VESSEL RRS JOHN MURRAY

CRUISE PERIOD 15-20 July 1976

PERSONNEL

I. R. Joint	SSO	Senior Scientist
R. F. C. Mantoura	HSO	
A. J. Bale	SO	
R. J. M. Howland	SO	
T. Kendall	SO	
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ITINERARY A sketch chart and station list are attached to this report.

Thursday July 15 Locked out Barry 0845. Work started on station 1 at 1000.

Friday " 16 Finished sampling at station 1 at 0015. Continuous samples taken on a track between stations 1 and 2. Finished sampling at 0515; proceeded to Barry Roads to pick up an O_2 cylinder brought out by Barry Pilots. Returned to Station 2; began sampling at 0945. Work on station 2 completed at 2330 and continuous sampling began on a track between stations 2 and 3.

Saturday " 17 Arrived on station 3 at 0700. Sampling completed at 2100 and continuous sample began on a track between stations 3 and 4.

Sunday " 18 Arrived on station 4 at 0600. Sampling completed at 2030 and continuous sampling began on a track between station 4 and Carmarthen Bay. A heavy swell prevented any work at the proposed station in Carmarthen Bay and we returned to station 4, arriving at 0900. Sampling continued at station 4 until 2000. Samples taken continuously on a track between stations 4 and 6.

Tuesday July 20 Arrived at station 6 at 0500. Sampling completed at 1745 and sampling continued on a track between station 6 and Barry until 2130. Locked in Barry at 2245.

OBJECTIVES

a) To measure rates of primary and secondary production.
b) To measure spatial variability of zooplankton.
c) To measure distribution and concentration of inorganic and organic nutrients.

PROCEDURES AND METHODS The methods used were those outlined in the cruise programme.

a) At each station water samples were taken at the beginning of each day for the measurement of

(i) $^{14}CO_2$ uptake rate by phytoplankton in a simulated in situ incubator.

(ii) uptake rates of ^{14}C glucose and the production of $^{14}CO_2$ by microbes in water samples incubated at ambient temperature.

(iii) O_2 uptake rates of water samples incubated at ambient temperature.

Water samples were also filtered for the subsequent analysis of chlorophyll. Large volumes of seawater were centrifuged in the Sharples centrifuge and the particulate matter was collected. Solar radiation was recorded continuously.

Zooplankton collected by net haul were incubated with known concentrations of Phaeodactylum and the change in algal concentration was measured with a Coulter Counter.

The consumption of oxygen over a 24 hour period by known species of zooplankton was measured with an O_2 meter.

The production of dissolved organic carbon by known species of zooplankton was measured over several days incubation at ambient temperature.

b) The spacial variability of zooplankton was sampled over one tidal cycle at each station. Water sampled continuously by the Flygt submersible pump was passed through a Longhurst-Hardy plankton recorder which sampled at 10 minute intervals.

c) The following measurements were made continuously over a tidal cycle at each station on water sampled continuously by the Flygt pump. (i) Temperatures and salinity with the Plessey thermosalinograph, (ii) Turbidity with the Partech meter, (iii) the concentrations of ammonia, nitrate, nitrite and phosphate with the Autoanalyser, (iv) the concentration of dissolved organic carbon with the DOC apparatus.

These measurements continued as the ship steamed between stations on the track indicated on the attached chart

EQUIPMENT AND OTHER FAILURES

All equipment performed well. However, the ships non-toxic seawater supply pump was unable to supply the water flow required by the Plessey thermosalinograph. We were able to divert some of the water from the Flygt pump to give sufficient flow for the thermosalinograph.

A leakage in the DOC apparatus on the first day resulted in an unexpectedly high use of oxygen. A second oxygen cylinder was obtained by RVB and sent out to the ship with the Barry Pilot launch. This oxygen cylinder lasted for the rest of the cruise.

RESULTS

Five stations were worked and bad weather prevented work

for one tidal cycle at a station in Carmarthen Bay. However, additional work was done at station 4. The sampling on the track between stations was completed successfully.

