

In Confidence: Not to be quoted without prior reference to the Laboratory.

3CR83  
Pt I and II

FRV 'Clupea'

Cruise Report

Cruise 3/83 Part I and II

8-30 March 1983

### Objectives

1. To carry out larval surveys on Ballantrae Bank and the outer reaches of the Firth of Clyde in order to investigate the location and duration of larval production in this area.
2. To carry out an echointegration and fishing survey of the outer reaches of the Firth of Clyde with a view to quantifying spawning aggregations of herring within this area.
3. To carry out a programme of bottom trawling to catch ripe and running herring and gadoids to enable shipboard fertilisation and plating out of eggs.

### Narrative

Scientific staff joined 'Clupea' in Buckie on the morning of 10 March where the gear was loaded, but 'Clupea' did not leave Buckie until 0900 the following morning because of adverse weather conditions. 'Clupea' then proceeded round the Pentland Firth and through the Minch to reach Campbeltown in the early hours of Sunday 13 March. All that day there were southerly gales and 'Clupea' remained in port, leaving for Ballantrae to start a metre net grid at 0400 on 14 March. The complete grid had been completed by 1300 that day and the remainder of the day was spent carrying out echointegration grids on Ballantrae Bank and off the south-west coast of Arran, before returning to Campbeltown. Tuesday 15 March was spent as a half-landing in Campbeltown and the following day a further Ballantrae Bank metre net survey was carried out followed by a grid of Dutch Gulf III stations to the east of Arran and in Kilbrannon Sound. At dusk an echointegration grid was started at the Iron Rock Ledges, to the south-west of Arran and this was continued as far as Pladda in depths of less than 30 fm. 'Clupea' anchored overnight in Whiting Bay and on 18 March completed another Ballantrae Banks metre net survey and one midwater trawl haul to the south-west of Arran in an area in which echotraces were observed. 'Clupea' spent the night in Campbeltown and the following day carried out a grid of Dutch Gulf III stations in the outer reaches of the Clyde. On 20 March 'Clupea' carried out an echointegration calibration in the lee of Davaar Island and then made for Troon for the "half-landing" and the changeover of gear and personnel.

Messrs Seaton and MacLachlan joined FRV 'Clupea' in Troon on the afternoon of 21 March, but after the loading of BT 116 and other equipment, adverse weather conditions forced 'Clupea' to proceed to Brodick where the ship anchored for the night. Over the next six days a series of bottom trawls were carried out on Ballantrae Bank, off Pladda, and in the vicinity of Ailsa Craig to obtain spawning samples of herring, gadoids and flatfish. Subsequently Messrs Seaton and MacLachlan disembarked from 'Clupea' on 28 March in Troon and the fertilised eggs and other samples were transported by road to Loch Ewe. 'Clupea' left Troon again on the morning of 28 March with Messrs Morrison and Rankine aboard and completed a metre net survey on Ballantrae Bank

and tied up overnight in Campbeltown. On 29 March 'Clupea' continued with a grid of Dutch Gulf III stations to the South of Arran, carried out several Gulf III and metre net calibrations and finally tied up at Greenock in the late evening. In the early hours of the next morning 'Clupea' moved into the James Watt Dock at the end of the cruise.

## Results

### Larval sampling

Four complete metre net surveys were carried out on Ballantrae Bank on 14 March, 16 March, 18 March and 28 March respectively. In addition a grid of 53 Dutch Gulf III stations was carried out over a much wider area of the Clyde, to check for the presence of older larvae. Visual inspection of the metre net samples suggested that some hatching had taken place on Ballantrae Bank but the numbers of young larvae were difficult to estimate visually. Few older larvae were observed in the Gulf III samples, but some were observed in samples taken between the south-west tip of Arran and Kintyre.

### Echointegration

Echointegration grids were carried out on Ballantrae Bank and along the south coast of Arran. Echotraces were in general rather scarce and aggregations reported earlier in these areas had dispersed by the time this survey took place. Along the south coast of Arran echotraces were observed to move inshore from approximately 30 fathoms bottom depth, to approximately 10 fathom bottom depth, between 1700 and 2100.

