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MRV *Scotia*

Survey 0718S

PROGRAMME

18- 31 May 2018

Loading: Aberdeen, 14 May 2018

Unloading: Aberdeen, 31 May 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

Personnel

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E Armstrong
P Stainer
R Leiper
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J Mair
R Parpucis

Estimated Days per Project: 14 days, 20083 REO1t0

Gear: Day grabs; TV drop frame with lasers; armoured cable; multibeam echosounder system; EK 60; CTD; VMADCP; fish cages and PT160.

Objectives

1. To assess the hydrographic influences on the aggregation of fish around surface laid oil and gas pipelines.
2. To assess the handling and performance of a benthic time lapse camera.

Procedure

MRV *Scotia* will depart Aberdeen Harbour at or before 07:00hrs on 18 May and conduct any required drills. Before making passage to the pipeline stations, *Scotia* will need to calibrate the EK60 and MBES in Scappa Flow. The nature of the survey work will be heavily dependent on

the prevailing weather conditions encountered. The survey techniques are no different to previous surveys conducted by MSS using MRV *Scotia* albeit on a more localised scale. The proposed survey is based on two parts:

- The deployment and recovery of a time lapse camera for the duration of the survey; and
- The collection of hydrographic and fisheries acoustic data over 12 or 24 hour periods from several pipeline stations.

Time Lapse Camera

The time lapse camera will be placed on the seabed at the beginning of the survey in the vicinity of the pipeline stations and surface marked with a buoy (Site 9 Figure 2). On completion of the survey the camera will be recovered.

Multibeam Bathymetry

A sound velocity profile (SVP) will be collected 500 m outside of the survey location. On completion of the SVP, MRV *Scotia* will complete a multibeam swathe along the length of the targeted pipeline. Survey speed will be 4 knots. The output will be checked for any anomalous features that could interact with other survey equipment. If features are identified MRV *Scotia* will relocate in the immediate area and repeat the multibeam swathe along the pipeline until a suitable length of pipeline is identified.

Trawling and Fish Cages

Trawling using the PT160 may be required to catch fish needed to bait the fish cages. Cages will be deployed at the mid-point and the end-point of one transect. They will remain in-situ until the EK60 survey is completed. Trawling with the PT160 along, but clear of the pipeline and end transect will be conducted after the recovery of the fish cages.

EK60, CTD, VM-ADCP, Multibeam Through Water Column and Seabed Video Footage

The collection of fisheries acoustic data will involve two parallel transects 5 km in length and 1 km apart running perpendicular to a pipeline (Figure 1).

Survey speeds during use of the EK60 will be a maximum of 8 knots while VM-ADCP and multibeam data will be collected at 5 knots. Each of the techniques will be collected independently due to potential interference between the different pieces of equipment.

CTD measurements will be made every three hours at the ends and centre point of a transect. Water samples will also be collected for chlorophyll, salinity and nutrients using the vessel's non-toxic water supply and reversing bottles attached to the CTD.

Multibeam transects will be run along the pipeline to collect through water column data for assessing the dimensions of fish aggregations.

Videofootage using a *drop-frame* camera will be collected from for the top, middle and bottom stations for each transect. The multibeam data will be assessed to identify changes in the seabed substrate. The substrates will be ground-truthed using a *drop-frame* camera. The *drop-frame* will be deployed 500 m from the pipeline off the stern of the vessel using an armoured cable. The *drop-frame* will be 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) on a course perpendicular to the pipeline. Video capability on the *drop-frame* will be vertically mounted.

The pipelines of interest are annotated in Figure 2.

On completion of the survey work *MRV Scotia* will return to unload at Aberdeen Harbour on the 31 May.

Normal contacts will be maintained with the laboratory.

