cont'd)	e_N	15 28.7		
	i_E	15 37 49		
	L	15 50		
	F	16 09+		
		Saskatoon		
	e	15 27 04		
	i	15 34 26		
	F	16 00 ca.		
		Seven Falls		
	e	15 28.8		
	i	15 37 47		
	e	15 41 23		
	F	16 49		
		Shawinigan Falls		
	i	15 28 49		
	e	15 37 47		
	L	15 42		
	F	15 50		
		Ottawa		
214 May 19	e_Z	18 35 19		
	e_Z	18 36 36		
	e_E	18 46.0		
	L	18 58		
	F	21 00		
		Victoria		
	e	18 36 15		
	e_N	18 47		
	L	19 32		
	F	20 51		
		Seven Falls		
	e	18 52		
	L	19 12		
	F	20 05		
		Ottawa		
215 May 21	i_Z	19 06 55		USCGS. gives:-
	e_E	19 13 08		ϕ = 23° S.
	e	19 14.3		λ = 178° W.
	e	19 17 37		
	F	20 16		
		Victoria		
	e	19 02 15		
	e	19 10 45		
	i	19 11 02		
	F	20 32		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM May 21, 1940 to May 24, 1940 No. 33

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
219	e	6 21.0		
May	L	6 30		
23	F	8 00		
		Victoria		
	e	6 09		
	L	6 20		
	F	9 05		
		Seven Falls		
	e	6 21.3		
	e	6 29.8		
	L	6 35		
	F	8 29		
		Ottawa		
222	H	16 33.8	6360	USCGS. gives:-
May	iP	16 43 33		ϕ = 12° S.
24	i	16 43 46		λ = 78° W.
	i_N	16 46 08		
	i_N	16 48 54		
	i	16 51 18		
	iS	16 51 34		
	i	16 53 30		
	SS_E	16 55 30		
	SSS_E	16 57 13		
	i	16 58 40		
	L	17 00		
	F	21 14		
		Victoria		
	H	16 34.0	7900	
	P	16 45 14		
	S	16 54 34		
	SS	16 59.2		
	SSS	17 02.7		
	eL	17 06		
	F	21 36		
		Toronto		
	H	16 33.9	6080	
	iP	16 43 19		
	i	16 43 31		
	iS	16 51 04		
	SS	16 55 42		
	L	17 01		
	F	21 00 ca.		
		Saskatoon		
	H	16 33.9	7350	
	P	16 44 40		
	S	16 53 35		
	SS	16 58 26		
	SSS	17 01.3		
	L	17 04		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM May 24, 1940 to May 24, 1940 No. 34

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
222 May 24 (Cont'd)	H	16 34.0	6400	
	P	16 43 47		
	i	16 43 55		
	PP	16 46 08		
	iS	16 51 50		
	SS	16 56 12		
	SSS	16 58.3		
	L	17 00		
	F	21 24		
		Shawinigan Falls		
	H	16 33.9	6450	
	P	16 43 43		
	PPP	16 46 40		
	S	16 51 50		
	SS	16 55 37		
	SSS	16 58 29		
	L	17 03		
	F	19 36		
		Ottawa		
223 May 24	H	21 58.0	6180	USCGS. gives:-
	iP	22 07 32		ϕ = 12° S.
	iS	22 15 23		λ = 78° W.
	i_E	22 17 18		
	eL	22 25		
	F	1 04		
		Victoria		
	H	21 57.9	7980	
	P	22 09.2		
	S	22 18.6		
	L	22 37		
	F	1 10		
		Toronto		
	H	21 58.0	5900	
	P	22 07 18		
	S	22 14 53		
	L	22 28		
	F	0 24		
		Saskatoon		
	H	21 57.9	7390	
	P	22 08 37		
	PP_E	22 11		
	S	22 17 34		
	L	22 31		
	F	23 20		

International Seismological Centre

FROM May 24, 1940 to May 28, 1940 No. 35

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
223 May 24 (Cont'd)	H	21 57.9	6460	
	P	22 07 44		
	iS	22 15 51		
	SS	22 19.5		
	L	22 24		
	F	0 55		
		Shawinigan Falls		
	H	21 58.0	6310	
	P	22 07 41		
	S	22 15 39		
	L	22 29		
	F	22 47		
		Ottawa		
227 May 28	P_Z	9 59 50		USCGS gives:-
	e	10 03		∅ = 2°.0 S.
	e	10 19		λ = 136° E.
	L	10 37		
	F	12 25		
		Victoria		
	e	9 54 25		
	e_E	10 04 54		
	e_N	10 05 44		
	e_E	10 11 44		
	L	10 21		
	F	12 50		
		Toronto		
	e	10 03		
	e_E	10 19		
	L	10 37		
	F	12 16		
		Halifax		
	e	10 02 37		
	L	10 43		
	F	12 00		
		Seven Falls		
	e	9 59 54		
	e	10 02.0		
	e	10 09.0		
	e	10 19.5		
	L	10 34		
	F	12 44		
		Shawinigan Falls		
	e	9 59 51		
	L	10 46		
	F	11 12		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM May 28, 1940 to May 29, 1940 No. 36

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
229 May 29	H	1 58.0	4020	USCGS. gives:-
	P	2 05 05		ϕ = 67°.9 N.
	S	2 10 54		λ = 148° W.
	SSS	2 13 28		
	eL	2 15		
	F	3 33		
		Victoria		
	H	1 57.8	2200	
	iP	2 02 17		
	S	2 05 59		
	L	2 07		
	F	4 00 ca.		
		Toronto		
	H	1 37.8	4140	
	P	2 05.0		
	S	2 10 56		
	SS	2 13 25		
	SSS	2 14 16		
	L	2 15		
	F	3 35		
		Saskatoon		
	H	1 58.0	2400	
	iP	2 02 49		
	S	2 06 46		
	e	2 08.0		
	L	2 09		
	F	3 06		
		Halifax		
	S	2 12 13		
	SS	2 14 35		
	L	2 18		
	F	3 11		
		Seven Falls		
	H	1 58.0	4140	
	eP	2 05.2		
	PPP	2 06.7		
	iS	2 11 08		
	SS	2 13 30		
	L	2 16		
	F	4 03		
		Shawinigan Falls		
	P	2 05 06		
	e	2 10.7		
	e	2 13 05		
	L	2 15		
	F	2 51		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM May 29, 1940 to May 31, 1940 No. 39

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
231	e	1 03		
May	L	1 20		
31	F	2 10		
		Seven Falls		
	e	1 09		
	L	1 41		
	F	2 30		
		Victoria		
232	e	2 54		
May	L	3 10		
31	F	3 46		
		Ottawa		
233	e	5 13 40		
May	L	5 24		
31	F	5 47		
		Seven Falls		
	e	5 14.6		
	L	5 25		
	F	5 42		

W. W. Doxsee.

EARTHQUAKE CORRELATION TABLE

Month May, 1940

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
167	1	....	....	....	....	....	....	23 16+0 0.1d	....	A
168	2	8 42+0 04P*	....	....	....	....	....	....	....	..
169	2	22 16+0 12L	22 00+0 10L	....	....	....	....	....	....	..
170	4	6 32+0 09L	6 47+0 05L	....	....	....	....	....	....	..
171	4	7 35+2 25U	7 32+2 28U	7 44+1 46U	7 39+1 16U	7 45+0 50U	7 35+2 35U	7 35+0 52U	7 35+0 57U	B
172	4	17 01+0 35u	17 05+0 25u	....	....	....	17 02+0 29u	....	....	..
173	4	20 17+0 01P*	....	....	....	....	....	....	....	..
174	4	21 15+1 58u	....	21 26+1 21u	....	....	21 25+1 38u	....	....	C
175	5	2 13+1 27u	2 15+1 20u	2 13+0 56u	....	....	2 21+1 16u	2 13+0 05P	2 13+0 05P	E
176	6	14 21+0 0.2v	....	....	....	....	....	....	....	..
177	6	14 59+0 0.1v	....	....	....	....	....	....	....	..
178	6	16 37+0 0.2v	....	....	....	....	....	....	....	..
179	6	16 40+0 0.2v	....	....	....	....	....	....	....	..
180	6	17 37+0 0.2v	....	....	....	....	....	....	....	..
181	6	18 28+0 0.1v	....	....	....	....	....	....	....	..
182	6	19 38+0 0.1v	....	....	....	....	....	....	....	..
183	7	22 36+1 20u	....	22 46+1 05u	....	....	22 45+1 09u	22 35+0 02P	....	F
184	9	....	....	....	....	....	....	3 25+0 0.5d	....	A
185	10	1 32+0 29r	1 36+0 20u	1 42+0 11L	1 41+0 12L	....	1 44+0 17L	1 45+0 25L	1 44+0 09L	G
186	10	1 51+0 46r	1 58+0 41L	1 59+0 16L	1 59+0 14L	....	2 04+0 26L	....	2 02+0 09L	..
187	10	19 19+0 04P	....	....	....	....	....	....	....	..
188	11	7 57+0 01P*	....	....	....	....	....	....	....	..
189	11	14 05+2 30U	14 02+2 38R	14 14+1 46U	14 03+0 57U	14 15+0 58U	14 06+2 26U	14 05+0 43U	14 05+0 42U	J
190	11	20 10+0 18u	....	....	....	....	....	....	....	..
191	11	21 19+0 01P*	21 48+0 25L	....	....	....	21 53+0 26L	....	....	..
192	12	....	16 46+0 09L	....	....	....	16 50+0 40L	....	....	..
193	12	17 14+0 01P*	....	....	....	....	....	....	....	..
194	12	17 19+0 01P*	....	....	....	....	....	....	....	..
195	12	....	19 30+0 07L	....	....	....	....	....	....	..
196	12	20 51+0 44u	20 55+0 43u	21 01+0 17L	21 00+0 20L	....	21 05+0 33L	....	....	..
197	13	....	15 05+0 17L	....	....	....	....	....	....	..
198	13	....	16 22+0 06L	....	....	....	....	....	....	..
199	16	14 01+0 02v	....	....	....	....	....	14 01+0 0.3d	14 01+0 01.5d	K

EARTHQUAKE CORRELATION TABLE

Month May, 1940

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
00	16	20 56+0 03L	20 36+0 21L	....	....	....	....	....	....	..
01	16	....	22 17+0 19L	....	....	....	....	....	....	..
02	17	2 07+1 23r	2 09+1 34u	2 08+1 04r	....	....	2 09+1 03r	2 07+0 22r	2 07+0 18r	N
03	18	5 21+0 25L	5 10+0 49r	5 19+0 13L	....	5 26+0 10L	5 23+0 22L	....	5 22+0 08L	..
04	18	5 48+0 20L	....	....	....	....	5 47+0 23L	....	....	..
05	18	6 08+0 17L	6 00+0 26L	6 07+0 16L	....	6 14+0 08L	6 10+0 22L	....	6 10+0 06L	..
06	18	7 39+0 13L	7 30+0 11L	7 38+0 05L	....	7 44+0 05L	7 42+0 04L	....	7 40+0 04L	..
07	18	16 35+0 20L	16 42+0 20L	16 30+0 13L	....	....	16 40+0 12L	....	....	..
08	19	4 43+4 23R	4 41+4 49R	4 43+4 02R	4 41+2 58R	4 45+2 25R	4 44+4 01R	4 44+2 28R	4 44+2 21R	S
09	19	5 58+0 20r	6 01+0 06L	6 08+0 10L	6 02+0 14L	6 13+0 11L	6 11+0 10L	6 11+0 13L	6 03+0 23L	..
10	19	6 42+0 25r	6 42+0 09L	6 50+0 10L	6 44+0 13L	6 55+0 08L	6 54+0 06L	6 52+0 13L	6 51+0 14L	..
11	19	8 20+0 10L	....	8 20+0 06L	....	....	8 14+0 06L	....	....	..
12	19	15 29+1 31u	15 26+2 00u	15 29+0 40u	15 27+0 33u	15 40+0 30L	15 29+1 20u	15 29+0 34u	15 29+0 21u	..
13	19	....	18 19+0 06L	....	....	....	....	....	....	..
14	19	18 35+2 25u	18 36+2 15u	....	....	19 17+0 09L	18 52+1 13u	....	....	..
215	21	19 07+1 09u	19 02+1 30u	....	....	....	19 13+1 02u	....	....	..
216	22	....	6 42+0 22L	....	....	6 41+0 16L	....	....	....	..
217	22	....	11 09+0 08L	....	....	....	....	....	....	..
218	22	....	12 12+0 09L	....	....	....	....	....	....	..
219	23	6 21+1 39u	6 09+2 56u	6 21+0 59u	....	....	6 21+2 08u	....	....	..
220	24	....	....	....	....	....	....	1 59+0 0.4d	....	A
221	24	....	16 03+0 06L	....	16 02+0 07L	....	....	....	....	..
222	24	16 44+4 30U	16 45+4 51U	16 43+4 17U	16 45+3 28U	....	16 44+4 36U	16 44+2 51U	16 44+2 52U	W
223	24	22 08+2 52u	22 09+3 01u	22 07+2 17u	22 09+1 11u	....	22 08+2 47u	22 08+0 35u	22 08+0 39u	X
224	25	....	16 03+0 07L	....	....	....	....	....	....	..
225	27	8 36+0 59L	8 39+0 56L	....	....	....	....	....	....	..
226	27	....	....	....	....	....	12 47+0 05L	....	....	..
227	28	10 00+2 25u	9 54+2 56u	10 03+2 13u	....	10 03+1 57u	10 02+2 43u	10 00+1 13u	10 00+1 12u	..
228	29	....	1 43+0 19L	....	....	....	1 04+0 17L	....	....	..
229	29	2 05+1 28r	2 02+1 58r	2 05+1 30r	2 03+1 03r	2 12+0 59r	2 05+1 57r	2 05+0 50r	2 05+0 46r	Y
230	29	5 31+0 04L	5 22+0 07L	....	5 22+0 05L	....	5 31+0 03L	5 31+0 09L	5 30+0 08L	..
231	31	1 30+0 53L	1 03+1 07u	....	....	....	1 09+1 21u	....	....	..
232	31	3 23+0 43L	2 54+0 52u	....	....	....	3 30+0 42L	....	....	..
233	31	5 14+0 33u	5 14+0 36L	....	....	....	5 15+0 27u	....	....	..
234	31	....	....	....	....	....	....	....	1[illegible] [illegible]4+0 02P	..

International Seismological Centre

N O T E S

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A : Origin probably within 50 km. of the Seven Falls station.

B :	Ottawa	Δ = 7120 km.	H = $7^{h}24^{m}.5$ U.T.
	Seven Falls	Δ = 7200 km.	H = 7 24.4 U.T.
	Shawinigan Falls	Δ = 7200 km.	H = 7 24.4 U.T.
C :	Ottawa	Δ = 9620 km.	H = $21^{h}02^{m}.4$ U.T.
E :	Ottawa	Δ = 5600 km.	H = $2^{h}04^{m}.0$ U.T.
	Victoria	Δ = 7280 km.	H = 2 04.0 U.T.
	Toronto	Δ = 5580 km.	H = 2 03.7 U.T.
	Seven Falls	Δ = 5940 km.	H = 2 03.9 U.T.
F :	Ottawa	Δ = 8630 km.	H = $22^{h}23^{m}.8$ U.T.
	Seven Falls	Δ = 8140 km.	H = 22 23.8 U.T.
G :	Ottawa	Δ = 3720 km.	H = $1^{h}25^{m}.3$ U.T.
J :	Ottawa	Δ = 7140 km.	H = $13^{h}54^{m}.9$ U.T.
	Victoria	Δ = 4100 km.	H = 13 55.1 U.T.
	Saskatoon	Δ = 5060 km.	H = 13 54.9 U.T.
	Seven Falls	Δ = 7200 km.	H = 13 54.9 U.T.
	Shawinigan Falls	Δ = 7140 km.	H = 13 54.9 U.T.
K :	Ottawa	Δ = 220 km.	H = $14^{h}00^{m}.3$ U.T.
	Shawinigan Falls	Δ = 90 km.	H = 14 00.3 U.T.
N :	Ottawa	Δ = 4160 km.	H = $1^{h}59^{m}.8$ U.T.
	Victoria	Δ = 5960 km.	H = 1 59.8 U.T.
	Seven Falls	Δ = 4300 km.	H = 2 00.0 U.T.
S :	Ottawa	Δ = 3620 km.	H = $4^{h}36^{m}.8$ U.T.
	Victoria	Δ = 1660 km.	H = 4 37.1 U.T.
	Toronto	Δ = 3380 km.	H = 4 36.8 U.T.
	Saskatoon	Δ = 2250 km.	H = 4 36.7 U.T.
	Seven Falls	Δ = 3980 km.	H = 4 36.9 U.T.
	Shawinigan Falls	Δ = 3680 km.	H = 4 37.3 U.T.
W :	Ottawa	Δ = 6360 km.	H = $16^{h}33^{m}.8$ U.T.
	Victoria	Δ = 7900 km.	H = 16 34.0 U.T.
	Toronto	Δ = 6080 km.	H = 16 33.9 U.T.
	Saskatoon	Δ = 7350 km.	H = 16 33.9 U.T.
	Seven Falls	Δ = 6400 km.	H = 16 34.0 U.T.
	Shawinigan Falls	Δ = 6450 km.	H = 16 33.9 U.T.
X :	Ottawa	Δ = 6180 km.	H = $21^{h}58^{m}.0$ U.T.
	Victoria	Δ = 7980 km.	H = 21 57.9 U.T.
	Toronto	Δ = 5900 km.	H = 21 58.0 U.T.
	Saskatoon	Δ = 7390 km.	H = 21 57.9 U.T.
	Seven Falls	Δ = 6460 km.	H = 21 57.9 U.T.
	Shawinigan Falls	Δ = 6310 km.	H = 21 58.0
Y :	Ottawa	Δ = 4020 km.	H = $1^{h}58^{m}.0$ U.T.
	Victoria	Δ = 2200 km.	H = 1 57.8 U.T.
	Toronto	Δ = 4140 km.	H = 1 57.8 U.T.
	Saskatoon	Δ = 2400 km.	H = 1 58.0
	Seven Falls	Δ = 4140 km.	H = 1 58.0 U.T.

