

THE STATE ELECTRICITY AUTHORITY

Hydrological Survey

Report No. 287

ICE OBSERVATION
IN THE LOWER REACHES OF THJÓRSÁ RIVER
SEPT. - OCT. 1964 THROUGH MARCH 1965

by

Sigurjón Rist

Reykjavík, April 1965

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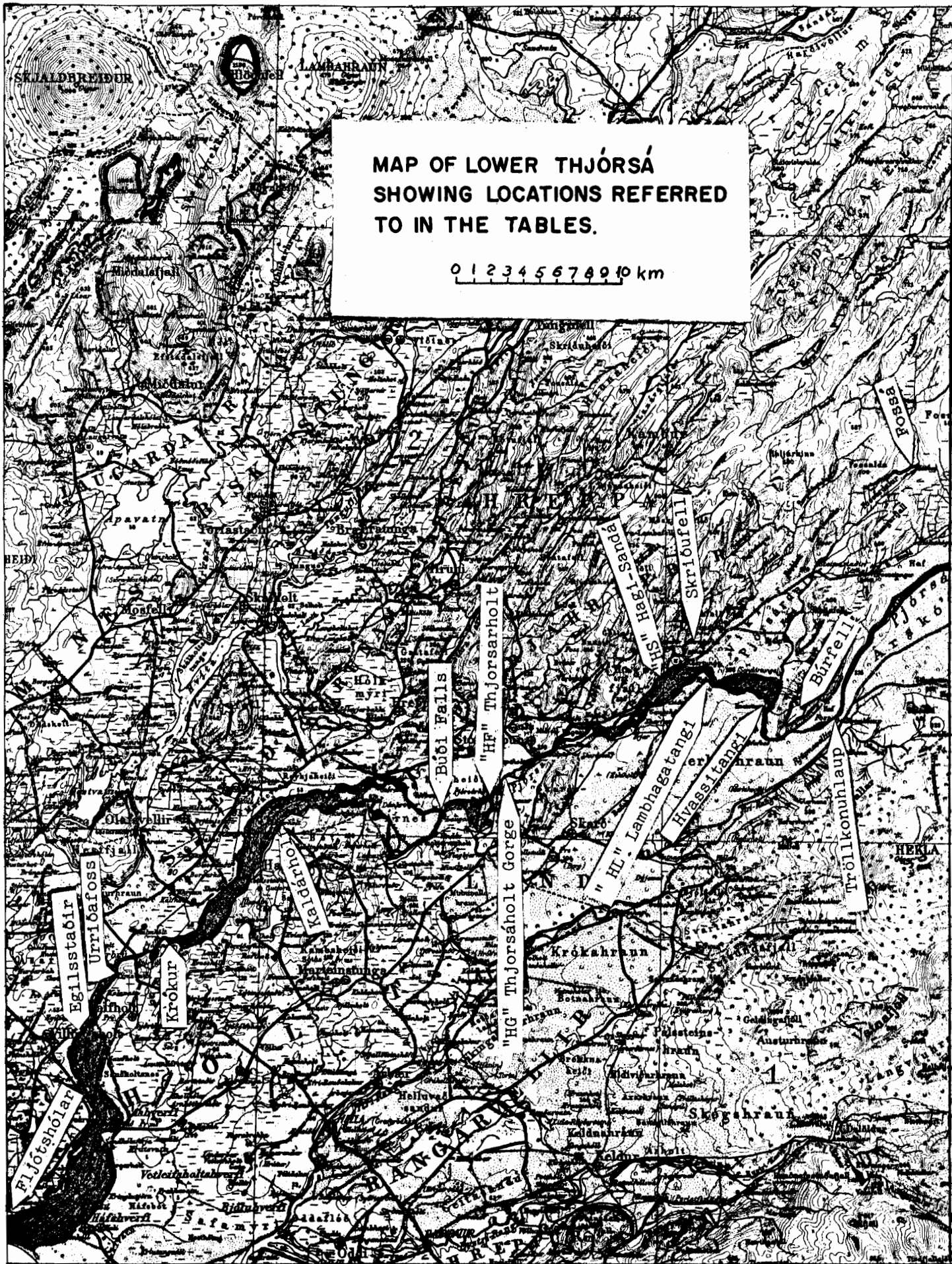
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MAP OF LOWER THJÓRSA
SHOWING LOCATIONS REFERRED
TO IN THE TABLES.

0 1 2 3 4 5 6 7 8 9 10 km

Egilstaðir

Urrlóafoss

Krokur

Fljótsþólar

Kaldan

Búði Falls

HG Thjorsáholt Gorge

HF Thjorsarholt

Hvassá

HL Lambagatangi

Hvassitangi

Skrifufell

Burrelli

Tröllkonuhlaup

Krokahraun

Skógahraun

HEKLA

INTRODUCTION

Observations Method of presentation

The following five persons, all of them living in the vicinity of the lower reaches of Thjórsá River, make regular daily observations of the ice conditions in the river and report their findings to the State Electricity Authority's Hydrological Survey (SEAHS):

<u>Name</u>	<u>Home</u>	<u>Observation reach</u>
Mr. Jóhann Ólafsson	SKRIÐUFELL	Búrfell - Hagi
Mrs. Thóra Jónsdóttir	TJÓRSÁRHOLT	Hagi - Thráandarholt
Mr. Gísli Helgason	KALDÁRHOLT	Thráandarholt - Skeiðháholt
Mr. Ingólfur Guðmundsson	KRÓKUR	Skeiðháholt - Heiðarendi
Mr. Haraldur Einarsson	URRIÐAFOSS	Heiðarendi - mouth

In addition, the observers at Skriðufell, Thjórsárholt and Krókur make daily weather notations.