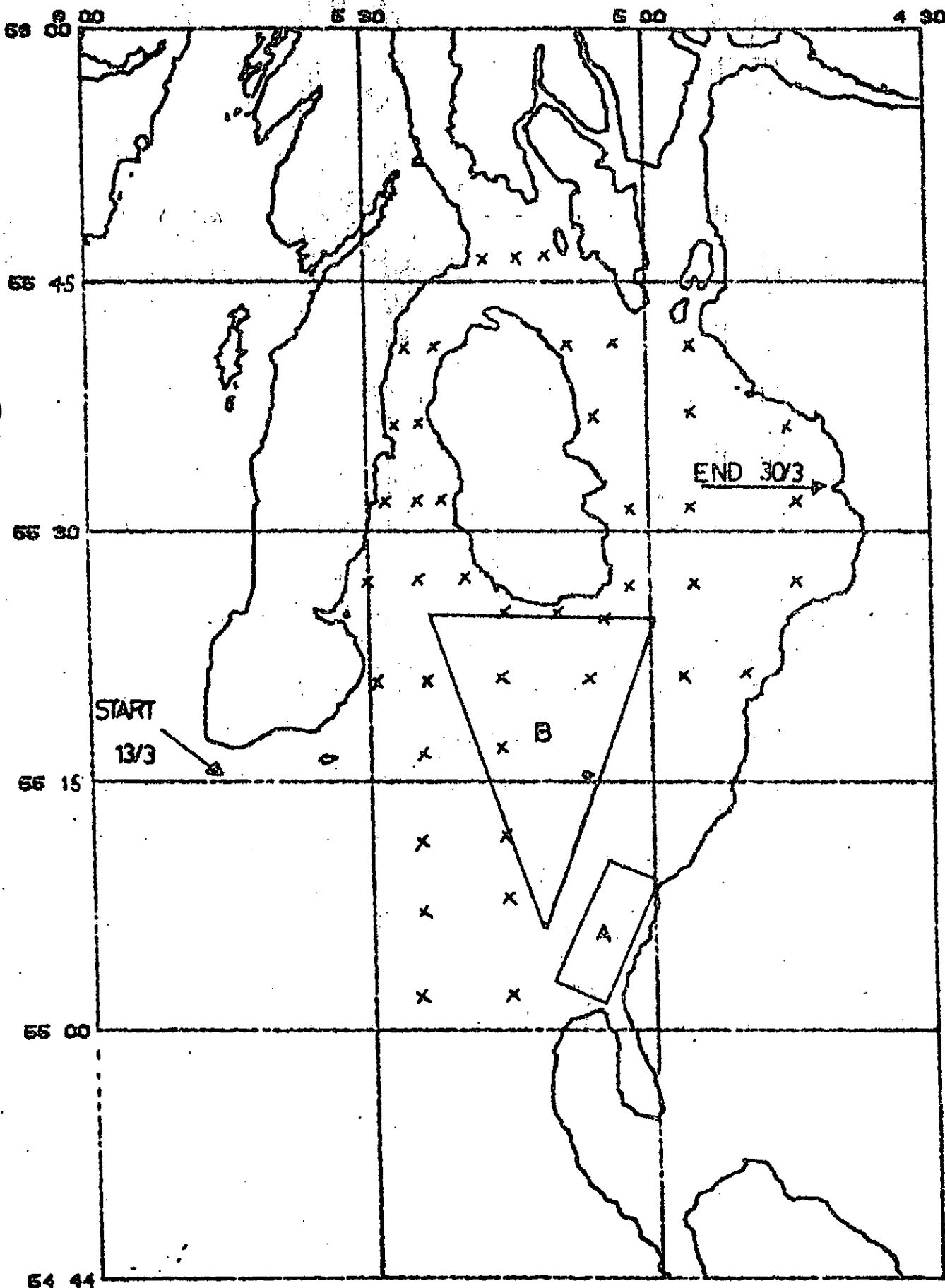
### Trawling

Only one pelagic trawl haul was carried out during part I of this trip and this was in an area of echotraces to the south west of Arran. The catch however was of under a basket and consisted mainly of immature and spent herring, sprats and small whiting. During part II of the trip, extensive bottom trawling was carried out in the area outlined in the narrative and shipboard fertilisation of herring eggs, cod eggs, whiting eggs and flounder eggs was accomplished. Ripe gadoid gonads and samples of mature unfertilised eggs were obtained for Dr Sargeant (Fisheries Biochemical Unit Aberdeen) and Dr Craik (SMEA, Oban). In addition samples of spent spring spawning herring were frozen for morphometric analysis, and several other samples of spent spring spawning herring were analysed racially aboard 'Clupea' during this period.

