

Cruise report
Sand eel survey 2017

M/V Salling
and
M/S Reykjanes

North Sea/Skagerrak – Sand eel area 1r, 2r & 3r
Including the extended area

Cruise: 1/2017

Vessel: M/S Salling

Area: Nordsøen, sand eel area 1r & 3r

Departure: Esbjerg **Date:** 22.11.2017

Arrival: Esbjerg **Date:** ca. 12.12.2017

Vessel: M/S Reykjanes

Area: Nordsøen, sand eel area 1r & 2r

Departure: Esbjerg **Date:** 21.11.2017

Arrival: Esbjerg **Date:** 5.12.2017

Project number: 39064 - 17

Participants (scientific)

Salling:

Cruise leader: Dirk Cornelis Tijssen Danmarks Tekniske Universitet, Institut for Akvatiske
Ressourcer (DTU Aqua) 22/11 – 12/12 2017

Consultant: Thorvald Boersmose FOGA Aps, Esbjerg
22/11 – 12/12 2017

Cruise responsible: Henrik Degel Danmarks Tekniske Universitet, Institut for Akvatiske
Ressourcer (DTU Aqua) 22/11 – 30/11 2017

Reykjanes:

Cruise leader: Farivar Azour Danmarks Tekniske Universitet, Institut for Akvatiske
Ressourcer (DTU Aqua) 21/11 – 5/12 2017

Assistant Flemming Thaarup Danmarks Tekniske Universitet, Institut for
Akvatiske Ressourcer (DTU Aqua) 21/11 – 24/11 2017

Objectives

The purpose of the sand eel dredge survey is to collect sand eels buried in the seabed and compare catches (number and age composition) with the previous year's collections to assess the 2017 year class strength of sand eel in area 1r, 2r and 3r of the different areas adopted by ICES in 2016 (figure 1). Data from the dredge survey is the basis for calculating an index, which is used in the stock assessment for sand eel in the North Sea.

Achievements

Types of data collected

- Dredge (sand eels; species, weight, length)
- Van Veen grab (sediment samples; grain size composition)

Salling:

- 21 days at sea (planned: 24)
- 300 stations; 13 sediment grab samples and 287 dredge hauls distributed over 58 sample positions.

Reykjanes:

- xx days at sea (planned: xx)
- 123 stations; 123 dredge hauls distributed over 41 sample positions.

Sampling method and strategy

Due to the extension of the survey area compared to 2016, two vessels participated in the survey: Salling and Reykjanes. Reykjanes worked on sand eel area 3r and the northern part of eel area 2r (i.e. the North Sea and the major part of Skagerrak). Salling carried out the remaining stations (i.e. the central and southern part of the North Sea).

Number of samples per position

- At all positions, where samples are taken, three stations are carried out in a "star" formation using the dredge. Furthermore, one sediment sample is taken using Van Veen sampler (0.2m²).

Time of the day for sampling

Sampling using the dredge is carried out during night time (i.e. 15 min after sunset to 15 min before sunrise). There is no time restriction on sediment samples.

Working up of samples on board

For more detailed description of the working-up procedure, see the cruise program.

Catch from dredge

The catch of the sand eel species is sorted (Lesser sand eel (*Ammodytes marinus* and *Ammodytes tobianus*) are pooled). The weight and the length distribution of the lesser sand eel are recorded. Sub-samples are frozen for split into the two species and age reading later in the laboratory. Each drag is worked up separately.

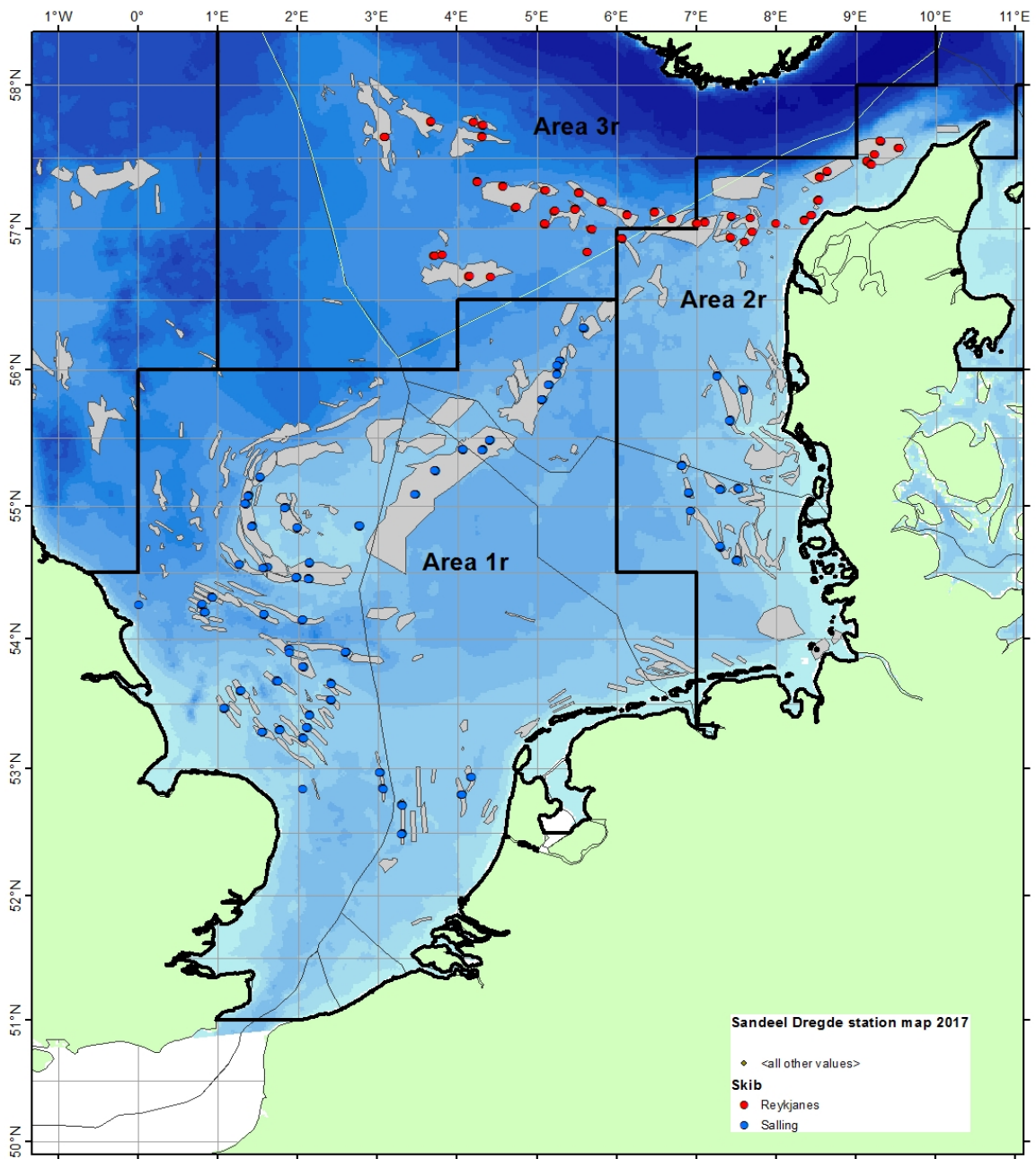
Sediment samples (Van Veen grab)

The content of the sediment samples are later on analyzed for grain size distribution in the lab.