Ottawa, Canada, July 27, 1940.

International Seismological Centre

SEISMOLOGICAL BULLETINS RECEIVED

May, 1940.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED
Reykjavik	Year 1939	May 6
Weston	Preliminary for April, 1940	" 6
Paris) Strasbourg) Bureau Central)	February, 1940	" 6
Manila	February, 1940	" 6
Uccle	September 1 to December 31, 1939	" 7
Apia	January to March, 1940	" 8
William's College	July, 1939 to March, 1940	" 10
Trieste	January and February, 1940	" 12
Brisbane	March, 1940	" 15
Sydney	November and December, 1939	" 15
Perth	March, 1940	" 18
Pasadena	Local Shocks October/39 to February/40	" 18
United States Coast and Geodetic Survey	February to April, 1938	" 20
Algiers	March, 1940	" 20
Riverview	February and March, 1940	" 21
New Zealand Stations	March, 1940	" 21
Osaka	July to December, 1939	" 21
Ksara	March, 1940	" 23
Pittsburgh	March, 1940	" 23
Fordham	January to March, 1940	" 25
Zürich	March and April, 1940	" 27
Bucarest	April, 1940	" 27
Pasadena	Preliminary Report January to April/40	" 30
Pittsburgh	April, 1940	" 31

DOMINION OBSERVATORY,
OTTAWA - CANADA.

International Seismological Centre

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
June,
1940.

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DOMINION OBSERVATORY
OTTAWA, CANADA.

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SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent

S T A T I O N S

OTTAWA

$\phi = 45°23'38''$ N. $\lambda = 75°42'57''$ W. h = 83m.

Time correction within 0.10s.

Foundation: boulder clay over limestone

Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

$\phi = 44°38'$ N. $\lambda = 63°36'$ W. h = 46m.

Time correction from recorded radio time signals

Foundation: Carbonaceous slate

Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

$\phi = 47°07'.4$ N. $\lambda = 70°49'.6$ W. h = 232m. ca.

Time correction from recorded radio time signals

Foundation: Solid granite of Canadian Shield

Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

$\phi = 48°31'14''$ N. $\lambda = 123°24'56''$ W. h = 197m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

International Seismological Centre

S T A T I O N S (Cont'd)

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33'.1 N. λ = 72°45'.8 W. h = 60m. ca.

Time correction from recorded radio time signals

Foundation: solid granite of Canadian Shield

Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.

Time correction from radio time signals

Foundation: clay and sand

Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.

Time correction from radio time signals

Foundation: sand and clay

Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W. h = 320m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_0	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2000			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.2	59	Aper.		
SE (Saskatoon)	9.2	60	"		
KL (Kirkland Lake)	1/30	2×10^4 at 30 cycles			

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM June 1, 1940 to June 3, 1940 No. 38

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
236 June 2	e	11 56		
	L	12 03		
	F	13 03		
		Victoria		
	e	11 49 45		
	L	11 53		
	F	13 25		
		Toronto		
	e	11 56 30		
	L	12 11		
	F	12 40		
		Seven Falls		
	e	11 56.4		
	L	12 09		
	F	13 ca.		
		Ottawa		
240 June 3	H	18 05.7	3440	USCGS. gives:
	P_Z	18 12 05		ϕ = 25° N.
	S	18 17 17		λ = 110° W.
	eL	18 21		
	F	19 33		
		Victoria		
	e	18 10.6		
	S	18 15 23		
	L	18 17		
	F	19 15		
		Toronto		
	e	18 16 48		
	e	18 18		
	L	18 21		
	F	19 26		
		Saskatoon		
	H	18 05.5	3250	
	P_N	18 11.6		
	S_N	18 16.6		
	L	18 20		
	F	19 12		
		Halifax		
	e_N	18 19 20		
	e	18 22 49		
	L	18 26		
	F	19 15		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM June 3, 1940 to June 5, 1940 No. 39

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
240 June 3 (Cont'd)	H	18 05.9	3630	
	P	18 12 29		
	S	18 17.9		
	L	18 21		
	F	19 01		
		Seven Falls		
	H	18 05.6	4000	
	P	18 12 38		
	PPP	18 14 23		
	S	18 18 25		
	L	18 23		
	F	20 ca.		
		Ottawa		
242 June 5	H	11 01.4	4010	USCGS. gives:
	P	11 08 30		ϕ = 68° N.
	iS	11 14 18		λ = 138° W.
	SS	11 16.4		
	e	11 17 01		
	L	11 18		
	F	13 22		
		Victoria		
	H	11 01.6	1870	
	iP	11 05 34		
	iS	11 08 48		
	SS	11 09 11		
	L	11 11		
	F	13 40		
		Toronto		
	H	11 01.5	3960	
	P	11 08 33		
	S	11 14 18		
	SS	11 15 50		
	L	11 18		
	F	13 10		
		Saskatoon		
	H	11 01.5	2120	
	iP	11 05 50		
	S_N	11 09 25		
	SS_N	11 10		
	L	11 12		
	F	12 22+		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM	June 5, 1940	to	June 12, 1940	No. 40

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Halifax		
242 June 5 (Cont'd)	e	11 10.8		
	e	11 15 34		
	L	11 19		
	F	12 31		
		Shawinigan Falls		
	P	11 08 31		
	L	11 18		
	F	12 20		
		Seven Falls		
	H	11 01.3	4150	
	P	11 08 30		
	S	11 14 27		
	SS	11 16.6		
	L	11 19		
	F	13 37		
		Victoria		
245 June 7	e	7 41		
	L	7 57		
	F	8 53		
		Victoria		
246 June 8	e	4 22		
	L	4 40		
	F	5 18		
		Victoria		
248 June 11	e	18 52.7		
	e	18 56 45		
	L	18 58		
	F	19 26		
		Victoria		
252 June 12	e	12 10		
	L	12 48		
	F	14 10		
		Victoria		
253 June 12	e	14 20		
	L	14 32		
	F	16 06		
		Seven Falls		
	e	14 23.9		
	L	14 47		
	F	15 57		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM June 12, 1940 to June 18, 1940 No. 41

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
257 June 17	H	10 27.1	7380	USCGS. gives:
	eP	10 37 50		ϕ = 21° N.
	eS	10 46 46		λ = 155°.3 W.
	eL	10 59		
	F	13 17		
		Victoria		
	H	10 27.1	4020	
	iP	10 34 09		
	PPP	10 35 35		
	iS	10 39 58		
	SSS_E	10 42 50		
	L	10 44		
	F	14 26		
		Toronto		
	H	10 27.0	7090	
	P_E	10 37.4		
	S	10 46.1		
	SSS	10 53.8		
	L	10 59		
	F	13 ca.		
		Halifax		
	e	10 48.1		
	L	11 03		
	F	12 06		
		Shawinigan Falls		
	H	10 27.2	7520	
	P	10 38 06		
	S	10 47 09		
	L	11 00		
	F	11 34		
		Seven Falls		
	H	10 27.0	7800	
	P	10 38 08		
	S	10 47 23		
	SS	10 52.0		
	L	11 00		
	F	13 26		
		Victoria		
260 June 18	e_E?	14 09		
	i	14 15 10		
	e	14 17 44		
	e_N	14 28 20		
	F	15 23		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM June 18, 1940 to June 22, 1940 No. 42

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
261 June 18	H	18 39.3	7120	USCGS. gives:
	P	18 49 48		ϕ = 54° N.
	S	18 58 32		λ = 173° E.
	SSS	19 06		
	L	19 12		
	F	21 17		
		Victoria		
	eN	18 52 32		
	L	18 55		
	F	20 53		
		Toronto		
	e	18 58 45		
	L	19 10		
	F	20 30		
		Saskatoon		
	eN	18 54.3		
	e	18 57.5		
	L	19 03		
	F	19 23		
		Seven Falls		
	e	18 53		
	S?	18 58 42		
	e	19 03		
	e	19 06.4		
	L	19 10		
	F	21 01		
		Shawinigan Falls		
	H	18 39.2		
	eP	18 49.8		
	eS	18 58.6		
	L	19 14		
	F	19 33		
		Ottawa		
264 June 22	H	11 36 ca.	15,800 ca	
	P'	11 55 36		
	PP	11 58 46		
	SKS	12 02 32		
	PPS	12 11 04		
	SS	12 17		
	L	12 35		
	F	13 20+		
		Victoria		
	H	11 36 ca	13,900 ca	
	P'	11 55.3		
	PP	12 00 57		
	PPP	12 03 58		
	SS	12 19.3		
	[illegible]	[illegible]		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM June 22, 1940 to June 23, 1940 No. 43

NO. AND Date	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Toronto		
264 June 22 (Cont'd)	e	11 58 49		
	i	11 59 45		
	e	12 04 32		
	L	12 16		
	F	13 20+		
		Halifax		
	e_N	11 59.0		
	e_E	12 16		
	L	12 37		
	F	13 ca.		
		Seven Falls		
	e	11 58 45		
	L	12 36		
	F	14 06		
		Shawinigan Falls		
	e	11 55 38		
	i	11 58 46		
	e	12 00 04		
	e	12 04 35		
	F	12 17		
		Ottawa		
265 June 23	H	6 55.9	4160	
	P_Z	7 03 10		
	PPP	7 04.7		
	S	7 09 08		
	SSS_E	7 12		
	L	7 15		
	F	7 50		
		Seven Falls		
	e	7 08 32		
	L	7 13		
	F	7 39		
		Ottawa		
267 June 23	H	21 41.7	3630	USCGS. gives:
	P_Z	21 48 16		ϕ = 25° N.
	S	21 53 40		λ = 111° W.
	L	21 59		
	F	23 05		
		Victoria		
	H	21 41.4	2840	
	P_N	21 46 54		
	S	21 51 26		
	L	21 54		
	F	22 56		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM June 23, 1940 to June 30, 1940 No. 44

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Toronto		
267 June 23 (Cont'd)	e	21 52 50		
	eL	21 57		
	F	22 46		
		Saskatoon		
	e	21 55 24		
	L	21 57		
	F	22 10		
		Seven Falls		
	e	21 55.8		
	L	22 00		
	F	22 54		
		Ottawa		
268 June 25	eZ	3 03 48		
	L	3 12		
	F	4 00		
		Ottawa		
271 June 26	e	8 40.5		
	L	9 09		
	F	9 46		
		Seven Falls		
	e	8 40.3		
	L	9 00		
	F	9 56		
		Ottawa		
272 June 29	eZ	13 27 42		Nearby quake.
	F	13 27 50		

W. W. Doxsee.

EARTHQUAKE CORRELATION TABLE

Month June, 1940

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
235	1	....	0 10+0 03L	0 16+0 19L	....	....	....	....	....	..
236	2	11 56+1 07u	11 50+1 35u	11 56+0 44u	....	12 14+0 20L	11 56+1 03u	....	....	..
237	2	15 06+0 02L	14 58+0 04L	15 06+0 03L	....	....	15 06+0 04L	15 06+0 05L	15 06+0 05L	..
238	2	....	19 36+0 13L	....	....	....	....	....	....	..
239	2	23 18+0 56L	....	23 20+0 46L	....	....	23 40+0 35L	....	....	..
240	3	18 12+1 21r	18 11+1 04r	18 17+1 09r	18 12+1 00r	18 19+0 56r	18 13+1 43r	18 13+0 47r	18 12+0 49r	A
241	4	10 53+0 02L	10 44+0 05L	10 51+0 02L	....	....	....	....	....	..
242	5	11 08+2 14R	11 06+2 34R	11 09+2 02R	11 06+1 16R	11 11+1 20R	11 09+2 29R	11 08+1 03R	11 09+1 11R	B
243	5	....	16 02+0 02L	....	....	....	....	16 11+0 02L	....	..
244	7	....	5 24+0 02L	....	....	....	....	....	....	..
245	7	8 13+0 37L	7 41+1 12u	....	....	....	8 21+1 13L	....	....	..
246	8	4 49+0 48L	4 22+0 56u	....	....	....	4 52+1 04L	....	....	..
247	8	....	11 50+0 08L	....	....	....	....	....	....	..
248	11	19 14+0 30L	18 53+0 33u	....	....	....	19 15+0 25L	....	....	..
249	11	....	20 01+0 02L	....	....	....	....	....	....	..
250	12	6 20+0 27L	6 08+0 17L	....	....	....	6 20+0 22L	....	....	..
251	12	9 37+0 47L	9 15+1 19u	....	....	....	9 39+0 42L	....	....	..
252	12	13 31+0 35L	12 10+2 00u	....	....	....	13 08+0 57L	....	....	..
253	12	14 45+0 52L	14 20+1 46u	14 49+0 34L	....	....	14 24+1 33u	....	....	..
254	12	....	....	....	....	....	16 50+0 14L	....	....	..
255	14	17 44+0 32L	....	....	....	....	17 44+0 29L	....	17 23+0 03P	..
256	17	....	2 12+0 36L	....	....	....	....	....	....	..
257	17	10 38+2 39u	10 34+3 52r	10 37+2 23u	....	10 48+1 18u	10 38+2 48u	10 38+0 43u	10 38+0 56u	C
258	17	....	21 07+0 13L	....	....	....	....	....	....	..
259	17	....	23 25+0 11L	....	....	....	....	....	....	..
260	18	14 13+1 23L	14 09+1 14u	14 15+0 45L	....	....	14 19+1 17L	....	14 13+0 07L	..
261	18	18 50+2 27u	18 53+2 00u	18 59+1 31u	18 54+0 29u	19 15+0 33L	18 53+2 08u	....	18 50+0 43u	E
262	20	....	....	....	....	....	....	6 44+0 0.5d	....	F
263	22	....	9 34+0 10L	9 44+0 05L	....	....	....	....	....	..
264	22	11 56+1 24u	11 55+2 27u	11 59+1 21u	....	11 59+1 01u	11 59+2 07u	11 59+0 04P	11 56+0 21u	G
265	23	7 03+0 47r	7 18+0 29L	7 15+0 12L	7 15+0 09L	7 16+0 04L	7 09+0 30r	....	7 03+0 02P	J
266	23	....	19 31+0 03L	....	....	....	....	....	....	..
267	23	21 48+1 17r	21 47+1 09r	21 53+0 53r	21 55+0 15r	22 03+0 26L	21 56+0 58r	22 01+0 14L	21 58+[illegible] 14L	K
268	25	3 04+0 56u	....	....	....	....	3 28+0 18L	....	3 04+[illegible] 01P	..
269	25	4 52+0 43L	....	5 01+0 13L	....	4 56+0 03L	4 57+0 27L	....	....	..
270	25	....	....	....	....	....	9 51+0 0.3d	9 51+0 0.5d	....	F
271	26	8 40+1 06u	....	9 17+0 15L	....	....	8 40+1 16u	....	....	..
272	29	13 28+0 0.1v*	....	....	....	....	....	....	....	..

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CORRELATION OF EARTHQUAKES

June, 1940.

N O T E S

A :	Ottawa	Δ = 3440 km.	H = $18^h05^m.7$ U.T.
	Saskatoon	Δ = 3250 km.	H = 18 05.5 U.T.
	Shawinigan Falls	Δ = 3630 km.	H = 18 05.9 U.T.
	Seven Falls	Δ = 4000 km.	H = 18 05.6 U.T.
B :	Ottawa	Δ = 4010 km.	H = $11^h01^m.4$ U.T.
	Victoria	Δ = 1870 km.	H = 11 01.6 U.T.
	Toronto	Δ = 3960 km.	H = 11 01.5 U.T.
	Saskatoon	Δ = 2120 km.	H = 11 01.5 U.T.
	Seven Falls	Δ = 4150 km.	H = 11 01.3 U.T.
C :	Ottawa	Δ = 7380 km.	H = $10^h27^m.1$ U.T.
	Victoria	Δ = 4020 km.	H = 10 27.1 U.T.
	Toronto	Δ = 7090 km.	H = 10 27.0 U.T.
	Shawinigan Falls	Δ = 7520 km.	H = 10 27.2 U.T.
	Seven Falls	Δ = 7800 km.	H = 10 27.0 U.T.
E :	Ottawa	Δ = 7120 km.	H = $18^h39^m.3$ U.T.
	Shawinigan Falls	Δ = 7200 km.	H = 18 39.2 U.T.
F :	Origin probably within 50 km. of the Seven Falls station.		
G :	Ottawa	Δ = 15800 km.	H = 11^h36^m U.T.
	Victoria	Δ = 13900 km.	H = 11 36 U.T.
J :	Ottawa	Δ = 4160 km.	H = $6^h55^m.9$ U.T.
K :	Ottawa	Δ = 3630 km.	H = $21^h41^m.7$ U.T.
	Victoria	Δ = 2840 km.	H = 21 41.4 U.T.