In present report is divided into three main parts:

1. Tables of daily observations at various locations along the river for the period September 1964 through March 1965. The number of locations varies from month to month, as shown in the tables, depending as the ice conditions in each month. The tables show (1) discharge of Thjórsá River at Tröllkonuhlaup and Urriðafoss and Fossá River at Háifoss; (2) weather notations at the three locations mentioned above, and (3) observations of floating sludge ice, border ice and floating ice-floes. In addition at some of the locations, the backwater effect of the ice, as estimated by the observer, is stated as well as the flow conditions, i.e. whether the flow is normal, rising, falling etc. Explanation is given below of letters as symbols used in the tables.
2. Notes on the Urriðafoss Ice jam, by the observer at Urriðafoss.
3. Notes and remarks from the other observers, supplementing the information given in the tables.

Explanations of letters and symbols used in the tables

MdQ average flow, in kl/s, for a period of 1 day

MmQ - - - - - 1 month

HmQ maximum flow, in kl/s, during a period of 1 month

LmQ minimum flow, in kl/s, during a period of 1 month

(d, h) date and hour

- S denoted floating sludge. The observers estimate on a relative scale from 0 to 10 the amount of floating sludge (in terms of cubic meters of ice passing a given section per unit of time), where 0 denoted no sludge and 10 the maximum sludge ever observed at the particular location.
- Ih denoted degree of sludge coverage. The observers estimate, on a relative scale from 0 - 10, that part of the river surface between the border ice at each bank, which is covered by the floating sludge clusters, where 0 denote as sludge free surface and 10 a wholly covered water surface. In the latter case (i.e. Ih 10), the movement of the sludge only persist for a short time and the ice starts to freeze into a solid cover or pile up, whereafter the ice is no longer classified as sludge but as border ice.
- H denotes border ice. The observers estimate the combined width of the border ice covers at both banks in relation to the total width of the river on a scale from 0 to 10, H0 then means no border ice and H10 that the whole width of the river is covered. An exception to this method of presentation is the observation past Kaldárholt, where the width of the border ice at the eastern bank, in metres, is given instead.
- HL Border ice at Lambshagatangi (see map). When HL reaches 10, the ice starts piling up west of Burfell.
- HS Border ice at Hagi - Sandá (see map).
- HG Border ice in Thjórsárholt Gorge (see map) which forms as a piled-up ice or jam. The rule generally applies that Thjórsá River is usually uncovered in the area west of Burfell when it is covered in the Gorge, and vice versa.
- HF Border ice at the ferry place near Thjórsárholt (see map).
- J Ice floes carried by the river. The observers estimate the amount of floating ice floes on a relative scale from 0 to 10, where 0 denotes no floes and 10 the maximum ever observed at the particular location.
- Zero
- " Repetition
- ... Information not available
- . No figure by nature of the matter

Date	THJORSA Trollkonuhlaup		FOSSA	KROKUR	THJORSA	Date
	MdQ kl/s	% Urridaf.	Haifoss	Weather	Urridafoss	
			MdQ kl/s	at 10 hrs	MdQ kl/s	
1.	314	97	2.6	SV1 9° þoka	321	1.
2.	358	96	2.6	NA1 11° skúrir	372	2.
3.	350	91	2.6	0 10° regn	385	3.
4.	335	96	2.6	NV3 5° skúrir	350	4.
5.	326	95	2.4	N3 6° léttsk.	344	5.
6.	332	96	2.3	NA2 8° "	344	6.
7.	301	94	2.3	NA1 8° "	321	7.
8.	272	94	2.1	NA1 7° "	288	8.
9.	251	95	2.1	NA3 5° "	263	9.
10.	245	97	2.1	NA1 6° "	252	10.
11.	230	95	2.1	NA2 7° "	242	11.
12.	227	96	2.0	NA1 8° "	237	12.
13.	221	93	2.0	NA3 6° "	237	13.
14.	209	91	2.0	NA6 4° skúrir	229	14.
15.	204	92	1.8	NA4 6° léttsk.	221	15.
16.	181	88	1.8	N3 4° "	206	16.
17.	187	93	1.8	NA2 4° "	202	17.
18.	187	93	1.7	S2 10° skyjað	202	18.
19.	190	97	1.8	NA1 7° léttsk	196	19.
20.	184	96	1.7	NA2 1° "	190	20.
21.	184	99	1.7	A8 5° regn	186	21.
22.	184	97	1.8	A1 6° skúrir	190	22.
23.	199	99	1.8	A3 8° "	204	23.
24.	230	102	2.0	A1 7° léttsk	225	24.
25.	245	98	1.8	NA1 7° "	250	25.
26.	227	96	1.7	S2 9° skyjað	237	26.
27.	215	95	1.7	S1 8° skúrir	225	27.
28.	209	95	1.8	S2 8° "	221	28.
29.	202	95	1.7	S1 10° léttsk.	212	29.
30.	202	96	2.8	SV7 4° skúrir	210	30.
MmQ	240	95	2.0		252	MmQ
HmQ	369	95	3.4		388	HmQ
(d h)	(03 10)		(30 24)		(03 05)	(d h)
LmQ	172	93	1.0		184	LmQ
(d h)	(16 14)		(21 10)		(20 15)	(d h)

