FRANKLIN

National Facility
Oceanographic Research Vessel

RESEARCH PLAN

Cruise FR 4/95

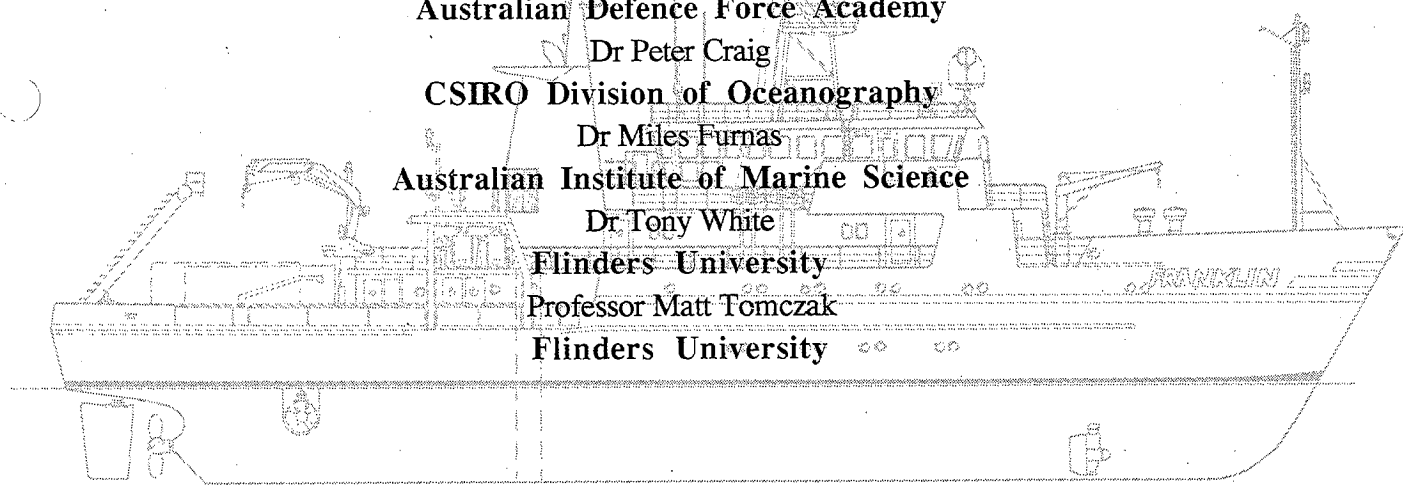
INTERNAL TIDAL EVOLUTION ON THE NORTHWEST SHELF

Itinerary

Sail Dampier 0900 Tuesday 25 April 1995
Arrive Femantle 1500 Saturday 6 May 1995

Principal Investigators

Dr Peter Holloway
Australian Defence Force Academy
Dr Peter Craig
CSIRO Division of Oceanography
Dr Miles Furnas
Australian Institute of Marine Science
Dr Tony White
Flinders University
Professor Matt Tomczak
Flinders University



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AUSTRALIA

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Scientific Objectives of the Project

- To describe the temporal and spatial evolution of internal tides across the North West Shelf and the associated higher frequency internal waves.
- To measure the temporal and spatial variability of primary production on the North West Shelf and to relate this to physical dynamics.

Cruise Objectives

- To recover 10 moorings containing current meters, ADCP's, thermistor strings and water level recorders, deployed during cruise FR1/95.
- To occupy 3 CTD and ADCP stations for 13 hours each, making CTD casts every 30 minutes in order to resolve a full tidal cycle.

Piggy Back Projects

Measuring the Leeuwin Current by Electromagnetic Induction

Dr Tony White Flinders University

Aims to recover 2 magnetometers from off North West Cape, moored from an earlier *Franklin* cruise. In addition, in conjunction with Dr Ted Lilley, measurements will be made of the Leeuwin Current over a period of several hours using a magnetometer suspended from the ship. This will be done in the vicinity of the magnetometer moorings.

Transport and fluxes in the Indian Ocean

Prof Matt Tomczak Flinders University

Two current meter strings deployed in 1994 will be recovered and redeployed after a battery change.

Cruise Track

The vessel will depart Dampier and steam to mooring site M3 (see attached figure) and carry out the first 13 hour CTD station. The next morning, mooring recovery will start as this can only be done in daylight hours. Mooring recovery (for the internal tide project) will take 3 days with CTD stations carried out during the nights. After the last current meter recovery (mooring M6), the ship will steam to North West Cape region to recover 2 magnetometers in separate moorings, recover and deploy two current meter arrays and make magnetometer measurements of the Leeuwin Current. The ship will then sail for Fremantle.

The time estimate is based on a steaming speed of 11 knots and a time allowance of 2 or 3 hours per mooring recovery, with mooring recovery only during daylight hours.