Results

In total where 310 stations fished using the dredges distributed on 99 positions. Furthermore, 13 sediment samples were obtained.

Row Labels	Reykjanes		Salling		Grand Total
	1r	3r	1r	2r	
Sediment samples			13		13
Sand eel dredge	54	69	132	42	297
Grand Total	54	69	145	42	310



Figur 1. Realized stations in sand eel area 1r, 2r and 3r for the November/December cruise 2017 (Salling og Reykjanes).

Tabel 1. List of realized dredge stations during the sand eel survey in area 1r, 2r and 3r in November/December 2017.

dato	Skib	Red-skab	Station	Tobis area	EEZ/ location	Sta-tion	Tid start	Tid slut	Lat. start	Lon. start	vand dybde
24-11-2017	Salling	DK2	4165.16	1r	Tail End	1	18:17	18:27	56.17.909	005.35.704	36
24-11-2017	Salling	DK2	4165.16	1r	Tail End	1	18:39	18:49	56.17.611	005.35.358	36
24-11-2017	Salling	DK2	4165.16	1r	Tail End	1	18:56	19:06	56.18.011	005.34.866	36
24-11-2017	Salling	DK2	4165.02	1r	Tail End	2	22:48	22:58	56.03.933	005.17.293	39
24-11-2017	Salling	DK2	4165.02	1r	Tail End	2	23:10	23:20	56.03.631	005.17.533	39
24-11-2017	Salling	DK2	4165.02	1r	Tail End	2	23:36	23:46	56.03.703	005.17.152	39
25-11-2017	Salling	DK2	4165.01	1r	Tail End	3	00:20	00:30	56.01.958	005.15.766	38
25-11-2017	Salling	DK2	4165.01	1r	Tail End	3	00:43	00:53	56.01.585	005.15.930	38
25-11-2017	Salling	DK2	4165.01	1r	Tail End	3	01:07	01:17	56.01.615	005.15.179	37
25-11-2017	Salling	DK2	4065.03	1r	Tail End	4	02:01	02:11	55.58.100	005.15.174	40
25-11-2017	Salling	DK2	4065.03	1r	Tail End	4	02:24	02:34	55.57.802	005.15.011	40
25-11-2017	Salling	DK2	4065.03	1r	Tail End	4	02:44	02:54	55.58.006	005.14.664	40
25-11-2017	Salling	DK2	4065.02	1r	Tail End	5	03:44	03:54	55.53.601	005.09.110	34
25-11-2017	Salling	DK2	4065.02	1r	Tail End	5	04:05	04:15	55.53.297	005.09.060	34
25-11-2017	Salling	DK2	4065.02	1r	Tail End	5	04:27	04:37	55.53.455	005.08.635	32
25-11-2017	Salling	Dk2	4065.01	1r	Tail End	6	16:13	16:23	55.46.823	005.04.402	33
25-11-2017	Salling	Dk2	4065.01	1r	Tail End	6	16:37	16:47	55.46.729	005.03.503	32
25-11-2017	Salling	Dk2	4065.01	1r	Tail End	6	16:59	17:09	55.47.097	005.03.801	32
25-11-2017	Salling	DK2	3964.03	1r	Elbow Spit	7	20:59	20:09	55.29.100	004.25.028	28
25-11-2017	Salling	DK2	3964.03	1r	Elbow Spit	7	21:19	21:29	55.28.822	004.24.627	28
25-11-2017	Salling	DK2	3964.03	1r	Elbow Spit	7	21:41	21:51	55.29.213	004.24.415	28
25-11-2017	Salling	DK2	3964.02	1r	Elbow Spit	8	22:43	22:53	55.25.135	004.19.367	33
25-11-2017	Salling	DK2	3964.02	1r	Elbow Spit	8	23:03	23:13	55.24.770	004.19.279	33
25-11-2017	Salling	DK2	3964.02	1r	Elbow Spit	8	23:24	23:34	55.24.957	004.18.823	32
16-11-2017	Salling	DK2	3964.01	1r	Elbow Spit	9	21:45	21:55	55.25.251	004.03.458	27
16-11-2017	Salling	DK2	3964.01	1r	Elbow Spit	9	22:07	22:17	55.24.901	004.04.093	27
16-11-2017	Salling	DK2	3964.01	1r	Elbow Spit	9	22:27	22:37	55.25.345	004.04.321	27
27-11-2017	Salling	DK2	3963.04	1r	Elbow Spit	10	00:27	00:37	55.15.909	003.43.898	30
27-11-2017	Salling	DK2	3963.04	1r	Elbow Spit	10	00:45	00:55	55.15.597	003.43.515	33
27-11-2017	Salling	DK2	3963.04	1r	Elbow Spit	10	01:07	00:17	55.15.967	003.43.318	30
27-11-2017	Salling	DK2	3963.01	1r	Elbow Spit	11	03:02	03:12	55.05.408	003.28.951	30
27-11-2017	Salling	DK2	3963.01	1r	Elbow Spit	11	03:22	03:32	55.05.408	003.28.951	30
27-11-2017	Salling	DK2	3963.01	1r	Elbow Spit	11	03:42	03:52	55.05.279	003.28.273	29
28-11-2017	Salling	DK2	3861.17	1r	Dogger	12	16:11	16:21	54.50.091	001.59.766	20
28-11-2017	Salling	DK2	3861.17	1r	Dogger	12	16:29	16:39	54.50.496	001.59.413	18
28-11-2017	Salling	DK2	3861.17	1r	Dogger	12	16:53	17:03	54.50.478	001.59.953	19
28-11-2017	Salling	DK2	3861.32	1r	Dogger	13	18:37	18:47	54.59.438	001.50.487	24
28-11-2017	Salling	DK2	3861.32	1r	Dogger	13	19:01	19:11	54.59.363	001.50.961	25
28-11-2017	Salling	DK2	3861.32	1r	Dogger	13	19:26	19:36	54.59.255	001.50.482	25
28-11-2017	Salling	DK2	3961.42	1r	Dogger	14	21:54	22:04	55.12.427	001.32.088	34
28-11-2017	Salling	DK2	3961.42	1r	Dogger	14	22:14	22:24	55.12.690	001.31.592	34
28-11-2017	Salling	DK2	3961.42	1r	Dogger	14	22:35	22:45	55.12.794	001.32.088	35
29-11-2017	Salling	DK2	3961.28	1r	Dogger	15	23:50	00:00	55.04.657	001.23.192	35
29-11-2017	Salling	DK2	3961.28	1r	Dogger	15	00:11	00:21	55.04.225	001.23.136	32
29-11-2017	Salling	DK2	3961.28	1r	Dogger	15	00:46	00:56	55.04.447	001.22.533	32