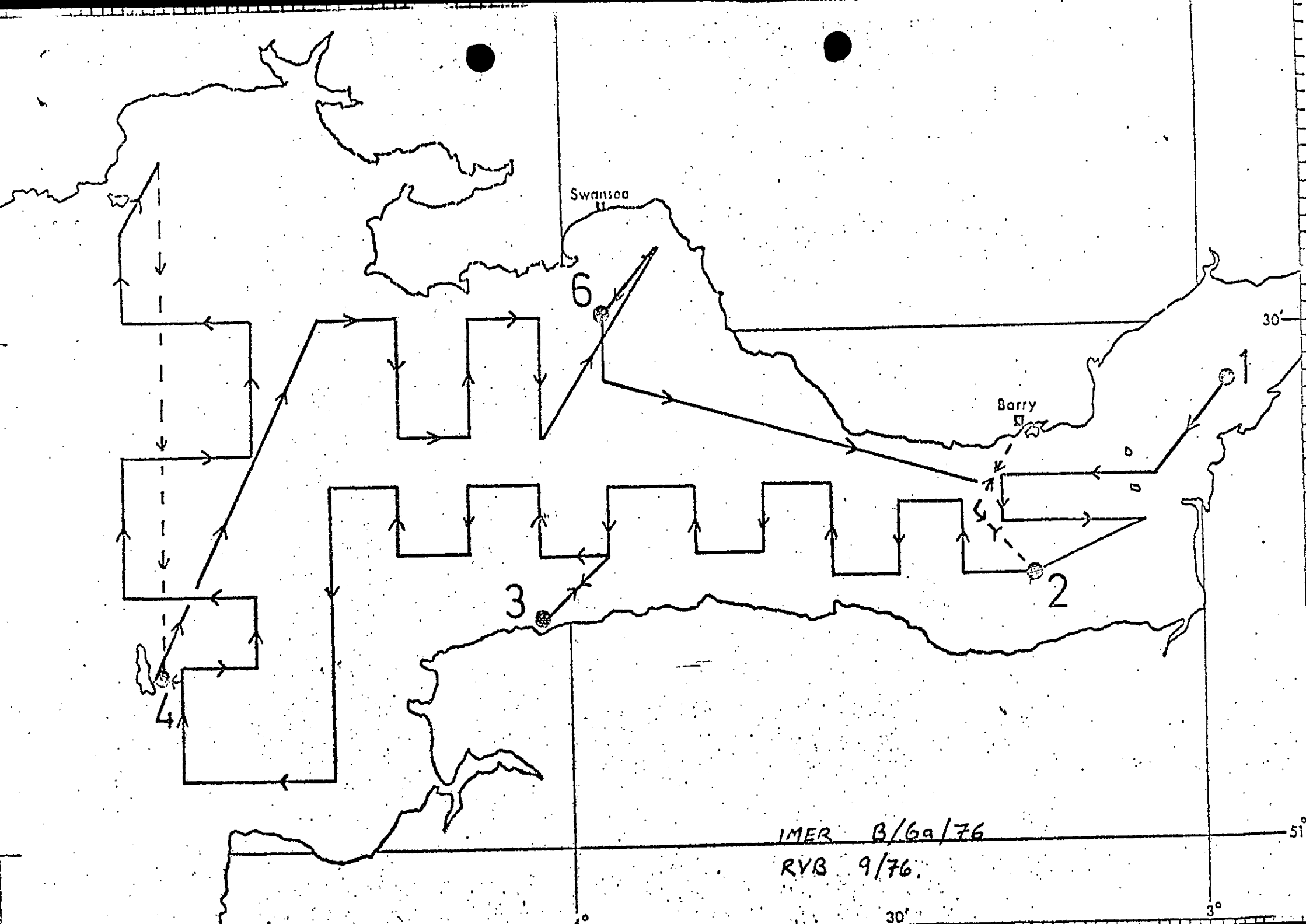
PREPARED BY I. R. Joint

APPROVED BY A. R. Longhurst

DATE 29th July, 1976.

STATION LIST

	Lat. N	Long. W
1.	51° 26.6'	02° 58'
2.	51° 16'	03° 16
3.	51° 13.2'	04° 02.8'
4.	51° 10'	04° 39'
6.	51° 31'	03° 56'



IMER B/6a/76

RVB 9/76.

CIRCULATION LIST - BRISTOL CHANNEL

Internal

Glover
Longhurst
Hamilton
Robinson
Fay
File
Notice Board - (Brown)

External

NERC

Foxton

IOS

Mrs Edwards (BODS)
Cartwright (Bidston)
Charnock (Wormley)
Tucker (Taunton)

IGS

Moore

MBA

Denton

SMBA

Currie

MAFF

Lee
Cushing
Wood

DAFS

Parrish

RVB

Stobie - (2)

DOE

Garnett, London

WRC

Eden, Stevenage

Welsh Office

Naylor Firth - (4)

ICI

Pearson

BRISTOL UNIVERSITY

Dineley
Eglinton

UNIVERSITY COLLEGE CARDIFF

Bellamy
Hammond

UWIST CARDIFF

Davies

UNIVERSITY COLLEGE SWANSEA

Banner
Knight-Jones
Nelson-Smith
Brooks
King

UNIVERSITY COLLEGE LONDON

Morris

IMPERIAL COLLEGE OF SCIENCE & TECHNOLOGY

Webb

UNIVERSITY OF LIVERPOOL

Abdullah

WATER AUTHORITY

Welsh National
Severn-Trent
Wessex
South West