ORV Equipment

CTD, ADCP, Rosette, Hydrology, Thermosalinograph
Rear-deck winch and capstan, A-frame

Personnel

Peter Holloway	ADFA	Chief Scientist
Peter Craig	CSIRO, Division of Oceanography	
Kevin Miller	CSIRO, Division of Oceanography	
Danny McLaughlan	CSIRO, Division of Oceanography	
Tony White	Flinders University	
Ted Lilley	Australian National University	
Bob Edwards	CSIRO, ORV	Cruise Manager
Phil Adams	CSIRO, ORV	
Neil White	CSIRO, ORV	
Ron Plaschke	CSIRO, ORV	

Mooring Locations

Mooring	Latitude	Longitude	Depth (m)	Instruments
M1	19 04.94' S	115 35.78' E	750	6 x Aanderaa current meters
				1 x water level recorder
M2	19 16.33'	115 49.57	300	6 x S4 current meters
M3	19 25.73'	116 00.42	170	1 x ADCP
M3A				1 x thermistor string
M4	19 33.10'	116 08.97'	125	1 x ADCP
M4A				1 x thermistor string
M4B				5 x Steedman current meters
M5	19 39.00'	116 16.00'	85	1 x ADCP
M5A				1 x thermistor string
M6	19 44.96	116 23.05	68	2 x Steedman current meters
				1 x water level recorder

Magnetometer Moorings

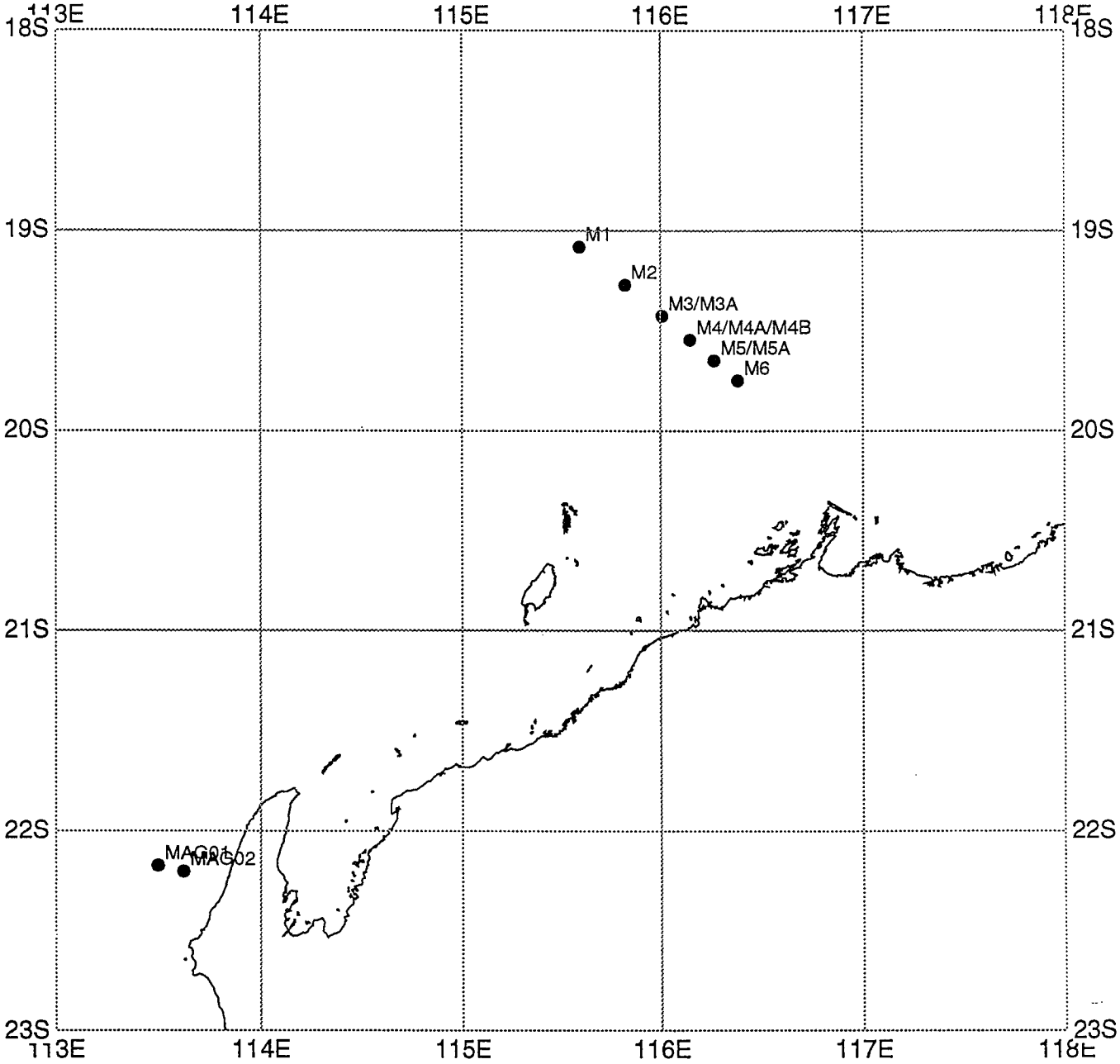
MAG01	22	10.40'	113	30.03'	1110	1 x magnetometer
MAG02	22	12.15'	113	37.50'	800	1 x magnetometer

This Research Plan is in accordance with the directions of the National Facility Steering Committee for the oceanographic research vessel *Franklin*.

A D McEwan
CSIRO Division of Oceanography

G W Paltridge
National Facility Steering Committee

February 1995


113E
114E
115E
116E
117E
118E
18S
19S
20S
21S
22S
23S
M1
M2
M3/M3A
M4/M4A/M4B
M5/M5A
M6
MAG01
MAG02