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MRV *Scotia*

Survey 1818S

PROGRAMME

8-18 December 2018

Loading: Aberdeen, 04 December 2018
Unloading: Aberdeen, 18 December 2018

In setting the survey programme and specific objectives, etc the Scientist-in-Charge needs to be aware of the restrictions on working hours and the need to build in adequate rest days and rest breaks as set out in Marine Scotland's Working Time Policy (Notice 34/03). In addition, the Scientist-in-Charge must formally review the risk assessments for the survey with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the survey report, to I Gibb and the Survey Summary Report (old ROSCOP form) to M Geldart, within four weeks of a survey ending. In the case of the Survey Summary Report a nil return is required, if appropriate

Out-turn days per project: 11 days: ST05b

Gear

Sea-Bird CTD/Carousel, water filtering equipment, mooring recovery equipment, chemistry sampling equipment.

Objectives

1. Perform hydrographic sampling along the Stonehaven AlterEco section in the northern North Sea (Priority 1).

2. Perform routine hydrographic sampling at stations along the long term monitoring JONSIS section in the northern North Sea (Priority 1).

3. Use deck unit to ping for lost AECO AL-200 mooring on Jonsis line and attempt recovery if it is communicating (Priority 2).

4. Perform routine hydrographic sampling at stations along the long term monitoring Faroe-Shetland Channel section: Nolso-Flugga (Priority 1).

5. Use deck unit to ping for lost NWEA AL-500 mooring on NOL line and attempt recovery if it is communicating (Priority 2).

6. Perform routine hydrographic sampling at stations along the long term monitoring Faroe-Shetland Channel section Fair Isle-Munken (Priority 2).

7. Take salinity, nutrient, chlorophyll, TA/DIC, dissolved oxygen samples along all standard lines.

8. If weather/time permits, perform a CTD/VMADCP survey on part of the Jonsis line (around 59° 17.00' N, 001° 15.26' W) (Priority 3).

9. If conditions in the Faroe-Shetland Channel don't allow further work in the Faroe-Shetland Channel, conduct VMADCP/CTD work in the Moray Firth (Priority 3) (details to be determined).

10. If sheltering in a suitable location around Shetland or Orkney due to bad weather conduct VMADP/CTD surveys (details to be determined).

11. Run the thermosalinograph throughout the survey.

12. Run the VMADCP on all the standard sections.

General Procedure

After departing Aberdeen and completing appropriate drills, *Scotia* will make passage to the start (western end) of the ALTERECO monitoring section to carry out sampling with the CTD and carousel water sampler along the section (Table 1, Figure 1).

On completion of that section, *Scotia* will head to the eastern end of the JONSIS section to carry out sampling with the CTD and carousel water sampler (Table 2, Figure 1). We will interrogate the lost mooring (AECO) on Jonsis and attempt recovery if the acoustic release is communicating.

The vessel will then proceed to the Faroe-Shetland Channel. We will commence hydrographic sampling along the Nolso Flugga survey line (Table 3, Figure 1). We will interrogate the lost mooring (NWEA) on NOL and attempt recovery if the acoustic release is communicating.

On completion of the Nolso Flugga line, if time allows, the vessel will proceed to conduct hydrographic sampling on the Fair Isle-Munken survey line (Table 4, Figure 1).

In case we are sheltering in a suitable location around Shetland or Orkney we will run the VMADCP and perform CTD sampling along specified lines (to be determined).

Once the Priority 1 and 2 work is completed and if time allows, *Scotia* will carry out additional work (listed among the cruise objectives as Priority 3) along the JONSIS line (Table 5) and/or in the Moray Firth, prior to her return to Aberdeen.

Mooring Positions (Pinging/Recovery)

Jonsis: AECO – AL-200: 59° 16.928' N 001° 15.393' W
Trawl resistant AL200 frame, (previously lost, attempt to communicate again)

NOL: NWEA – AL-500: 61° 38.01'N 004° 32.60'W
AL-500 frame, (previously lost, attempt to communicate again)

Scientific Procedures

It is expected that deployments of hydrographic equipment will be carried out with the CTD crane whilst the vessel is on station.

Three container laboratories will be required (one wet chemical analysis laboratory, two dry containers for electronics work and communications with sampling equipment).

Chlorophyll samples will be stored frozen in the freezer in the Fish House.

The thermosalinograph will be run throughout the survey.

(NOTE: The survey will potentially take *Scotia* into the Foinaven Development Area. This is now standard practice, and normal on-site communications will be established with the Foinaven co-ordinating officer).

Normal contacts will be maintained with the laboratory.