29-11-2017	Salling	DK2	3961.29	1r	Dogger	16	01:37	01:47	55.01.271	001.21.308	28
29-11-2017	Salling	DK2	3961.29	1r	Dogger	16	01:58	02:08	55.00.740	001.21.287	28
29-11-2017	Salling	DK2	3961.29	1r	Dogger	16	02:16	02:26	55.01.057	001.20.727	28
29-11-2017	Salling	DK2	3861.14	1r	Dogger	17	03:39	03:49	54.51.238	001.25.903	22
29-11-2017	Salling	DK2	3861.14	1r	Dogger	17	04:02	04:12	54.50.903	001.26.284	20
29-11-2017	Salling	DK2	3861.14	1r	Dogger	17	04:23	04:33	54.50.877	001.25.716	21
29-11-2017	Salling	DK2	3861.36	1r	Dogger	18	16:12	16:22	54.34.463	002.08.763	15
29-11-2017	Salling	DK2	3861.36	1r	Dogger	18	17:09	17:19	54.34.880	002.08.980	16
29-11-2017	Salling	DK2	3861.36	1r	Dogger	18	17:32	17:40	54.34.667	002.09.001	14
29-11-2017	Salling	DK2	3762.01	1r	Dogger	19	18:36	18:46	54.27.573	002.08.435	12
29-11-2017	Salling	DK2	3762.01	1r	Dogger	19	18:57	19:07	54.27.296	002.08.593	12
29-11-2017	Salling	DK2	3762.01	1r	Dogger	19	19:17	19:27	54.27.393	002.08.067	13
29-11-2017	Salling	DK2	3761.04	1r	Dogger	20	20:11	20:21	54.28.006	001.59.463	15
29-11-2017	Salling	DK2	3761.04	1r	Dogger	20	20:31	20:41	54.27.885	001.58.748	15
29-11-2017	Salling	DK2	3761.04	1r	Dogger	20	20:51	21:01	54.28.256	001.58.781	15
29-11-2017	Salling	DK2	3861.23	1r	Dogger	21	22:50	23:00	54,32.619	001.37.737	16
29-11-2017	Salling	DK2	3861.23	1r	Dogger	21	23:09	23:19	54.32.613	001.37.071	26
29-11-2017	Salling	DK2	3861.23	1r	Dogger	21	23:30	23:40	54.32.887	001.37.396	17
30-11-2017	Salling	DK2	3861.22	1r	Dogger	22	00:19	00:29	54.32.356	001.34.713	24
30-11-2017	Salling	DK2	3861.22	1r	Dogger	22	00:38	00:48	54.32.077	001.34.336	24
30-11-2017	Salling	DK2	3861.22	1r	Dogger	22	00:57	01:07	54.32.352	001.34.077	22
30-11-2017	Salling	DK2	3861.19	1r	Dogger	23	03:05	03:15	54.33.834	001.16.057	22
30-11-2017	Salling	DK2	3861.19	1r	Dogger	23	03:28	03:38	54.33.901	001.15.862	22
30-11-2017	Salling	DK2	3861.19	1r	Dogger	23	03:50	04:00	54.33.898	001.16.022	22
01-12-2017	Salling	DK2	3760.03	1r	Dogger	24	16:28	16:38	54.12.316	000.49.909	45-39
01-12-2017	Salling	DK2	3760.03	1r	Dogger	24	16:48	16:58	54.12.429	000.50.414	50-39
01-12-2017	Salling	DK2	3760.03	1r	Dogger	24	17:10	17:20	54.12.179	000.50.552	43-39
01-12-2017	Salling	DK2	3760.04	1r	Dogger	25	18:12	18:22	54.15.446	000.48171	48-56
01-12-2017	Salling	DK2	3760.04	1r	Dogger	25	18:34	18:44	54.15.783	000.47.516	46-54
01-12-2017	Salling	DK2	3760.04	1r	Dogger	25	18:54	19:04	54.15.868	000.48.136	47-55
01-12-2017	Salling	DK2	3760.05	1r	Dogger	26	20:16	20:26	54.19.182	000.55.365	49-41
01-12-2017	Salling	DK2	3760.05	1r	Dogger	26	20:27	20:37	54.19.040	000.56.010	52-33
01-12-2017	Salling	DK2	3760.05	1r	Dogger	26	20:48	20:58	54.18.795	000.55.470	34.56
02-12-2017	Salling	DK2	3761.08	1r	Dogger	27	00:05	00:15	54.11.379	001.34.971	26
02-12-2017	Salling	DK2	3761.08	1r	Dogger	27	00:24	00:34	54.11.198	001.34.520	25
02-12-2017	Salling	DK2	3761.08	1r	Dogger	27	00:43	00:53	54.11.494	001.34.545	26
02-12-2017	Salling	DK2	3762.02	1r	Dogger	28	03:21	03:31	54.09.028	002.03.956	25
02-12-2017	Salling	DK2	3762.02	1r	Dogger	28	03:40	03:50	54.08.701	002.03.527	23
02-12-2017	Salling	DK2	3762.02	1r	Dogger	28	03:59	04:09	54.09.103	002.03.557	25
02-12-2017	Salling	DK2	3662.02	1r	Syd for Dogger	29	16:12	16:22	54.50.904	002.46.643	33
02-12-2017	Salling	DK2	3662.02	1r	Syd for Dogger	29	16:31	16:41	54.51.221	002.46.138	32
02-12-2017	Salling	DK2	3662.02	1r	Syd for Dogger	29	16:53	17:03	54.51.361	002.46.757	32
02-12-2017	Salling	DK2	3662.01	1r	Syd for Dogger	30	17:57	18:07	53.54.048	002.36.772	28
02-12-2017	Salling	DK2	3662.01	1r	Syd for Dogger	30	18:17	18:27	53.53.944	002.36.139	27
02-12-2017	Salling	DK2	3662.01	1r	Syd for Dogger	30	18:37	18:47	53.54.438	002.36.056	29
02-12-2017	Salling	DK2	3662.05	1r	Syd for Dogger	31	21:19	21:29	53.47.428	002.04.808	20-28
02-12-2017	Salling	DK2	3662.05	1r	Syd for Dogger	31	21:38	21:48	53.47.061	002.04.658	26
02-12-2017	Salling	DK2	3662.05	1r	Syd for Dogger	31	21:56	22:06	53.47.303	002.04.089	27

