MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES RESEARCH LABORATORY, PAKEFIELD ROAD, LOWESTOFT, SUFFOLK, NR33 OHT

1993 RESEARCH VESSEL PROGRAMME

REPORT : RV CIROLANA: Cruise 1

STAFF:

	(a)	(b)
	S J Malcolm SIC	S J Malcolm SIC
	J Lawrence	J Rees
	D B Sivyer	N Pearson
	A Reeve	J Aldridge
	N Faber	M Mason (UC)
	R Goddard (PML)	A Emery
	K Prastka (UEA)	
	A Matthewson (UEdin)	

DURATION: 8 January-22 January 1993
(planned 7-26 January 1993)
Part (a) 2100h 8 January-1600h 15 January
Part (b) 1700h 18 January-2100h 22 January

LOCATION: Wash, Humber, North Sea

AIMS:

1. To identify and quantify the fate of river-borne nutrients entering the Wash and Humber estuary, examining nutrient distributions and critical processes from the river inputs through to the North Sea in sub-tidal sediments and overlying water. (AE00504A)

2. To measure factors affecting benthic nutrient recycling in sub-tidal sediments in the North Sea. (AE00504A)

3. To measure nutrients along an offshore transect from the Humber to the Tyne, linking with a SOAFD initiative sampling nutrients along an offshore transect coming south to the Tyne. (AE00504A)

4. To take samples over a grid in the southern North Sea to improve knowledge of the seasonal signal in nutrients, particularly phosphate. (AE00503A)

5. To recover the tetrapod following its long deployment off Aberdeen. (AE00207)

6. To conduct a programme of sediment sampling at the COSEDS site off Aberdeen. (AE00207)

NARRATIVE: (all times are GMT)

RV CIROLANA was unable to sail at 2000h on 7 January due to a major engine breakdown. Repairs were executed and CIROLANA left Lowestoft at 2124h on Friday 8 January to arrive

in the Wash at 0830h on 9 January 1993. Box cores were collected with the NIOZ box-corer and a CTD cast made at site A1 and 8 of the Wash Grid sites were sampled. Humber grid sampling commenced at 0830h on Sunday 10 January and was completed that evening. An attempt to combine work on the propulsion motor with the scientific programme was not practicable. It was, therefore, necessary to write off a day of the scientific programme to complete the engineering work. On Tuesday 12 January CIROLANA entered the Humber to conduct a sediment and water sampling programme at site A4 returning to the Bull anchorage for a further 12 hours engineering work. The continuing strong westerly winds dictated that a visit to the Outer Silver Pit sediment site could not take place. CIROLANA lay off the Humber overnight before proceeding to OS3 to commence a transect of CTD and surface water sampling sites along the north Norfolk coast and to allow the disembarkation of the engineering contractors. CIROLANA lay off Lowestoft overnight. The westerly arm of the JoNuS southern North Sea grid was sampled down into the Thames, CIROLANA laying overnight off Margate. On Friday 15 January 1993 CIROLANA commenced a transect across the North Sea from the Thames to the Rhine but after 3 stations work was abandoned in an increasing southerly gale. Following a breakdown due to loss of cooling water, CIROLANA returned to Lowestoft on the afternoon tide. Docked at 1618h. Scientific staff disembarked unloading the JoNuS project gear.

There was a mid cruise break for the weekend. Loading of gear for the next leg of the cruise was completed on Monday 18 January 1993 and CIROLANA left Lowestoft at 1648h proceeding overnight to the Humber. On 19 January 1993 sampling of the East Coast transect (Aim 3) commenced at 0830h at HOS1 and finished at the Tyne at 2230h.

CIROLANA proceeded as fast as possible overnight to the COSEDS site north of Aberdeen. A good weather 'window' allowed the guard buoys and the Quadrapod and Tetrapod to be safely brought aboard as quickly as possible. All credit to the officers and crew of CIROLANA.

Sediment samples were collected at the Tetrapod position using the Day grab and the new FSI CTD fitted to the rosette and successfully deployed. CIROLANA lay while work was completed on the 'pods'. CIROLANA travelled overnight to the Farne Deeps. The new CTD was tested in the Farne Deeps the following morning before CIROLANA had to return to the coast in worsening weather. Gales and storms forecast for the whole North Sea prevented sampling at the Dogger bank NMP sites. Further tests of the CTD were made at the mouth of the Tyne and in the Silver Pit on the return leg to Lowestoft.

CIROLANA docked at Lowestoft at 2040h on 22 January 1993.

