

R1/12

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FRV *Scotia*

Cruise 1500S

## REPORT

20 September - 2 October 2000

**Start port:** Aberdeen

**End port:** Aberdeen

### Personnel

Alistair McIntosh	(In charge)
Derek Moore	
Chris Hall	
Lesley Campbell	
Pam Simpson	
Charlie Shand	
Phil Copland	
Eric Dalgarno	
Stuart Halewood	
David Donnan	(Visitor - SNH)
Matt Dalkin	(Visitor - SNH)
Caroline Weir	(Visitor - JNCC - Sea Birds at Sea Team)

### Fishing Gear

Granton 48' Trawl (BT101) (modified) - with tickler chains; 3 m beam trawl.

### Objectives

1. Offshore oil development and production effects on hydrocarbon loadings in fish, shellfish and sediments on the west coast of Shetland and Outer Isles.
2. To conduct a primary survey delineated by an area of 7 x 7 km on the caldera which forms the group of islands that makes up St Kilda. Benthic topography mapping will be conducted using RoxAnn™, side scan and swathe bathymetry. Ground truthing will be conducted by sediment sampling, ROV with TV and still photography.
3. To conduct a secondary survey delineated by an area of 11 x 11 km to the north west of the St Kilda and take similar measurements as outlined in 2 above.

**Out-Turn Days per Project:** 6 days AE08o: 7 days AE11d.

## **Narrative**

The vessel was loaded with all necessary sampling and scientific equipment but due to prevailing adverse weather conditions, and the closure of Aberdeen harbour, *Scotia* did not depart until 0600 hours on 21 September when passage was made to the northwest of Shetland and the first sampling area.

*Scotia* arrived on site at 0030 hours on 22 September, but due to technical problems with the trawl winches, fishing did not commence until 0630 hours.

During the period 22-25 September, fishing was conducted within 18 ICES rectangles. Sediment samples, where possible, were taken at the start, mid and end points of each trawl.

Caroline Weir was put ashore at Carloway, Western Isles, on the morning of 25 September on compassionate grounds.

On completion of the fishing survey, *Scotia* arrived in the St Kilda area at 2300 hours where, after calibration the sonar instruments, the benthic topography mapping by RoxAnn™ and swathe bathymetry was started. The first survey covered the primary area of the caldera. Following an approximate period of 24 hours sonar topography data collection, grab sampling for sediment samples and ROV and towed sledge work with TV/video and still photography was conducted to ground truth the sonar data.

A secondary survey was conducted to the north west of the caldera where again initially the ground was covered by sonar data collection followed by sampling for ground truth data.

The surveys around St Kilda were completed by 2200 hours on 30 September, when *Scotia* made passage for the Moray Firth where sediment sampling on and around a-drill cuttings' pile commenced at 1900 hours on 1 October. This work was completed by 2200 hours when *Scotia* made passage for Aberdeen and docking was completed by 0600 hours on 2 October.

## **Results**

All fish and sediment samples were treated according to standard protocols and stored appropriately for subsequent analyses in Aberdeen. Trawling provided over 300 fish and shellfish samples for sensory assessment, 45 pools of flesh and liver for hydrocarbon muscle and liver burden respectively. In addition 145 samples for hepatic biological effects indicators were collected. Forty-four sediments were sampled for hydrocarbon concentration.

In addition to the stated objectives listed for this cruise, new software was tested to control and monitor the thermosalinograph in the water sampling laboratory as part of a project to develop an NMEA-compatible interface for connection to the vessel's central computer system. A routine to provide way-point information for scientific use was also written.

Analysis and determination of hydrocarbon concentration as ultra violet fluorescent oil equivalents were made on around 400 sediment extracts. Some analyses for hepatic protein were determined. The data collected during the St Kilda survey are summarised in the table below.

