

FRANKLIN

National Facility
Oceanographic Research Vessel

Research Plan

FR08/96

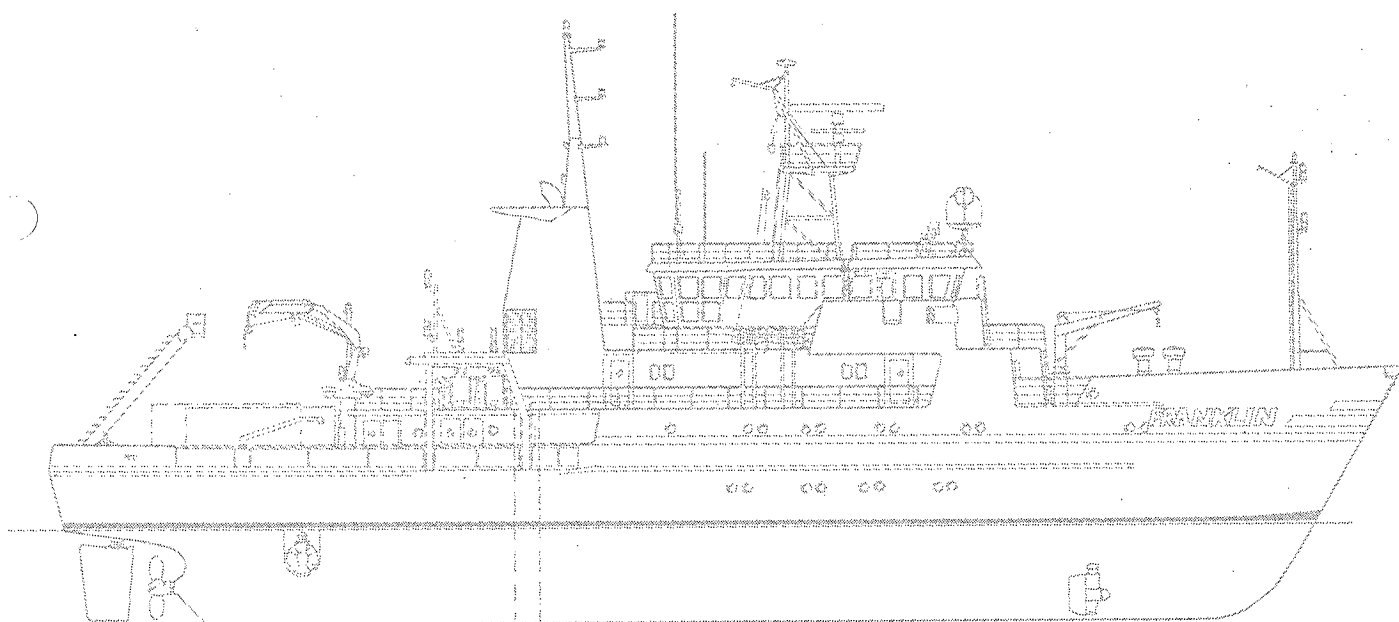
Sail	Fremantle	1000	Thursday 12 September 1996
Arrive	Fremantle	1000	Saturday 28 September 1996

SEASONALITY OF OCEAN TRANSPORT IN THE LEEUWIN CURRENT

Principal Investigator

Dr TJ McDougall
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May 1996



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RESEARCH PLAN

FR 08/96

Itinerary

Sail	Fremantle	1000	Thursday 12 September 1996
Arrive	Fremantle	1000	Saturday 28 September 1996

Moored Measurements and CTD sections of the flow of Deep and Bottom Water into the West Australian Basin of the Indian Ocean

Cruise Objectives

(i) To recover moored current meters in the passage between Cape Mentelle and Broken Plateau to measure the flow of Deep and Bottom water into the West Australian Basin.

(ii) To use the moored current-meter data together with several realisations of the hydrography across the section between Cape Mentelle and Broken Ridge to deduce the flow of Bottom, Deep and Intermediate Waters in this region.

(iii) To estimate the vertical diffusivity across the potential temperature surfaces less than 1.1°C in the West Australian Basin using the deduced volume flow rates of Deep and Bottom water across the section from Naturaliste Plateau to Broken ridge.

(iv) By obtaining more reliable estimates of the equatorward flux of deep and bottom water into the West Australian Basin, contribute to the estimate of the poleward heat flux borne by the Indian Ocean.

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Cruise Track

The proposed cruise track is shown in Figure 1. We will retrace most of the path of the F06/95 cruise on which the moorings were deployed. We plan to recover the ten moorings (marked as M1 to M10 on Figure 1) that were deployed on FR06/95 and to reoccupy 28 CTD stations (beginning at station #01 shown on Figure 1) taken on that cruise.

ORV Equipment required

All standard equipment, including thermosalinograph; ADCP; CTD, with 24-bottle (1.7 l) rosette.

Equipment Supplied by Users

Mooring winch.