NOVEMBER 1964

NOVEMBER 1964

Date	THJORSA		FOSSA	THJORSARHOLT						KROKUR						THJORSA	Date
	Trollkonuhlaup		Haifoss	Weather at 8hrs	Air temp. 22hrs	Thjorsa ice				Weather at 10 hrs	Thjorsa ice				Urridafoss MdQ kl/s		
	MdQ kl/s	% Urridaf.	MdQ kl/s			S	HG	HF	J		lh	H	J	B.w. effect of ice			
												Estimated cm	Actual cm				
1.	275	75	8.6	...	...	-	-	-	-	S1 7° þoka	.	.	.	.	.	365	1.
2.	288	86	8.6	...	...	-	-	-	-	S1 6° "	.	.	.	.	.	335	2.
3.	301	84	8.1	...	...	-	-	-	-	S2 5° "	.	.	.	.	.	359	3.
4.	281	82	7.3	...	...	-	-	-	-	S1 6° "	.	.	.	.	.	344	4.
5.	278	84	6.9	...	...	-	-	-	-	S1 5° skjáð	.	.	.	.	.	332	5.
6.	248	79	6.5	...	...	-	-	-	-	A1 1° regn	.	.	.	.	.	313	6.
7.	245	83	7.7	...	...	-	-	-	-	SA3 4° "	.	.	.	.	.	294	7.
8.	326	79	18.6	...	...	-	-	-	-	SA4 5° "	.	.	.	.	.	412	8.
9.	377	78	12.1	...	...	-	-	-	-	SV1 3° skúrr	.	.	.	.	.	481	9.
10.	332	76	10.2	...	...	-	-	-	-	A3 5° skjáð	.	.	.	.	.	437	10.
11.	295	82	9.1	...	...	-	-	-	-	SA2 4° skúrr	.	.	.	.	.	359	11.
12.	295	83	7.7	...	...	-	-	-	-	NA3 1° léttsk.	.	.	.	.	.	356	12.
13.	227	78	5.1	NA3 0° íl	-3°	2	1	1	-	NA5 -2° "	2	1	-	7	15	291	13.
14.	190	96	3.7	-5°	-5°	7	2	"	-	A5 -3° "	7	"	-	...	...	198	14.
15.	118	81	2.4	-3°	-8°	8	5	2	-	N2 -4° "	"	2	-	20	43	145	15.
16.	102	87	1.7	-10°	-13°	1	10	5	-	NA1 -12° "	5	3	-	...	...	117	16.
17.	120	92	2.6	-7°	-5°	0	"	"	-	NA2 -15° "	1	"	-	...	...	130	17.
18.	163	90	2.6	-3°	...	1	"	"	-	SA8 6° skúrr	"	"	-	19	21	182	18.
19.	190	76	4.0	2°	...	0	"	3	-	SA2 4° "	0	"	1	...	...	250	19.
20.	224	70	9.1	5°	...	-	0	0	0-6	S1 6° "	-	2	2	3	3	321	20.
21.	295	84	12.8	6°	...	-	-	-	2	SA4 7° regn	-	1	1	...	...	350	21.
22.	342	79	10.2	4°	...	-	-	-	1	SA3 6° skúrr	-	"	"	2	6	433	22.
23.	275	71	9.7	1°	-3°	2	-	-	-	SV2 1° íl	-	0	"	...	...	388	23.
24.	227	79	8.1	-4°	...	5	-	-	-	NV3 -3° "	1	-	0	...	...	288	24.
25.	218	81	7.3	-5° snjök	...	8	5	1	-	NA2 -6° léttsk.	2	1	-	1	6	268	25.
26.	202	85	6.1	-7°	...	2	10	2	-	SV4 -2° íl	"	2	-	...	...	237	26.
27.	190	89	5.4	-5°	...	"	"	3	-	NA2 -7° léttsk.	5	3	-	17	24	214	27.
28.	134	67	4.0	-3°	...	"	"	"	-	SV3 -3° íl	4	"	-	...	...	200	28.
29.	151	81	5.7	SA4 3° regn	...	0	0	"	2	SA5 1° "	3	"	1	24	34	186	29.
30.	175	81	5.1	-4	-5°	1	2	"	-	N3 -7° léttsk.	4	"	-	...	...	216	30.
MmQ	236	80	7.2													293	MmQ
HmQ	385	78	22.7													493	HmQ
(d h)	(09 21)		(08 11)													(09 18)	(d h)
LmQ	96	85	0.7													113	LmQ
(d h)	(16 19)		(16 07)													15 22	(d h)

Date	THJORSA		FOSSA	SKRIDUFELL				THJORSARHOLT										
	Trollkonuhaulp			Haifoss	Weather		Thjorsa ice		Weather		Air temp.	Thjorsa ice						
	MdQ	%	MdQ	at 8 hrs	S	HL	HS	J	at 8hrs	22hrs	S	HG	HF	J				
	kl/s	Urridaf.	kl/s															
1.	175	87	5.1	0	-7°	skýjað	5	2	2	-	0	-6°	skýjað	0°	0	2	3	-
2.	184	85	5.1	V4	-4°	él	1	"	"	-	V4	-2°	skafi.	-4°	4	3	"	-
3.	172	85	6.1	NA3	-9°	löttsk.	5	"	3	-	NA3	-6°	löttsk.	-5°	6	4	"	-
4.	193	86	8.6	NA4	-6°	skýjað	"	"	"	-	NA3	-3°	skýjað	0°	4	"	"	-
5.	199	84	7.7	0	-1°	"	1	"	"	-	0	0°	"	0°	0	"	"	-
6.	190	86	4.8	0	-7°	löttsk.	5	3	4	-	0	-6°	löttsk.	-8°	-	"	"	-
7.	181	85	4.8	NA3	-7°	"	"	"	"	-	N3	-9°	"	...	2	"	"	-
8.	179	85	4.5	A3	-3°	skýjað	1	4	"	-	A3	-3°	él	0°	"	"	"	-
9.	177	85	4.5	A3	-5°	"	5	5	"	-	A2	-3°	"	...	2-7	"	"	-
10.	175	88	4.2	0	-5°	löttsk.	5	7	"	-	0	-10°	löttsk.	-9°	2	"	"	-
11.	214	107	4.5	NA3	-6°	skýjað	0	10	5	-	NA3	-7°	skafi.	-10°	5-7	"	"	-
12.	148	93	4.0	NA4	-10°	löttsk.	-	"	3-5	-	N4	-11°	löttsk.	-12°	7	"	"	-
13.	122	68	4.0	0	-16°	"	-	"	4-6	-	0	-12°	"	-14°	6	"	"	-
14.	114	72	4.0	0	-8°	"	-	"	4-7	-	0	-7°	"	-6°	3	"	"	-
15.	114	76	4.0	NA4	-8°	"	-	"	"	-	N3	-6°	"	-7°	2	"	"	-
16.	122	65	4.5	NA3	-10°	"	-	"	"	-	N2	-8°	"	-12°	9-4	"	"	-
17.	190	91	5.4	A4	-2°	snjök.	-	"	"	-	...	0°	skýjað	3°	1	"	"	-
18.	212	59	10.2	A3	4°	skúrir	-	"	"	-	...	4°	...	4°	0	"	"	-
19.	215	66	15.9	V6	-1°	él	-	"	4-6	-	...	0°	...	...	1	"	"	-
20.	215	76	8.1	SV3	3°	súld	-	"	"	-	...	4°	...	...	0	1	1	5
21.	242	75	15.9	SA3	4°	regn	-	"	"	-	...	5°	...	...	-	0	0	3
22.	304	65	29.8	SV4	0°	él	-	"	"	1	...	4°	...	...	-	-	-	1-6
23.	248	83	9.1	V4	-9°	"	-	"	4	-	...	0°	él	-5°	3	-	-	0
24.	179	91	6.9	NA3	-11°	löttsk.	-	"	4-5	-	NA3	-10°	löttsk.	...	8	2	1	-
25.	169	88	6.1	NA4	-10°	snjök.	-	"	"	-	NA3	-8°	él	0°	5	"	"	-
26.	179	90	5.7	NA3	-8°	löttsk.	-	"	"	-	NA3	-7°	löttsk.	-9°	3	"	"	-
27.	172	95	5.4	NA3	-7°	skýjað	-	"	4-6	-	N3	-6°	skýjað	...	4	"	"	-
28.	166	91	5.4	NA4	-9°	"	-	"	"	-	NA3	-5°	"	0	3	3	"	-
29.	161	84	5.1	NA4	-2°	"	-	"	5-6	-	N7	0°	skafi.	...	4	"	3	-
30.	148	88	4.8	N6	-7°	"	-	"	"	-	...	-5°	...	...	3	"	"	-
31.	130	78	4.5	A6	-3°	"	-	"	5-7	-	...	-2°	...	-2°	"	"	"	-
MmQ	180	81	7.0															
HmQ	594*	118	63.8															
(d h)	(11 09)		(22 02)															
LmQ	112	79	2.3															
(d h)	(14 99)		(11 19)															

