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FRV *Scotia*

Cruise 0615S

Report

11th May– 31st May 2015

Loading: Aberdeen

Change-overs: Aberdeen

Unloading: Aberdeen

Personnel

Peter Hayes (SIC)

Mike Robertson

Jim Hunter

Paul Stainer

Jane Heron

Phil Copland

Eric Armstrong

Rachel Duncan

Andronikos Kafas

Robert Watret

Laura Anderson

Chris Hall

Iain Gibb

Ross Gardiner

Rob Kynoch

Matt Kinghorn

Tom Broomfield (Reson)

Project Codes: 20083, 21 days

Fishing gear: Day grabs; TV drop frame with lasers (including rectangular footprint); armoured cable; Swathe multibeam echosounder system; RoxAnn system; Scout System; sidescan sonar; and smolt trawl.

Objectives

1. To undertake bathymetric, side scan sonar and groundtruthing survey work in connection with offshore oil and gas pipelines and elevated demersal fishing activities in UK and Norwegian waters of the North Sea.
2. To undertake trials of a smolt trawl in the Moray Firth

Objective 1 Work Package

Scotia departed from Aberdeen at 10:00 on 11th of May 2015 and made passage to Site 20. On completion of the survey work at Site 20 passage was then made into Norwegian waters arriving on 14th of May. Due to problems involving a Netsonde winch on board Scotia, time was spent in Bergen to facilitate repairs. On completion of the repairs survey work continued in Norwegian waters at Sites 21 and 24. Scotia left Norwegian waters on 19th of May to continue surveying in UK waters. A half landing was completed at Aberdeen Harbour on 19th of May to exchange scientific staff who continued on board to complete the remaining sites identified for Objective 1. The sites and survey dates for Objective 1 are summarized in Table 1 below.

Site	Survey Date	Waters	MBES/SSS km2	TV Tows
20	12 May 2015	UK	10	4
21	14 May 2015	Norwegian	10	3
24	17 May 2015	Norwegian	10	6
23	18 May 2015	Norwegian	10	6
1	21 May 2015	UK	10	5
9	22 May 2015	UK	10	7
19	24 May 2015	UK	10	6

Table 1 Sites surveyed as part of objective 1 for 0615S

Objective 1 Procedure

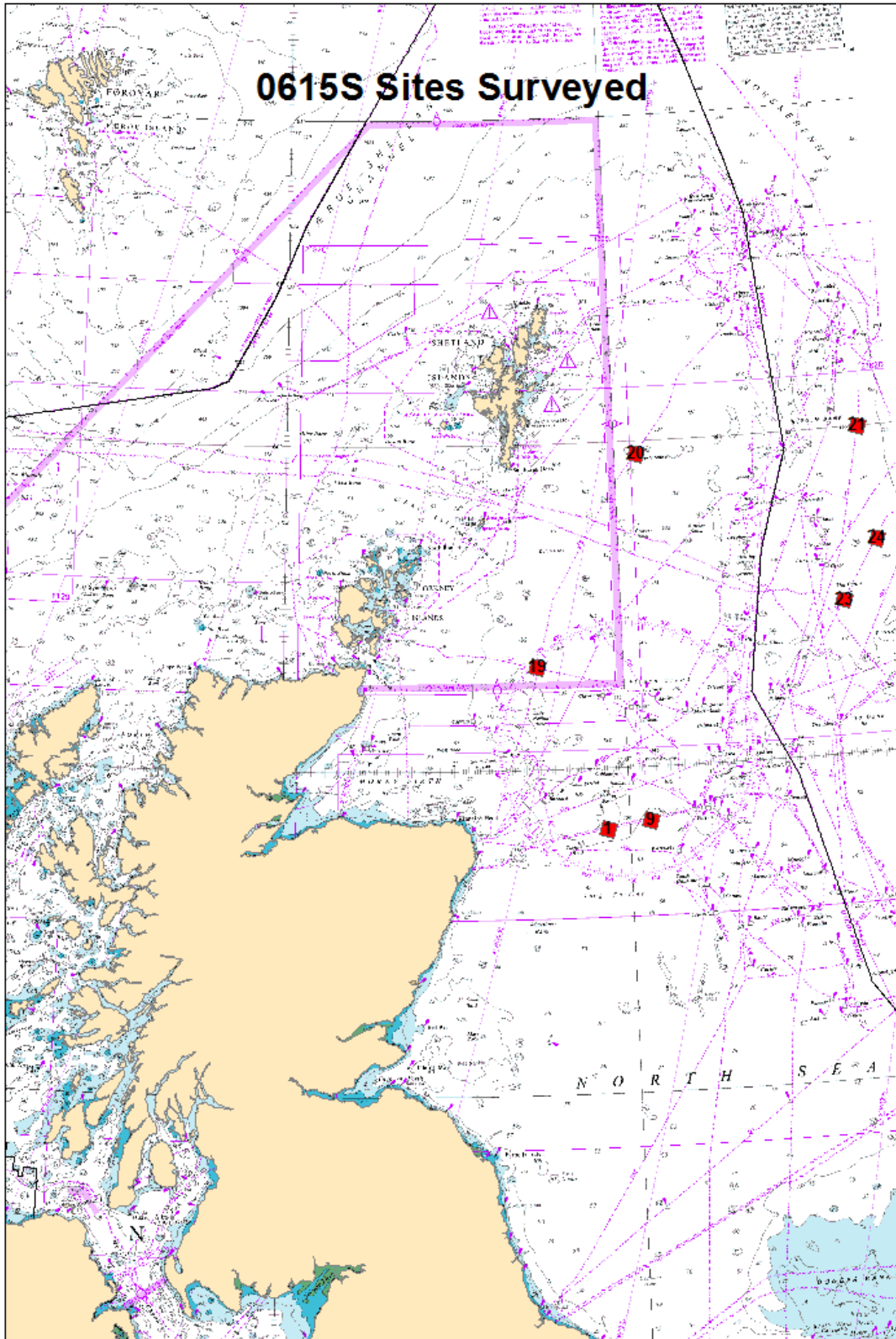
Marine Scotland Science (MSS) undertook non-intrusive surveys along 10 km sections of North Sea pipelines (see maps below) located in UK and Norwegian waters. In total seven sites were surveyed 19, 20, 1, 9, 23, 24 and 21. For each survey location the following procedure was applied:

