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

1978 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 4

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

STAFF:

S J Lockwood
M G Pawson
J H Nichols
M R Vince
W L Huggins
Mrs W A Dawson
Miss L Emerson
J Curtis (Newlyn)
J Little (Whitby)
G C Baxter) Part-time
J Wooltorton)

DURATION:

30 March-28 April

LOCALITY:

West of Scotland, Ireland and Bay of Biscay

AIMS:

1. To service three current meter stations and to lay additional stations off the Rivers Tees and Tyne.

2. To carry out an acoustic survey for blue whiting from Shetland to Porcupine Bank.

3. To launch a satellite buoy north of Porcupine Bank.

4. To study the spawning distribution of mackerel and blue whiting by trawling and plankton sampling over 24 hour periods.

5. To measure incubation rates of mackerel eggs from 15-25°C.

6. To collect selected tissues from all fish species caught for biochemical and histological examination.

7. To collect 25 l water samples from selected station positions for analysis by FRL.

NARRATIVE: All times GMT

CIROLANA departed from Grimsby at 0845 h, 30 March and docked at 0840 h, 28 April at the end of 29 days uninterrupted good weather. The first task undertaken was the servicing of current meters which was

completed by 1730 h, 31 March when Messrs Baxter and Wooltorton were taken ashore by the Tyne pilot vessel. CIROLANA sailed from the Tyne to west of Shetland where the acoustic survey commenced on 2 April and was completed on 9 April. Fish traces were identified by trawling during the survey (Figure 1). Trawling continued southwards along the edge of the continental shelf after the acoustic survey was completed.

Whilst trawling in mid-Biscay on 11 April a message was received from le Commandant de Prefecture Maritime, Brest, instructing us that CIROLANA could not work between 46° and 48°N and that he required 48 hours notice of our intentions. CIROLANA returned to the Celtic Sea until 14 April when we were able to resume working in southern Biscay. Seven days were spent there trawling and plankton sampling before returning again to the Celtic Sea for a final two and a half days plankton sampling and trawling. The main programme of work was completed at 1900 h, 25 April when CIROLANA began the journey home.

RESULTS:

1. The Spurn Head, JONSIS 1 and JONSIS 2 current meter rigs were found on station and were relaid without problems. New stations were laid off the Rivers Tees and Tyne.

2. An acoustic survey of blue whiting was made from west of Shetland (60°N) to a position west of Fastnet (51°30N). The distribution is shown in Figure 2. The blue whiting occurred mainly at 400-500 m depth in the Rockall Channel, but shoaled to 300-400 m over the Wyville-Thompson Ridge and 250-300 m south of Porcupine Bank. The fish densities were lower than found in previous surveys, with a marked absence of high densities along the eastern side of the Rockall Channel.

3. Essential preparation work on the satellite buoy was not carried out by the Meteorological Office in time for the cruise. It could not therefore be launched.

4. Mackerel: Spawning mackerel were found from the north side of the Porcupine Bank (54°N) south to southern Biscay (44°N). Intensive trawling in the Bay of Biscay and the western Celtic Sea did not reveal any clear indications of where mackerel actually spawn, but a preliminary assessment of the vertical distribution of mackerel eggs in the plankton suggests that spawning occurs in the lower half of the water column during the early hours of darkness.

Otoliths were collected for separate age length keys for the areas west of Ireland, Celtic Sea and Bay of Biscay.

Blue Whiting: Fish taken by pelagic trawl north of 53°30'N in the first week of April were mainly filling or spent, with more advanced spawning at the southern limit of this pelagic distribution. Adult fish taken south of 53°30'N were mainly spent and recovering. Few females less than 22 cm or males less than 19 cm were found to have maturity or spent gonads.

Preliminary observations indicate that the blue whiting in the pelagic layer north of 53°30'N were 4 years old or older. South of this the fish were mainly younger.

Those blue whiting with food in their stomachs were found to contain mainly euphausids, but at one station in mid-Biscay mackerel eggs were the preferred food item. One 16 cm fish had 1 200 mackerel eggs in its stomach and a further 300 undigested in its gut.

5. Mackerel eggs were reared to hatching at temperatures below 18°C, as was the case in 1977, but despite several variations in technique they could not be reared at temperatures above 18°C.

6. A total of 212 hearts from 15 species of fish and 74 muscle samples from 3 species of fish were collected for histological and biochemical examination by Dr Greer Walker.