*Prepahlaup

KALDARHOLT						KROKUR						THJORSA	Date
Thjorsa ice						Weather at 10 hrs	Thjorsa ice					Urridafoss	
lh	Thickness of flowing sludge	H metr.	No of branches	J	Flow conditions		lh	H	J	B.w. effect of ice		MdQ kl/s	
						Estimated cm				Actual cm			
...	...	...	...	...	...	A2 -2° íl	3	3	-	...	...	202	1.
...	...	...	...	...	...	NV5 -5° "	4	"	-	30	32	216	2.
...	...	...	...	...	...	NA1 -4° "	"	4	-	...	...	202	3.
7	þykkt	2-6	1	-	meðall.	NA2 -3° "	5	"	-	33	28	225	4.
1	þunnt	"	"	-	"	SA3 1° "	"	"	-	...	...	237	5.
2	þykkt	"	"	-	"	NV1 -6° "	6	"	-	37	39	221	6.
6	"	"	"	-	"	NA1 -4° "	5	"	-	...	...	212	7.
5	"	2-7	"	-	"	NV2 -2° "	"	"	-	...	...	210	8.
"	"	"	"	-	"	A2 -3° "	4	"	-	42	41	208	9.
"	"	"	"	-	"	NA1 -8° líttek.	5	"	-	...	...	198	10.
7	"	2-8	"	-	"	NA2 -10° "	6	"	-	49	49	200	11.
6	"	"	"	-	"	NA4 -10° skaf.	"	5	-	...	...	159	12.
7	"	2-10	"	-	"	NA1 -14° líttek.	7	"	-	56	62	180	13.
6	"	"	"	-	"	NA2 -13° "	"	"	-	...	...	159	14.
"	"	"	"	-	"	NA1 -8° "	"	"	-	...	...	150	15.
9-5	"	"	"	-	"	NA2 -14° "	8	"	-	63	67	188	16.
1	þunnt	"	"	-	"	SA4 3° regn	5	4	-	...	...	208	17.
1	"	0-8	2	1	vöxtur	SA3 4° "	0	"	-	50	38	359	18.
0	"	0-7	"	"	"	NV2 3° skyggt	-	"	2	...	...	327	19.
-	"	"	"	5	"	SA3 6° regn	-	3	5	53	74	283	20.
-	"	0-4	"	2	"	S4 7° "	-	2	4	...	...	321	21.
-	"	0	"	1	"	NV3 1° íl	-	1	2	...	...	470	22.
4	þykkt	1-2	1	0	meðall.	NA4 -6° skyggt	3	2	0	17	27	299	23.
"	"	"	"	-	"	NA3 -8° líttek.	4	"	-	...	...	196	24.
5	"	1-3	"	-	"	NA4 -11° "	6	3	-	24	36	192	25.
4	"	"	"	-	"	NA6 -8° "	7	4	-	...	...	200	26.
5	"	"	"	-	"	NA4 -7° "	8	"	-	20	24	182	27.
6	"	"	"	-	"	A6 -11° íl	"	5	-	...	...	182	28.
1	þunnt	"	"	-	"	A4 -1° skyggt	7	"	-	...	...	192	29.
2	þykkt	2-4	"	-	"	A5 -6° íl	5	"	-	25	35	168	30.
3	"	"	"	-	"	NA8 -2° skyggt	6	"	-	...	...	166	31.
												223	MmQ
												504	HmQ
												(22 12)	(d h)
												142	LmQ
												(14 08)	(d h)