Dominion Observatory,
Ottawa, Canada,
August 26, 1940.

International
Seismological
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SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
July,
1940.

DOMINION OBSERVATORY
OTTAWA, CANADA.

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent

International Seismological Centre

STATIONS

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: Boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07'.4 N. λ = 70°49'.6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33!1 N. λ = 72°45!8 W. h = 60m. ca.

Time correction from recorded radio time signals

Foundation: solid granite of Canadian Shield

Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

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SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.

Time correction from radio time signals

Foundation: clay and sand

Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.

Time correction from radio time signals

Foundation: sand and clay

Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W. h = 320m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2200			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.1	61	Aper.		
SE (Saskatoon)	9.0	58	"		
KL (Kirkland Lake)	1/30	2×10^4 at 30 cycles			

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SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM July 1, 1940 to July 2, 1940 No. 45

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
273 July 1	i_Z	6 49 28		
	i_Z	6 49 38		
	F	6 50 06		
		Shawinigan Falls		
	e	6 50 20		
	F	6 50 50		
		Ottawa		
275 July 1	H	21 29.7	3680	
	eP	21 36 23		
	eS	21 41 50		
	eL	21 46		
	F	22 17		
		Victoria		
	e_N	21 43.8		
	e_E	21 48.5		
	L	22 00		
	F	22 21		
		Toronto		
	e	21 42 27		
	L	21 48		
	F	21 58		
		Halifax		
	H	21 29.7	2800	
	eP_E	21 35 08		
	S	21 39 36		
	L	21 43		
	F	21 46		
		Seven Falls		
	H	21 29.6	3300	
	P	21 35 48		
	S	21 40 52		
	L	21 44		
	F	22 12		
		Ottawa		
276 July 2	e_E	19 28.0		
	e	19 37.0		
	e	19 43.1		
	eL	19 55		
	F	21 08		
		Victoria		
	e	19 21.3		
	e	19 31 04		
	L	19 42		
	F	20 34		

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FROM July 2, 1940 to July 6, 1940 No. 46

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
276 July 2 (Cont'd)	e	19 35.7		
	e	19 43.8		
	L	20 00		
	F	21 43		
		Ottawa		
279 July 6	H	3 40.4	3520	USCGS. gives:
	P	3 46 53		ϕ = 11° N.
	e	3 47 29		λ = 61° W.
	PPP	3 48 06		
	S	3 52 10		
	e_N	3 53 10		
	SS_E	3 54.2		
	L	3 56		
	F	5 13		
		Victoria		
	H	3 40.5	6490	
	iP	3 50 24		
	iS	3 58 32		
	SSS_E	4 05		
	L	4 09		
	F	5 00 ca.		
		Toronto		
	H	3 40.5	3460	
	P_N	3 46 53		
	e_N	3 47 24		
	e	3 48 49		
	S	3 52 06		
	L	3 54		
	F	4 50		
		Halifax		
	H	3 40.5	3150	
	P_N	3 46 28		
	PP_N	3 47 22		
	S	3 51 22		
	L	3 54		
	F	4 22		
		Seven Falls		
	H	3 40.5	3540	
	P	3 46 58		
	S	3 52 16		
	e	3 53 21		
	SS	3 54.1		
	L	3 55		
	F	5 14		

DOMINION OBSERVATORY, OTTAWA

FROM July 6, 1940 to July 10, 1940 No. 47

International Seismological Centre

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
279 July 6 (Cont'd)	H	3 40.4	3550	
	P	3 46 55		
	e	3 47 27		
	S	3 52 14		
	L	3 59		
	F	4 08		
		Ottawa		
283 July 10	H	5 49.9	8650	USCGS. gives:
	P	6 01 46		ϕ = 45° N. ca.
	PP_N	6 04 44		λ = 128° E. ca.
	e	6 08 08		Depth between 400 and
	S	6 11 42		500 km.
	e	6 15 20		
	e	6 17 40		
	e_N	6 21 23		
	L	6 24.5		
	F	8 25		
		Victoria		
	H	5 49.8	6700	
	P	5 59 53		
	PP	6 02		
	iS	6 08 14		
	i_N	6 09 11		
	e	6 11 23		
	i_E	6 12 56		
	L	6 17		
	F	8 00 ca.		
		Toronto		
	H	5 50.5	8060	
	P_N	6 01 52		
	e	6 05		
	e_N	6 08 22		
	S	6 11 21		
	e	6 15.4		
	e	6 18		
	e_N	6 21.6		
	F	7 30		
		Saskatoon		
	H	5 50.2	6940	
	P	6 00 29		
	S	6 09 03		
	e	6 12 25		
	L	6 18		
	F	6 41		
		Seven Falls		
	H	5 49.9	8520	
	P	6 01 42		
	i	6 11 13		
	eS	6 11 32		
	e	6 15 09		
	SS	6 17 34		
	SSS	6 20.3		
	F	8 37		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM July 10, 1940 to July 14, 1940 No. 40

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
285 July 13	H	16 47.7	4040	USCGS. gives:
	P	16 54 46		ϕ = 7°1 N.
	PPP$_N$	16 56 20		λ = 83° W.
	iS	17 00 36		
	SSS	17 03.4		
	eL	17 05		
	F	19 23		
		Victoria		
	H	16 47.6	5830	
	P	16 56 49		
	S	17 04 20		
	e	17 06 37		
	L	17 11		
	F	18 55		
		Toronto		
	H	16 47.9	3720	
	P	16 54.6		
	S	17 00.1		
	L	17 03		
	F	18 22		
		Halifax		
	H	16 47.7	4250	
	P	16 55 04		
	S	17 01 07		
	SSS	17 04 20		
	L	17 07		
	F	17 46		
		Seven Falls		
	H	16 47.7	4300	
	P	16 55 08		
	S	17 01 14		
	SSS	17 04.3		
	L	17 07		
	F	19 10		
		Shawinigan Falls		
	e	16 55.0		
	e	16 56.6		
	e	17 05.1		
	L	17 07		
	F	17 31		
		Ottawa		
286 July 14	H	5 53.2	6830	USCGS. gives:
	eP	6 03 24		ϕ = 52° N.
	PPP	6 07.2		λ = 178° E.
	S	6 11 52		
	PS	6 12 18		
	SSS	6 19		
	e	6 21		
	eL	6 23		
	F	10 49		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM	July 14, 1940	to	July 14,1940	No. 49

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
286 July 14 (Cont'd)	H	5 53.0	3960	
	P	6 00 00		
	PPP_N	6 01 38		
	i_N	6 02 30		
	S	6 05 45		
	SSS	6 08 30		
	e	6 09.2		
	L	6 11		
	F	11 11		
		Toronto		
	H	5 53.2	6790	
	P	6 03 20		
	PPP	6 07.5		
	S	6 11 46		
	SS_N	6 17.1		
	SSS	6 18.8		
	L	6 21		
	F	9 43		
		Saskatoon		
	H	(5 52.5)	5250	May be error in clock correction.
	P	6 01 01		
	PPP	6 03 26		
	iS	6 08 00		
	i	6 10 49		
	SS	6 11 24		
	L	6 14		
	F	8 36		
		Halifax		
	H	5 53.2	7465	
	P	6 04 01		
	S	6 13 01		
	PS_N	6 13 39		
	SSS	6 21.0		
	L	6 26		
	F	8 44		
		Seven Falls		
	H	5 53.2	6920	
	P	6 03 30		
	S	6 12 03		
	PS	6 12 38		
	L	6 26		
	F	8 30		
		Shawinigan Falls		
	H	5 53.2	6880	
	P	6 03 27		
	S	6 11 58		
	PS	6 12 32		
	L	6 23		
	F	8 08		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM July 14, 1940 to July 20, 1940 No. 50

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
289 July 16	e	3 25.6		
	i_E	3 30 42		
	L	3 34		
	F	5 30		
		Victoria		
291 July 16	e	19 37		
	L	19 58		
	F	20 47		
		Victoria		
292 July 16 and 17	e	23 43		
	L	0 00		
	F	0 46		
		Ottawa		
295 July 19	e	5 06 56		USCGS. gives:
	e	5 14 26		ϕ = 54° N.
	L	5 23		λ = 173° E.
	F	6 37		
		Victoria		
	H	4 47.7	4200	
	P	4 55		
	S	5 01		
	L	5 04		
	F	6 48		
		Toronto		
	e	5 06.9		
	L	5 20		
	F	6 17		
		Seven Falls		
	e	5 07 09		
	e	5 14.8		
	L	5 21		
	F	7 04		
		Shawinigan Falls		
	H	4 47.8	7140	
	P	4 58 18		
	S	5 07 03		
	F	5 10 ca.		
		Ottawa		
297 July 20	e_N	2 20		
	e_N?	2 27.7		
	eL	2 38		
	F	4 27		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM July 20, 1940 to July 21, 1940 No. 51

International Seismological Centre

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
297 July 20 (Cont'd)	H	1 54.0	8540	
	P	2 05 50		
	iS	2 15 41		
	SS_N	2 20.8		
	L	2 32		
	F	4 00		
		Toronto		
	e	2 18.6		
	e_E	2 26 56		
	L	2 41		
	F	3 46		
		Seven Falls		
	e	2 13.3		
	e	2 19.1		
	e	2 22.4		
	e	2 28.5		
	L	2 45		
	F	4 48		
		Ottawa		
301 July 21	e	15 57 38		
	e	16 01 00		
	e_N	16 11.6		
	e_N	16 16.6		
	e_N	16 23		
	L	16 44		
	F	18 06		
		Victoria		
	e	15 57.8		
	e	16 03 11		
	e	16 05 54		
	e_E	16 11 58		
	L	16 26		
	F	18 14		
		Toronto		
	e	16 01 04		
	e	16 17.0		
	L	16 43		
	F	17 47		
		Halifax		
	e	16 01 09		
	e_N	16 07.0		
	e_N	16 23		
	L	16 45		
	F	17 21		
		Seven Falls		
	e	16 01.9		
	e	16 17 17		
	L	16 33		
	F	18 06		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM July 21, 1940 to July 27, 1940 No. 52

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
307 July 23	eZ	14 15 24		
	eL	14 26		
	F	14 45		
		Ottawa		
308 July 27	H	13 32.6	3600	USCGS. gives:
	P	13 39 10		ϕ = 13°6 N.
	PP	13 40 08		λ = 91°6 W.
	PPP	13 40 28		
	iS	13 44 32		
	i	13 45 04		
	L	13 48		
	F	16 43		
		Victoria		
	H	13 32.6	4620	
	iP	13 40 26		
	PPP	13 42 15		
	iS	13 46 50		
	eN	13 47 20		
	SSS	13 50 16		
	L	13 53		
	F	16 27		
		Toronto		
	H	13 32.6	3250	
	P	13 38 43		
	S	13 43 43		
	L	13 47		
	F	15 21		
		Halifax		
	H	13 32.7	4090	
	P	13 39 51		
	PPP	13 41 25		
	S	13 45 44		
	SSSN	13 48 51		
	L	13 51		
	F	14 55		
		Seven Falls		
	H	13 32.6	3960	
	P	13 39 37		
	PPP	13 41 08		
	S	13 45 22		
	SSS	13 48.3		
	L	13 50		
	F	17 07		
		Shawinigan Falls		
	H	13 32.6	3820	
	P	13 39 27		
	PPP	13 40 55		
	S	13 45 03		
	L	13 49.2		
	F	14 18		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM July 27, 1940 to July 31, 1940 No. 53

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
309 July 30	H	0 12.2	8340	
	P_Z	0 23 52		
	S	0 33 34		
	L	0 46		
	F	1 51		
		Victoria		
	e	0 35 50		
	L	0 55		
	F	1 59		
		Toronto		
	e	0 34		
	L	0 47		
	F	1 36		
		Seven Falls		
	H	0 12.2	7940	
	P	0 23 32		
	S	0 32.9		
	L	0 43		
	F	2 06		
		Ottawa		
313 July 30	H	16 05.3	2960	
	P	16 11 00		
	S	16 15 40		
	L	16 18		
	F	16 56		

W. W. Doxsee.

International Seismological Centre

EARTHQUAKE CORRELATION TABLE

Month July, 1940

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan
273	1	6 49+0 0.6v	....	....	....	....	....	....	6 50+0 0.5v
274	1	21 32+0 04L	....	....	....	....	21 29+0 08L	....	....
275	1	21 36+0 41r	21 44+0 37u	21 42+0 16r	....	21 35+0 11r	21 41+0 30r	21 36+0 13r	21 36+0 10r
276	2	19 28+1 40u	19 21+1 13u	19 57+0 43L	....	....	19 36+2 07u	....	....
277	3	16 21+0 09L	16 05+0 19L	....	....	....	....	....	16 21+0 05L
278	5	....	....	....	....	....	14 58+0 15L	....	....
279	6	3 47+1 26r	3 50+1 10u	3 47+1 03r	....	3 46+0 36r	3 47+1 30r	3 47+0 19r	3 47+0 22r
280	6	18 14+0 08L	18 04+0 06L	....	....	....	18 14+0 13L	18 10+0 10L	18 09+0 14L
281	6	....	....	....	....	....	....	....	20 08+0 07P
282	8	8 22+0 21L	....	....	....	....	....	....	....
283	10	6 02+2 23u	6 00+2 00u	6 02+1 28u	6 00+0 41u	....	6 02+2 35u	6 02+0 40u	....
284	12	19 19+0 11L	19 14+0 14L	....	....	....	....	....	....
285	13	16 55+2 28r	16 57+1 58u	16 55+1 27r	....	16 55+0 51r	16 55+2 15r	16 55+0 35r	16 55+0 36r
286	14	6 03+4 46U	6 00+5 11R	6 03+3 40U	6 01+2 35U	6 04+2 40U	....	6 03+2 26U	6 03+2 04U
287	14	....	12 18+0 10L	....	....	....	....	....	....
288	16	0 23+0 23L	0 05+0 24L	....	....	....	0 27+0 14L	....	....
289	16	3 45+1 05L	3 25+2 05u	3 50+0 28L	....	....	3 38+1 15L	....	....
290	16	5 54+0 36L	5 35+0 44L	5 56+0 24L	....	....	5 26+1 15L	....	....
291	16	20 08+0 34L	19 37+1 10u	....	....	....	20 11+0 41L	....	....
292	17	0 09+0 32L	23 43+1 03u	....	....	....	0 16+0 41L	....	....
293	17	7 20+0 32L	7 27+0 23L	....	....	....	7 19+0 27L	....	12 21+0 01P
294	18	....	....	....	....	....	....	....	4 58+0 12u
295	19	5 07+1 30u	4 55+0 53u	5 07+1 10u	....	....	5 07+1 57u	....	....
296	19	16 49+0 08L	....	....	....	....	16 50+0 05L	....	....
297	20	2 20+2 07u	2 06+1 54u	2 19+1 27u	....	....	2 13+2 35u	....	....
298	20	....	....	....	....	....	5 16+0 16L	....	....
299	20	....	....	....	....	....	8 38+0 24L	....	18 49+0 04P
300	20	....	....	....	....	....	....	....	....

International Seismological Centre

EARTHQUAKE CORRELATION TABLE

Month July, 1940

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan
301	21	....	5 38+0 37L	....	....	....	....	....	....
302	21	15 58+2 08u	15 58+2 16u	16 01+1 46u	....	16 01+1 20u	16 02+2 04u	....	15 58+0 10P
303	21	....	....	....	....	....	....	....	21 58+0 02P
304	23	....	0 00+0 08L	....	....	....	....	....	....
305	23	....	0 51+0 18L	....	....	....	....	....	....
306	23	....	3 28+0 21L	....	....	....	....	....	....
307	23	14 15+0 30u	14 34+0 17L	....	....	....	14 29+0 13L	....	14 16+0 02P
308	27	13 39+3 04R	13 40+2 47R	13 39+1 42R	....	13 40+1 15R	13 40+3 28R	13 40+0 39R	13 39+0 38R
309	30	0 24+1 27u	0 36+1 23u	0 34+1 02u	....	....	0 33+1 33u	0 24+0 03P	0 24+0 03P
310	30	....	2 36+0 07L	....	....	....	....	....	....
311	30	....	6 03+0 20L	....	....	....	6 05+0 16L	....	....
312	30	15 41+0 24L	....	....	....	....	15 45+0 12L	....	....
313	30	16 11+0 45r	....	....	....	....	16 16+0 31L	....	....
314	30	19 44+0 14L	....	....	....	....	19 46+0 09L	....	....
315	31	....	....	....	....	....	12 42+0 30L	....	....