Submitted:
P Hayes
14 May 2018

Approved:
I Gibb
16 May 2018

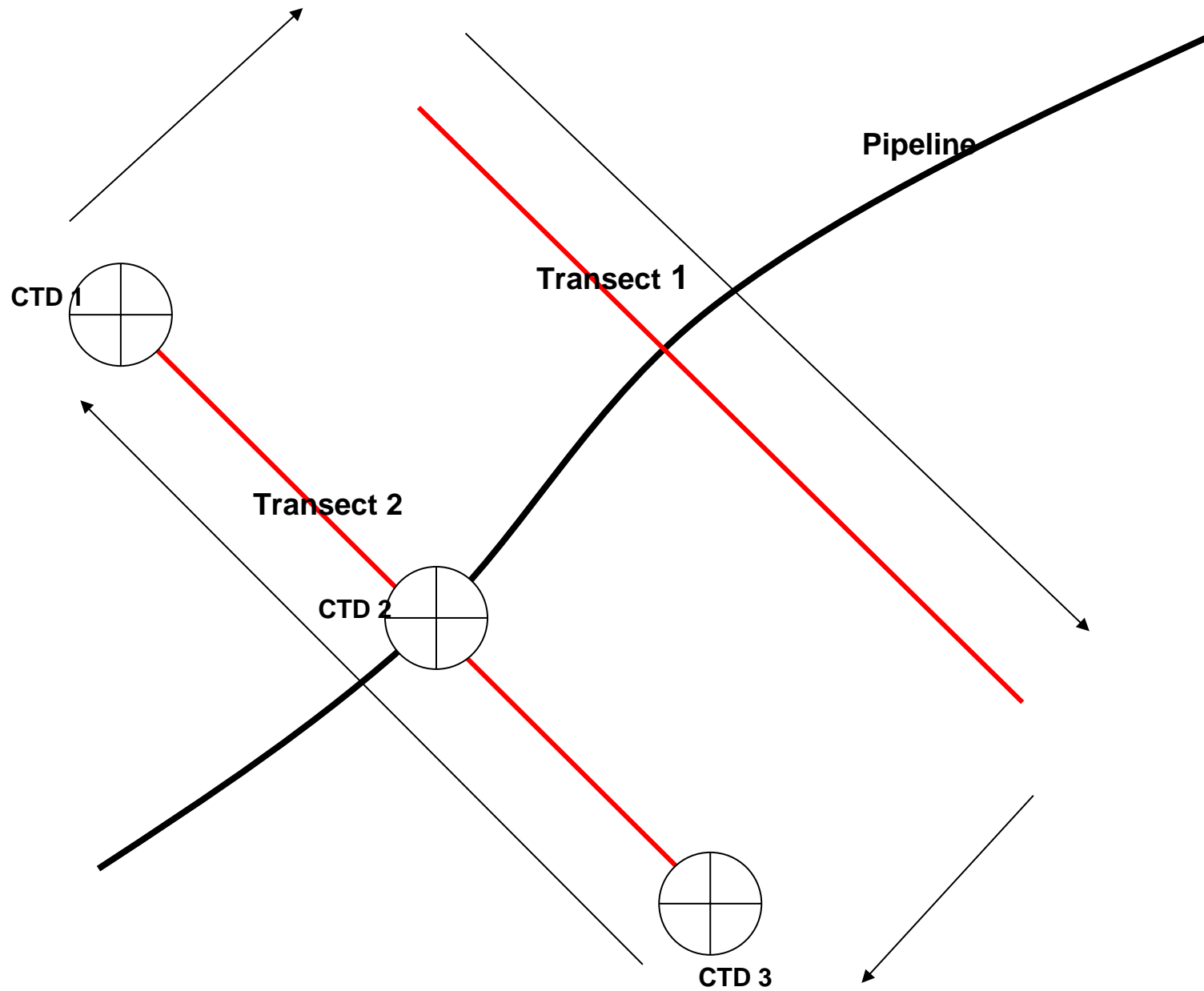


Figure 1: Showing a schematic diagram of the survey design for collecting fisheries acoustic data, VM-ADCP data and CTD data over a 24 hour period.