KALDARHOLT						KROKUR						THJORSA	Date
Thjorsa ice						Weather at 10 hrs	Thjorsa ice					Urridafoss	
lh	Thickness of flowing sludge	H metr.	No of branches	J	Flow conditions			lh	H	J	B.w. effect of ice		MdQ kl/s
						Estimated cm					Actual cm		
7	þykk	2-5	1	-	mæðall.	N2 -10° léttsk	8	5	-	8	36	168	1.
"	"	"	"	-	"	N1 -12° "	"	"	-	...	...	168	2.
1	"	"	"	-	"	SA3 2° regn	2	"	-	4	39	170	3.
7	"	"	"	-	"	NA5 -7° snjök.	1	"	-	...	...	172	4.
1	þunnt	0-5	"	-	"	A7 1° skúrir	0	"	-	...	...	182	5.
0	-	"	2	2	Vöxtur	SA2 3° "	-	4	3	3	10	202	6.
-	-	"	"	0	"	S1 1° "	-	2	1	...	...	242	7.
-	-	"	"	-	"	NV3 -1° el	-	"	0	0	0	283	8.
5	þykk	"	1	-	"	N4 -4° léttsk	3	3	-	...	...	252	9.
2	þunnt	1-5	"	-	mæðall.	N2 -3° "	"	"	-	5	8	232	10.
1	"	"	"	-	"	NV2 -3° skjjað	"	"	-	...	...	208	11.
2	þykk	1-6	"	-	"	NA5 -5° "	"	4	-	...	...	202	12.
"	"	"	"	-	"	NA4 -4° "	"	"	-	9	40	200	13.
6	"	"	"	-	"	NA4 -8° léttsk.	4	1	-	...	...	198	14.
7	"	1-7	"	-	"	NA1 -12° "	6	"	-	8	15	196	15.
8-9	"	"	"	-	"	NA6 -5° skjjað	"	"	-	...	...	194	16.
8	"	"	"	-	"	N1 -10° léttsk	7	5	-	10	23	192	17.
7	"	"	"	-	"	N1 -11° "	8	"	-	...	...	192	18.
8	"	"	"	-	"	A5 -6° snjök.	"	"	-	...	...	204	19.
3	þunnt	"	"	-	"	A2 -2° el	7	"	-	10	21	216	20.
1	"	"	"	-	"	A8 2° skúrir	1	"	-	...	...	237	21.
"	"	"	"	-	"	NA1 1° skjjað	"	4	-	10	6	263	22.
0	-	"	"	-	"	SA4 5° skúrir	0	"	1	...	...	223	23.
1	þunnt	"	"	-	"	SA3 4° "	-	"	"	7	25	210	24.
0	-	"	"	-	"	SA4 5° "	-	"	0	...	...	210	25.
-	-	"	"	-	"	SA4 4° "	-	"	-	...	...	258	26.
-	-	"	"	-	"	0 5° súld	-	"	-	6	22	237	27.
-	-	"	"	-	"	N1 3° skjjað	-	"	-	...	...	227	28.
6	þykk	"	"	-	"	N1 -5° léttsk.	1	"	-	5	25	196	29.
1	þunnt	"	"	-	"	N1 -4° "	"	"	-	...	...	206	30.
"	"	"	"	-	"	N1 -3° "	"	"	-	3	17	210	31.
												211	MdQ
												288	HmQ
												(08 10)	(d h)
												168	LmQ
												(01 00)	(d h)

KALDARHOLT						KROKUR						THJORSA	Date	
Thjorsa ice						Weather at 10 hrs	Thjorsa ice					Urridafoss		
lh	Thickness of flowing sludge	H metr.	No of branches	J	Flow conditions		lh	H	J	B.w. effect of ice		MdQ kl/s		
						Estimated cm				Actual cm				
1	þunnt	1-7	1	-	meðall.	SA2	3° súld	0	4	-	...	...	214	1.
0	-	"	"	-	"	SA4	4° regn	-	"	-	...	...	247	2.
-	-	"	2	-	vöxtur	S1	7° súld	-	3	1	7	13	359	3.
-	-	"	4	-	"	S1	7° skúrir	-	2	"	...	...	359	4.
-	-	0-5	"	5	"	SA2	2° "	-	1	3	3	2	596	5.
-	-	0	"	2-7	flöð	SA3	7° "	-	0	2	...	...	713	6.
-	-	-	"	3	"	S2	6° "	-	-	1	...	...	723	7.
-	-	-	"	1	vöxtur	SV7	2° "	-	-	0	-	-	601	8.
3	þunnt	-	1	0	"	SV4	5° "	-	-	-	...	...	416	9.
0	-	-	"	-	meðall.	SV3	4° "	-	-	-	-	-	294	10.
-	-	-	"	-	"	SV4	4° regn	-	-	-	...	...	395	11.
5	þykkt	1-3	2	-	vöxtur	NV9	-7° el	1	1	-	8	3	455	12.
"	"	1-20	1	-	þurrð	N1	-8° léttsk.	"	"	-	...	...	170	13.
0-6	þunnt	1-10	"	-	meðall.	SA3	2° skúrir	2	"	-	8	10	227	14.
1	"	1-7	"	-	"	SA1	5° súld	0	"	-	...	...	324	15.
0	-	0	2	3	vöxtur	SAG	4° regn	-	0	1	...	...	385	16.
-	-	-	"	1	"	SV3	6° skúrir	-	-	1	-	-	416	17.
-	-	-	"	0	"	SA4	7° "	-	-	0	...	...	455	18.
-	-	-	"	-	"	S3	7° "	-	-	-	-	-	481	19.
-	-	-	"	-	"	V1	3° léttsk.	-	-	-	...	...	463	20.
-	-	-	"	-	"	N1	5 skjáð	-	-	-	-	-	385	21.
1	þunnt	-	1	-	meðall.	N1	-2° léttsk.	-	-	-	...	...	304	22.
0-3	"	-	"	-	"	NA3	-5° "	2	-	-	...	...	273	23.
0	-	-	"	-	"	NV1	4° skjáð	-	-	-	-	-	252	24.
-	-	-	"	-	"	V2	5° "	-	-	-	...	...	237	25.
-	-	-	"	-	"	N1	3° léttsk.	-	-	-	-	-	225	26.
-	-	-	"	-	"	N3	-7° "	-	-	-	...	...	221	27.
6	þykkt	1-2	"	-	"	N2	-3° "	2	1	-	-	-	196	28.
												371	MdQ	
												780	HmQ	
												(07 03)	(d h)	
												122	LmQ	
												(13 20)	(d h)	