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CORRELATION OF EARTHQUAKES

July, 1940

N O T E S

A :	Ottawa	Δ = 3680 km.	H = $21^h29^m.7$ U.T.
	Halifax	Δ = 2800 km.	H = 21 29.7 U.T.
	Seven Falls	Δ = 3300 km.	H = 21 29.6 U.T.
B :	Ottawa	Δ = 3520 km.	H = $3^h40^m.4$ U.T.
	Victoria	Δ = 6490 km.	H = 3 40.5 U.T.
	Toronto	Δ = 3460 km.	H = 3 40.5 U.T.
	Halifax	Δ = 3150 km.	H = 3 40.5 U.T.
	Seven Falls	Δ = 3540 km.	H = 3 40.5 U.T.
	Shawinigan Falls	Δ = 3550 km.	H = 3 40.4 U.T.
C :	Ottawa	Δ = 8650 km.	H = $5^h49^m.9$ U.T.
	Victoria	Δ = 6700 km.	H = 5 49.8 U.T.
	Toronto	Δ = 8060 km.	H = 5 50.5 U.T.
	Saskatoon	Δ = 6940 km.	H = 5 50.2 U.T.
	Seven Falls	Δ = 8520 km.	H = 5 49.9 U.T.
E :	Ottawa	Δ = 4040 km.	H = $16^h47^m.7$ U.T.
	Victoria	Δ = 5830 km.	H = 16 47.6 U.T.
	Toronto	Δ = 3720 km.	H = 16 47.9 U.T.
	Halifax	Δ = 4250 km.	H = 16 47.7 U.T.
	Seven Falls	Δ = 4300 km.	H = 16 47.7 U.T.
F :	Ottawa	Δ = 6830 km.	H = $5^h53^m.2$ U.T.
	Victoria	Δ = 3960 km.	H = 5 53.0 U.T.
	Toronto	Δ = 6790 km.	H = 5 53.2 U.T.
	Saskatoon	Δ = 5250 km.	H = (5 52.5) U.T.
	Halifax	Δ = 7465 km.	H = 5 53.2 U.T.
	Seven Falls	Δ = 6920 km.	H = 5 53.2 U.T.
	Shawinigan Falls	Δ = 6880 km.	H = 5 53.2 U.T.
G :	Victoria	Δ = 4200 km.	H = $4^h47^m.7$ U.T.
	Shawinigan Falls	Δ = 7140 km.	H = 4 47.8 U.T.
J :	Victoria	Δ = 8540 km.	H = $1^h54^m.0$ U.T.
K :	Ottawa	Δ = 3600 km.	H = $13^h32^m.6$ U.T.
	Victoria	Δ = 4620 km.	H = 13 32.6 U.T.
	Toronto	Δ = 3250 km.	H = 13 32.6 U.T.
	Halifax	Δ = 4090 km.	H = 13 32.7 U.T.
	Seven Falls	Δ = 3960 km.	H = 13 32.6 U.T.
	Shawinigan Falls	Δ = 3820 km.	H = 13 32.6 U.T.
N :	Ottawa	Δ = 8340 km.	H = $0^h12^m.2$ U.T.
	Seven Falls	Δ = 7940 km.	H = 0 12.2 U.T.
S :	Ottawa	Δ = 2960 km.	H = $16^h05^m.3$ U.T.

Dominion Observatory,
Ottawa, Canada,
October 19, 1940.

International Seismological Centre

SEISMOLOGICAL BULLETINS RECEIVED

July, 1940.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED
Strasbourg) Paris) Bureau Central)	April, 1940	July 9
Richmond	May, 1940	" 10
Manila	April, 1940	" 11
Brisbane	May, 1940	" 15
Weston	June, 1940	" 17
San Fernando	November, 1939 to April, 1940	" 24
Cartuja	January to March, 1940	" 26
Malaga	July to December, 1938	" 26

DOMINION OBSERVATORY,
OTTAWA - CANADA.

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
August,
1940.

DOMINION OBSERVATORY
OTTAWA, CANADA.

International Seismological Centre

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent

International Seismological Centre

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: Boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07!4 N. λ = 70°49!6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

International Seismological Centre

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33'.1 N. λ = 72°45'.8 W. h = 60m. ca.

Time correction from recorded radio time signals

Foundation: solid granite of Canadian Shield

Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.

Time correction from radio time signals

Foundation: clay and sand

Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.

Time correction from radio time signals

Foundation: sand and clay

Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W. h = 320m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2200			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.1	61	Aper.		
SE (Saskatoon)	9.0	58	"		
KL (Kirkland Lake)	1/30	2×10^4 at 30 cycles			

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM August 1, 1940 to August 1, 1940 No. 54

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
316 Aug. 1	e_Z	12 57 25		
	e	12 58 49		
	e_Z	13 00 12		
	e_E	13 03 22		
	e_E	13 04 58		
	e_N	13 06 02		
	e	13 07		
	F	14 30+		
		Ottawa		
317 Aug. 1	H	15 08.4	9430	USCGS gives:
	P	15 20 58		ϕ = 44°.5 N.
	PP_N	15 24 32		λ = 140° E.
	PPP_N	15 26 10		
	S	15 31 28		
	PS	15 32 21		
	SS	15 37.3		
	SSS	15 41 28		
	e_E	15 43.8		
	eL	15 47		
	F	20 05		
		Toronto		
	H	15 08.5	9400	
	P	15 21 01		
	S	15 31.5		
	SS	15 37.2		
	SSS	15 41		
	L	15 45		
	F	18 30		
		Saskatoon		
	H	15 08.4	7520	
	P	15 19 25		
	i	15 20 03		
	S	15 28 32		
	SS	15 33.5		
	L	15 39		
	F	16 47		
		Halifax		
	H	15 08.5	9790	
	P	15 21 19		
	S	15 32 04		
	SS_N	15 38		
	L	15 47		
	F	16 50+		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM August 1, 1940 to August 5, 1940 No. 55

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
317 Aug 1 (Cont'd)	H	15 08.4	9520	
	P	15 20 59		
	iS	15 31 31		
	SS	15 37 37		
	SSS	15 41 47		
	L	15 45		
	F	19 53		
		Shawinigan Falls		
	H	15 08.1	9780	
	P	15 20 51		
	S	15 31 36		
	e	15 32 41		
	L	15 52		
	F	16 56		
		Ottawa		
318 Aug. 4	H	16 20.7	110	
	P_1	16 21 01.5		
	S_1	16 21 15.0		
	L	16 21 19		
	F	16 22.3		
		Shawinigan Falls		
	i	16 21 26		
	F	16 21.8		
		Ottawa		
319 Aug. 5	e_Z	8 30.5		
	e	8 38.5		
	eL	8 48		
	F	10 11		
		Victoria		
	e	8 27 47		
	e	8 32.1		
	L	8 35		
	F	10 35+		
		Toronto		
	e	8 39.3		
	L	8 50		
	F	9 32		
		Seven Falls		
	e	8 39.7		
	L	8 52		
	F	10 43+		
		Shawinigan Falls		
	e	8 30.3		
	L	8 58		
	F	9 02		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM August 5, 1940 to August 11, 1940 No. 56

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
323 Aug 7	H	2 56.2	7240	
	eP	3 06 50		
	e	3 07 18		
	eS	3 15 40		
	e	3 16 26		
	L	3 24		
	F	3 50		
		Victoria		
	e	3 09 15		
	e	3 19.0		
	F	3 55		
		Ottawa		
325 Aug. 7	H	23 56.5	76	
	P_1	23 56 46.5		
	i	23 56 50		
	S_1	23 56 55		
	F	23 59		
		Shawinigan Falls		
	e	23 57 23		
	e	23 57 27		
	F	23 58.5		
		Ottawa		
327 Aug. 11	e_E	17 11.6		
	e_E	17 14.7		
	e	17 20.4		
	e_E	17 28		
	L	17 35		
	F	18 30		
		Victoria		
	e	17 08 28		
	L	17 22		
	F	18 08		
		Toronto		
	e	17 11.4		
	L	17 35		
	F	18 20		
		Seven Falls		
	e	17 11.9		
	e	17 15.2		
	L	17 38		
	F	19 11		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM August 11, 1940 to August 15, 1940 No. 57

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
328 Aug. 13	e	15 50 11		
	e	15 54.0		
	e	16 00.7		
	L	16 25		
	F	18 06		
		Victoria		
	H	15 37.0	7940	
	P	15 48 20		
	S	15 57 42		
	L	16 14		
	F	17 13+		
		Toronto		
	e	15 50 18		
	e	16 00 49		
	L	16 29		
	F	17 45		
		Halifax		
	e	16 00 56		
	L	16 25		
	F	17 03		
		Seven Falls		
	e	15 50.2		
	e	16 00 44		
	L	16 24		
	F	18 08		
		Shawinigan Falls		
	e	15 50 09		
	e	16 00 45		
	e	16 07.6		
	L	16 37		
	F	16 46		
		Ottawa		
329 Aug. 15	e_E	4 50		
	L	4 57		
	F	5 30		
		Ottawa		
330 Aug. 15	e	21 47.8		
	L	22 07		
	F	22 37		
		Seven Falls		
	e	21 47.7		
	L	22 09		
	F	22 35		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM August 15, 1940 to August 22, 1940 No. 58

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
331 Aug. 16	eZ	16 14 10		
	e	16 22.3		
	L	16 36		
	F	17 11		
		Seven Falls		
	e	16 13 49		
	e	16 23.9		
	L	16 34		
	F	17 01		
		Victoria		
334 Aug. 18	e	6 18		
	L	6 39		
	F	7 36		
		Ottawa		
336 Aug. 20	e	17 40		
	eZ	17 48.8		
	e	18 02.3		
	L	18 35		
	F	20 28		
		Victoria		
	e	17 54		
	L	18 12		
	F	21 00 ca.		
		Toronto		
	e	17 40 45		
	e	18 02.2		
	L	18 23		
	F	20 10		
		Seven Falls		
	e	17 41.3		
	e	17 52.3		
	L	18 22		
	F	20 30		
		Ottawa		
338 Aug. 22	H	3 27.3	6180	USCGS. gives:
	eP	3 36 51		ϕ = 51°.9 N.
	PP	3 39 06		λ = 164°.9 W.
	S	3 44 42		
	SS	3 48.8		
	L	3 55		
	F	8 00 ca.		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM August 22, 1940 to August 22, 1940 No. 59

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
338 Aug. 22 (Cont'd)	H	3 27.3	3010	
	P	3 33 06		
	PP	3 33 37		
	S	3 37 50		
	SS	3 38 56		
	F	8 27		
		Toronto		
	H	3 27.6	6010	
	P	3 36 56		
	PP	3 39 03		
	iS	3 44 37		
	i	3 46 26		
	SS	3 48.5		
	L	3 53		
	F	7 21		
		Saskatoon		
	H	3 27.2	3760	
	P	3 34 01		
	S	3 39 33		
	L	3 44		
	F	6 00 ca.		
		Halifax		
	H	3 27.7	6740	
	P	3 37 50		
	PP	3 40 09		
	PPP	3 41.6		
	S	3 46 13		
	SS	3 50.3		
	L	3 58		
	F	5 57		
		Seven Falls		
	H	3 27.3	6320	
	P	3 37 00		
	PP	3 39 21		
	PPP	3 40 40		
	S	3 44 59		
	SS	3 49 02		
	i	3 51 34		
	L	3 55		
	F	7 39		
		Shawinigan Falls		
	H	3 27.1	6420	
	P	3 36 54		
	S	3 45.0		
	SS	3 50.0		
	SSS	3 51.3		
	L	3 57		
	F	5 07		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM August 22, 1940 to August 31, 1940 No. 60

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
339 Aug. 24	e	7 57.7		
	L	8 02		
	F	8 58		
		Ottawa		
340 Aug. 24	e	13 56		
	e	14 05		
	L	14 13		
	F	15 34		
		Victoria		
	H	13 30.5	8590	
	P	13 42 21		
	S	13 52 14		
	L	14 06		
	F	15 15		
		Seven Falls		
	e	13 59.5		
	L	14 24		
	F	15 21		
		Ottawa		
342 Aug. 26	e_Z	2 37 37		
	e	2 45.6		
	L	2 54		
	F	3 06		
		Ottawa		
343 Aug. 26	H	5 00.7	5170	
	P	5 09 08		
	S	5 16 02		
	SS	5 19.0		
	L	5 23		
	F	6 25		
		Victoria		
	H	5 01.0	6050	
	P	5 10 23		
	S	5 18.1		
	L	5 25		
	F	6 33		
		Toronto		
	H	5 00.8	4800	
	P_N	5 08 52		
	S	5 15 26		
	L	5 19		
	F	5 55		
		Seven Falls		
	e	5 16.7		
	L	5 25		
	F	6 22		

W. W. Doxsee

EARTHQUAKE CORRELATION TABLE

Month August, 1940

Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
1	12 57+1 32u	....	....	....	13 04+0 16L	13 08+1 20L	....	....	..
1	15 21+4 44U	....	15 21+3 09U	15 19+1 28U	15 21+1 29U	15 21+4 31U	15 21+1 38U	15 21+1 35U	A
4	16 21+0 01v	....	....	....	....	....	....	....	B
5	8 30+1 41u	8 28+2 07u	8 39+0 53u	....	8 56+0 23L	8 40+1 03u	....	8 30+0 32u	..
5	10 45+0 29L	10 34+0 17L	....	....	....	10 43+0 30L	....	....	..
5	....	....	....	....	....	14 51+0 19L	....	....	..
5	....	22 21+0 19L	....	....	....	22 18+0 34L	....	....	..
7	3 07+0 36u	3 09+0 46u	....	....	....	....	....	3 07+0 05P	C
7	....	8 11+0 02L	....	....	....	....	....	....	..
7	23 57+0 0.3d	....	....	....	....	....	....	....	E
8	....	13 24+0 28L	....	....	....	....	....	....	..
11	17 12+1 18u	17 08+1 00u	17 11+1 09u	....	....	17 12+1 59u	....	....	..
13	15 50+2 16u	15 48+1 25u	15 50+1 55u	....	16 01+1 02u	15 50+2 18u	15 50+1 00u	15 50+0 56u	F
15	4 50+0 40u	4 38+0 52L	4 55+0 30L	....	....	4 24+1 16u	....	....	..
15	21 48+0 49u	....	....	....	....	21 48+0 47u	....	....	..
16	16 14+0 57u	....	....	....	....	16 24+0 37u	16 14+0 01P	16 14+0 02P	..
16	18 35+0 02P	....	....	....	....	....	....	....	..
17	....	....	....	....	....	....	....	12 17+0 01P	..
18	....	6 18+1 18u	....	....	....	6 54+0 49L	....	....	..
19	....	....	....	....	....	....	21 33+0 03P	21 32+0 04P	..
20	17 40+2 48u	17 54+3 06u	17 41+2 29u	18 19+0 20L	18 34+0 27L	17 41+2 49u	....	17 37+0 08P	..
21	....	20 22+0 09L	....	....	....	....	....	....	..
22	3 37+4 23U	3 33+4 54R	3 37+3 44U	3 34+2 26R	3 38+2 19U	3 37+4 02U	3 37+1 35U	3 37+1 30U	G
24	8 17+0 29L	7 58+1 00u	....	....	8 25+0 05L	8 18+0 28L	....	....	..
24	13 56+1 38u	13 42+1 33u	....	....	....	14 00+1 21u	....	....	J
25	....	....	....	....	....	17 06+0 11L	....	....	..
26	2 38+0 28u	2 49+0 02L	....	....	....	2 47+0 23L	....	2 38+0 04P	..
26	5 09+1 16u	5 10+1 23u	5 09+0 46r	....	....	5 17+1 05u	....	....	K

International Seismological Centre

CORRELATION OF EARTHQUAKES

August, 1940.

N O T E S

A	:	Ottawa	Δ = 9430 km.	H = $15^h08^m.4$ U.T.
		Toronto	Δ = 9400 km.	H = 15 08.5 U.T.
		Saskatoon	Δ = 7520 km.	H = 15 08.4 U.T.
		Halifax	Δ = 9790 km.	H = 15 08.5 U.T.
		Seven Falls	Δ = 9520 km.	H = 15 08.4 U.T.
		Shawinigan Falls	Δ = 9780 km.	H = 15 08.1 U.T.
B	:	Ottawa	Δ = 110 km.	H = $16^h20^m.7$ U.T.
C	:	Ottawa	Δ = 7240 km.	H = $2^h56^m.2$ U.T.
E	:	Ottawa	Δ = 76 km.	H = $23^h56^m.5$ U.T.
F	:	Victoria	Δ = 7940 km.	H = $15^h37^m.0$ U.T.
G	:	Ottawa	Δ = 6180 km.	H = $3^h27^m.3$ U.T.
		Victoria	Δ = 3010 km.	H = 3 27.3 U.T.
		Toronto	Δ = 6010 km.	H = 3 27.6 U.T.
		Saskatoon	Δ = 3760 km.	H = 3 27.2 U.T.
		Halifax	Δ = 6740 km.	H = 3 27.7 U.T.
		Seven Falls	Δ = 6320 km.	H = 3 27.3 U.T.
		Shawinigan Falls	Δ = 6420 km.	H = 3 27.1 U.T.
J	:	Victoria	Δ = 8590 km.	H = $13^h30^m.5$ U.T.
K	:	Ottawa	Δ = 5170 km.	H = $5^h00^m.7$ U.T.
		Victoria	Δ = 6050 km.	H = 5 01.0 U.T.
		Toronto	Δ = 4800 km.	H = 5 00.8 U.T.