02-12-2017	Salling	DK2	3661.01	1r	Syd for Dogger	32	23:18	23:28	53.55.364	001.53.493	30
02-12-2017	Salling	DK2	3661.01	1r	Syd for Dogger	32	23:39	23:49	53.55.359	001.54.020	28
02-12-2017	Salling	DK2	3661.01	1r	Syd for Dogger	32	23:56	00:06	53.54.000	001.53.893	28
03-12-2017	Salling	DK2	3661.02	1r	Syd for Dogger	33	02:15	02:25	53.40.767	001.44.250	19
03-12-2017	Salling	DK2	3661.02	1r	Syd for Dogger	33	02:33	02:43	53.41.156	001.44.560	22-19
03-12-2017	Salling	DK2	3661.02	1r	Syd for Dogger	33	02:49	02:59	53.40.829	001.45.037	21
03-12-2017	Salling	DK2	3661.02	1r	Syd for Dogger	34	16:20	16:30	53.36.090	001.17.086	21
03-12-2017	Salling	DK2	3661.02	1r	Syd for Dogger	34	16:38	16:48	53.36.472	001.16.859	20
03-12-2017	Salling	DK2	3661.02	1r	Syd for Dogger	34	16:59	17:09	53.36.526	001.17.535	14
03-12-2017	Salling	DK2	3561.01	1r	Syd for Dogger	35	18:17	18:27	53.28.623	001.05.098	10
03-12-2017	Salling	DK2	3561.01	1r	Syd for Dogger	35	18:36	18:47	53.28.177	001.04.829	12
03-12-2017	Salling	DK2	3561.01	1r	Syd for Dogger	35	18:53	19:03	53.28.394	001.04.352	15
03-12-2017	Salling	DK2	3561.03	1r	Syd for Dogger	36	21:04	21:14	53.17.444	001.33.154	10
03-12-2017	Salling	DK2	3561.03	1r	Syd for Dogger	36	21:22	21:31	53.17.492	001.33.929	9
03-12-2017	Salling	DK2	3561.03	1r	Syd for Dogger	36	21:37	21:47	53.17.134	001.33.574	9
03-12-2017	Salling	DK2	3561.01	1r	Syd for Dogger	37	22:44	22:54	53.18.389	001.45.981	13
03-12-2017	Salling	DK2	3561.01	1r	Syd for Dogger	37	23:04	23:14	53.18.685	001.46.693	10
03-12-2017	Salling	DK2	3561.01	1r	Syd for Dogger	37	23:23	23:33	53.18.211	001.46.978	12
04-12-2017	Salling	DK2	3562.03	1r	Syd for Dogger	38	01:16	01:26	53.14.262	002.04.082	12
04-12-2017	Salling	DK2	3562.03	1r	Syd for Dogger	38	01:33	01:43	53.14.663	002.03.829	5
04-12-2017	Salling	DK2	3562.03	1r	Syd for Dogger	38	01:57	02:07	53.14.539	002.04.414	8
04-12-2017	Salling	DK2	3562.02	1r	Syd for Dogger	39	16:12	16:22	53.19.509	002.07.215	11
04-12-2017	Salling	DK2	3562.02	1r	Syd for Dogger	39	16:40	16:50	53.19.083	002.07.209	13
04-12-2017	Salling	DK2	3562.02	1r	Syd for Dogger	39	15:57	17:07	53.19.390	002.06.936	13
04-12-2017	Salling	DK2	3562.01	1r	Syd for Dogger	40	18:07	18:17	53.25.295	002.08.989	14
04-12-2017	Salling	DK2	3562.01	1r	Syd for Dogger	40	18:26	18:36	53.24.877	002.09.202	12
04-12-2017	Salling	DK2	3562.01	1r	Syd for Dogger	40	18:45	18:55	53.25.024	002.08.632	13
04-12-2017	Salling	DK2	3662.04	1r	Syd for Dogger	41	20:57	21:07	53.32.207	002.24.753	14
04-12-2017	Salling	DK2	3662.04	1r	Syd for Dogger	41	21:17	21:27	53.31.815	002.25.164	15
04-12-2017	Salling	DK2	3662.04	1r	Syd for Dogger	41	21:35	21:45	53.32.214	002.25.297	12
04-12-2017	Salling	DK2	3662.03	1r	Syd for Dogger	42	22:45	22:55	53.39.440	002.25.275	20
04-12-2017	Salling	DK2	3662.03	1r	Syd for Dogger	42	23:05	23:15	53.39.802	002.25.028	21
04-12-2017	Salling	DK2	3662.03	1r	Syd for Dogger	42	23:24	23:34	53.39.654	002.25.615	18
05-12-2017	Salling	DK2	3563.01	2r	Syd for Dogger	43	05:17	05:27	52.58.649	003.01.734	20
05-12-2017	Salling	DK2	3563.01	2r	Syd for Dogger	43	05:35	05:45	52.58.365	003.02.275	20
05-12-2017	Salling	DK2	3563.01	2r	Syd for Dogger	43	05:55	06:05	52.58.270	003.01.866	20
05-12-2017	Salling	DK2	3463.01	2r	Syd for Dogger	44	16:09	16:19	52.50.947	003.03.744	23
05-12-2017	Salling	DK2	3463.01	2r	Syd for Dogger	44	16:28	16:38	52.50.794	003.04.303	20
05-12-2017	Salling	DK2	3463.01	2r	Syd for Dogger	44	16:49	16:59	52.50.723	002.03.946	22
05-12-2017	Salling	DK2	3463.02	2r	Syd for Dogger	45	18:19	18:29	52.43.322	003.18.341	20
05-12-2017	Salling	DK2	3463.02	2r	Syd for Dogger	45	18:37	18:47	52.43.230	003.19.073	19
05-12-2017	Salling	DK2	3463.02	2r	Syd for Dogger	45	18:55	19:05	52.42.973	003.18.638	20
05-12-2017	Salling	DK2	3463.01	2r	Syd for Dogger	46	20:43	20:53	52.29.825	003.18.523	19
05-12-2017	Salling	DK2	3463.01	2r	Syd for Dogger	46	21:01	21:11	52.29.482	003.18.852	19
05-12-2017	Salling	DK2	3463.01	2r	Syd for Dogger	46	21:21	21:31	52.29.489	003.18.293	20
06-12-2017	Salling	DK2	3464.01	1r	Ny banke east	47	01:33	01:43	52.47.949	004.03.145	19
06-12-2017	Salling	DK2	3464.01	1r	Ny banke east	47	01:53	02:03	52.48.298	004.03.623	19
06-12-2017	Salling	DK2	3464.01	1r	Ny banke east	47	02:12	02:22	52.47.980	004.03.848	19