D Seaton  
J Morrison  
4 May 1983

### Seen in draft G Geddes

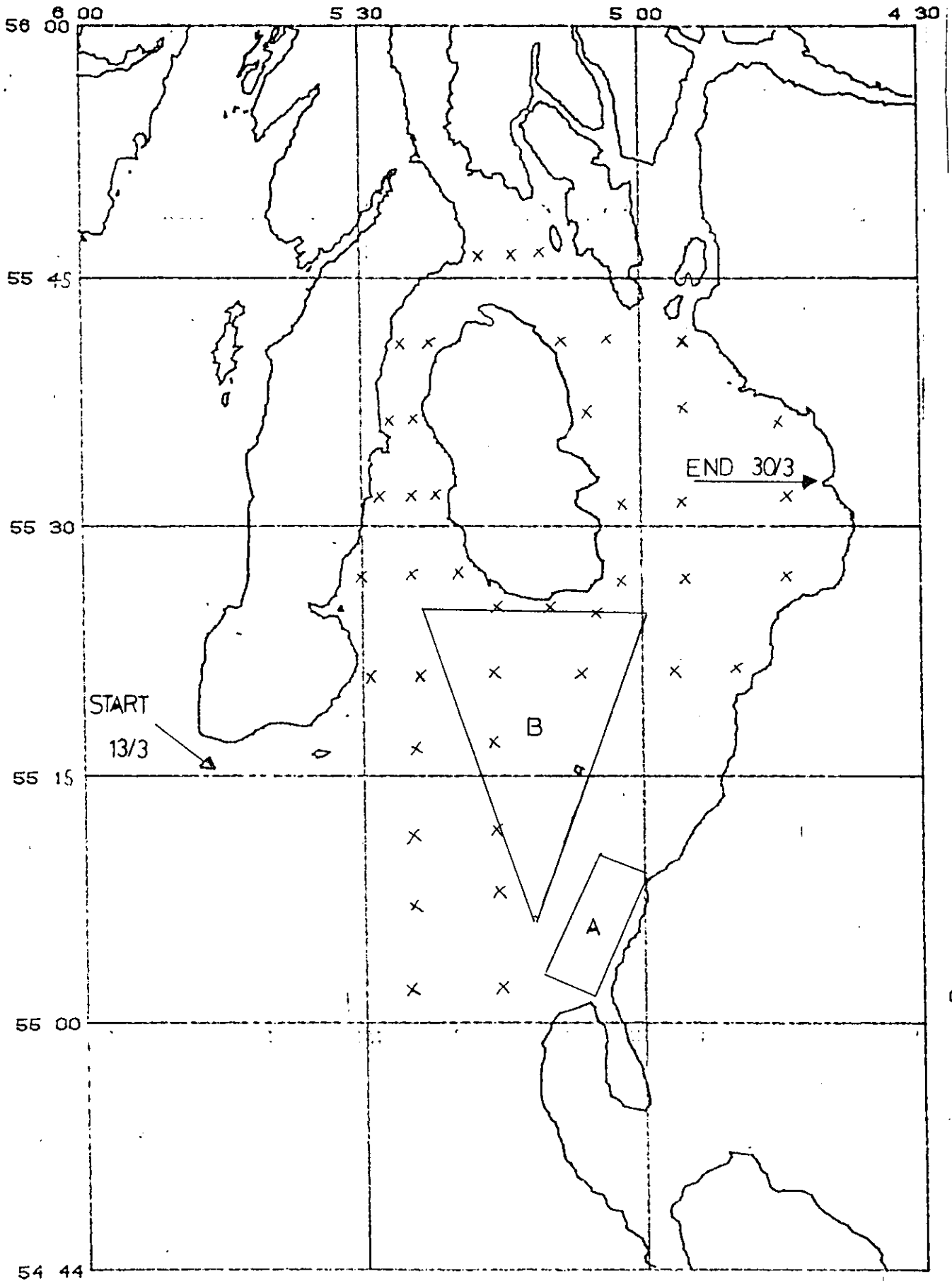
CLUPEA 3/83 — CRUISE TRACK



X = GULF III STATIONS  