Dominion Observatory,
Ottawa, Canada,
October 31, 1940.

SEISMOLOGICAL BULLETINS RECEIVED

August, 1940.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:

STATIONS	BULLETINS	RECEIVED
Mizusawa	Year 1939	August 2
Manila	May, 1940	" 6
Apia	April to June, 1940	" 9
Strasbourg and Int. U. G. G.	May, 1940	" 14
Perth	May, 1940	" 14
Weston	July, 1940	" 15
United States Coast and Geodetic Survey	June to October, 1938	" 16
Pasadena	Preliminary for May-June, 1940	" 19
Perth	June, 1940	" 20
New Zealand Stations	May and June, 1940	" 20
Leningrad and Auxiliary Stations	June, 1938 to August, 1939	" 21
Brisbane	June, 1940	" 22
India Stations	April to June, 1939	" 27
Saint Louis and Auxiliary Stations	Preliminaries for April 1, 18, May 5, 19, June 18, 1940 and Supplement to May-June, 1940	" 28
Manila	June, 1940	" 30

DOMINION OBSERVATORY,

OTTAWA - CANADA.

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
September,
1940

°°°°°°
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DOMINION OBSERVATORY
OTTAWA, CANADA

******
*****

International
Seismological
Centre

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent

International Seismological Centre

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: Boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07!4 N. λ = 70°49!6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

International Seismological Centre

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33!1 N. λ = 72°45!8 W. h = 60m. ca.

Time correction from recorded radio time signals

Foundation: solid granite of Canadian Shield

Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.

Time correction from radio time signals

Foundation: clay and sand

Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.

Time correction from radio time signals

Foundation: sand and clay

Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W. h = 320m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2200			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.1	61	Aper.		
SE (Saskatoon)	9.0	58	"		
KL (Kirkland Lake)	1/30	2×10^4 at 30 cycles			

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM September 1, 1940 to September 11, 1940 ; No. 61

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
345 Sept. 6	e_Z	3 02 15		
	e_E	3 11.3		
	eL	3 23		
	F	4 03		
		Victoria		
	e	3 05.5		
	L	3 14		
	F	3 45		
		Seven Falls		
	e	3 11 21		
	L	3 19		
	F	3 57		
		Victoria		
347 Sept. 7	e	19 49		
	L	20 10		
	F	20 42		
		Ottawa		
349 Sept. 8	e_Z	10 25 58		
	eL	10 39		
	F	11 26		
		Victoria		
	e	10 30		
	L	10 40		
	F	11 36		
		Seven Falls		
	e	10 34.9		
	e	10 39.7		
	L	10 51		
	F	11 07+		
		Ottawa		
350 Sept. 11	H	1 06.9	435	Felt at Quebec City and at Beaupre, Quebec.
	P_n	1 07 55		
	i	1 08 01		
	i	1 08 35		
	S_n	1 08 42		
	F	1 11 ca		
		Shawinigan Falls		
	H	1 06.9	125	
	P_1	1 07 15.5		
	i	1 07 17.5		
	S_1	1 07 31		
	i	1 07 36		
	F	1 09 ca		

International Seismological Centre

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM September 11, 1940 to September 12, 1940 No. 62

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
350 Sept. 11 (Cont'd)	H	1 06.9	25	
	P_1	1 07 00.5		
	i	1 07 01.5		
	S_1	1 07 03		
	F	1 10 ca		
		Ottawa		
352 Sept. 12	eZ	13 36 04		
	e	13 37.5		
	e	13 43		
	e	13 47.3		
	e	13 54 20		
	eL	14 07		
	F	16 32		
		Victoria		
	H	13 18.6	9810	
	P	13 30 25		
	SKS	13 40 38		
	S	13 41 11		
	SS	13 47		
	SSS	13 54		
	L	13 57		
	F	17 27		
		Toronto		
	eN	13 39.6		
	eN	13 42.7		
	e	13 48.4		
	L	14 07		
	F	16 00 ca		
		Saskatoon		
	eE	13 35		
	L	14 02		
	F	14 54		
		Seven Falls		
	e	13 36.4		
	e	13 37 56		
	e	13 44.8		
	e	13 47 49		
	e	13 49.9		
	e	13 53 10		
	L	14 08		
	F	16 21		
		Shawinigan Falls		
	e	13 36.4		
	L	14 21		
	F	14 45		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM September 12, 1940 to September 19, 1940 No. 63

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
357 Sept. 18	e_Z	15 19 57		
	i	15 28 43		
	e	15 29 32		
	F	15 46		
		Ottawa		
360 Sept. 19	H	18 19.5	14,000	USCGS. gives: ϕ = 23° S. λ = 171° E.
	P'	18 18 36		
	PP	18 40.2		
	SKS	18 45.6		
	SKKS	18 47 11		
	PS	18 50.5		
	SS_E	18 57.5		
	SSS_E	19 01		
	eL	19 11		
	F	21 44		
		Victoria		
	H	18 19.7	10,500	
	P_N	18 33 04		
	SKS	18 43 26		
	S	18 44 12		
	e	18 49 26		
	SSS	18 54.2		
	eL	19 02		
	F	21 27		
		Toronto		
	e	18 40.2		
	e_N	18 47 57		
	e_N	18 56 23		
	L	19 10		
	F	21 12		
		Saskatoon		
	e	18 43.0		
	L	19 04		
	F	19 50		
		Halifax		
	e_N	18 39.2		
	e_E	18 42 15		
	L	19 14		
	F	20 33		
		Seven Falls		
	H	18 19.8	14,000	
	P'	18 38 56		
	PP	18 40 40		
	SKKS	18 47 22		
	PS	18 50 42		
	SS	18 58 36		
	L	19 14		
	F	21 28		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM September 19, 1940 to September 23, 1940 No. 64

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
360 Sept. 19 (Cont'd)	e	18 53 22		
	L	19 14		
	F	19 38		
		Victoria		
361 Sept. 20	e	0 24.2		
	eL	0 39		
	F	1 26		
		Seven Falls		
	e	0 33.7		
	L	0 59		
	F	2 23		
		Ottawa		
365 Sept. 21	e	14 01 50		
	e	14 12 00		
	e	14 13 40		
	L	14 24		
	F	15 00 ca		
		Victoria		
	e	14 12		
	e	14 13 54		
	L	14 34		
	F	14 57		
		Toronto		
	e	14 14 02		
	F	14 38 ca		
		Seven Falls		
	e	14 11.7		
	i	14 13 49		
	L	14 23		
	F	14 57		
		Ottawa		
369 Sept. 22 and 23	e	23 09 43		
	e	23 11 43		
	e	23 13 44		
	e	23 17.5		
	e	23 20.4		
	e	23 23.1		
	L	23 38		
	F	1 00 ca		
		Victoria		
	H	22 53.0	8200	
	P	23 04.5		
	iS	23 14 06		
	i	23 16 35		
	SSS	23 21		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM September 23, 1940 to September 26, 1940 No. 65

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Toronto		
369 Sept. 22 and 23 (Cont'd)	e	23 16.5		
	F	0 35		
		Seven Falls		
	e	23 12 56		
	e	23 23 01		
	L	23 40		
	F	1 03		
		Shawinigan Falls		
	e	23 09 43		
	e	23 17.4		
	F	23 30		
		Ottawa		
372 Sept. 23	H	7 15.4	6660	
	P_Z	7 25 25		
	S	7 33 44		
	SS_E	7 37.1		
	F	8 00		
		Seven Falls		
	H	7 15.4	6800	
	P	7 25 32		
	S	7 33 59		
	F	7 46		
		Victoria		
373 Sept. 24	e	1 18		
	L	1 29		
	F	2 02		
		Ottawa		
375 Sept. 26	e_Z	4 15 04		
	e	4 21 48		
	e	4 26.0		
	e	4 32		
	L	4 41		
	F	5 33		
		Victoria		
	H	3 56.8	9080	
	P	4 09 02		
	S	4 19 16		
	PS	4 20.2		
	SS	4 25 13		
	L	4 32		
	F	5 26		
		Toronto		
	e_E	4 16.0		
	e	4 25.4		
	L	4 49		
		[illegible]		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM September 26, 1940 to September 30, 1940 No. 66

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
375 Sept. 26 (Cont'd)	e	4 17.3		
	e	4 22.0		
	e	4 26 28		
	L	4 57		
	F	5 26		
		Ottawa		
378 Sept. 26	H	23 30.2	180	
	P_2	23 30 44		
	S_2	23 31 05		
	i	23 31 15		
	F	23 32		
		Ottawa		
381 Sept. 29	H	1 21.5	8520	
	iP_Z	1 33 20		
	iS_E	1 43 10		
	F	2 05		
		Ottawa		
384 Sept. 30	e	11 41.0		
	e	11 49.2		
	e	12 08		
	L	12 19		
	F	13 00 ca		
		Victoria		
	e_E	11 36 43		
	e_E	11 43.2		
	L	11 57		
	F	14 22		
		Seven Falls		
	e	11 40		
	L	12 14		
	F	13 14+		
		Victoria		
385 Sept. 30	e_E	14 34 03		
	L	14 55		
	F	16 07		

W. W. Doxsee.

EARTHQUAKE CORRELATION TABLE

Month September, 1940

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
344	3	15 17+0 59L	15 05+0 58L	....	....	....	....	....	....	..
345	6	3 02+1 01u	3 06+0 39u	3 12+0 46u	....	....	3 11+0 46u	....	....	..
346	6	....	6 33+0 44L	....	....	....	7 10+0 16L	....	....	..
347	7	....	19 49+0 53u	20 40+0 17L	....	....	20 23+0 37L	....	....	..
348	8	6 33+0 07L	6 31+0 05L	6 32+0 03L	....	....	6 35+0 07L	....	....	..
349	8	10 26+1 00u	10 30+1 06u	10 51+0 31L	....	....	10 35+0 32u	....	10 26+0 03P	..
350	11	1 08+0 03v	....	....	....	....	1 07+0 0.4d	1 07+0 03d	1 07+0 02v	A
351	12	0 40+0 06P*	0 47+0 14L	....	....	....	....	0 40+0 05P	0 40+0 07P	..
352	12	13 36+2 56u	13 30+3 57U	13 40+1 20u	13 35+1 19u	14 04+1 09u	13 38+2 43u	13 36+1 18u	13 36+1 09u	B
353	13	12 06+0 16L	....	12 05+0 12L	....	....	....	....	12 08+0 05L	..
354	14	23 30+0 13L	23 28+0 12L	....	....	....	....	....	....	..
355	15	12 30+0 33L	12 14+0 45L	....	....	....	12 34+0 35L	....	....	..
356	17	....	8 48+0 36L	....	....	....	....	....	....	..
357	18	15 20+0 26u	15 32+0 03L	15 29+0 02L	....	....	....	15 20+0 02P	15 20+0 04P	..
358	18	15 38+0 01P*	....	....	....	....	....	....	....	..
359	18	....	20 06+0 02L	....	....	....	....	....	....	..
360	19	18 39+3 05U	18 33+2 54U	18 40+2 32U	18 43+1 07U	18 39+1 54U	18 41+2 47U	18 39+1 05U	18 53+0 45U	C
361	20	0 56+0 54L	0 24+1 02u	....	....	....	0 34+1 49u	....	....	..
362	20	....	....	....	....	....	9 30+0 18L	....	....	..
363	21	....	....	21 13+0 05L	....	....	....	....	....	..
364	21	....	12 51+0 07L	12 45+0 04L	....	....	12 44+0 10L	....	....	..
365	21	14 02+0 58u	14 12+0 45u	14 14+0 24u	....	....	14 12+0 45u	....	14 02+0 06P	..
366	22	....	....	....	....	....	4 53+0 14L	....	....	..
367	22	....	13 02+0 28L	....	....	....	13 21+0 29L	....	....	..
368	22	....	....	22 30+0 30L	....	....	....	....	....	..

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EARTHQUAKE CORRELATION TABLE

Month September, 1940

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
369	22	23 10+1 50u	23 04+2 06u	23 16+1 19u	....	....	23 13+1 50u	....	23 10+0 20u	E
370	22	23 19+0 05P*	....	....	....	....	....	....	....	..
371	23	....	....	....	....	....	2 07+0 03L	....	....	..
372	23	7 25+0 35u	....	....	....	....	7 34+0 12u	7 26+0 09u	....	F
373	24	1 46+0 19L	1 18+0 44u	1 48+0 13L	....	....	....	....	....	..
374	25	14 48+0 01P*	....	....	....	....	....	....	....	..
375	26	4 15+1 18u	4 09+1 17u	4 16+1 22u	....	....	4 17+1 09u	....	....	G
376	26	....	6 18+0 25L	....	....	....	....	....	....	..
377	26	18 35+0 01P*	....	....	....	....	....	....	....	..
378	26	23 31+0 01v	....	....	....	....	....	....	....	J
379	27	17 22+0 10L	....	17 22+0 03L	....	....	17 27+0 01L	....	....	..
380	27	....	23 02+0 07L	....	....	....	....	....	....	..
381	29	1 33+0 32u	1 45+0 09L	....	....	....	....	....	....	K
382	29	5 12+0 13L	4 54+0 27L	....	....	....	5 17+0 11L	....	....	..
383	29	6 22+0 49L	6 06+1 01L	6 27+0 40L	....	....	6 27+0 23L	....	....	..
384	30	11 41+1 19u	11 37+2 45u	12 05+1 00L	....	....	11 40+1 34u	....	....	..
385	30	14 32+1 43L	14 34+1 33u	14 37+1 10L	....	....	14 33+1 32L	....	....	..

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CORRELATION OF EARTHQUAKES
September, 1940.

N O T E S

A :	Ottawa	Δ = 435 km.	H = $1^h06^m.9$ U.T.
	Shawinigan Falls	Δ = 125 km.	H = 1 06.9 U.T.
	Seven Falls	Δ = 25 km.	H = 1 06.9 U.T.
	Felt at Beaupre, Que.		
B :	Victoria	Δ = 9810 km.	H = $13^h18^m.6$ U.T.
C :	Ottawa	Δ = 14000 km. ca	H = $18^h19^m.5$ U.T.
	Victoria	Δ = 10500 km.	H = 18 19.7 U.T.
	Seven Falls	Δ = 14000 km.	H = 18 19.8 U.T.
E :	Victoria	Δ = 8200 km.	H = $22^h53^m.0$ U.T.
F :	Ottawa	Δ = 6660 km.	H = $7^h15^m.4$ U.T.
	Seven Falls	Δ = 6800 km.	H = 7 15.4 U.T.
G :	Victoria	Δ = 9080 km.	H = $3^h56^m.8$ U.T.
J :	Ottawa	Δ = 180 km.	H = $23^h30^m.2$ U.T.
K :	Ottawa	Δ = 8520 km.	H = $1^h21^m.5$ U.T.

Dominion Observatory,
Ottawa, Canada,
December 2, 1940.

International
Seismological
Centre

SEISMOLOGICAL BULLETINS RECEIVED

September, 1940.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:

STATIONS	BULLETINS	RECEIVED
State College	January to June, 1940	September 4
Weston	August, 1940	" 6
Mizusawa	Year 1938	" 6
Saint Louis and Auxiliary Stations	Preliminaries for January 6, February 20, April 16, May 4, 11, 17 and Supplement to January, February and March, 1940	" 9
Cluj (Roumanie)	May, 1940	" 10
Osaka	January to March, 1940	" 12
Georgetown	July to December, 1935	" 13
Brisbane	July, 1940	" 14
Sydney	March and April, 1940	" 16
Perth	July, 1940	" 16
Tortosa	April to June, 1937	
Denver	March to July and September to December, 1939	" 21
Saint Louis and Auxiliary Stations	Preliminaries for December 26-27, and April 18, 1939 and May 18, 19, 24, 29, and June 3, 1940	" 23
Bucarest	May to July, 1940	" 24
Riverview	April to June, 1940	" 24
Manila	June, 1940	" 25
India Stations	July to September, 1939	" 28

DOMINION OBSERVATORY,
OTTAWA - CANADA.