06-12-2017	Salling	DK2	3464.02	1r	Ny banke east	48	03:28	03:38	52.56.118	004.10.446	23
06-12-2017	Salling	DK2	3464.02	1r	Ny banke east	48	03:50	04:00	52.56.333	004.10.889	22
06-12-2017	Salling	DK2	3464.02	1r	Ny banke east	48	04:08	04:18	5,256,034	004.10.859	23
10-12-2017	Salling	DK2	3867.06	2r	West Coast Jutland	49	01:34	01:44	54.35.612	007.29.943	20
10-12-2017	Salling	DK2	3867.06	2r	West Coast Jutland	49	10:52	02:02	54.35.944	007.30.311	20
10-12-2017	Salling	DK2	3867.06	2r	West Coast Jutland	49	02:10	02:20	54.35.760	007.30.634	20
10-12-2017	Salling	DK2	3867.02	2r	West Coast Jutland	50	03:27	03:37	54.41.574	007.18.372	22
10-12-2017	Salling	DK2	3867.02	2r	West Coast Jutland	50	03:45	03:55	54.41.758	007.17.782	22
10-12-2017	Salling	DK2	3867.02	2r	West Coast Jutland	50	04:04	04:14	54.42.066	007.17.892	22
10-12-2017	Salling	DK2	3866.01	2r	West Coast Jutland	51	15:53	16:03	54.58.039	006.55.440	26
10-12-2017	Salling	DK2	3866.01	2r	West Coast Jutland	51	16:12	16:22	54.57.895	006.55.872	27
10-12-2017	Salling	Dk2	3866.01	2r	West Coast Jutland	51	16:30	16:40	54.57.811	006.55.211	27
10-12-2017	Salling	DK2	3966.05	2r	West Coast Jutland	52	17:32	17:42	55.05.664	006.54.120	25
10-12-2017	Salling	DK2	3966.05	2r	West Coast Jutland	52	17:51	18:01	55.05.930	006.53.780	25
10-12-2017	Salling	DK2	3966.05	2r	West Coast Jutland	52	18:09	18:19	55.05.964	006.54.207	24
10-12-2017	Salling	DK2	3966.03	2r	West Coast Jutland	53	19:52	20:02	55.17.965	006.48.626	25
10-12-2017	Salling	DK2	3966.03	2r	West Coast Jutland	53	20:11	20:21	55.18.329	006.49.368	23
10-12-2017	Salling	DK2	3966.03	2r	West Coast Jutland	53	20:27	20:37	55.18.027	006.49.385	22
10-12-2017	Salling	DK2	3967.02	2r	West Coast Jutland	54	23:10	23:20	55.07.759	007.17.651	19
10-12-2017	Salling	DK2	3967.02	2r	West Coast Jutland	54	23:27	23:37	55.07.415	007.18.026	20
10-12-2017	Salling	DK2	3967.02	2r	West Coast Jutland	54	23:45	23:55	55.07.278	007.17.535	19
10-12-2017	Salling	DK2	3967.06	2r	West Coast Jutland	55	00:45	00:55	55.07.770	007.30.884	20
10-12-2017	Salling	DK2	3967.06	2r	West Coast Jutland	55	01:03	01:13	55.08.107	007.31.485	19
10-12-2017	Salling	DK2	3967.06	2r	West Coast Jutland	55	01:20	01:30	55.07.712	007.31.758	19
11-12-2017	Salling	DK2	4067.05	2r	West Coast Jutland	56	15:57	16:07	55.57.473	007.15.457	20
11-12-2017	Salling	DK2	4067.05	2r	West Coast Jutland	56	16:12	16:22	55.57.318	55.15.792	20
11-12-2017	Salling	DK2	4067.05	2r	West Coast Jutland	56	16:35	16:45	55.57.149	007.15.238	21
11-12-2017	Salling	DK2	4067.01	2r	West Coast Jutland	57	18:11	18:21	55.51.314	007.35.004	15
11-12-2017	Salling	DK2	4067.01	2r	West Coast Jutland	57	18:28	18:38	55.51.315	007.35.641	15
11-12-2017	Salling	DK2	4067.01	2r	West Coast Jutland	57	18:46	18:56	55.51.057	007.35.486	15
11-12-2017	Salling	DK2	4067.07	2r	West Coast Jutland	58	20:30	20:40	55.37.932	007.25.812	13
11-12-2017	Salling	DK2	4067.07	2r	West Coast Jutland	58	20:47	20:57	55.37.417	007.25.622	12
11-12-2017	Salling	DK2	4067.07	2r	West Coast Jutland	58	21:03	21:13	55.37.606	007.24.962	12
23-11-2017	Reykjanes	DK5	4463.05	3r	Norway EEZ	59	18:32	18:42	57.38.638	03.05.812	64.1
23-11-2017	Reykjanes	DK5	4463.05	3r	Norway EEZ	59	18:56	19:06	57.38.898	03.05.246	64.2
23-11-2017	Reykjanes	DK5	4463.05	3r	Norway EEZ	59	19:20	19:30	57.38.638	03.05.201	64.3
23-11-2017	Reykjanes	DK5	4463.03	3r	Norway EEZ	60	21:48	21:58	57.45.188	03.40.273	69
23-11-2017	Reykjanes	DK5	4463.03	3r	Norway EEZ	60	22:12	22:22	57.44.951	03.40.406	68.7
23-11-2017	Reykjanes	DK5	4463.03	3r	Norway EEZ	60	22:37	22:47	57.45.074	03.40.429	68.9
24-11-2017	Reykjanes	DK5	4464.06	3r	Norway EEZ	61	01:11	01:21	57.44.902	04.12.319	70.1
24-11-2017	Reykjanes	DK5	4464.06	3r	Norway EEZ	61	01:35	01:45	57.44.749	04.12.581	70.2
24-11-2017	Reykjanes	DK5	4464.06	3r	Norway EEZ	61	01:58	02:08	57.44.845	04.12.492	70
24-11-2017	Reykjanes	DK5	4464.04	3r	Norway EEZ	62	03:03	03:13	57.43.510	04.18.591	70.3
24-11-2017	Reykjanes	DK5	4464.04	3r	Norway EEZ	62	03:27	03:37	57.43.388	04.19.042	70.2
24-11-2017	Reykjanes	DK5	4464.04	3r	Norway EEZ	62	03:48	03:58	57.43.590	04.19.187	70.3
24-11-2017	Reykjanes	DK5	4464.05	3r	Norway EEZ	63	05:03	05:13	57.38.929	04.18.751	71.1
24-11-2017	Reykjanes	DK5	4464.05	3r	Norway EEZ	63	05:26	05:36	57.38.694	04.18.430	71.1
24-11-2017	Reykjanes	DK5	4464.05	3r	Norway EEZ	63	05:50	06:00	57.38.694	04.18.835	71.2