Submitted:
B Rabe
16 November 2018

Approved:
I Gibb
04 December 2018

Figure 1: Map including the main monitoring lines AlterEco, Jonsis, NOL, and FIM, and the mooring locations.

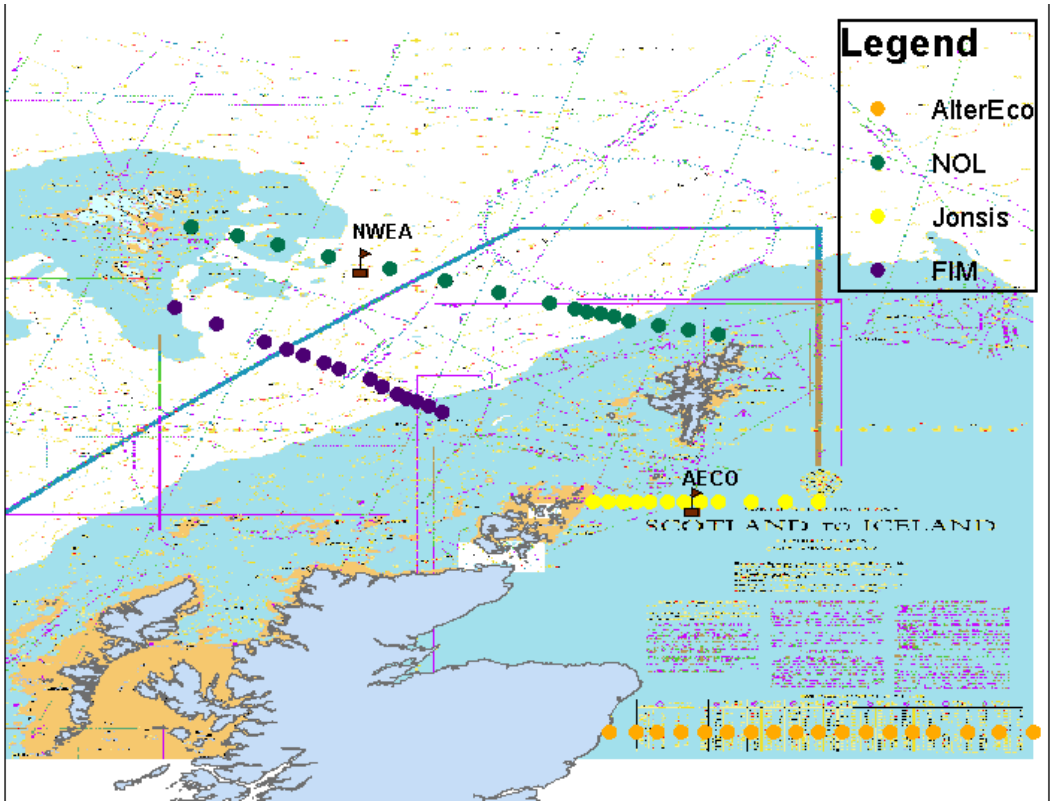

Table 1: ALTERECO line

CODE	#	Name	Latitude	Longitude	Depth [m]	Spacing
N, CH	**01**	**AlterEco1**	**57° 00.00' N**	**02° 04.00' E**	**92**	
N, CH	**02**	**AlterEco2**	**57° 00.00' N**	**01° 48.00' E**	**94**	**8.72 nm**
N, CH	**03**	**AlterEco3**	**57° 00.00' N**	**01° 36.00' E**	**99**	**6.54 nm**
CTD only	04	AlterEco4	57° 00.00' N	01° 22.00' E	104	7.63 nm
N, CH	**05**	**AlterEco5**	**57° 00.00' N**	**01° 08.00' E**	**85**	**7.63 nm**
CTD only	06	AlterEco6	57° 00.00' N	00° 54.00' E	102	7.61 nm
N, CH	**07**	**AlterEco7**	**57° 00.00' N**	**00° 40.00' E**	**92**	**7.61 nm**
CTD only	08	AlterEco8	57° 00.00' N	00° 27.00' E	89	7.09 nm
N, CH	**09**	**AlterEco9**	**57° 00.00' N**	**00° 14.00' E**	**84**	**7.09 nm**
CTD only	10	AlterEco10	57° 00.00' N	00° 00.00' E	83	7.61 nm
N, CH	**11**	**AlterEco11**	**57° 00.00' N**	**00° 14.00' W**	**79**	**7.61 nm**
CTD only	12	AlterEco12	57° 00.00' N	00° 28.00' W	82	7.63 nm
N, CH	**13**	**AlterEco13**	**57° 00.00' N**	**00° 42.00' W**	**68**	**7.63 nm**
CTD only	14	AlterEco14	57° 00.00' N	00° 55.00' W	75	7.07 nm
N, CH	**15**	**AlterEco15**	**57° 00.00' N**	**01° 08.00' W**	**67**	**7.07 nm**
N, CH	**16**	**AlterEco16**	**57° 00.00' N**	**01° 28.00' W**	**68**	**10.91 nm**
CTD only	17	AlterEco17	57° 00.00' N	01° 47.00' W	98	10.56 nm
N, CH	***18***	***AlterEco18***	***56° 57.80' N***	***02° 06.80' W***	***47***	***10.78 nm***
				Totals	1508 m	136.83 nm