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
October,
1940

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DOMINION OBSERVATORY
OTTAWA, CANADA

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International Seismological Centre

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: Boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07!4 N. λ = 70°49!6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33!1 N. λ = 72°45!8 W. h = 60m. ca.
Time correction from recorded radio time signals
Foundation: solid granite of Canadian Shield
Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

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SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.
Time correction from radio time signals
Foundation: clay and sand
Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.
Time correction from radio time signals
Foundation: sand and clay
Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W. h = 320m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2200			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.1	61	Aper.		
SE (Saskatoon)	9.0	58	"		
KL (Kirkland Lake)	1/30	2×10^4 at 30 cycles			

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM October 1, 1940 to October 1, 1940 No. 67

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
386 Oct. 1	H	10 42.9	8000	
	eP	10 54 17		
	eS	11 03 42		
	SS	11 11.5		
	eL	11 18		
	F	12 29		
		Victoria		
	H	10 42.6	10280	
	P	10 55 44		
	PP	10 59 20		
	S	11 06 50		
	PS	11 08 04		
	L	11 27		
	F	12 53		
		Toronto		
	H	10 42.9	7880	
	P_N	10 54 08		
	S	11 03 27		
	L	11 13		
	F	11 46		
		Seven Falls		
	H	10 42.6	8620	
	eP	10 54 31		
	eS	11 04 25		
	F	11 05		
		Shawinigan Falls		
	H	10 42.6	8560	
	P	10 54 25		
	S	11 04 17		
	F	11 08		
		Ottawa		
388 Oct. 1 and 2	e_Z	21 57 56		
	e	22 20.0		
	e	22 25.5		
	L	22 38		
	F	0 11		
		Victoria		
	e	22 04		
	e	22 16 10		
	eL	22 30		
	F	0 18		
		Toronto		
	e	22 00 38		
	e	22 19 39		
	eL	22 39		
	F	0 00 ca.		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM October 1, 1940 to October 2, 1940 No. 68

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s		
		Seven Falls		
388	e	21 58 48		
Oct.	e	22 20 17		
1	e	22 25.8		
and	L	22 38		
2	F	0 07		
(Cont'd)				
		Victoria		
389	e_E	1 15		
Oct.	L	1 28		
2	F	2 17		
		Ottawa		
390	H	3 15.8	3980	
Oct.	P	3 22 52		
2	PPP_N	3 24.5		
	S_N	3 28 38		
	e_E	3 31.5		
	eL	3 34		
	F	4 20		
		Victoria		
	e_E	3 25		
	e	3 35		
	L	3 41		
	F	4 41		
		Toronto		
	H	3 16.0	3590	
	P_N	3 22 33		
	S	3 27 55		
	L	3 33		
	F	4 13		
		Seven Falls		
	H	3 15.8		
	PPP	3 24 48		
	S	3 29.2		
	SSS	3 32.2		
	L	3 36		
	F	4 27		
		Victoria		
392	e	10 47.9		
Oct.	L	11 10		
2	F	11 41		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM October 2, 1940 to October 4, 1940 No. 69

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
393	H	11 00.5	135	
Oct.	P_1	11 00 55.5		
3	P_1S_1	11 01 02		
	S_2	11 01 12		
	i	11 01 18.5		
	F	11 02		
		Ottawa		
396	H	7 54.9	7240	USCGS. gives:
Oct.	eP	8 05 30		ϕ = 19° S.
4	iS	8 14 20		λ = 67° W.
	PS_E	8 14 52		
	SSS_E	8 21.3		
	eL	8 24		
	F	11 35		
		Victoria		
	H	7 55.0	9160	
	eP_E	8 07 23		
	PP_E	8 10 11		
	iS_E	8 17 41		
	SS_E	8 22.7		
	eL	8 33		
	F	11 55 ca.		
		Toronto		
	H	7 54.9	7120	
	eP	8 05 23		
	iS	8 14 07		
	SSS	8 21.5		
	e_E	8 23		
	eL_N	8 27		
	F	11 04		
		Saskatoon		
	H	7 55.4	8420	
	P	8 07.1		
	eS	8 16 52		
	SS	8 22.5		
	L	8 35		
	F	9 05		
		Halifax		
	H	7 55.1	7020	
	P	8 05 31		
	i_N	8 05 51		
	S	8 14 10		
	SSS	8 21.4		
	L	8 27		
	F	9 19		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM October 4, 1940 to October 5, 1940 No. 70

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
396 Oct. 4 (Cont'd)	H	7 55.2	7300	
	P	8 05 50		
	PP	8 08 42		
	iS	8 14 43		
	SS	8 19.3		
	SSS	8 22.3		
	L	8 25		
	F	11 38		
		Shawinigan Falls		
	H	7 54.9	7400	
	P	8 05 39		
	i	8 05 54		
	PPP	8 08 36		
	eS	8 14 36		
	e	8 25.2		
	eL	8 29		
	F	8 53		
		Ottawa		
399 Oct. 5	e_Z	9 43 01		
	L	10 05		
	F	10 26		
		Ottawa		
401 Oct. 5	H	14 38.8	4000	USCGS. gives: ϕ = 9° N. λ = 84° W.
	P	14 45 51		
	PPP	14 47 28		
	eS	14 51 38		
	i_E	14 51 54		
	SS_E	14 53.7		
	SSS_N	14 54.1		
	eL	14 56		
	F	16 32		
		Victoria		
	e	14 47 43		
	e	14 57 39		
	L	15 04		
	F	16 30		
		Toronto		
	H	14 38.9	3620	
	P	14 45 29		
	PPP	14 46 52		
	eS	14 50 53		
	SS	14 53.8		
	L	14 57		
	F	16 20		
		Halifax		
	e	14 47.7		
	L	14 59		
	F	15 25		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM October 5, 1940 to October 6, 1940 No. 71

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
401 Oct. 5 (Cont'd)	H	14 38.9	4280	
	P	14 46 15		
	PPP	14 48 02		
	S	14 52 20		
	SS	14 55 31		
	L	14 58		
	F	16 27		
		Shawinigan Falls		
	H	14 38.8	4180	
	P	14 46 05		
	PPP	14 47 36		
	eS	14 52 04		
	L	15 00		
	F	15 12		
		Ottawa		
402 Oct. 5	e_Z	17 24 20		
	L	17 35		
	F	17 57		
		Ottawa		
403 Oct. 6	H	15 38.6	7050	
	P	15 49 02		
	S	15 57 42		
	e_E	15 58 54		
	SS	16 02.0		
	SSS_E	16 04.0		
	eL	16 09		
	F	17 44		
		Victoria		
	H	15 38.5	9090	
	eP	15 50 49		
	iS	16 01 04		
	L	16 16		
	F	17 15 ca.		
		Seven Falls		
	H	15 38.8	7140	
	P	15 49 16		
	iS	15 58 01		
	L	16 10		
	F	17 46		
		Shawinigan Falls		
	H	15 38.5	7240	
	P	15 49 08		
	S	15 57 58		
	F	16 23		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM October 6, 1940 to October 11, 1940 No. 72

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
405 Oct. 7	e_Z	7 01 53		
	e	7 10.5		
	L	7 41		
	F	8 19		
		Victoria		
	H	6 42.8	11,000	
	PP	7 00 30		
	SKS	7 07 05		
	PPS	7 10 10		
	SS	7 15.5		
	L	7 29		
	F	7 55		
		Seven Falls		
	e	7 01.9		
	e	7 20 49		
	L	7 50		
	F	8 18		
		Shawinigan Falls		
	e	7 01 53		
	e	7 10 28		
	F	7 14		
		Ottawa		
409 Oct. 11	H	7 53.0	5170	
	P	8 01 29		
	PPP	8 03.5		
	S	8 08 23		
	SSS	8 11.3		
	eL	8 14		
	F	8 46		
		Victoria		
	H	7 53.1	2300	
	P	7 57 45		
	iPP	7 58 02		
	iS	8 01 35		
	L	8 02.7		
	F	8 23		
		Toronto		
	e_N	8 01 44		
	e	8 07 59		
	e	8 11 14		
	e	8 16 22		
	L	8 19		
	F	8 35		

International Seismological Centre

FROM October 11, 1940 to October 11, 1940 No. 97

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Seven Falls		
409 Oct. 11 (Cont'd)	H	7 52.9	5440	
	P	8 01 36		
	PP	8 03 43		
	S	8 08 45		
	SS	8 12 01		
	L	8 17.4		
	F	8 39		
		Shawinigan Falls		
	P	8 01 33		
	L	8 16		
	F	8 27		
		Ottawa		
410 Oct. 11	H	18 41.3	9620	USCGS gives:
	P	18 53 58		ϕ = 45° S.
	PP	18 57 15		λ = 73° W.
	S	19 04 36		
	SS	19 10.4		
	eL	19 20		
	F	22 09		
		Victoria		
	e_E	18 55.2		
	e	19 05 18		
	e	19 08 09		
	e	19 13 14		
	e	19 24		
	F	22 20		
		Toronto		
	H	18 41.3	9390	
	eP_N	18 53 49		
	S	19 04 17		
	SS	19 10 38		
	e	19 16.2		
	L	19 25		
	F	21 45		
		Halifax		
	e	19 04 33		
	e	19 10.1		
	L	19 24		
	F	20 09		
		Seven Falls		
	e	18 57.8		
	e	18 59.0		
	iS	19 04 57		
	SS	19 10 44		
	e	19 17 21		
	L	19 21		
	F	22 12		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM October 11, 1940 to October 22, 1940 No. 74

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
410 Oct. 11 (Cont'd)	H	18 41.1	9920	
	P	18 54 03		
	S	19 04 54		
	L	19 30		
	F	19 52		
		Victoria		
412 Oct. 13	e_E	13 49 11		
	L	14 09		
	F	14 43		
		Ottawa		
413 Oct. 13	H	19 50.8	520	NESA Bulletin No. 57 gives:
	iP_n	19 51 58		$\phi = 47^{\circ}.7$ N.
	iP_2	19 52 07.5		$\lambda = 69^{\circ}.7$ W.
	iS_n	19 52 52.5		
	iS_2	19 53 09		
	i	19 53 13		
	F	20 00		
		Seven Falls		
	H	19 50.8	100	
	iP_1	19 51 04		
	iS_1	19 51 16.5		
	F	19 54		
		Shawinigan Falls		
	H	19 50.8	250	
	iP_3?	19 51 27		
	iS_3?	19 51 55		
	iS_2	19 51 56.5		
	iS_1	19 52 02		
	F	19 59		
		Ottawa		
416 Oct. 19	H	7 46.0	500	
	P_1	7 47 19		
	S_n	7 47 55		
	S_2	7 48 08		
	F	7 49.5		
		Ottawa		
418 Oct. 22	H	6 37.2	7050	
	P_z	6 47 36		
	S	6 56 16		
	SS	7 00.8		
	eL	7 07		
	F	7 32		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

FROM October 22, 1940 to October 27, 1940 No. 75

International Seismological Centre

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
418 Oct. 22 (Cont'd)	e	6 49 44		
	i	6 59 16		
	e_N	7 00 16		
	L	7 16		
	F	7 45		
		Toronto		
	e	6 56 55		
	e_N	7 04 46		
	L	7 10		
	F	7 26		
		Ottawa		
420 Oct. 24	H	20 06.8	8630	
	P	20 18 45		
	S	20 28 40		
	eL	20 40		
	F	21 15		
		Seven Falls		
	H	20 06.9	8800	
	P	20 18 56		
	iS	20 28 59		
	L	20 44		
	F	21 00		
		Ottawa		
422 Oct. 27	H	5 35.7	3950	USCGS. gives:
	P	5 42 41		ϕ = 9°.9 N.
	PP	5 44 00		λ = 84°.4 W.
	PPP	5 44 19		
	S	5 48 25		
	i_N	5 48 44		
	SS	5 50 50		
	eL	5 53		
	F	8 36		
		Victoria		
	H	5 35.7	5610	
	P	5 44 38		
	PP_E	5 46 42		
	S_N	5 51 57		
	e_E	5 52 08		
	e_N	5 54 16		
	L	5 58		
	F	9 00 ca.		
		Toronto		
	H	5 35.8	3540	
	iP	5 42 21		
	PPP	5 43 29		
	eS_N	5 47 39		
	e_N	5 50.0		
	L	5 53		
	F	8 00 ca.		

International Seismological Centre

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM October 27, 1940 to October 31, 1940 No. 76

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Saskatoon		
422 Oct. 27 (Cont'd)	e	5 46 22		
	e_N	5 48.6		
	e	5 54.2		
	eL	6 00		
	F	6 34		
		Halifax		
	H	5 35.9	4040	
	P	5 43 04		
	PPP_N	5 44 41		
	S	5 48.9		
	L	5 53		
	F	6 38		
		Seven Falls		
	H	5 35.6	4350	
	P	5 43 06		
	iPPP	5 45 04		
	S	5 49 16		
	SS	5 51 57		
	L	5 54		
	F	8 48		
		Shawinigan Falls		
	H	5 35.6	4230	
	P	5 42 55		
	PP	5 44 29		
	S	5 48 57		
	SSS	5 54.9		
	L	5 57		
	F	6 28		
		Ottawa		
423 Oct. 27	e_Z	10 47 01		
	L	11 07		
	F	11 30		
		Victoria		
424 Oct. 27	i	22 29 34		Nearby quake.
	i_N	22 29 48		
	F	22 34		
		Victoria		
429 Oct. 30	e_E	3 32		
	e	3 37.0		
	eL	3 51		
	F	4 50		

W. W. Doxsee

EARTHQUAKE CORRELATION TABLE

Month October, 1940

o.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
6	1	10 54+1 35u	10 56+1 57u	10 54+0 52u	....	....	....	10 55+0 11u	10 54+0 13u	A
7	1	20 59+0 39L	20 49+0 58L	21 10+0 20L	....	....	21 08+0 27L	....	....	..
8	1	21 58+2 13u	22 04+2 14u	22 01+1 59u	....	22 22+1 00L	21 59+2 08u	....	21 58+0 03P	..
9	2	1 44+0 39L	1 15+1 02u	1 54+0 15L	....	....	1 48+0 26L	....	....	..
0	2	3 23+0 57r	3 25+1 16r	3 23+0 50r	....	3 36+0 09L	3 25+1 02r	....	3 23+0 02P	B
1	2	11 23+0 43L	10 48+0 53u	11 27+0 35L	....	....	11 30+0 35L	....	....	..
2	3	5 07+0 01P*	5 19+0 02L	....	....	....	....	....	....	..
3	3	11 01+0 01v	....	....	....	....	....	....	....	C
4	3	....	....	....	....	....	15 02+0 21L	....	....	..
5	4	5 30+0 30L	5 24+0 36L	....	....	....	5 24+0 31L	....	....	..
6	4	8 05+3 30U	8 07+3 48U	8 05+2 59U	8 07+0 58U	8 06+1 13U	8 06+3 32U	8 06+0 40U	8 06+0 47U	E
7	4	8 33+0 03P*	....	....	....	....	....	....	8 33+0 03P	..
8	4	9 44+0 02P*	....	....	....	....	....	....	9 44+0 02P	..
9	5	9 43+0 43u	9 52+0 19L	....	....	....	10 06+0 18L	....	....	..
0	5	....	....	....	....	....	13 57+0 05L	....	....	..
1	5	14 46+1 46r	14 48+1 42r	14 45+1 35r	....	14 48+0 37u	14 46+1 41r	14 46+0 24r	14 46+0 26r	F
2	5	17 24+0 33u	17 49+0 17L	17 34+0 17L	....	....	17 36+0 17L	....	17 25+0 02P	..
3	6	15 49+1 55u	15 51+1 24u	15 58+1 02L	....	....	15 58+1 48u	15 49+0 15u	15 49+0 34u	G
4	7	1 44+0 02P	....	....	....	....	....	....	....	..
5	7	7 02+1 17u	7 00+0 55u	....	....	....	7 21+0 57u	7 02+0 03P	7 02+0 12P	J
6	7	....	....	18 43+0 12L	....	....	....	....	....	..
7	8	....	....	18 11+0 18L	....	....	....	....	....	..
8	10	5 39+0 02P*	....	....	....	....	....	....	....	..
9	11	8 01+0 45u	7 58+0 25r	8 02+0 33u	....	8 17+0 12L	8 04+0 35u	8 02+0 26u	8 02+0 25u	K
0	11	18 54+3 15U	18 55+3 25U	18 54+3 04U	19 33+0 43L	19 05+1 04U	18 58+3 14U	19 05+0 44U	18 54+0 58U	N
1	12	....	....	....	....	....	....	....	2 55+0 02P	..

