

RRS Challenger Cruise CH4/82. 3-18 March 1982.

Dr. D. Hamilton,

University of Bristol.

Due to stormy weather, only four days were suitable for working, during which the following were achieved. 1 Six current meter moorings were laid and recovered.

2 80 nautical miles of side scan sonar and high resolution continuous seismic profiling were carried out.

The following charts are enclosed.

- ① Our proposed area of operations, and programme.
- ② Positions of current meter moorings CM1 - CM6.
- ③ Track chart of side scan sonar and continuous seismic profiling survey.

Six Current Meter Log Sheets give details of the moorings
CM1 = B3502 to CM6 = B3497.

For CM1, CM2, CM3 & CM5 a new type of free fall, acoustically released mooring for shelf depths was used successfully for a first time.

Weather conditions precluded sea testing of our Boundary Layer Instrument Package (BLIP).

It is hoped to report on the results of the Cruise in about three months.

D. Hamilton,

18.3.82.

Note: Success of current meter recording appears to be 100%.

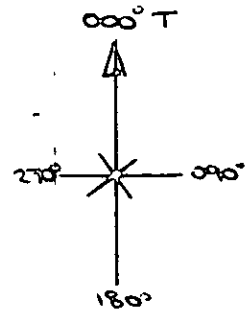
RRS CHALLENGER CRUISE 4/82, BRISTOL UNIVERSITY

MIAS 2695

SSS AND CSP TRACKS - - - -

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R. R. S. CHALLENGER



Tidal Station

49° 00' N

8° 00' W

8°

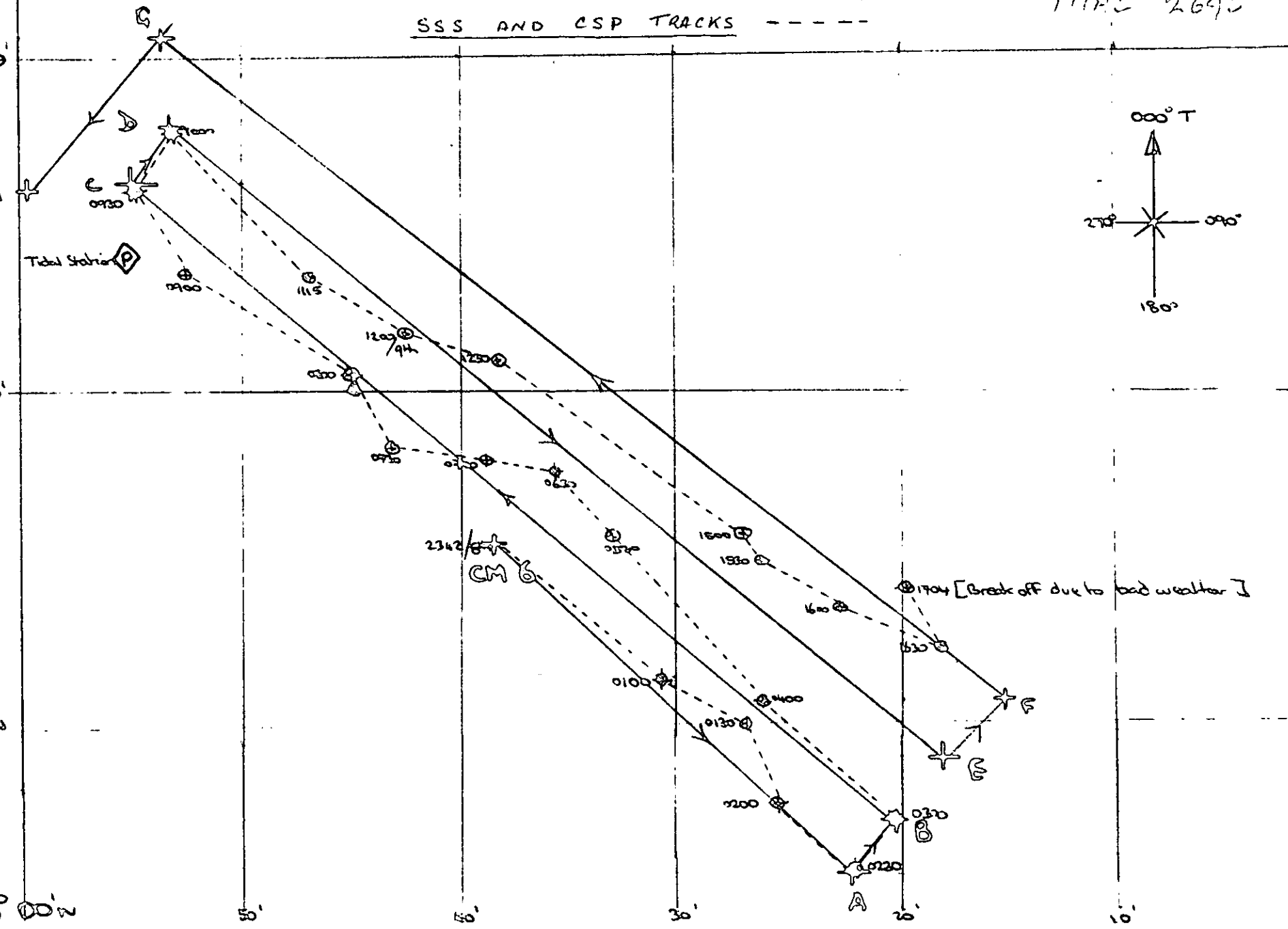
10°

12°

14°

16°

18°



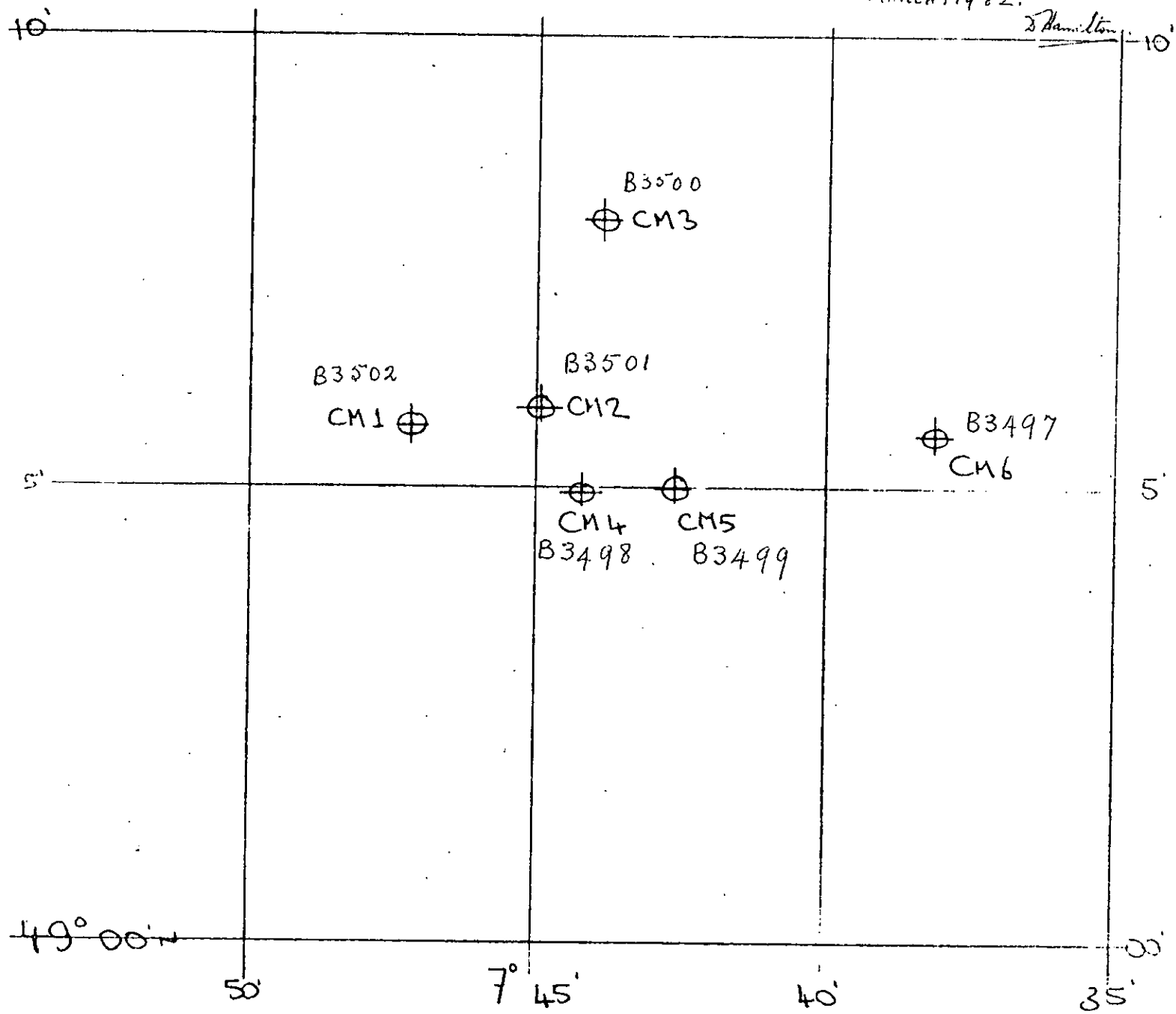
R. R. S. CHALLENGER / cruise 418

BRISTOL UNIVERSITY