KALDARHOLT						KROKUR						THJORSA			
Thjorsa ice						Weather at 10 hrs	Thjorsa ice					Urridafoss			
lh	Thickness of flowing sludge	H metr.	No of branches	J	Flow conditions		lh	H	J	B.w. effect of ice		MdQ kl/s	Date		
						Estimated cm				Actual cm					
2-4	þykk	1-3	1	-	médall.	NA2	-4°	léttsk.	4	1	-	...	...	202	1.
1-3	"	1-4	"	-	"	NA9	-8°	él	6	3	-	...	...	204	2.
2-6	"	1-15	"	-	þurrð	NA8	-12°	"	"	"	-	12	30	131	3.
1-5	"	1-20	"	-	"	NA1	-10°	léttsk.	7	4	-	...	...	100	4.
1-9	Breytil.	"	"	-	médall.	S2	2°	skjjað	1-8	"	-	15	5	178	5.
0-1	þunnt	1-10	"	-	"	NA5	-2°	él	0	3	1	...	...	210	6.
5-7	þykk	1-7	"	-	"	NA3	-12°	léttsk.	7	4	0	8	9	159	7.
1-4	"	"	"	-	"	NA3	1°	él	3	"	-	...	...	148	8.
0	"	0-7	"	1	"	SA1	5°	skúrir	0	3	2	...	...	214	9.
-	"	0-5	"	"	vöxtur	SA2	4°	regn	-	"	"	5	3	229	10.
-	"	0	2	0	"	NA1	3°	skúrir	-	0	1	...	...	294	11.
0-4	þunnt	1	1	-	"	NA3	-2°	léttsk.	2	1	0	3	3	315	12.
0-3	"	1-2	"	-	médall.	NA2	-2°	"	"	2	-	...	...	265	13.
"	"	"	"	-	-	NA2	-1°	"	"	"	-	4	7	227	14.
"	"	0-2	"	-	-	A4	1°	"	3	1	-	...	...	221	15.
0-1	þykk	1-2	"	-	-	NA6	4°	"	4	"	-	...	...	202	16.
3-7	"	"	"	-	-	NA8	-3°	"	6	4	-	12	10	154	17.
5	"	1-3	"	-	-	NA4	-5°	"	7	5	-	...	...	141	18.
7-1	"	1-4	"	-	-	NA2	-7°	"	6	"	-	12	10	143	19.
3-1	þunnt	"	"	1	-	NA1	-1°	"	4	3	-	...	...	196	20.
3-03	"	"	"	0	-	NA4	-4°	"	5	4	-	10	2	194	21.
6-8	þykk	1-20	"	-	þurrð	NA3	-8°	"	7	5	-	...	...	131 ¹⁾	22.
"	"	2-20	"	-	"	A6	-10°	skjjað	8	9	-	15	5	125	23.
7-10	"	Allögð	Mikill fjöldi	-	"	NA6	-12°	léttsk.	0	10	-	65	45	128 ²⁾	24.
0	"	"	"	-	...	NA4	-10°	"	-	"	-	...	...	133	25.
-	"	"	"	-	...	NA1	-2°	"	-	9-10	-	85	58	163	26.
-	"	Auðar rennur	"	-	...	A4	-2°	skjjað	-	7-10	-	...	...	168	27.
-	"	"	"	-	...	A1	3°	léttsk.	2	"	-	80	54	159	28.
-	"	"	"	-	...	S1	3°	"	0	6-10	2	...	...	186	29.
-	"	"	"	1-2	...	SA6	6°	halfsk.	-	3-7	3	...	...	210	30.
-	"	"	"	1-3	vöxtur	SA3	10°	léttsk.	-	1-2	1-6	6	6	260	31.
												187	MdQ		
												347	HmQ		
												(31 14)	(d h)		
												87	LmQ		
												(03 19)	(d h)		
												1) LdQ (22 18) 96 kl/s			
												2) LdQ (24 17) 113 "			

NOTES ON URRIDAFOSS ICE JAM

(by the observer at Urriðafoss)

1964

November

14. - 15. Large amounts of floating sludge.
16. Ice bridges have formed at two locations
17. Thjórsá River freezes over in the braided area near the shore.
18. The ice cover has reached to below Urriðafoss Falls.
20. The jams starts collapsing (over the middle of the channel).
22. The jam has collapsed (i.e. an open channel has been formed through it).
24. An open channel is formed in the braided area near the shore.
27. - 30. Appreciable amounts of floating sludge.

December

1. The two ice bridges are there.
3. Large amounts of floating sludge. The river is open down to the shore.
4. A jam has reached the middle of Urriðafoss Falls.
5. An open channel is formed through the jam until below the transmission line crossing.
7. The river is flowing in an open channel; no obstructions until below the transmission line crossing.
8. The channel is gradually being filled.
10. The jam has reached the top of Urriðafoss Falls.
12. Top of jam has reached elevation 23.
13. Top of jam at el. 24.5. A channel was formed through it in the afternoon until below Egilsstadir.
14. The channel fills again.
15. Top of jam at el. 20.
16. A new channel is formed down to the braided area, but not as far as the previous one.
17. Top of jam at el. 19.
19. The jam is collapsing; a channel has formed until below the Falls. Unabstructed flow.
21. The channel fills very slowly. Floating ice floes.
23. Obstructed flow up to middle of Urriðafoss Falls.
25. The new jam (i.e. in the channel) rises slowly.