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EARTHQUAKE CORRELATION TABLE

Month October, 1940

Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
13	....	13 49+0 54u	....	....	....	14 27+0 40L	....	....	..
13	19 52+0 08v	....	....	....	....	19 51+0 01v	19 51+0 03v	19 51+0 08v	S
14	2 55+0 01P*	....	....	....	....	3 43+0 14L	....	....	..
15	7 07+0 25L	6 50+0 26L	....	....	....	....	....	....	..
19	7 47+0 02v	....	....	....	....	....	....	....	T
20	....	....	....	....	....	....	1 22+0 0.3v	....	..
22	6 48+0 44u	6 50+0 56u	6 57+0 29u	....	....	6 51+0 35u	6 47+0 03P	6 48+0 06P	W
23	2 32+0 03P*	....	....	....	....	....	....	....	..
24	20 19+0 56u	....	....	....	....	20 29+0 31u	20 19+0 13u	20 20+0 07P	X
26	....	18 14+0 09L	....	....	....	....	....	....	..
27	5 43+2 53R	5 45+3 15U	5 42+2 18R	5 46+0 48U	5 43+0 55R	5 43+3 05R	5 43+0 46R	5 43+0 45R	Y
27	10 47+0 43u	....	....	....	....	....	....	10 47+0 03P	..
27	....	22 30+0 04v	....	....	....	....	....	....	Z
28	....	21 19+0 12L	....	....	....	....	....	....	..
29	....	0 04+0 04L	....	....	....	....	....	....	..
29	....	0 55+0 05L	....	....	....	....	....	....	..
29	....	1 15+0 07L	....	....	....	....	....	....	..
30	3 30+0 36L	3 32+1 18u	....	....	....	3 29+0 53L	....	....	..
30	23 12+0 01P*	....	....	....	....	....	....	....	..
31	2 12+0 05P*	....	....	....	....	....	....	....	..
31	....	....	....	....	....	6 27+0 24L	....	....	..
31	....	11 45+0 20L	....	....	....	11 34+0 44L	....	....	..

CORRELATION OF EARTHQUAKES

October, 1940

N O T E S

A :	Ottawa	Δ = 8,000 km.	H = $10^h42^m.9$ U.T.
	Victoria	Δ = 10,280 km.	H = 10 42.6 U.T.
	Toronto	Δ = 7,880 km.	H = 10 42.9 U.T.
	Seven Falls	Δ = 8,620 km.	H = 10 42.6 U.T.
	Shawinigan Falls	Δ = 8,560 km.	H = 10 42.6 U.T.
B :	Ottawa	Δ = 3,980 km.	H = $3^h15^m.8$ U.T.
	Toronto	Δ = 3,590 km.	H = 3 16.0 U.T.
	Seven Falls	Δ = 4,200 km.	H = 3 15.8 U.T.
C :	Ottawa	Δ = 135 km.	H = $11^h00^m.5$ U.T.
E :	Ottawa	Δ = 7,240 km.	H = $7^h54^m.9$ U.T.
	Victoria	Δ = 9,160 km.	H = 7 55.0 U.T.
	Toronto	Δ = 7,120 km.	H = 7 54.9 U.T.
	Saskatoon	Δ = 8,420 km.	H = 7 55.4 U.T.
	Halifax	Δ = 7,020 km.	H = 7 55.1 U.T.
	Seven Falls	Δ = 7,300 km.	H = 7 55.2 U.T.
	Shawinigan Falls	Δ = 7,400 km.	H = 7 54.9 U.T.
F :	Ottawa	Δ = 4,000 km.	H = $14^h38^m.8$ U.T.
	Toronto	Δ = 3,620 km.	H = 14 38.9 U.T.
	Seven Falls	Δ = 4,280 km.	H = 14 38.9 U.T.
	Shawinigan Falls	Δ = 4,180 km.	H = 14 38.8 U.T.
G :	Ottawa	Δ = 7,050 km.	H = $15^h38^m.6$ U.T.
	Victoria	Δ = 9,090 km.	H = 15 38.5 U.T.
	Seven Falls	Δ = 7,140 km.	H = 15 38.8 U.T.
	Shawinigan Falls	Δ = 7,240 km.	H = 15 38.5 U.T.
J :	Victoria	Δ = 11,000 km.	H = $6^h42^m.8$ U.T.
K :	Ottawa	Δ = 5,170 km.	H = $7^h53^m.0$ U.T.
	Victoria	Δ = 2,300 km.	H = 7 53.1 U.T.
	Seven Falls	Δ = 5,440 km.	H = 7 52.9 U.T.

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CORRELATION OF EARTHQUAKES
October, 1940

NOTES

N :	Ottawa	Δ = 9,620 km.	H = $18^h41^m.3$ U.T.
	Toronto	Δ = 9,390 km.	H = 18 41.3 U.T.
	Shawinigan Falls	Δ = 9,920 km.	H = 18 41.1 U.T.
S :	Ottawa	Δ = 520 km.	H = $19^h50^m.8$ U.T.
	Seven Falls	Δ = 100 km.	H = 19 50.8 U.T.
	Shawinigan Falls	Δ = 250 km.	H = 19 50.8 U.T.
T :	Ottawa	Δ = 500 km.	H = $7^h46^m.0$ U.T.
W :	Ottawa	Δ = 7,050 km.	H = $6^h37^m.2$ U.T.
X :	Ottawa	Δ = 8,630 km.	H = $20^h06^m.8$ U.T.
	Seven Falls	Δ = 8,800 km.	H = 20 06.9 U.T.
Y :	Ottawa	Δ = 3,950 km.	H = $5^h35^m.7$ U.T.
	Victoria	Δ = 5,610 km.	H = 5 35.7 U.T.
	Toronto	Δ = 3,540 km.	H = 5 35.8 U.T.
	Halifax	Δ = 4,040 km.	H = 5 35.9 U.T.
	Seven Falls	Δ = 4,350 km.	H = 5 35.6 U.T.
	Shawinigan Falls	Δ = 4,230 km.	H = 5 35.6 U.T.

Z : Origin probably within 100 km. of the Victoria station.

Dominion Observatory,
Ottawa, Canada,
December 11, 1940.

International Seismological Centre

SEISMOLOGICAL BULLETINS RECEIVED

October, 1940.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED
Pasadena	Preliminary for July-August, 1940	October 1
New Zealand Stations	July, 1940 and Report for Year ending Dec. 31/39	" 1
Saint Louis and Auxiliary Stations	Preliminaries for June 5, 17, July 6, 10, 13, 14, 27, August 1 and Supplement for June-July, 1940	" 3
Manila	July, 1940	" 5
Weston	Preliminary for September, 1940	" 9
Perth	August, 1940	" 12
Brisbane	August, 1940	" 12
New Zealand Stations	August, 1940	" 15
United States Coast and Geodetic Survey	November, 1938	" 17
Cape Town	February to December, 1939	" 18
Hong Kong	January to December, 1931; January and March to October, 1932	" 21
Pittsburgh	May and June, 1940	" 23
Manila	July to December, 1939	" 26
Pasadena	Preliminary for September, 1940	" 28
Bureau Central and U.G.G.I.	July, 1940	" 29
Sydney	May and June, 1940	" 30

DOMINION OBSERVATORY,

OTTAWA - CANADA.

International Seismological Centre

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
November,
1940

DOMINION OBSERVATORY
OTTAWA, CANADA

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent

International Seismological Centre

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07!4 N. λ = 70°49!6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

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SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33'.1 N. λ = 72°45'.8 W.   h = 60m. ca.

Time correction from recorded radio time signals

Foundation: solid granite of Canadian Shield

Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W.   h = 515m.

Time correction from radio time signals

Foundation: clay and sand

Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W.   h = 111m.

Time correction from radio time signals

Foundation: sand and clay

Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W.   h = 320m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_0	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2200			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.1	61	Aper.		
SE (Saskatoon)	9.0	58	"		
KL (Kirkland Lake)	1/30	2×10^4 at 30 cycles			

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM November 1, 1940 to November 8, 1940 No. 77

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
435 Nov. 1	e_Z	15 59 47		
	L	16 12		
	F	16 26		
		Ottawa		
436 Nov. 2	e_N	23 59.2		
	L	0 04		
	F	0 38		
		Victoria		
	e	23 42.1		
	e	23 46		
	L	23 48		
	F	0 45		
		Seven Falls		
	e	23 56 53		
	L	0 02		
	F	0 40		
		Victoria		
437 Nov. 3	e	2 18.0		
	e	2 22		
	L	2 24		
	F	3 11		
		Ottawa		
438 Nov. 7	e	14 20 34		
	e	14 24.0		
	e	14 26.1		
	eL	14 43		
	F	15 11		
		Seven Falls		
	e	14 20 29		
	L	14 46		
	F	15 10		
		Ottawa		
439 Nov. 8	e	11 04 20		
	L	11 27		
	F	13 00		
		Victoria		
	e	10 57.9		
	eL	11 16		
	F	12 06		
		Seven Falls		
	e	11 02 01		
	eL	11 24		
	F	13 01		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM November 8, 1940 to November 10, 1940 No. 7[illegible]

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
440	e	11 22.4		
Nov.	L	11 35		
9	F	12 10		
		Ottawa		
441	H	1 39.3	7050	USCGS. gives:
Nov.	iP	1 49 44		ϕ = 45° N.
10	PP	1 50 20		λ = 26°.2 E.
	e	1 53 54		Depth 100 to 150 km.
	iS	1 58 24		
	PS_N	1 59 12		
	i_E	2 00 32		
	e	2 02 06		
	SS	2 02 48		
	i_N	2 04 08		
	eL	2 10		
	F	5 00 ca.		
		Victoria		
	H	1 39.2	9000	
	eP	1 51 23		
	PP_N	1 54 37		
	iS	2 01 34		
	SSS_N	2 11.1		
	eL	2 14		
	F	5 00 ca.		
		Toronto		
	H	1 39.4	7320	
	eP	1 50 06		
	e	1 52.3		
	e_N	1 54 20		
	iS	1 59 00		
	SS	2 03 12		
	e	2 07 00		
	L	2 12		
	F	4 10		
		Saskatoon		
	H	1 39.3	8160	
	P	1 50 48		
	i	1 51 16		
	PP_E	1 53 14		
	PPP_N	1 55.5		
	S	2 02 22		
	SS	2 05.2		
	SSS	2 08		
	L	2 13		
	F	2 58		

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FROM November 10, 1940 to November 10, 1940

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Halifax		
441 Nov. 10 (Cont'd)	H	1 39.2	6380	
	P	1 48 58		
	iS	1 57 00		
	e_N	2 01.9		
	SSS	2 03		
	L	2 05		
	F	3 00		
		Seven Falls		
	H	1 39.3	6650	
	P	1 49 19		
	PP	1 51.9		
	iS	1 57 37		
	SS	2 01.7		
	L	2 07		
	F	4 27		
		Shawinigan Falls		
	H	1 39.4	6680	
	P	1 49 28		
	i	1 50 10		
	S	1 57.8		
	e	1 59 04		
	L	2 10		
	F	2 31		
		Ottawa		
443 Nov. 10	H	20 40.5	3080	
	eP_Z	20 46 25		
	eS	20 51 14		
	eL	20 55		
	F	21 45		
		Victoria		
	e_E	20 48 56		
	e	20 55 20		
	e_E	20 58 52		
	L	21 03		
	F	22 10		
		Toronto		
	e	20 50 38		
	L	20 54		
	F	21 30		
		Seven Falls		
	H	20 40.3	3540	
	P	20 46.7		
	S	20 52 01		
	L	20 56		
	F	21 46		

SEISMOLOGICAL SERVICE OF CANADA

DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM November 10, 1940 to November 23, 1940 No. 80

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
448 Nov. 17	e_E	4 08.6		
	L	4 16		
	F	4 36		
		Seven Falls		
	e	4 10.5		
	L	4 18		
	F	4 42		
		Ottawa		
449 Nov. 17	e_Z	6 16.1		
	L	7 14		
	F	7 50		
		Ottawa		
452 Nov. 19	H	15 01.8	9720	
	P_Z	15 14 34		
	S	15 25 16		
	SS	15 31.4		
	eL	15 42		
	F	16 38		
		Victoria		
	e	15 12 32		
	S?	15 20 51		
	e_N	15 22 12		
	e_E	15 25 05		
	e	15 28 26		
24-16	L	15 32		
14-34	F	16 50		
18-42		Toronto		
	e	15 25 20		
87°.7	L	15 44		
	F	16 30		
		Seven Falls		
	S?	15 25 25		
	e	15 31 12		
	L	15 46		
	F	16 38		
		Ottawa		
454 Nov. 23	H	3 49.0	4010	USCGS. gives:
	P	3 56 02		ϕ = 9° N.
	PPP	3 57 26		λ = 84° W.
	S	4 01 50		
	SSS	4 05		
	eL	4 08		
	F	4 47		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM November 23, 1940 to November 30, 1940 No. 61

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Victoria		
454 Nov. 23 (Cont'd)	e	3 57 54		
	e	4 05 29		
	e	4 07 57		
	L	4 17		
	F	5 16		
		Toronto		
	H	3 48.9	3790	
	P	3 55 44		
	PPP	3 57 15		
	S	4 01.3		
	e	4 04.7		
	L	4 08		
	F	4 52		
		Seven Falls		
	e	3 58.0		
	S	4 02 33		
	e	4 05 42		
	eL	4 08		
	F	5 05		
		Shawinigan Falls		
	e	3 56 16		
	L	4 12		
	F	4 22		
		Victoria		
456 Nov. 27	i	15 05 23		
	L	15 19		
	F	16 26		

W. W. Doxsee.

EARTHQUAKE CORRELATION TABLE

Month November, 1940

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan	**
34	1	....	15 01+0 18L	....	....	....	....	....	....	..
35	1	16 00+0 26r	16 09+0 19L	16 11+0 17L	....	....	16 14+0 11L	....	....	..
36	2	23 59+0 39r	23 42+1 03u	0 01+0 25L	....	....	23 57+0 43r	....	....	..
37	3	2 40+0 25L	2 18+0 53u	2 37+0 34L	....	....	2 38+0 30L	....	....	..
38	7	14 21+0 50u	....	....	....	....	14 20+0 50u	....	....	..
39	8	11 04+1 56u	10 58+1 08u	11 33+0 47L	....	....	11 02+1 59u	....	....	..
40	9	....	11 22+0 48u	....	....	....	12 00+0 13L	....	....	..
41	10	1 50+3 10U	1 51+3 09U	1 50+2 20U	1 51+1 07U	1 49+1 11U	1 49+2 38U	1 49+0 44U	1 49+0 42U	A
42	10	2 18+0 04P*	....	....	....	....	....	....	....	..
43	10	20 46+0 59r	20 49+1 21u	20 51+0 39r	....	....	20 52+0 54r	20 47+0 15r	20 47+0 20r	B
44	10	22 30+0 19L	22 12+0 48L	22 31+0 03L	....	....	22 32+0 20L	....	....	..
45	13	....	9 17+0 09L	....	....	....	....	....	....	..
46	15	....	14 30+0 11L	....	....	....	14 53+0 19L	....	....	..
47	16	3 03+0 19L	2 45+0 36L	3 02+0 22L	....	3 07+0 12L	3 01+0 26L	....	....	..
48	17	4 09+0 27u	3 59+0 28L	4 13+0 14L	4 07+0 09L	....	4 10+0 32u	....	....	..
49	17	6 16+1 32u	7 01+1 04L	....	....	....	7 15+0 40L	....	....	..
50	17	....	20 07+1 05L	....	....	....	20 45+0 12L	....	....	..
451	18	....	13 08+0 07L	....	....	....	13 40+0 04L	....	15 15+0 07P	C
452	19	15 15+1 23u	15 13+1 37u	15 25+1 05u	....	....	15 25+1 13u	....	....	..
453	22	....	9 25+1 01L	....	....	....	....	....	....	..
454	23	3 56+0 51r	3 58+1 18u	3 56+0 56r	....	....	3 58+1 07r	....	3 56+0 26r	E
455	26	....	1 53+0 24L	....	....	....	2 08+0 04L	....	....	..
456	27	....	15 05+1 20u	....	....	....	....	....	....	..

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CORRELATION OF EARTHQUAKES

November, 1940.

N O T E S

A :	Ottawa	Δ = 7050 km.	H = $1^{h}39^{m}.3$ U.T.
	Victoria	Δ = 9000 km.	H = 1 39.2 U.T.
	Toronto	Δ = 7320 km.	H = 1 39.4 U.T.
	Saskatoon	Δ = 8160 km.	H = 1 39.3 U.T.
	Halifax	Δ = 6380 km.	H = 1 39.2 U.T.
	Seven Falls	Δ = 6650 km.	H = 1 39.3 U.T.
	Shawinigan Falls	Δ = 6680 km.	H = 1 39.4 U.T.
B :	Ottawa	Δ = 3080 km.	H = $20^{h}40^{m}.5$ U.T.
	Seven Falls	Δ = 3540 km.	H = 20 40.3 U.T.
C :	Ottawa	Δ = 9720 km.	H = $15^{h}01^{m}.8$ U.T.
E :	Ottawa	Δ = 4010 km.	H = $3^{h}49^{m}.0$ U.T.
	Toronto	Δ = 3790 km.	H = 3 48.9 U.T.

Dominion Observatory,
Ottawa, Canada,
December 18, 1940.

International Seismological Centre

SEISMOLOGICAL BULLETINS RECEIVED

November, 1940.

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED
Batavia	October to December, 1939	November 4
Ksara	August, 1940	" 5
Osaka	April to June, 1940	" 5
Manila	August, 1940	" 6
Pittsburgh	July to September, 1940	" 7
Perth	September, 1940	" 12
Weston	Preliminary for October, 1940	" 13
Brisbane	September, 1940	" 14
Pasadena	January to March, 1940	" 20
Saint Louis	October, 1939 to March, 1940	" 25
Florissant	November, 1939 to January, 1940	" 25
Denver	April to June, 1940	" 25
Apia	July to September, 1940	" 25
Riverview	July to September, 1940	" 26
Prague	Years 1924 - 1927	" 26
Strasbourg	June, 1940	" 28
Bureau Central	May and June, 1940	" 28
Pasadena	April to October, 1940 (Local Shocks)	" 28

DOMINION OBSERVATORY,
OTTAWA - CANADA.