3-18 MARCH, 1982.

Mooring Positions

Hamilton



POSITIONS

	STATION					
	No.					
CM 1	49° 05.7' N	75° 47.2' W.	<u>B3502</u>	Decca	Red. C 23.3	Range B 78.1
CM 2	49° 05.8' N	75° 44.9' W.	<u>B3501</u>		C 23.4	B 77.6
CM 3	49° 07.9' N	75° 43.8' W.	<u>B3500</u>		C 22.3	B 78.2
CM 4	49° 04.9' N	75° 44.2' W.	<u>B3498</u>		D 0.2	B 76.8
CM 5	49° 05.0' N	75° 42.6' W.	<u>B3499</u>		D 0.3	B 76.6
CM 6	49° 05.6' N	75° 38.1' W.	<u>B3497</u>		D 0.7	B 75.5

CRUISE PROGRAMME

1

RESEARCH CRUISE CH4/82. R.R.S. CHALLENGER

3 MARCH to 18 MARCH, 1982

Dr.D.Hamilton
Department of Geology
University of Bristol

1. Area of Research

Celtic Sea, south west of the Scilly Isles. (see attached chart.)

2. Objectives of Research

The aim of the research is to measure bottom currents and boundary layer parameters in an area of sand ribbons and sand patches, to determine the limiting parameters for these bedforms.

This aim will be achieved by: measuring bottom currents with Aanderaa recording current meters and Velocity Gradient Units; making surveys of the bedforms present with side scan sonar and a high resolution sub-bottom profiler; taking sediment samples by Shipek grab; recording the nature and mobility of the sea floor using stereo and time lapse cine photography.

The specific objectives of the cruise are:

- a. Lay and recover six current meter stations as follows: (See chart). The current meters will be deployed as soon as practicable in order to monitor the rise to the maximum equinoctial spring tides.