Table 2: Jonsis line

CODES	#	Name	Latitude	Longitude	Depth	Spacing
N, T,O/OCal, CH, DS	01	JO 1	59° 17.00' N	02° 14.00' W	75 m	
N,CH	02	JO 1A	59° 17.00' N	02° 5.00' W	90 m	4.59 nm
N,CH	03	JO 2	59° 17.00' N	01° 56.00' W	100 m	4.59 nm
N, T,O,CH, DS	04	JO 3	59° 17.00' N	01° 48.00' W	80 m	4.08 nm
N,CH	05	JO 4	59° 17.00' N	01° 40.00' W	90 m	4.08 nm
N,CH	06	JO 5	59° 17.00' N	01° 30.00' W	95 m	5.10 nm
N,CH	07	JO 6	59° 17.00' N	01° 20.00' W	110 m	5.10 nm
N, T,O,CH, DS	08	JO 6A	59° 17.00' N	01° 10.00' W	120 m	5.10 nm
N,CH	09	JO 7	59° 17.00' N	01° 0.00' W	125 m	5.10 nm
N,CH	10	JO 8	59° 17.00' N	00° 40.00' W	120 m	10.20 nm
N,CH	11	JO 9	59° 17.00' N	00° 20.00' W	140 m	10.20 nm
N, T,O/OCal, CH, DS	12	JO10	59° 17.00' N	00° 0.00' W	135 m	10.20 nm
				Totals	1180 m	68.36 nm

Table 3: Nolso-Flugga

CODES	#	Name	Latitude	Longitude	Depth	Spacing
N, CH, DS	**01**	**NOL-01**	**60° 56.00' N**	**01° 00.00' W**	**110 m**	
N, CH	**02**	**SEFN1**	**60° 58.70' N**	**01° 17.70' W**	**125 m**	**9.00 nm**
N, CH	**03**	**SEFN2**	**61° 01.40' N**	**01° 35.40' W**	**155 m**	**8.99 nm**
N, T, O/OCal, CH	**04**	**NOL-02**	**61° 04.00' N**	**01° 53.00' W**	**270 m**	**8.91 nm**
N, CH, DS	**05**	**SEFN3**	**61° 06.00' N**	**02° 01.50' W**	**440 m**	**4.57 nm**
N, CH	**06**	**NOL-03**	**61° 08.00' N**	**02° 10.00' W**	**550 m**	**4.57 nm**
N, CH	**07**	**SEFN4**	**61° 09.30' N**	**02° 17.50' W**	**630 m**	**3.85 nm**
N, CH	**08**	**NOL-3a**	**61° 11.00' N**	**02° 25.00' W**	**730 m**	**3.98 nm**
N, T, O, CH, DS	**09**	**NOL-04**	**61° 14.00' N**	**02° 40.00' W**	**1080 m**	**7.82 nm**
N, CH	**10**	**NOL-05**	**61° 21.00' N**	**03° 10.00' W**	**1370 m**	**16.03 nm**
N, T, O/OCal, CH	**11**	**NOL-06**	**61° 28.00' N**	**03° 42.00' W**	**1235 m**	**16.84 nm**
CTD only	12	FARN2	61° 32.00' N	03° 57.00' W	1200 m	8.18 nm
N, CH, DS	**13**	**NOL-07**	**61° 35.00' N**	**04° 15.00' W**	**990 m**	**9.08 nm**
CTD only	14	FARN1	61° 38.00' N	04° 33.00' W	530 m	9.07 nm
N, T, O, CH	**15**	**NOL-08**	**61° 42.00' N**	**04° 51.00' W**	**235 m**	**9.44 nm**
N, CH	**16**	**NOL-09**	**61° 49.00' N**	**05° 21.00' W**	**180 m**	**15.84 nm**
N, CH, DS	**17**	**NOL-10**	**61° 54.00' N**	**05° 45.00' W**	**290 m**	**12.37 nm**
N, T, O/OCal,CH	**18**	**NOL-11**	**62° 00.00' N**	**06° 12.00' W**	**125 m**	**14.04 nm**
				Totals	10245 m	162.60 nm