01-12-2017	Reykjanes	DK5	2014.08	3r	Norway EEZ	64	18:07	18:17	56.56.164	06.04.023	55
01-12-2017	Reykjanes	DK5	2014.08	3r	Norway EEZ	64	18:34	18:44	56.56.047	06.04.023	55
01-12-2017	Reykjanes	DK5	2014.08	3r	Norway EEZ	64	19:00	19:10	56.56.228	06.03.775	55
01-12-2017	Reykjanes	DK5	2014.07	3r	Norway EEZ	65	21:00	21:10	56.50.519	05.38.106	52
01-12-2017	Reykjanes	DK5	2014.07	3r	Norway EEZ	65	21:23	21:33	56.50.352	05.38.010	52
01-12-2017	Reykjanes	DK5	2014.07	3r	Norway EEZ	65	21:50	22:00	56.50.352	05.37.694	52
01-12-2017	Reykjanes	DK5	4365.11	3r	Norway EEZ	66	23:16	23:26	57.00.210	05.40.869	53
01-12-2017	Reykjanes	DK5	4365.11	3r	Norway EEZ	66	23:40	23:50	57.00.295	05.40.749	53
02-12-2017	Reykjanes	DK5	4365.11	3r	Norway EEZ	66	00:02	00:12	57.00.338	05.41.172	53
02-12-2017	Reykjanes	DK5	4365.01	3r	Norway EEZ	67	01:39	01:49	57.11.586	05.48.265	55
02-12-2017	Reykjanes	DK5	4365.01	3r	Norway EEZ	67	02:00	02:10	57.11.503	05.48.892	55
02-12-2017	Reykjanes	DK5	4365.01	3r	Norway EEZ	67	02:22	02:32	57.11.747	05.48.706	55
02-12-2017	Reykjanes	DK5	4365.01	3r	Norway EEZ	68	03:45	03:55	57.15.236	05.31.778	59
02-12-2017	Reykjanes	DK5	4365.01	3r	Norway EEZ	68	04:04	04:14	57.15.481	05.31.562	59
02-12-2017	Reykjanes	DK5	4365.01	3r	Norway EEZ	68	04:25	04:35	57.15.198	05.31.333	59
02-12-2017	Reykjanes	DK5	4365.04	3r	Norway EEZ	69	18:09	18:19	57.08.506	05.28.933	50
02-12-2017	Reykjanes	DK5	4365.04	3r	Norway EEZ	69	18:30	18:40	57.08.648	05.28.702	50
02-12-2017	Reykjanes	DK5	4365.04	3r	Norway EEZ	69	18:49	18:59	57.08.401	05.28.441	50
02-12-2017	Reykjanes	DK5	4365.08	3r	Norway EEZ	70	20:48	20:58	57.07.891	05.13.392	55
02-12-2017	Reykjanes	DK5	4365.08	3r	Norway EEZ	70	21:11	21:21	57.07.722	05.13.202	55
02-12-2017	Reykjanes	DK5	4365.08	3r	Norway EEZ	70	21:43	21:53	57.07.958	05.13.354	55
02-12-2017	Reykjanes	DK5	4365.12	3r	Norway EEZ	71	23:32	23:42	57.16.329	05.06.067	56
02-12-2017	Reykjanes	DK5	4365.12	3r	Norway EEZ	71	23:52	00:02	57.16.610	05.06.189	56
03-12-2017	Reykjanes	DK5	4365.12	3r	Norway EEZ	71	00:22	00:32	57.16.450	05.06.197	56
03-12-2017	Reykjanes	DK5	4364.05	3r	Norway EEZ	72	02:20	02:30	57.09.246	04.43.788	56
03-12-2017	Reykjanes	DK5	4364.05	3r	Norway EEZ	72	02:40	02:50	57.09.434	04.44.051	56
03-12-2017	Reykjanes	DK5	4364.05	3r	Norway EEZ	72	03:07	03:17	57.09.317	04.44.023	56
24-11-2017	Reykjanes	DK5	4263.02	3r	Norway EEZ	73	17:23	17:25:30	56.48.827	03.42.784	69
24-11-2017	Reykjanes	DK5	4263.02	3r	Norway EEZ	73	17:38	17:40:30	56.48.793	03.42.648	69
24-11-2017	Reykjanes	DK5	4263.02	3r	Norway EEZ	73	18:09	18:11:30	56.48.786	03.42.733	69
24-11-2017	Reykjanes	DK5	4263.03	3r	Norway EEZ	74	19:11	19:13:30	56.49.088	03.48.926	58
24-11-2017	Reykjanes	DK5	4263.03	3r	Norway EEZ	74	19:41	19:43:30	56.49.081	03.49.029	58
24-11-2017	Reykjanes	DK5	4263.03	3r	Norway EEZ	74	20:12	20:14:30	56.49.123	03.49.066	58
24-11-2017	Reykjanes	DK5	4264.02	3r	Norway EEZ	75	22:13	22:23	56.40.191	04.08.996	51
24-11-2017	Reykjanes	DK5	4264.02	3r	Norway EEZ	75	22:32	22:42	56.39.962	04.08.817	51
24-11-2017	Reykjanes	DK5	4264.02	3r	Norway EEZ	75	23:00	23:10	56.40.155	04.09.420	51
25-11-2017	Reykjanes	DK5	4264.05	3r	Norway EEZ	76	00:16	00:26	56.39.974	04.25.003	49
25-11-2017	Reykjanes	DK5	4264.05	3r	Norway EEZ	76	00:37	00:47	56.39.697	04.25.267	49
25-11-2017	Reykjanes	DK5	4264.05	3r	Norway EEZ	76	01:18	01:28	56.39.817	04.25.158	49
25-11-2017	Reykjanes	DK5	4365.13	3r	Norway EEZ	77	04:56	05:06	57.02.130	05.05.617	59
25-11-2017	Reykjanes	DK5	4365.13	3r	Norway EEZ	77	05:18	05:28	57.02.116	05.06.260	59
25-11-2017	Reykjanes	DK5	4365.13	3r	Norway EEZ	77	05:41	05:51	57.02.312	05.06.054	59
25-11-2017	Reykjanes	DK5	4364.08	3r	Norway EEZ	78	15:30	15:40	57.20.093	04.15.445	69
25-11-2017	Reykjanes	DK5	4364.08	3r	Norway EEZ	78	15:52	16:02	57.20.171	04.15.169	69
25-11-2017	Reykjanes	DK5	4364.08	3r	Norway EEZ	78	16:16	16:26	57.19.988	04.15.195	69
25-11-2017	Reykjanes	DK5	4364.07	3r	Norway EEZ	79	18:37	18:47	57.18.209	04.34.132	60
25-11-2017	Reykjanes	DK5	4364.07	3r	Norway EEZ	79	19:22	19:33	57.18.235	04.34.015	60
25-11-2017	Reykjanes	DK5	4364.07	3r	Norway EEZ	79	19:45	19:55	57.18.098	04.34.236	60