Time estimates

The distance along the proposed cruise track is 1600 nautical miles, and using an average ship speed of 10 knots gives a total transit time of 7 days. I have taken a ship speed of 10 knots rather than 12 knots because of the frequent inclement weather in this region. Allowing 12 hours for the recovery of each of the ten moorings means that 5 days will be devoted to the mooring work. Assuming a CTD wire speed of 1 m/s, the CTD station time (for 28 CTD casts) is estimated to be 4 days. The total cruise time is then 16 days and allowing one extra day for bad weather gives 17 days. I am conscious that we should expect more down-time due to the sea state in this part of the ocean. If we are afflicted with a significant amount of such bad weather we will have no alternative but to omit some of the CTD stations.

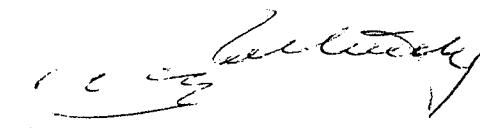
Scientific Personnel

Trevor McDougall	CSIRO	Oceanography	Chief Scientist
David Jackett	CSIRO	Oceanography	
Kevin Miller	CSIRO	Oceanography	
Danny McLaughlan	CSIRO	Oceanography	
Phil Adams	CSIRO	ORV Electronics	
Bernadette Heaney	CSIRO	ORV Computing	
Mark Rayner	CSIRO	ORV Hydrology	
David Terhell	CSIRO	ORV Hydrology	

This cruise plan is in accordance with the directions of the National Facility Steering committee for the oceanographic research vessel *Franklin*.



C. B. Fandry
CSIRO Division of Oceanography



G Paltridge
National Facility Steering Committee

May 1996

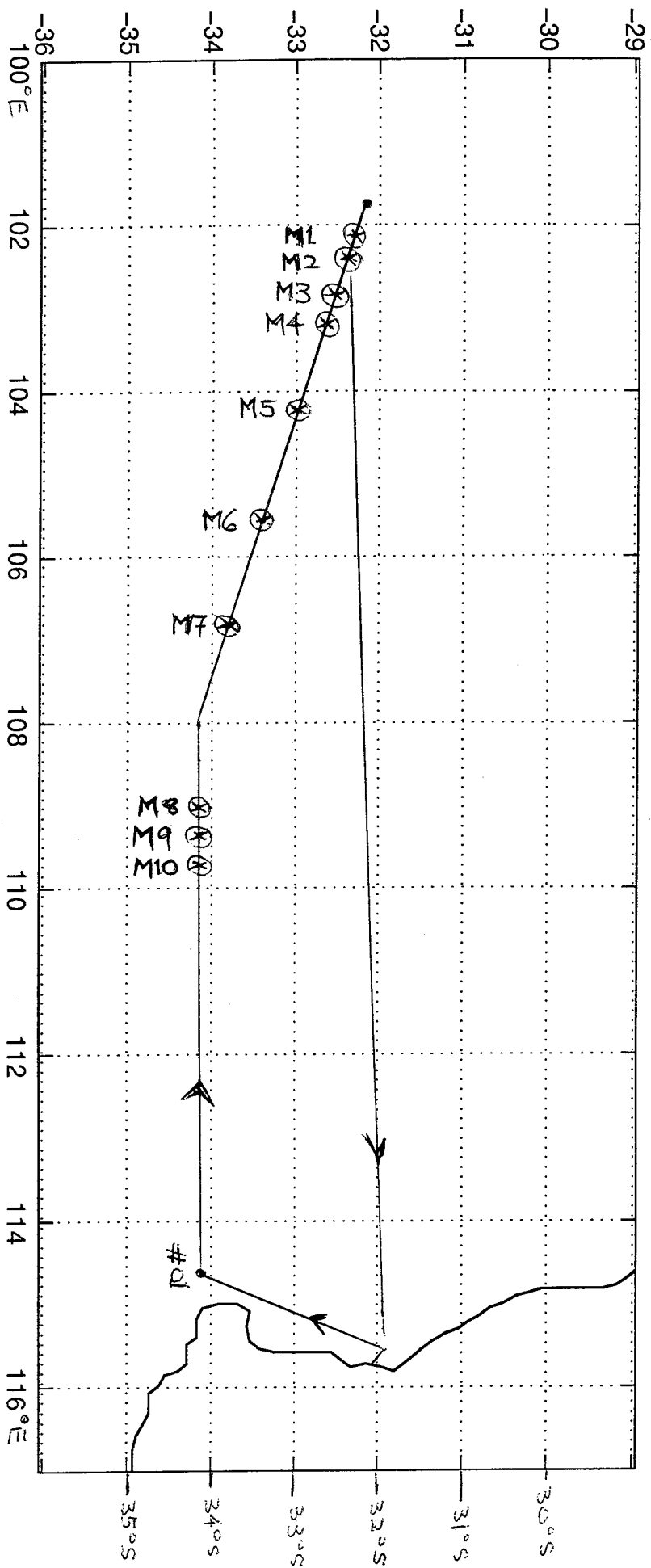


Figure 1. Proposed Cruise Track FR08/96