RESULTS

The cruise track is shown on the chart at Fig 1.

1. A reduced programme of sampling in the Wash, Humber and the area immediately offshore was completed successfully. Constraints due to the reduced overtime budget let to incomplete utilisation of the shiptime resource. The cruise period was one of exceptionally consistent, strong winds from the west which hindered working offshore and an additional constraint was placed on the cruise by the requirement to perform work on one of the propulsion motors.

Two sediment process sites were sampled and a range of work completed by the MAFF sediment process team, UEA and PML. Nutrient concentrations in all water column samples collected were determined on board but most of the sediment process samples had to be retained for analysis at Lowestoft. There will in future be a requirement to run the sediment process samples at sea.

2. Aim 2 could not be met due to weather limitations preventing sampling at sites in mid North Sea.

3. The transect of water sampling sites from the Humber to the Tyne was completed and samples returned to Lowestoft for analysis. The transect included 2 NMP sites.

4. Weather and overtime constraints meant that the grid of water sampling sites in the southern bight could not be sampled.

5. The Quadrapod and Tetrapod were successfully recovered from the Newburgh site north of Aberdeen. The Quadrapod had fallen over during an 'event' after 1.5 days while the Tetrapod had remained upright and returned data from the entire deployment. Initial data processing shows that 5 events were recorded (Fig 2). The Tetrapod moved at the same time as the Quadrapod fell over and again 13 days later during another storm (Fig 3). Maximum significant wave height recorded was 3m during the first event (approximately 2 or 3 per year) (Fig 4).

6. Sediment samples were collected at the COSEDS site at Newburgh for particle size distribution determination and for calibration of the MOBS (miniature optical backscatter probe).

Despite limitations imposed by the overtime budget constraints, the appalling weather, and the engineering work, the much reduced JoNuS programme covered some of the highest priority objectives. The COSEDS programme was completed successfully despite the bad weather. We were very lucky to be at the site at the right time.

S J Malcolm (SIC)
22 January 1993

SEEN IN DRAFT: Master B A Chapman
SFM J Harper

INITIALLED: P G S

DISTRIBUTION:

Basic list+	K Prastka (UEA)
S J Malcom	A Matthewson (UEdin)
J Lawrence	J Rees
D B Sivyer	N Pearson
A Reeve	J Aldridge
N Faber	M Mason (UC)
R Goddard (PML)	A Emery

JONUS SAMPLING POSITIONS. CIRO 1/93

+ water
● sediment.