27-11-2017	Reykjanes	DK5	4368.02	1r	Skagerrak	80	17:44	17:54	57.03.988	08.21.408	20
27-11-2017	Reykjanes	DK5	4368.02	1r	Skagerrak	80	18:08	18:18	57.03.896	08.21.335	20
27-11-2017	Reykjanes	DK5	4368.02	1r	Skagerrak	80	18:30	18:40	57.03.833	08.21.101	20
27-11-2017	Reykjanes	DK5	4368.01	1r	Skagerrak	81	19:19	19:29	57.05.865	08.26.165	19
27-11-2017	Reykjanes	DK5	4368.01	1r	Skagerrak	81	19:40	19:50	57.06.068	08.26.544	19
27-11-2017	Reykjanes	DK5	4368.01	1r	Skagerrak	81	20:02	20:12	57.05.975	08.26.365	19
27-11-2017	Reykjanes	DK5	4368.03	1r	Skagerrak	82	21:39	21:49	57.12.200	08.31.196	21
27-11-2017	Reykjanes	DK5	4368.03	1r	Skagerrak	82	21:49	21:59	57.12.406	08.31.488	21
27-11-2017	Reykjanes	DK5	4368.03	1r	Skagerrak	82	22:11	22:21	57.12.299	08.31.470	21
28-11-2017	Reykjanes	DK5	4368.05	1r	Skagerrak	83	00:26	00:36	57.22.081	08.32.864	30
28-11-2017	Reykjanes	DK5	4368.05	1r	Skagerrak	83	00:46	00:56	57.22.240	08.32.608	30
28-11-2017	Reykjanes	DK5	4368.05	1r	Skagerrak	83	01:02	01:12	57.21.996	08.32.490	30
28-11-2017	Reykjanes	DK5	4368.06	1r	Skagerrak	84	01:49	01:59	57.24.222	08.37.938	25
28-11-2017	Reykjanes	DK5	4368.06	1r	Skagerrak	84	02:06	02:16	57.24.313	08.38.508	25
28-11-2017	Reykjanes	DK5	4368.06	1r	Skagerrak	84	02:24	02:34	57.24.389	08.38.141	25
28-11-2017	Reykjanes	DK5	4469.02	1r	Skagerrak	85	18:11	18:21	57.34.168	09.32.153	18
28-11-2017	Reykjanes	DK5	4469.02	1r	Skagerrak	85	18:31	18:41	57.34.263	09.31.843	18
28-11-2017	Reykjanes	DK5	4469.02	1r	Skagerrak	85	18:49	18:59	57.34.310	09.32.465	18
28-11-2017	Reykjanes	DK5	4469.03	1r	Skagerrak	86	20:22	20:32	57.36.898	09.18.843	24
28-11-2017	Reykjanes	DK5	4469.03	1r	Skagerrak	86	20:31	20:41	57.36.943	09.18.495	24
28-11-2017	Reykjanes	DK5	4469.03	1r	Skagerrak	86	20:52	21:02	57.37.046	09.18.392	24
28-11-2017	Reykjanes	DK5	4469.01	1r	Skagerrak	87	22:08	22:18	57.31.515	09.14.186	19
28-11-2017	Reykjanes	DK5	4469.01	1r	Skagerrak	87	22:30	22:40	57.31.329	09.13.817	19
28-11-2017	Reykjanes	DK5	4469.01	1r	Skagerrak	87	22:53	23:03	57.31.405	09.13.706	19
29-11-2017	Reykjanes	DK5	4369.01	1r	Skagerrak	88	00:02	00:12	57.28.475	09.08.601	19
29-11-2017	Reykjanes	DK5	4369.01	1r	Skagerrak	88	00:25	00:35	57.28.359	09.08.308	19
29-11-2017	Reykjanes	DK5	4369.01	1r	Skagerrak	88	00:42	00:52	57.28.588	09.08.521	19
29-11-2017	Reykjanes	DK5	4369.02	1r	Skagerrak	89	01:26	01:36	57.27.535	09.11.034	21
29-11-2017	Reykjanes	DK5	4369.02	1r	Skagerrak	89	01:44	01:54	57.27.192	09.11.024	21
29-11-2017	Reykjanes	DK5	4369.02	1r	Skagerrak	89	02:02	02:12	57.27.384	09.11.459	21
29-11-2017	Reykjanes	DK5	4367.23	1r	Tail End	90	18:03	18:13	57.04.846	07.40.651	28
29-11-2017	Reykjanes	DK5	4367.23	1r	Tail End	90	18:27	18:37	57.04.778	07.40.434	28
29-11-2017	Reykjanes	DK5	4367.23	1r	Tail End	90	18:52	19:02	57.04.755	07.40.199	28
29-11-2017	Reykjanes	DK5	4267.25	1r	Tail End	91	20:11	20:21	56.58.795	07.41.847	22
29-11-2017	Reykjanes	DK5	4267.25	1r	Tail End	91	20:30	20:40	56.58.861	07.41.993	22
29-11-2017	Reykjanes	DK5	4267.25	1r	Tail End	91	20:53	21:03	56.58.830	07.41.602	22
29-11-2017	Reykjanes	DK5	4267.27	1r	Tail End	92	22:08	22:18	56.54.634	07.36.299	25
29-11-2017	Reykjanes	DK5	4267.27	1r	Tail End	92	22:29	22:39	56.54.756	07.35.963	25
29-11-2017	Reykjanes	DK5	4267.27	1r	Tail End	92	22:47	22:57	56.54.653	07.36.060	25
30-11-2017	Reykjanes	DK5	4267.12	1r	Tail End	93	00:11	00:21	56.56.626	07.25.561	28
30-11-2017	Reykjanes	DK5	4267.12	1r	Tail End	93	00:30	00:40	56.56.412	07.25.561	28
30-11-2017	Reykjanes	DK5	4267.12	1r	Tail End	93	00:55	01:05	56.56.626	07.25.597	28
30-11-2017	Reykjanes	DK5	4367.16	1r	Tail End	94	02:20	02:30	57.05.449	07.25.910	27
30-11-2017	Reykjanes	DK5	4367.16	1r	Tail End	94	02:39	02:49	57.05.367	07.26.456	27
30-11-2017	Reykjanes	DK5	4367.16	1r	Tail End	94	02:57	03:07	57.05.584	07.26.205	27
30-11-2017	Reykjanes	Dk5	4367.06	1r	Tail End	95	18:03	18:13	57.02.957	07.06.279	26
30-11-2017	Reykjanes	Dk5	4367.06	1r	Tail End	95	18:27	18:37	57.03.082	07.06.078	26
30-11-2017	Reykjanes	Dk5	4367.06	1r	Tail End	95	18:49	18:59	57.03.016	07.06.124	26