Table 4: Fair Isle - Munken

CODE	#	Name	Latitude	Longitude	Depth	Spacing
N, CH, DS, 4S	**01**	**FIM-01**	**60° 10.00' N**	**03° 44.00' W**	**150 m**	
N, CH	**02**	**SEFF1**	**60° 13.00' N**	**03° 51.50' W**	**170 m**	**4.74 nm**
N, T, O/OCal, CH	**03**	**FIM-02**	**60° 16.00' N**	**03° 59.00' W**	**200 m**	**4.84 nm**
N, CH	**04**	**SEFF2**	**60° 18.00' N**	**04° 04.50' W**	**330 m**	**3.36 nm**
N, CH, DS	**** 05***	***FIM-03***	***60° 20.00' N***	***04° 10.00' W***	***390 m***	***3.03 nm***
N, CH	**06**	**FIM-04**	**60° 25.00' N**	**04° 19.00' W**	**655 m**	**6.88 nm**
N, CH	**07**	**FIM-05**	**60° 29.00' N**	**04° 26.00' W**	**995 m**	**5.45 nm**
N,T,O/OCal,CH,4S	**08**	**FIM-06**	**60° 35.00' N**	**04° 45.00' W**	**1090 m**	**11.15 nm**
N, CH, DS	**09**	**FIM-6a**	**60° 38.00' N**	**04° 54.00' W**	**1030 m**	**5.33 nm**
N, CH	**10**	**FIM-07**	**60° 43.00' N**	**05° 06.00' W**	**915 m**	**7.70 nm**
N, T, O, CH	**11**	**FIM-08**	**60° 47.00' N**	**05° 16.00' W**	**830 m**	**6.34 nm**
N, CH, DS	**12**	**FIM-09**	**60° 51.00' N**	**05° 29.00' W**	**600 m**	**7.36 nm**
CTD only	13	FARF3	60° 56.70' N	05° 42.80' W	333 m	8.90 nm
N, CH	**14**	**FIM-10**	**61° 02.00' N**	**05° 57.00' W**	**280 m**	**8.68 nm**
CTD only	15	FARF2	61° 07.20' N	06° 09.40' W	250 m	7.95 nm
N, T, O/OCal, CH, DS	**16**	**FIM-11**	**61° 12.00' N**	**06° 22.00' W**	**240 m**	**7.67 nm**
CTD only	17	FARF1	61° 16.40' N	06° 37.70' W	100 m	8.80 nm
				Totals	8,558 m	108.18 nm

Table 5: Extra Jonsis work

#	Name	Latitude	Longitude	Spacing (nm)	Depth (m)
1	JO6_VM17	59° 17.00' N	001° 24.90' W	0.5	
2	JO6_VM16	59° 17.00' N	001° 23.92' W	0.5	
3	JO6_VM15	59° 17.00' N	001° 22.94' W	0.5	
4	JO6_VM14	59° 17.00' N	001° 21.96' W	0.5	
5	JO6_VM13	59° 17.00' N	001° 20.98' W	0.5	
6	JO6_VM12	59° 17.00' N	001° 20.00' W	0.5	114
7	JO6_VM11	59° 17.00' N	001° 19.02' W	0.5	114
8	JO6_VM10	59° 17.00' N	001° 18.04' W	0.5	114
9	JO6_VM9	59° 17.00' N	001° 17.06' W	0.5	109
10	JO6_VM8	59° 17.00' N	001° 16.08' W	0.5	109
11	JO6_VM7	59° 17.00' N	001° 15.10' W	0.5	112
12	JO6_VM6	59° 17.00' N	001° 14.12' W	0.5	115
13	JO6_VM5	59° 17.00' N	001° 13.14' W	0.5	117
14	JO6_VM4	59° 17.00' N	001° 12.16' W	0.5	118
15	JO6A_VM3	59° 17.00' N	001° 11.18' W	0.5	117
16	JO6A_VM2	59° 17.00' N	001° 10.20' W	0.5	121
17	JO6A_VM1	59° 17.00' N	001° 09.22' W	0.5	
18	JO6A_VM0	59° 17.00' N	001° 08.24' W	0.5	
19	JO6A_VMA	59° 17.00' N	001° 07.26' W	0.5	
20	JO6A_VMB	59° 17.00' N	001° 06.28' W	0.5	
21	JO6A_VMC	59° 17.00' N	001° 05.30' W		