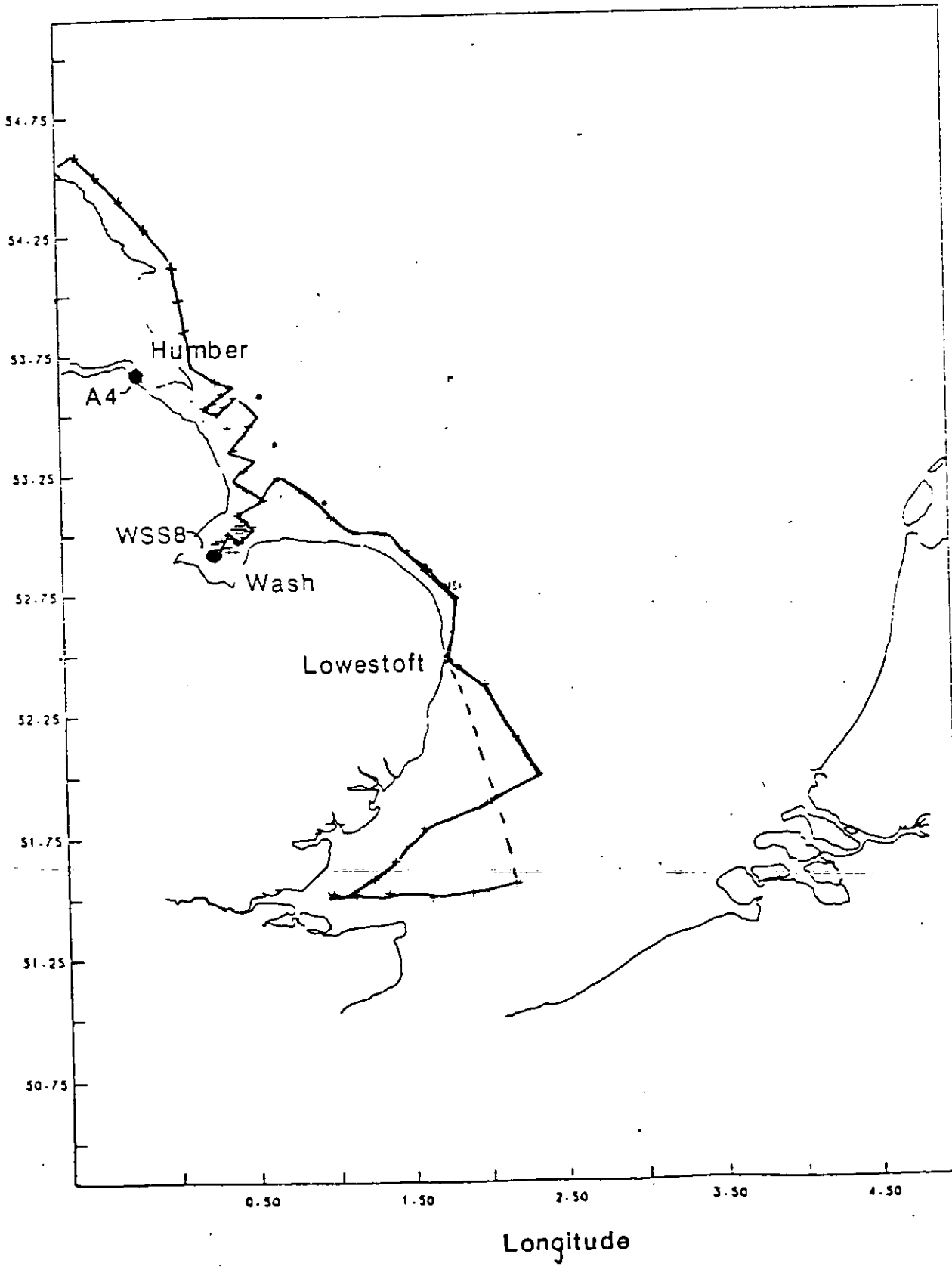


Fig 1

Aberdeen dep83 - roll & pitch