7. Fifty two 25 l water samples were collected from around the British Isles (Figure 1) for analysis by FRL.

8. Two thousand sea-bed drifters were dropped in groups of 200 at 10 stations to the west of Britain and Ireland (Figure 1).

9. Blue whiting and mackerel were frozen whole and returned to Lowestoft for collection and heavy metal analysis by Dr Murray of Burnham on Crouch.

10. The speed of sound through mackerel was estimated by measuring the acoustic impedance of 70 fish. Laterally the speed is 1545 m/s but dorso-ventrally it is faster, 1559 m/s.

11. Mackerel eggs were stripped from running female fish and fertilised artificially. Samples of eggs were preserved at intervals following fertilisation for genetic studies by Dr A Longwell, National Marine Fisheries Service, Milford, Connecticut, USA.

S J Lockwood
26 April 1978

SEEN IN DRAFT: THF (Master)
WJS (Fishing Skipper)

INITIALLED: AJL

DISTRIBUTION:

Basic list+
S J Lockwood
M G Pawson
J H Nichols
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W L Huggins
Mrs W A Dawson
Miss L Emerson
J Curtis (Newlyn)
J Little (Whitby)
G C Baxter
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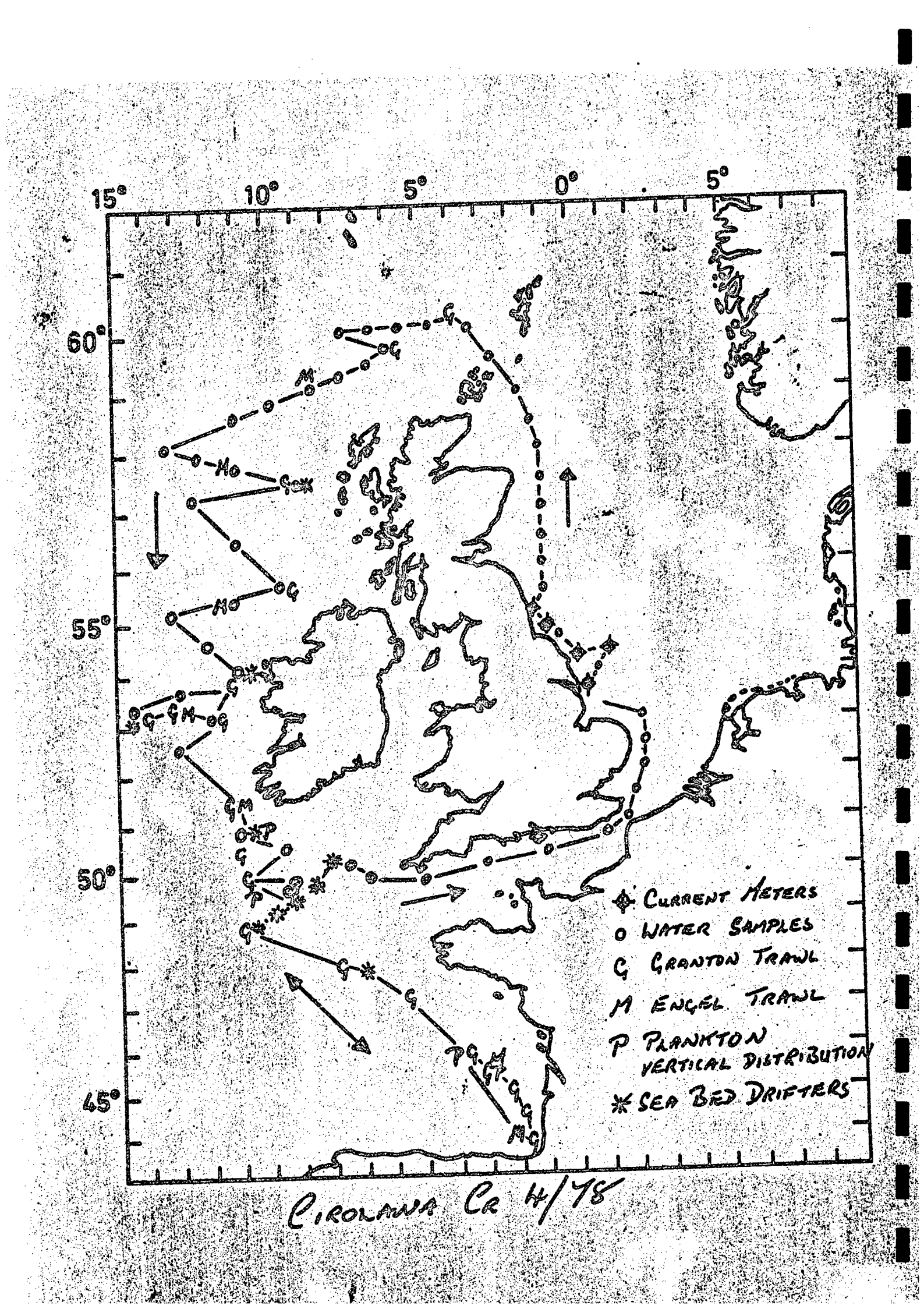