30-11-2017	Reykjanes	Dk5	4367.02	1r	Tail End	96	19:53	20:03	57.02.388	07.00.164	39
30-11-2017	Reykjanes	Dk5	4367.02	1r	Tail End	96	20:12	20:22	57.02.599	07.00.561	39
30-11-2017	Reykjanes	Dk5	4367.02	1r	Tail End	96	20:33	20:43	57.02.582	07.59.975	39
30-11-2017	Reykjanes	Dk5	4366.11	1r	Tail End	97	22:13	22:23	57.04.367	06.41.474	54
30-11-2017	Reykjanes	Dk5	4366.11	1r	Tail End	97	22:54	23:04	57.04.301	06.41.059	54
30-11-2017	Reykjanes	Dk5	4366.11	1r	Tail End	97	23:18	23:28	5,704,480	06.41.569	54
01-12-2017	Reykjanes	Dk5	4366.13	3r	Norway EEZ	98	00:43	00:53	57.07.111	06.28.635	56
01-12-2017	Reykjanes	Dk5	4366.13	3r	Norway EEZ	98	01:02	01:12	57.07.401	06.28.204	56
01-12-2017	Reykjanes	Dk5	4366.13	3r	Norway EEZ	98	01:25	01:35	57.07.060	06.28.152	56
01-12-2017	Reykjanes	Dk5	4366.06	3r	Norway EEZ	99	02:58	03:08	57.06.121	06.07.860	53
01-12-2017	Reykjanes	Dk5	4366.06	3r	Norway EEZ	99	03:19	03:29	57.06.192	06.07.696	53
01-12-2017	Reykjanes	Dk5	4366.06	3r	Norway EEZ	99	03:45	03:55	57.05.979	06.07.605	53

Tabel 2. List of sediment samples using the van Veen sediment sampler.

dato	Skib	Red-skab	Station	Tobis area	EEZ/ location	Sta-tion	Tid start	Tid slut	Lat. start	Lon. start	Vand dybde
24-11-2017	Salling	v. Veen	4165.16	1r	Tail End	1	16:22	16:25	56.17.822	005.35.253	36
25-11-2017	Salling	v. Veen	4065.01	1r	Tail End	6	15:57	15:59	55.46.896	005.04.012	32
28-11-2017	Salling	v. Veen	3861.17	1r	Dogger	12	16:00	16:05	54.50.353	001.59.741	20
28-11-2017	Salling	v. veen	3861.32	1r	Dogger	13	18:25	18:30	54.59.288	001.50.826	23
01-12-2017	Salling	v. Veen	3760.05	1r	Dogger	26	19:50	19:53	54.18.971	000.55.724	44
01-12-2017	Salling	v. Veen	3761.08	1r	Dogger	27	23:57	00:00	54.11.390	001.34.627	25
02-12-2017	Salling	v. Veen	3762.02	1r	Dogger	28	02:50	02:53	54.08.971	002.03.611	25
02-12-2017	Salling	v. Veen	3662.02	1r	Syd for Dogger	29	16:01	16:03	54.51.186	002.46.490	33
03-12-2017	Salling	v. Veen	3661.02	1r	Syd for Dogger	33	02:07	02:09	53.40.995	001.44.623	20
04-12-2017	Salling	v. Veen	3562.03	1r	Syd for Dogger	38	01:07	01:09	53.14.430	002.04.088	5
04-12-2017	Salling	v. Veen	3562.02	1r	Syd for Dogger	39	16:01	16:03	53.19.384	002.07.081	11
04-12-2017	Salling	v. Veen	3562.01	1r	Syd for Dogger	40	17:58	18:00	53.25.052	002.08.939	13
04-12-2017	Salling	v. Veen	3662.04	1r	Syd for Dogger	41	20:48	20:50	53.32.018	002.25.030	14