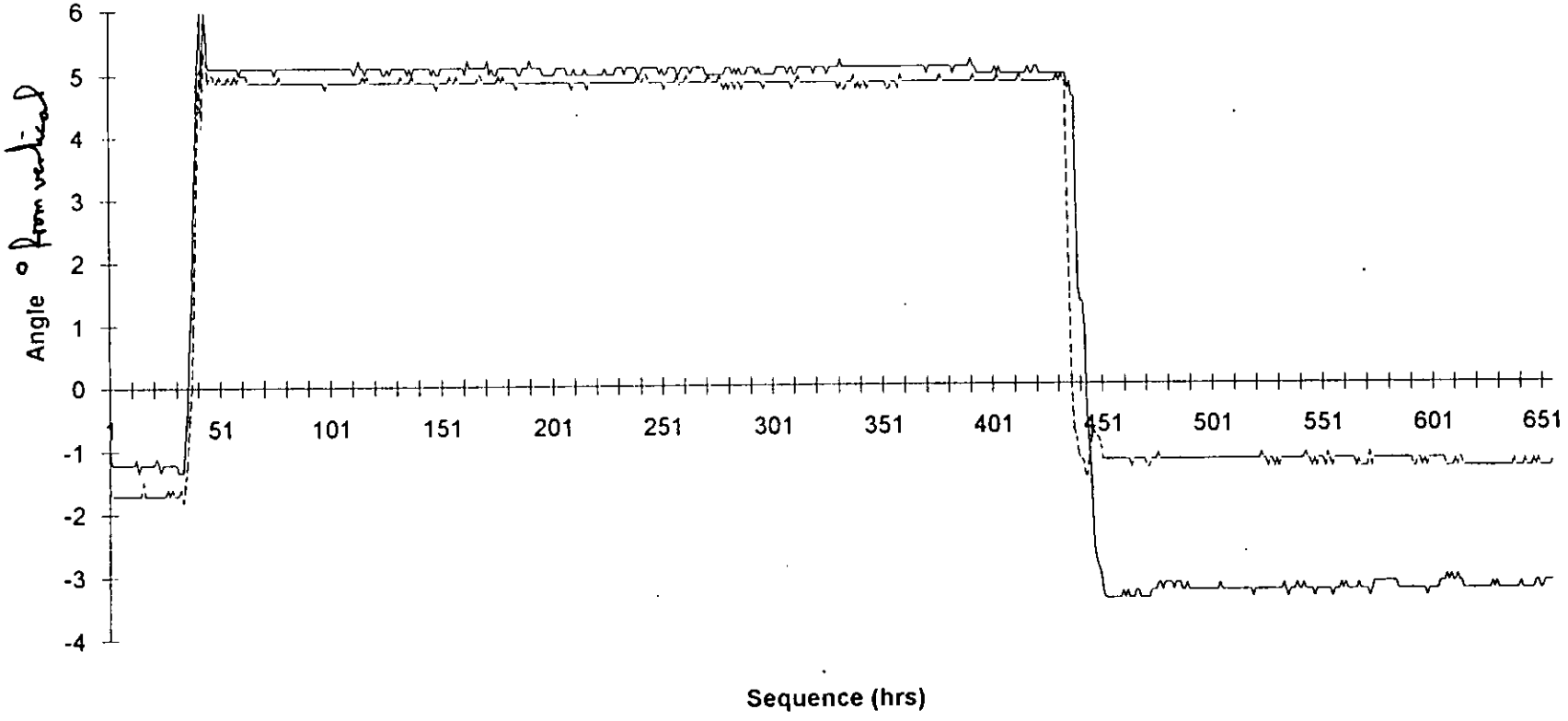
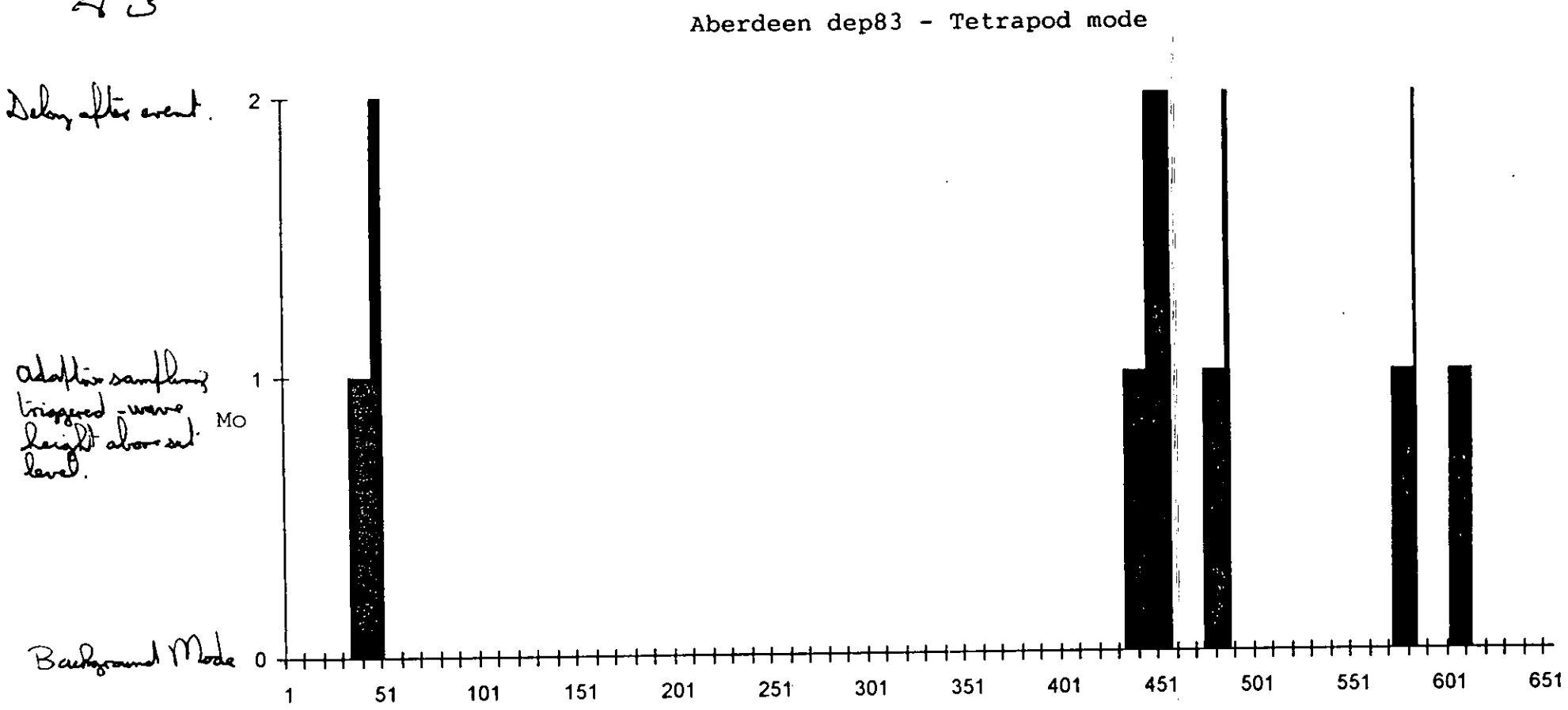