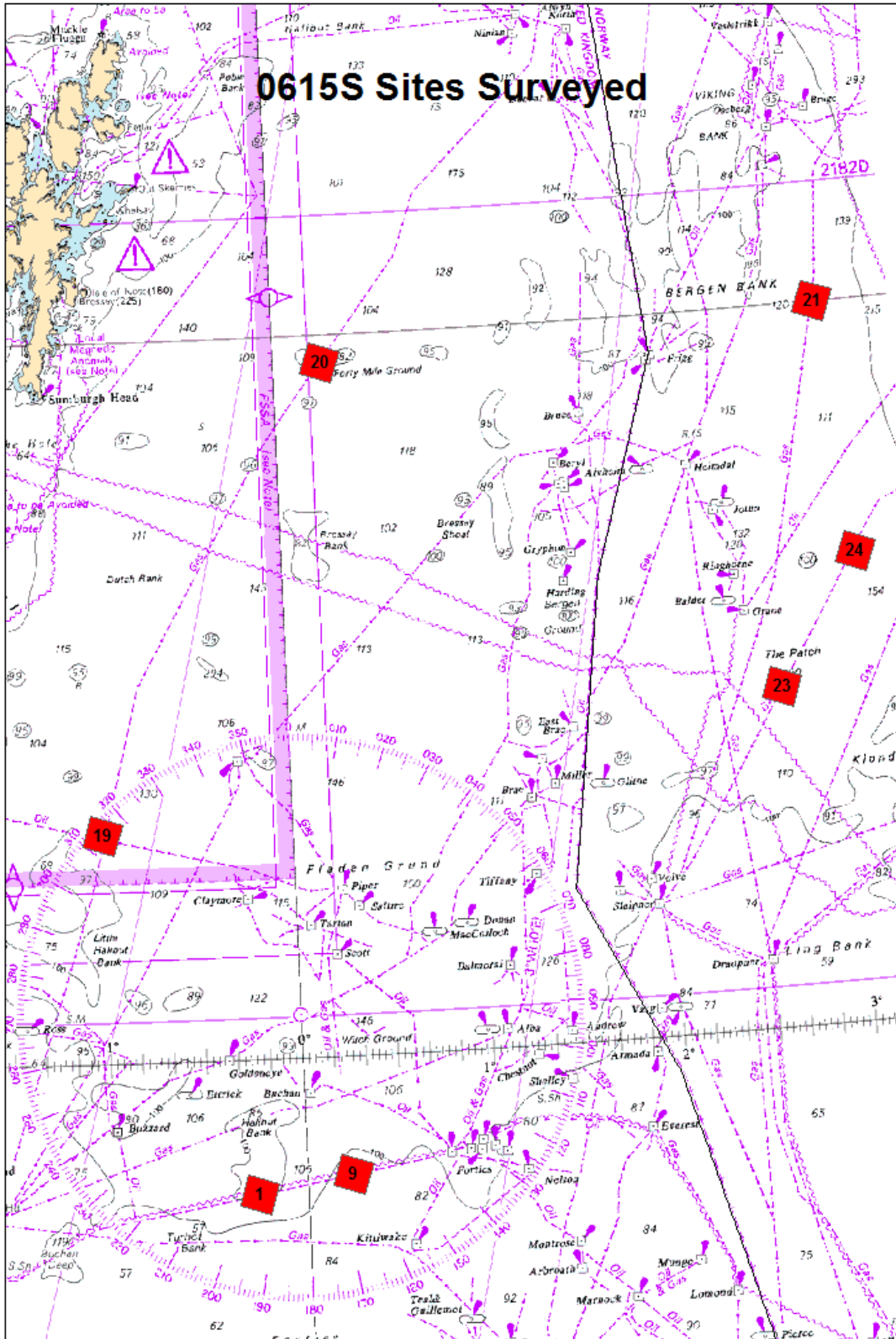
A sound velocity profile (SVP) was collected 500 m outside of the survey location. On completion of the SVP MRV Scotia position relocated above the pipeline section of interest and completed a multibeam (hull mounted) swathe along a 10 km length of pipeline. Survey speed was 4 knots and the output was checked for any anomalous features that could interact with other survey equipment. If features were identified MRV Scotia relocated in the immediate area and repeated the multibeam swathe along the pipeline until a suitable length of pipeline was identified.