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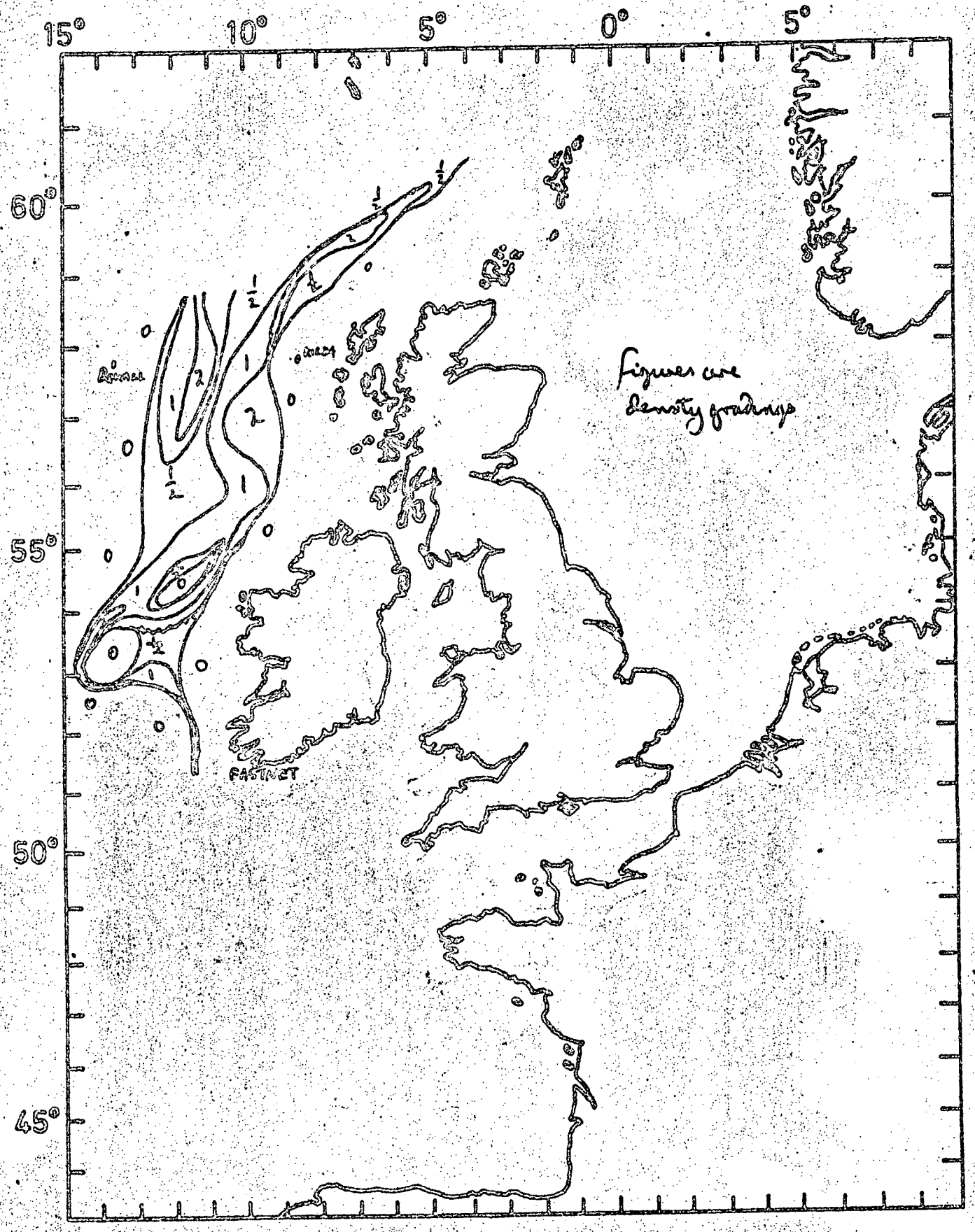
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