**Primary Area - St Kilda caldera extending to Boreray and Levenish**

	Total no of lines	Total mileage	Total area covered	No of dives completed	No of samples
RoxAnn™ and Swathe	92 lines	192 km - caldera 32 km - Boreray 82 km - St Kilda and Levenish	84 km <sup>2</sup> 8 km <sup>2</sup> 25 km <sup>2</sup>		1.4 GB data
Side scan	3 lines	22.2 km			
Towed sledge				10	
ROV				12 <sup>(1)</sup>	
Sediments					12

<sup>(1)</sup>2 of which were aborted when unable to reach target depth

**Secondary Area - to the northwest of the caldera**

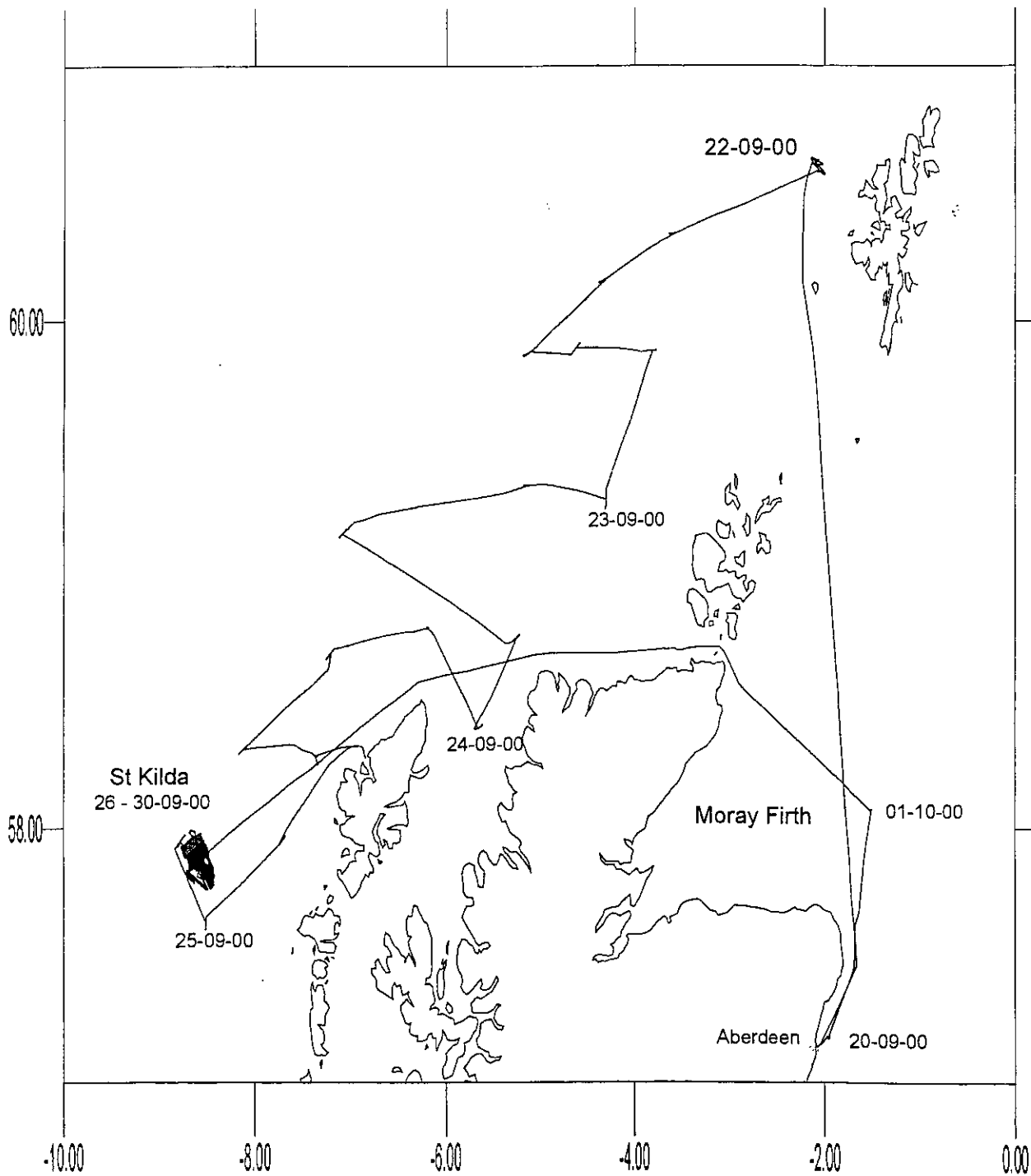
	Total no of lines	Total mileage	Total area covered	No of dives completed	No of samples
RoxAnn™ and Swathe		212 km	120 km <sup>2</sup>		900 MB data
Side scan	3 lines	5.3 km			
Towed sledge				4	
ROV	no dives undertaken				
Sediments					11