 A = BALLANTRAE BANK GRID (25 STATIONS)  
 B = AREA OF TRAWLING

CLUPEA 3/83

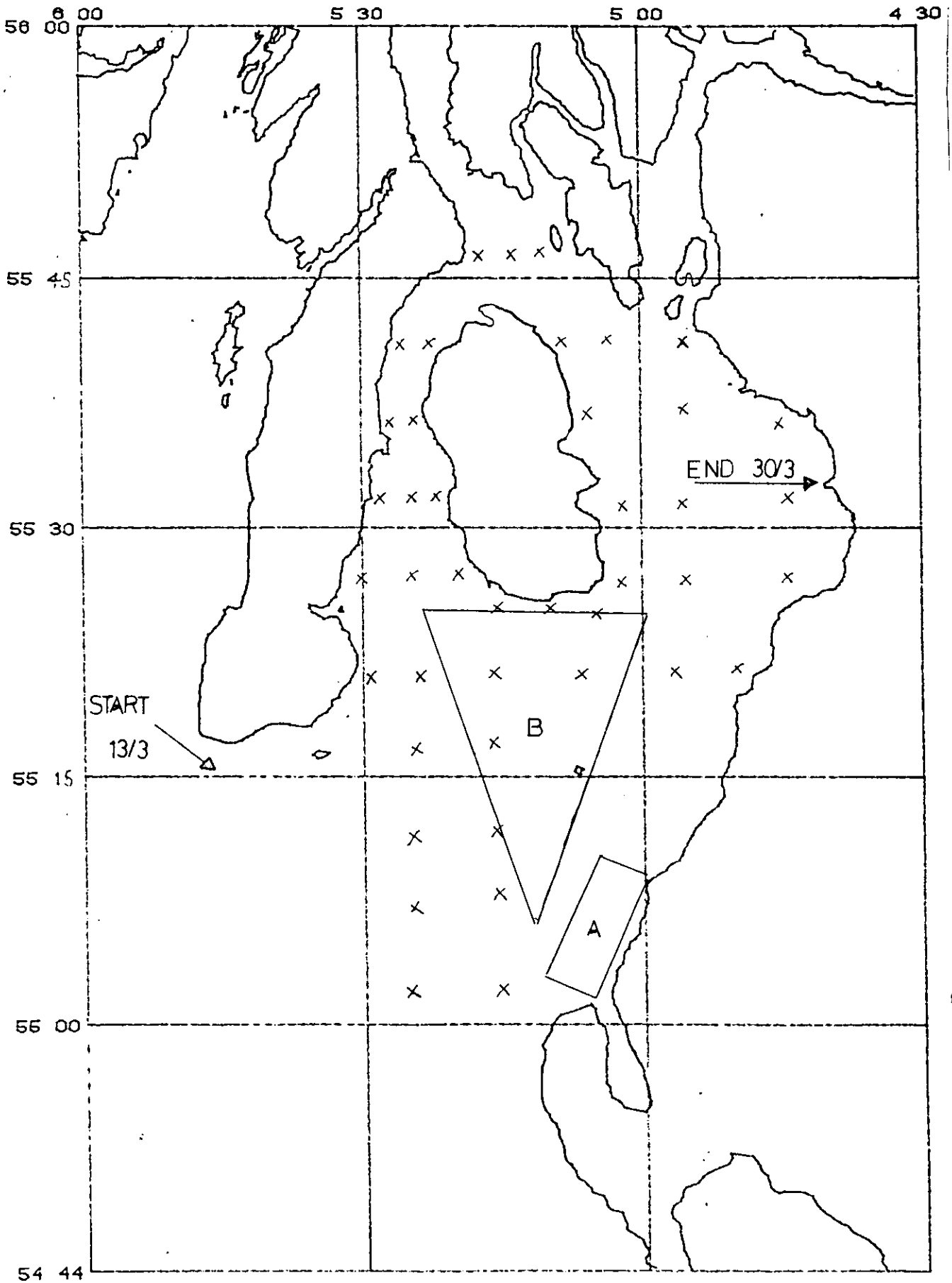
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