

MR BADE

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1974 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 9a/74 Part A

(Provisional: Not to be quoted without prior reference to the author)

STAFF

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DURATION

Left Grimsby 0730 h, 18 November

Arrived Barry 0930 h, 26 November

All times are Greenwich Mean Time

LOCALITY

North Sea, Scottish coastal waters, Irish Sea, Celtic Sea and Bristol Channel.

AIMS

1. To re-examine the concentration contours of Caesium-137 and Caesium-134 in seawater of the Irish Sea following increased rates of discharge from B.N.F.L., Windscale, Cumberland.
2. To collect samples of seabed, from selected stations in the Irish Sea, for the examination of the distribution of radioactivity with depth from the surface layer in both the solid and liquid phases.
3. To record the total gamma count rate from seawater of the Irish Sea.
4. To collect seawater samples for the measurement of the weight of the suspended load at selected stations in the Irish Sea.
5. To collect seawater samples in British Isles coastal waters for radiocaesium and tritium analyses.
6. To collect fish samples in the western Irish Sea for radiocaesium analyses.

NARRATIVE

CIROLANA sailed from Grimsby on the morning tide of 18 November and proceeded northabout to the Irish Sea, sampling surface seawater at 26 stations. 50 litre samples were taken and processed on board for the analysis of the caesium-137 content. At two stations, one at the northern end of the Minch and the other off Skerryvore, 500 litre samples were taken for a more precise determination of the ^{137}Cs concentration: ^{134}Cs concentration to be made. The results obtained will be used to estimate transit times of

seawater from the North Channel of the Irish Sea.

Work commenced at the southern end of the North Channel at 0055 h, 21 November and a grid of 53 stations, previously worked on CIROLANA 6b/74, were completed by 1830 h, 24 November, when with south westerly to westerly gale force winds CIROLANA commenced to 'dodge' in the Cardigan Bay area.

At all stations worked in this grid, 25 litre samples of surface and bottom water were collected and processed on board for ^{137}Cs and ^{134}Cs analyses. At 15 selected stations samples of seabed sediment were collected by a Reineck box sampler, 1 metre or 2 metre barrel gravity corer or Van Veen grab. At 3 stations, in the vicinity of Windscale, 4" diameter cores, obtained by the use of a Reineck box sampler, were sectioned on board and samples of interstitial water were obtained by squeezing 5cm. depth sections. The water obtained was retained for radioactivity analyses. A continuous recording was made of the gamma count rate from seawater within the Irish Sea area by passing surface seawater continuously over a 3" x 3" NaI crystal coupled to a gamma spectrometer. A punched tape and print out of either 100 or 1000 sec. interval integrated count were also retained. The data showed that the maximal count rate was found at a position some 5 miles north of the discharge point at Windscale.

10 litre samples of surface and bottom seawater were collected at 7 stations in the Irish Sea. The seawater was passed through weighed membrane filters of 0.22 μm pore size. Upon completion of filtration the papers were washed with distilled water and then frozen for return to the laboratory for drying and reweighing.

A one hour haul with a mid-water trawl at a position some 30 miles WSW of the Isle of Man produced 9 mackerel and 1 herring only. All fish were retained for ^{137}Cs analysis.

Moderation in the weather at 0730 h, 24 November made sampling possible again at 0830 h and, after abandoning 3 stations towards the Irish side of the southern entrance, CIROLANA proceeded to Barry, sampling seawater in the Celtic Sea and Bristol Channel for the estimation of the distribution of ^{137}Cs leaving the Irish Sea by way of St. George's Channel. CIROLANA anchored in Barry roads on 26 November when all members of the scientific staff except Mr Folkard disembarked by pilot boat at 09.30 h.

RESULTS

All the aims of the cruise were completed although the number of samples obtained by the new Reineck box sampler was limited due to intermittent malfunctioning of the tripping mechanism. The eye link, supplied by the manufacturers for the tripping mechanism, does not seem to have sufficient clearance to allow for completely successful tripping. A number of core samples greater than 1 metre in length were obtained by a barrel gravity corer for the examination of ^{137}Cs and ^{239}Pu at depth.

The number of fish caught in the one haul was small but will be sufficient to allow for a ^{137}Cs determination.

SEEN IN DRAFT

T H FINN

D F JEFFERIES

G W ARGUMONT

26 November 1974

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