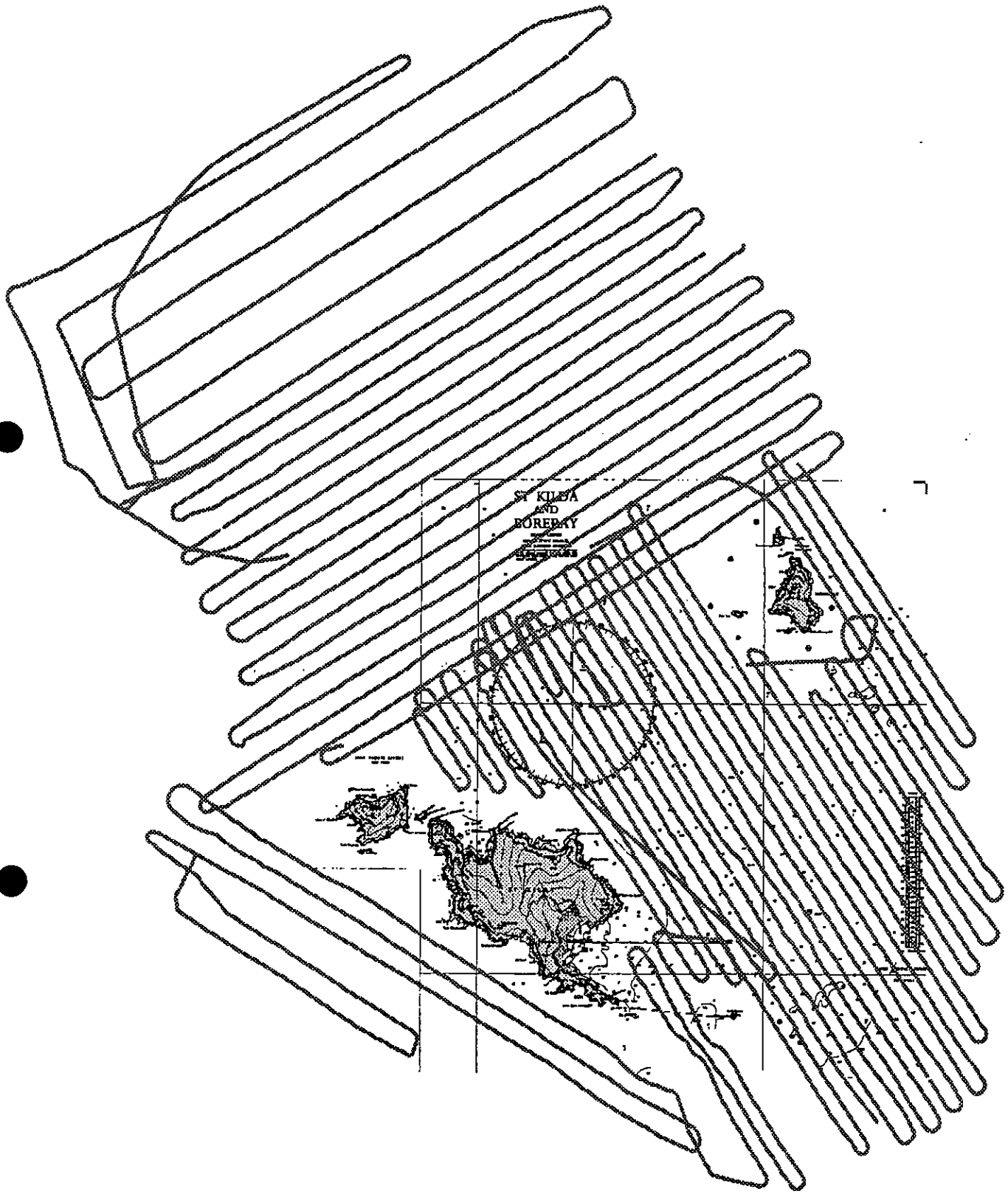
The sampling on the drill cuttings' pile resulted in 17 stations being occupied. The samples will be analysed for total hydrocarbon concentration and dye tracer used during the Cruise 0600S.

A McIntosh  
16 October 2000

Seen in draft: Capt P Ramsay, OIC

# Track Chart - 1500S





ST KILDA  
AND  
BOREBAY

St Kilda Swathe and Roxann Survey  
September 2000

• Survey Lines