If no features were identified MRV Scotia relocated 50m from the side of the pipeline and surveyed using a multibeam and a towed sidescan sonar. Transects were run parallel to the pipeline alternating the direction of travel for each tow. This was continued until 500 m had been surveyed on each side of the pipeline. Consequently each survey location covered a survey area of approximately 10 km².

The multibeam and side scan data were used to identify sections of the seabed for groundtruthing using a dropframe camera (total weight 100 kg). The dropframe was deployed 400 m from the pipeline off the stern of the vessel. The dropframe was kept at 1.5 m above the seabed/pipeline and towed using the vessel's bow thrusters at a speed of 1 knot or less (0.5 m per second). Once the tow was completed the dropframe was recovered onto the MRV Scotia deck. MRV Scotia then relocated to the next dropframe station and repeated the above process.

In total 37 tows were completed, typically 30 minutes in length. Approximately 1000 digital stills were recorded simultaneously with the collection of video footage. On completion of the dropframe tows MRV Scotia relocated to the next survey site.





Objective 2 Work Package

Scotia departed from Aberdeen at 10:00 on 27th of May 2015 and made passage to the Southern Trench in the Moray Firth. The location provided sufficient depth of water to confidently deploy a new smolt net to test how it worked, and to determine what depth of water would be suitable for its deployment. Problems were encountered during the deployment resulting in the vessel returning to Aberdeen Harbour to collect additional net materials. On return to the Moray Firth the trials successfully deployed the net, working along the southern margin of the Moray Firth and north east coast of Scotland south of the Moray Firth. On completion of the trials Scotia returned to Aberdeen Harbour on 30th of Aberdeen in preparation for unloading on the following day.

Objective 2 Procedure

A video trawl net was used pelagically, close to the water surface for the enumeration of salmon and sea trout smolts as they emigrate through near coastal waters in spring. The net was successfully operated close to the surface with entrained fish directed through a detachable camera. The camera also worked successfully recording different species of fish while the net was deployed. Additional TV tows were also collected along the Moray coast to groundtruth potential cable corridors for offshore windfarms.