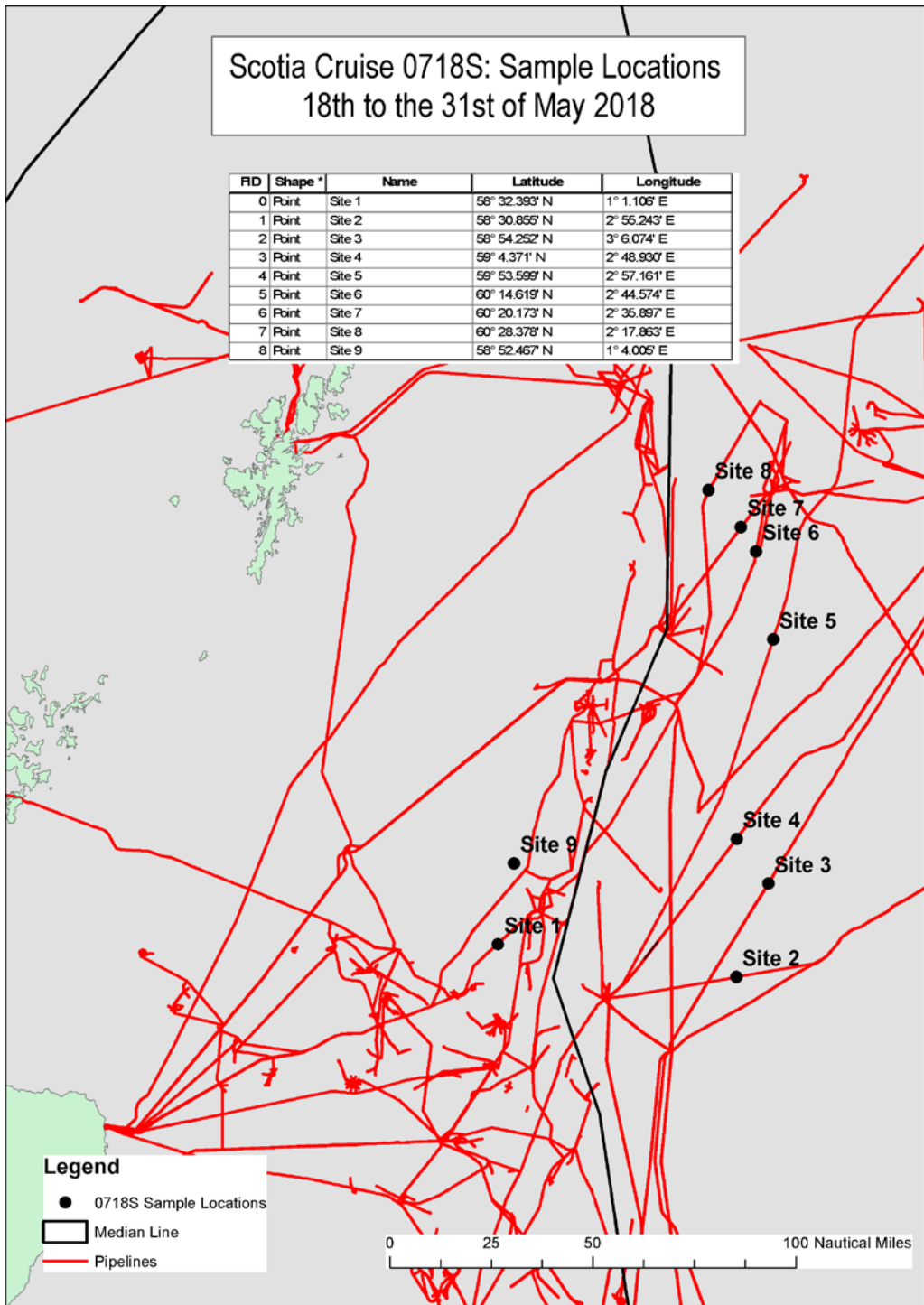


Figure 2: Site locations for 0718S.