SEISMOLOGICAL SERVICE OF CANADA

SEISMOLOGICAL BULLETIN
December
1940

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DOMINION OBSERVATORY
OTTAWA, CANADA

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SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

R. Meldrum Stewart, Dominion Astronomer
Ernest A. Hodgson, Seismologist
W. W. Doxsee, Station Superintendent

International Seismological Centre

S T A T I O N S

OTTAWA

ϕ = 45°23'38" N. λ = 75°42'57" W. h = 83m.
Time correction within 0.10s.
Foundation: Boulder clay over limestone
Instruments: Milne-Shaw NS and EW components, designated 23 and 17, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 1 lb.

Benioff Vertical, short and long period, designated BS and BL, photographic registration, BS a paper speed of 60 mm. per min., BL a paper speed of 30 mm. per min., mass 235 lbs.

HALIFAX

Dalhousie University

ϕ = 44°38' N. λ = 63°36' W. h = 46m.
Time correction from recorded radio time signals
Foundation: Carbonaceous slate
Instruments: Bosch NS and EW components, designated HN and HE, respectively, each with photographic registration, magnetic damping, paper speed of 15 mm. per min., mass 200 g.

SEVEN FALLS

Quebec Power Company

ϕ = 47°07'.4 N. λ = 70°49'.6 W. h = 232m. ca.
Time correction from recorded radio time signals
Foundation: Solid granite of Canadian Shield
Instruments: Wood-Anderson and Milne-Shaw, both EW component, designated SF and SM, respectively, each with photographic registration, magnetic damping, SF a paper speed of 60 mm. per min. and mass 15 g., SM a paper speed of 8 mm. per min. and mass 1 lb.

VICTORIA

Dominion Astrophysical Observatory

ϕ = 48°31'14" N. λ = 123°24'56" W. h = 197m.
Time correction from recorded radio time signals
Foundation: rock
Instruments: Milne-Shaw NS and EW components, designated 21 and 20, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

Wiechert Vertical designated WV, smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 80 kg.

SHAWINIGAN FALLS

Shawinigan Water and Power Company

ϕ = 46°33'.1 N. λ = 72°45'.8 W. h = 60m. ca.

Time correction from recorded radio time signals

Foundation: solid granite of Canadian Shield

Instruments: Wood-Anderson NS component, designated SA, photographic registration, magnetic damping, paper speed of 60 mm. per min., mass 15 g.

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SASKATOON

University of Saskatchewan

ϕ = 52°08' N. λ = 106°38' W. h = 515m.

Time correction from radio time signals

Foundation: clay and sand

Instruments: Mainka NS and EW components, designated SN and SE, respectively, each with smoked sheet registration, air damping, paper speed of 15 mm. per min., mass 139 kg.

TORONTO

ϕ = 43°40' N. λ = 79°24' W. h = 111m.

Time correction from radio time signals

Foundation: sand and clay

Instruments: Milne-Shaw NS and EW components, designated 18 and 22, respectively, each with photographic registration, magnetic damping, paper speed of 8 mm. per min., mass 1 lb.

KIRKLAND LAKE

Lake Shore Mines

ϕ = 48°09' N. λ = 80°03' W. h = 320m.

Time correction from recorded radio time signals

Foundation: rock

Instruments: Converted Heiland Field Seismometer, vertical component, designated KL, photographic registration, paper speed of 30 mm. per min.

DETERMINED CONSTANTS

INSTRUMENT	T_o	V	ε	DISPLACEMENT FOR 1" ARC TILT	DISPLACEMENT FOR 10^{-6} g
17 (Ottawa)	12.0	300	20:1	50 mm.	
23 (Ottawa)	12.0	300	20:1	50 mm.	
BS (Ottawa)	1.0				11 mm.
BL (Ottawa)	1.0				17 mm.
HN (Halifax)	5.0	125	20:1		
HE (Halifax)	5.0	125	20:1		
SA (Shawinigan)	1.0	2200			
18 (Toronto)	10.0	165	20:1	20 mm.	
22 (Toronto)	10.0	165	20:1	20 mm.	
20 (Victoria)	12.0	300	20:1		
21 (Victoria)	12.0	300	20:1		
WV (Victoria)	4.0	120	15:1		
SF (Seven Falls)	1.0	2500			
SM (Seven Falls)	12.0	300	20:1	50 mm.	
SN (Saskatoon)	9.1	61	Aper.		
SE (Saskatoon)	9.0	58	"		
KL (Kirkland Lake)	1/30	2×10^4 at 30 cycles			

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM December 1, 1940 to December 17, 1940 No. 82

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
457	e_Z	21 17 55		
Dec.	e	21 24.0		
1	eL	21 28		
	F	21 52		
		Victoria		
	e	21 27 41		
	L	21 35		
	F	22 25		
		Seven Falls		
	e	21 24 34		
	eL	21 28		
	F	21 46		
		Victoria		
460	e_E	13 30.6		
Dec.	e_E	13 39.1		
4	L	13 53		
	F	14 32		
		Ottawa		
461	e_Z	22 23 08		
Dec.	L	22 34		
7	F	22 41		
		Ottawa		
463	e_Z	15 01 09		
Dec.	eL	15 25		
17	F	16 35		
		Victoria		
	e	15 06 09		
	e	15 08.0		
	e	15 13 41		
	e	15 17 09		
	eL	15 26		
	F	16 20		
		Toronto		
	e	15 12.4		
	L	15 39		
	F	16 26		
		Seven Falls		
	e	15 15.0		
	L	15 43		
	F	16 50		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International
Seismological
Centre

FROM December 17, 1940 to December 20, 1940 No. 83

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Ottawa		
466 Dec. 20	H	7 27.1	440	USCGS. gives:
	P_2	7 28 20		ϕ = 44°0 N.
	P_1	7 28 25		λ = 71°1 W.
	S_n	7 28 58		
	S_2	7 29 09		
	F	8 00 ca.		
		Saskatoon		
	e	7 37 31		
	L	7 40		
	F	7 58		
		Halifax		
	e	7 29 45		
	e	7 29 56		
	L	7 30 19		
	F	7 39		
		Shawinigan Falls		
	H	7 27.3	400	
	P_n	7 28 11		
	P_2	7 28 18		
	e	7 28 37		
	Sn	7 28 52		
	F	8 00 ca.		
		Seven Falls		
	H	7 27.4	370	
	P_n	7 28 16.5		
	P_2	7 28 27		
	e	7 28 44		
	Sn	7 28 56		
	F	8 03 ca.		
		Ottawa		
467 Dec. 20	H	23 41.0	3850	
	P_Z	23 47 52		
	S_N	23 53 30		
	SSS	23 56.0		
	eL	23 59.5		
	F	0 36		
		Victoria		
	S?	23 45 36		
	L	23 48.3		
	F	0 38		
		Saskatoon		
	e	23 44 53		
	eL	23 50		
	F	0 03		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM December 20, 1940 to December 23, 1940 No. 84

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
467 Dec. 20 (Cont'd)	e	23 48 51		
	S	23 53 31		
	e	23 58		
	L	0 00		
	F	0 15		
		Seven Falls		
	e	23 48 21		
	e	23 58.5		
	L	0 02		
	F	0 45		
		Ottawa		
469 Dec. 22	e_E	12 58.5		USCGS. gives:
	e	13 06.3		ϕ = 17° S.
	eL	13 23		λ = 178° W.
	F	14 20+		
		Seven Falls		
	e	12 58.9		
	e	13 06 45		
	L	13 24		
	F	15 20		
		Ottawa		
470 Dec. 22	e	19 09 42		
	e	19 10.5		
	e_N	19 14 29		
	e	19 17 42		
	eL	19 26		
	F	19 52		
		Victoria		
	i	19 21 32		
	i	19 22 52		
	F	19 28		
		Seven Falls		
	e	19 09 53		
	e	19 17 02		
	i	19 18 04		
	i	19 19 30		
	L	19 26		
	F	20 01		
		Ottawa		
472 Dec. 23	e_Z	22 01 19		
	L	22 04		
	F	22 08		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM December 23, 1940 to December 26, 1940 No. 85

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Saskatoon		
472	e	21 52 46		
Dec.	L	21 54		
23	F	22 00		
(Cont'd)		Shawinigan Falls		
	e	22 02 18		
	L	22 04		
	F	22 11		
		Ottawa		
473	H	13 43.5	440	USCGS. gives:
Dec.	P_2	13 44 39		ϕ = 44°.0 N.
24	P_1	13 44 44		λ = 71°.1 W.
	S_n	13 45 18		
	S_2	13 45 29		
	F	14 18 ca.		
		Saskatoon		
	e	13 53 47		
	L	13 56.6		
	F	14 09		
		Shawinigan Falls		
	H	13 43.6	390	
	P_n	13 44 30		
	P_2	13 44 36		
	i	13 44 52		
	S_n	13 45 11		
	F	14 15		
		Seven Falls		
	H	13 43.7	370	
	P_n	13 44 35.5		
	P_2	13 44 42		
	F	14 20		
		Ottawa		
474	H	5 03.5	440	
Dec.	P_2	5 04 47		
25	S_n	5 05 26		
	e	5 05 31.5		
	S_2	5 05 35		
	F	5 08		
		Ottawa		
477	e_Z	6 35 45		
Dec.	L	6 46		
26	F	6 58		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

FROM December 26, 1940 to December 28, 1940 No. 86

International Seismological Centre

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
477 Dec. 26 (Cont'd)	e	6 35 49		
	i	6 46 13		
	L	6 48		
	F	6 56		
		Seven Falls		
	e	6 42.5		
	L	6 46		
	F	6 53		
		Ottawa		
479 Dec. 27	H	19 55.9	440	
	P_1	19 57 16.5		
	S_2	19 58 00.5		
	F	20 02		
		Shawinigan Falls		
	e	19 57 03.5		
	e	19 57 42		
	F	20 00		
		Ottawa		
481 Dec. 28	e	16 56 24		USCGS. gives:
	e	17 02.5		ϕ = 18°.5 N.
	e	17 11.6		λ = 147° E.
	eL	17 25		
	F	18 46		
		Victoria		
	H	16 38.3	7910	
	P	16 49 32		
	PP_E	16 52 27		
	S_N	16 58 53		
	SS_E	17 03 50		
	SSS	17 07.5		
	L	17 10		
	F	20 09		
		Saskatoon		
	H	16 37.9	9380	
	P	16 50 24		
	S	17 00 52		
	L	17 15		
	F	17 53		
		Halifax		
	e	16 57 01		
	e	17 06.5		
	L	17 28		
	F	18 22		

SEISMOLOGICAL SERVICE OF CANADA
DOMINION OBSERVATORY, OTTAWA

International Seismological Centre

FROM December 28, 1940 to December 31, 1940 No. 87

NO. AND DATE	PHASE	TIME	DISTANCE	REMARKS
		h m s	km.	
		Shawinigan Falls		
481	e	16 56.2		
Dec.	e	17 05.5		
28	L	17 27		
(Cont'd)	F	18 09		
		Seven Falls		
	e	16 55 16		
	e	17 02 51		
	e	17 05.6		
	e	17 11 40		
	L	17 19		
	F	19 56		
		Victoria		
486	e	20 42 46		
Dec.	e	20 46 41		
30	L	20 48		
	F	21 33		
		Seven Falls		
	e	20 57.9		
	L	21 04		
	F	21 29		

W. W. Doxsee

EARTHQUAKE CORRELATION TABLE

Month December, 1940

No.	Date	Ottawa	Victoria	Toronto	Saskatoon	Halifax	Seven Falls M. S.	Seven Falls W. A.	Shawinigan
457	1	21 18+0 34u	21 28+0 57u	21 27+0 19L	....	....	21 25+0 21u	....	....
458	2	....	14 47+0 18L	....	....	....	....	....	....
459	3	....	14 46+0 04L	....	....	....	....	....	....
460	4	....	13 31+1 00u	....	....	....	14 09+0 53L	....	....
461	7	22 23+0 18u	22 26+0 11L	22 33+0 04L	....	....	....	....	22 24+0 05P
462	16	....	....	0 07+0 09L	....	....	....	....	....
463	17	15 01+1 34u	15 06+1 14u	15 12+1 14u	....	....	15 15+1 35u	....	....
464	18	4 36+0 24L	5 02+0 25L	....	....	....	4 38+0 11L	....	....
465	18	5 51+0 01P*	6 18+0 14L	....	....	....	....	....	....
466	20	7 28+0 32V	....	....	7 37+0 21r	7 30+0 09v	7 28+0 12V	7 28+0 35V	7 28+0 31V
467	20	23 48+0 48r	23 46+0 52r	....	23 45+0 18r	0 02+0 25L	23 58+0 44r	23 48+0 28r	23 49+0 26r
468	21	15 29+0 01P*	....	....	....	....	....	....	....
469	22	12 58+1 22u	12 54+0 52L	....	....	13 27+0 41L	12 59+2 21u	13 34+0 10L	....
470	22	19 10+0 42u	19 22+0 06u	....	....	....	19+18+0 43u	19 10+0 11u	19 10+0 11P
471	22	....	....	....	....	....	21 27+0 12L	....	....
472	23	22 01+0 07r	21 55+0 04P	....	21 53+0 07r	....	....	22 03+0 06L	22 02+0 09r
473	24	13 45+0 33V	....	....	13 54+0 15r	....	13 44+0 13V	13 44+0 35V	13 44+0 31V
474	25	5 05+0 03v	....	....	....	....	....	....	5 05+0 02v
475	25	6 50+0 08P*	....	....	....	....	....	....	6 54+0 05P
476	25	12 17+0 02P*	....	....	....	....	....	....	12 17+0 02P
477	26	6 36+0 21r	....	....	....	....	....	6 42+0 10r	6 36+0 20r
478	27	0 18+0 01v	....	....	....	....	....	....	....
479	27	19 57+0 05v	....	....	....	....	....	....	19 57+0 03v
480	27	....	22 26+0 18L	....	....	....	....	....	....
481	28	16 56+1 50u	16 50+3 19u	....	16 50+1 03u	16 57+1 25u	16 53+3 00u	16 55+1 10u	16 52+1 17u
482	29	13 46+0 01P*	....	....	....	....	....	....	....
483	29	....	17 06+0 09L	....	....	....	16 57+0 17L	....	....
484	29	....	18 22+1 11L	....	....	....	18 22+1 09L	....	....
485	30	....	13 21+0 27L	....	....	....	....	....	....
486	30	20 57+0 29L	20 43+0 50u	....	....	....	20 58+0 31u	....	....
487	31	....	7 51+0 44L	....	....	....	....	....	....

International Seismological Centre

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CORRELATION OF EARTHQUAKES
December, 1940

N O T E S

A	:	Ottawa	Δ = 440 km.	H = $7^{h}27^{m}.1$ U.T.
		Shawinigan Falls	Δ = 400 km.	H = 7 27.3 U.T.
		Seven Falls	Δ = 370 km.	H = 7 27.4 U.T.
B	:	Ottawa	Δ = 3850 km.	H = $23^{h}41^{m}.0$ U.T.
C	:	Ottawa	Δ = 440 km.	H = $13^{h}43^{m}.5$ U.T.
		Shawinigan Falls	Δ = 390 km.	H = 13 43.6 U.T.
		Seven Falls	Δ = 370 km.	H = 13 43.7 U.T.
E	:	Ottawa	Δ = 440 km.	H = $5^{h}03^{m}.5$ U.T.
		Aftershock of quake of December 24th.		
F	:	Ottawa	Δ = 440 km.	H = $19^{h}55^{m}.9$ U.T.
		Aftershock of quake of December 24th.		
G	:	Victoria	Δ = 7910 km.	H = $16^{h}38^{m}.3$ U.T.
		Saskatoon	Δ = 9380 km.	H = 16 37.9 U.T.

Dominion Observatory,
Ottawa, Canada,
January 31, 1941.

International Seismological Centre

SEISMOLOGICAL BULLETINS RECEIVED

December, 1940

We acknowledge, with thanks, the receipt of the following seismological publications and bulletins:-

STATIONS	BULLETINS	RECEIVED	
Ksara	June and July, 1940	December	10
Bucarest	August, 1940	"	11
Manila	September, 1940	"	11
New Zealand Stations	October, 1940	"	12
Ksara	September, 1940	"	13
New Zealand Stations	September, 1940	"	16
Sydney	July and August, 1940	"	17
United States Coast and Geodetic Survey	December/38 and January/39	"	20
San Fernando	July and August, 1940	"	27
Pasadena	Bulletin No. 20 - October-November/40	"	30
Brisbane	October, 1940	"	31
Pasadena	April to June, 1939	"	31

DOMINION OBSERVATORY,

OTTAWA - CANADA.