Diagram - part of Consultancy Report CIRI/93



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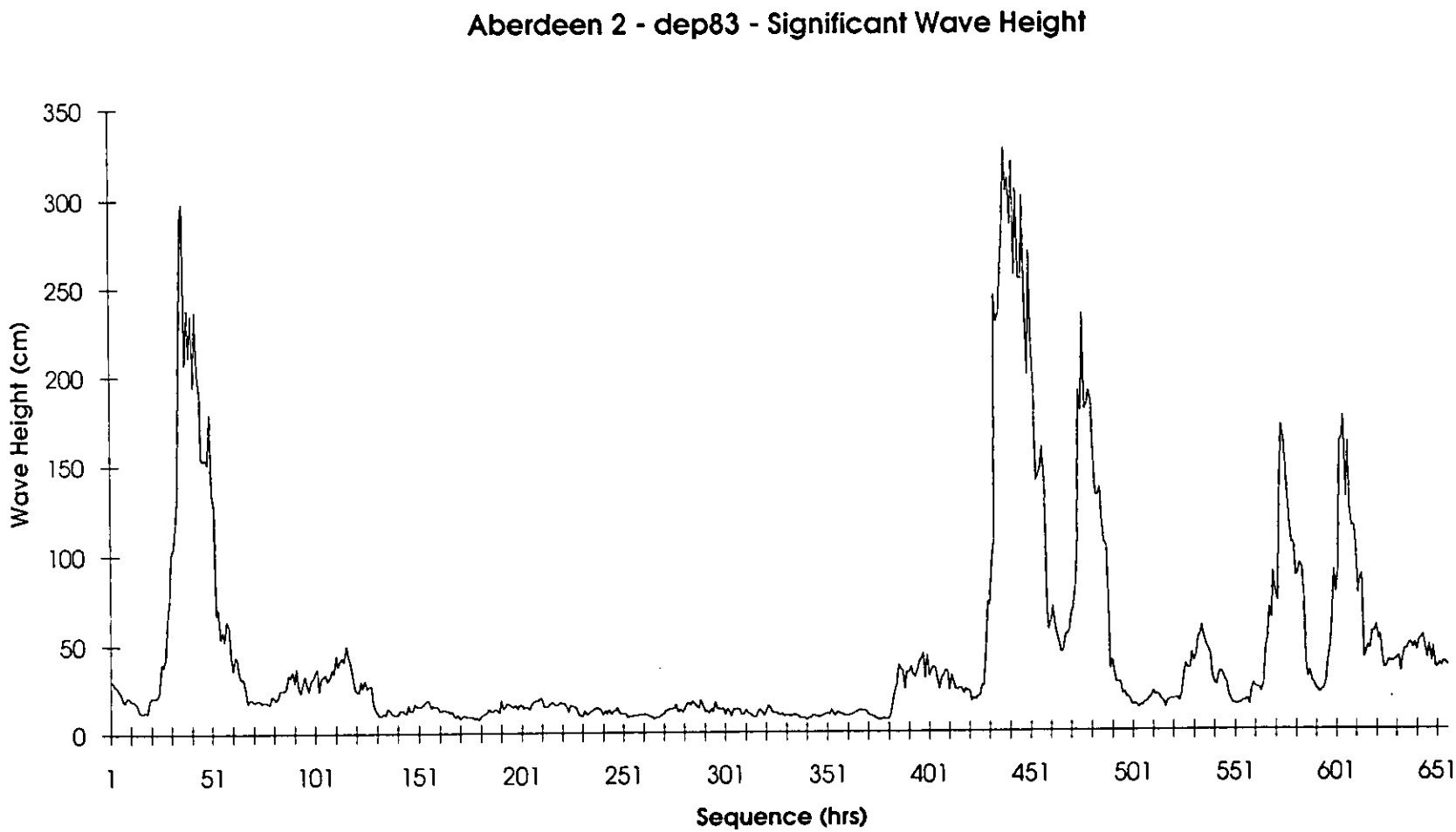
Aberdeen 2 - dep83 - Significant Wave Height
Wave Height (cm)
350
300
250
200
150
100
50
0
1
51
101
151
201
251
301
351
401
451
501
551
601
651
Sequence (hrs)