27. Top of jam at el. 17.
29. Top of jam at el. 19.
31. Top of jam at el. 20.

1965

January

2. Top of jam at el. 23
3. Top of jam at el. 25.5. The stage falls in the afternoon.
4. The river finds its way beneath the jam.
5. Unobstructed flow (beneath the jam) until below the Falls.
6. - 11. No change.
12. Jam rising.
13. Jam rising rapidly.
14. Top of jam at el. 25.5.
16. Top of jam at el 26.
18. Top of jam at el 27.
20. The river flows beneath the jam. Unobstructed flow until below the Falls.
24. An open channel has formed until below Egilsstadir.
30. Numerous holes in the ice cover in the braided area.
31. The open channel has not reached the mouth.

February

1. Open channels in the braided area.
3. The open areas increase more and more.
9. An open channel has reached down to the mouth.
13. An ice jam rising rapidly.
14. Top of jam at el. 20.
15. The water finds its way under the jam.
17. The jam is collapsing. Unobstructed flow until below the Falls.
18. An open channel reaches below the transmission line crossing.
20. A channel is forming down to mouth.
28. Appreciable amounts of floating sludge.

March

1. Appreciable floating sludge.
2. Much floating sludge.
3. The two ice bridges have formed.
4. A low jam cover the river completely up to the Falls. Complete cover down to mouth.

5. The jam starts collapsing. An open channel down to the power line crossing.
6. The open channel gets gradually longer.
7. A low jam covers to river again up to the Falls.
8. The jam starts collapsing.
9. The open channel has not get reached Egilsstadir. River covered from there to month.
10. The open shannel reaches Egilsstadir.
11. Numerous openings formed through the cover in the braided area still more openings formed;
12. but the open channel does not reach the month.
14. An ice cover on the river up to the lower one of the two ice bridges, which is intact.
16. Heavy storm and thaw. The ice cover breaks up down to the braided area.
17. - 19. The river freezes over up to the Falls at night but the ice breaks up during the daytime (until below Egilsstadir).
21. Top of the new jam at el. 17.
23. Top of the new jam at el. 21.
24. Top of the new jam at el. 23. The jam has closed to rise.
25. - 27. The river flows beneath the jam only little obstructed.
29. The jam has started to collapse.
31. An open channel has formed through the jam until below the power line crossing. Three holes have been formed through the jam above Egilsstadir. At and below Egilsstadir the jam is unaltered.

Additional remarks

In addition to the regular observations at Urriðafoss, some other observations of the Thjórsá in the reach between Urriðafoss and mouth were, upon request by the SEAHS, made from time to time on special occasions by two farmers living near the river. Here are two of their findings:

- 1) The farmer at Egilsstadir, Mr. Sigthór Einarsson, reported that, off the farm, the new ice jam kept on rising till March 21 when it had reached 2/3 of the thickness of the older one.
- 2) During a frost perioed March 23 to 27 the farmer at Fljótshólar made daily trips along the river from Grjótnes to mouth. He reports that on March 23 rd, the jam covered the river

entirely down to Grjótnes, where open water begins. The water emerging from beneath the jam was clear and free from sludge ice a trace of ice needles could, however, be seen in the water.

From Grjótnes down to Ferjuhamar there was an open channel. At Ferjunes a cover had formed at the beginning at the cold spell, but the ice had been broken up again and had formed obstructions and the water had risen by about a metre. At Selpartur, traces of sludge ice could be discerned.

A flat ice cover was on the river at the Skúmseyrar sand bars, but no appreciable rise in stage or obstructions to the flow could be seen. These conditions remained unaltered for the next days.

VARIOUS NOTES
BY THE OBSERVERS AT
SKRIÐUFELL, THJÓRSÁRHOLT, KALDÁRHOLT OG KRÓKUR

1964

November

20 At Thjórsárholt: The river breaks up all ice in the Gorge and all border ice. Appreciable amounts of ice floes are carried from upstream.

29 At Thjórsárholt: The ice in the Gorge collapsed; border ice remaining.

December

10 At Skriðufell: Fossá River under a cover at the ford to Burfell as well as upstream and downstream from there.

11 At Skriðufell: No floating sludge in the Thjórsá below Lambshagi since the cover there is about to extend across the river.

12 At Skriðufell: Burfell Ice Jam has started to form. The ice cover is about to reach Hvassatangi.

15 At Skriðufell: Border ice estimated at 4 below Sandá River and 7 at the gauging section and from there to the Burfell Jam (see explanations for the meaning of these numbers).

16 At Thjórsárholt: 0900 hrs. River carrying a dense mixture of sludge ice and water. Lifting of all the border ice, accompanied by a roaring sound as the ice breaks. No horizontal movement of the border ice. Much water flooding the ice at the banks.

16 At Skriðufell: No change in the border ice here.

20 - 21 At Skriðufell: Sandá River impassable.

22 At Skriðufell: The border ice is quite stable.

- 22 At Thjórsárholt: The flow has increased a little. Some floating ice floes about noon.
- 22 At Kaldárholt: The stage is similar as the one frequently prevailing about mid-May.
- 28 At Thjórsárholt: No border ice was formed. No frost in the afternoon. Snowstorm with strong wind from E. in the evening.
- 29 At Thjórsárholt: Border ice was formed at the right bank.

1965

January

- 1 At Thjórsárholt: Border ice was formed at the left bank.
- 6 At Skriðufell: Sandá River impassable.
- 7 At Skriðufell: Burfell Ice Jam has probably reached a height of 10 m at Hvassatangi. It has been increasing since Dec. 11.
- 8 At Thjórsárholt: A minor increase in flow. No movement of the border ice.
- 10 At Thjórsárholt: A cover was formed across the river from Vaðeyri up to Árbæjartangi.
- 22 At Thjórsárholt: 10 - 11 hrs. Floating ice, estimated at 2.
- 27 At Thjórsárholt: 10 - 11.30 hrs. Floating ice, estimated at 2.

February

- 3 At Thjórsárholt: The flow has increased. Most of the border ice at the left bank has broken up, as well as the ice cover between Árbæjartangi and Vaðeyri. An inlet is broken into the right bank border ice.
- 4 At Skriðufell: Sandá River impassable.