Peter Hayes
19/01/2016

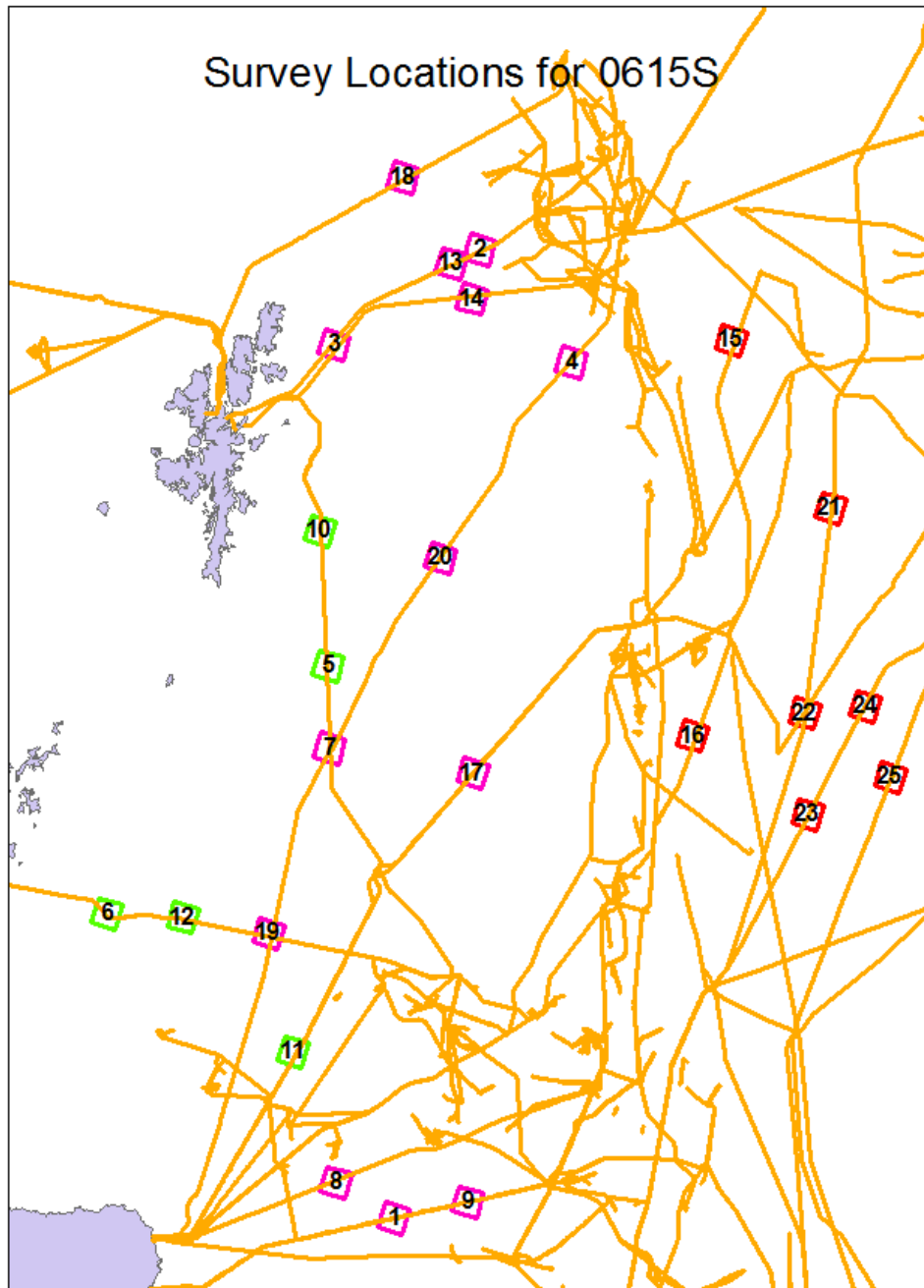


Figure 1 shows the pipeline survey locations for cruise 0615S. Symbols in pink and red indicate priority areas. Red symbols are located in Norwegian waters. The green symbols indicate contingency locations if we are not granted survey access to Norwegian waters.

Survey Number	Staff Name	Group	Cabin	Dates
0615S	Peter Hayes	OEEA	SIC	11th to 31st of May
0615S	Mike Robertson	OEEA	H	11th to 27th of May
0615S	Robert Watret	OEEA	D	11th to 19th of May
0615S	Andronikos Kafas	OEEA	E	11th to 19th of May
0615S	Phil Copland	Marine Ecosystems	B	11th to 31st of May
0615S	Eric Armstrong	Marine Ecosystems	C	11th to 27th of May
0615S	Paul Stainer	OEEA	G	19th to 27th of May
0615S	Jane Heron	OEEA	G	11th to 19th of May
0615S	Rachel Duncan	OEEA	D	19th to 27th of May
0615S	Laura Anderson	OEEA	E	19th to 27th of May
0615S	Jim Hunter	Engineering Services	J	11th to 31st of May
0615S	Chris Hall	Engineering Services	C	27th to 31st of May
0615S	Rob Kynoch	Coastal and Offshore Fisheries	H	27th to 31st of May
0615S	Matt Kinghorn	Coastal and Offshore Fisheries	D	27th to 31st of May
0615S	Ross Gardiner	Renewables Advice Group	G	27th to 31st of May
0615S	Iain Gibb	Science Operations	E	27th to 31st of May

Table 1 shows the scientific staff duration and associated cabins for 0615S