- 4 At Thjórsárholt: The flow is still high. All the border ice at the left bank and a part of that at the right bank breaks away.
- 5 At Thjórsárholt: The flow increases. All border ice breaks up, except around the Sauðasker Isle.
- 6 At Thjórsárholt: The flow is still high. The amount of floating ice floes was small, except for one hour.
- 7 At Thjórsárholt: The river is ice-free. The flow decreases slightly.
- 7 At Kaldárholt: The ice breaks away from the branch near the right bank.
- 9 - 10 At Thjórsárholt: The flow is still decreasing.
- 11 At Thjórsárholt: High flow again.
- 12 At Thjórsárholt: The flow is decreasing. Large amounts of floating sludge in the afternoon; still larger amounts of the left bank owing to the NW-9 wind.
- 13 At Thjórsárholt: An ice dam is formed off Thrándarholt. Búða Ice Jam starts to pile up.
- 14 At Thjórsárholt: A floe got loose from the border ice at Vaðeyri and drifted away until it got stuck on Árbæjarsker Isle, extending across the river and forming an ice bridge. The river has cut a channel through the dam at Thrándarholt.
- 16 At Kaldárholt: The ice broke off the channel near the right bank.
- March
- 3 At Thjórsárholt: Búða Ice Jam starts piling up.
- 3 At Kaldárholt: The river ran dry in the afternoon.

- 4 At Kaldárholt: The flow was very low until noon.
- 5 At Thjórsárholt: A channel is cut through the ice below Búða Falls.
- 5 At Kaldárholt: Some floating sludge between 9 and 9,30 hrs. ;
otherwise very small.
- 5 At Krókur: Amount of floating sludge in the morning estimated
at 1, but at 8 now on then from 9,30 to 15,00 hrs.
- 6 At Skriðufell: Sludge ice has accumulated in the open channel
along Lambhagi, up to Hvassitangi. Water is held
up by the ice in Fossárlæmi; especially its lower
part.
- 11 At Skriðufell: The ice is breaking up on the river at Lambhagi.
- 13 - 16 At Kaldárholt: Floating sludge in the morning only.
- 17 At Krókur: Botton ice estimated at 2.
- 18 At Skriðufell: A cover is formed on the river at Gaukshöfði and
upward from there.
- 18 At Krókur: Some botton ice.
- 19 At Skriðufell: No sludge appeared from beneath the ice cover at
Gaukshöfði.
- 19 At Kaldárholt: Sludge ice coverage 7 in the morning, but only a
trace in the evening.
- 19 At Krókur: Botton ice estimated at 3.
- 20 At Kaldárholt: Ice floes seen in the floating sludge.
- 20 At Krókur: Botton ice estimated at 2.
- 21 At Kaldárholt: No floating sludge during the middle of the day.

- 21 At Krókur : Botton ice estimated at 2.
- 22 At Kaldárholt : Water level 70 - 80 cm below normal stage.
- 22 At Krókur : Botton ice estimated at 3.
- 23 At Thjórsárholt : An ice cover formed across the river in the Gorge; but no piling-up.
- 23 At Thjórsárhólt : An ice cover formed across the river below Búði Falls
- 23 At Kaldárholt : A open channel upwards to below Búði Falls.
- 23 At Krókur : Botton ice estimated at 6.
- 24 At Kaldárholt : Complete stoppage of the flow in the morning. An ice cover has formed across the river along Skeið. Water was held up by ice in the main channel and the flow has come to an end by 11.00 hr.s The sludge ice freezes into a cover over the main channel. Here farther upstream the water level is rising.
- At 14.00 hrs. the frozen sludge was sat in motion. It moved some 800 m and piled up there. Simultaneously, water started to flow from beneath the ice into the sand bars. This flow reached a maximum at about 16.00 hrs. whereafter it receded.
- 24 At Krókur : The river is completely frozen over up along Skeið!
- 25 At Kaldárholt : Numerous small branches, mostly covered.
- 26 At Krókur : Holes forming in the ice cover. No floating sludge in the holes.
- 27 At Kaldárholt : Open channels are forming.

- 28 At Skriðufell: During the (just elapsed) frost period, no floating sludge remerged from beneath the ice cover at Gaukshöfði.
- In the reach from Gaukshöfði to the flow gauging section the rise in stage was 1,5 m, between 1,5 and 2 m at the section and still more farther upstream.
- 28 At Krókur: Floating sludge in the holes in the ice cover.
- 30 At Kaldárholt: The ice breaks up from the main channel. To the north from the farmhouse there is an ice bridge and dam that diverts the water to the right, onto the sand bars.
- 31 At Skriðufell: An open channel is forming up along Lambshagi. Floating sludge emerges from beneath the cover. Holes have formed in the ice cover at many places. The ice has a loose consistency; similar to a snow-water mixture. At the holes this weak ice is turn away, carried by the current and turned into a loose sludge ice. Along Hvassitangi overhanging blocks of the ice pile fall into the water from the remaining walls on each side and the channel widens. The new pile still remains intact at a few places.
- 31 At Thjórsholt: The river is completely uncovered.
- 31 At Kaldárholt: The ice is breaking up. The ice dam still diverts the flow to the right, onto the sand bars. Some distance downstream the water has eroded a gully into the sand and flows to the east towards the main channel at right angles to it. Large amounts of sand are being moved by the water.

APPENDIX

Glossary of Icelandic terms appearing in the tables of daily observations, and their English equivalent:

Icelandic term	English equivalent
Allögð	completely covered
Auðar rennur	open channels
Breytil, = breytilegur	varying
Él	snow - shower
Flóð	flood
Hálfsk, = hálfskýjað	half-overcast
Léttsk, = léttskýjað	fair
Meðall, = meðallag	normal
Mikill fjöldi	numerous
Regn	rain
Skafr, = skafrenningur	drifting snow
Skúrir	(rain) showers
Skýjað	cloudy
Snjók, = snjókoma	snowing
Súld	drizzle
Vöxtur	high flow
Þoka	fog
Þrepahlaup	step-burst
Þunnt	loose
Þurrð	the river is running dry
Þykkt	dense