	<u>Lat. No.</u>	<u>Long. W.</u>	<u>Depth m</u>	<u>Type</u>
CM1	49° 05'	07° 50'	136	2xR/F.F.
CM2	49° 05'	07° 48'	125	R+U/F.F.
CM3	49° 05'	07° 46'	128	R+U/F.F.
CM4	49° 05'	07° 44'	136	V.G.U./S.L.
CM5	49° 05'	07° 42'	140	2xR/F.F.
CM6	49° 05'	07° 40'	140	V.G.U./S.L.

NOTES: R = Aanderaa RCM. Sensors at 1 m and 3 m.

U = UCM2 acoustic 3-component RCM. Sensor at 1 m.

V.G.U. = Velocity Gradient Unit. *includes time lapse cine photography*

F.F. = free fall mooring with acoustic release.

S.L. = single line mooring.

- i. Moorings with 2 recording current meters have the sensors at 1 and 2⁺ above the sea floor. The recording interval is 2 minutes for the Aanderaa RCM and the UCM2 samples on every 10 minutes with sampling bursts of 20 records every 1/2 seconds.

- ii. Moorings with a Velocity Gradient Unit have one Aanderaa RCM above the data logger of the VGU, with its sensor at 3.5 m above the sea floor.

iii. The Velocity Gradient Units have time lapse cine photographic systems attached. These systems have a 40 second interval between frames.

- b. Make several (about 5) deployments of the prototype Boundary Layer Instrument Package (BLIP). This is a free fall, acoustically released system which measures the velocity profile in the benthic boundary layer and records bedform movement by stereophotography. The deployments and recoveries are to be made on slack water conditions of the tide, in areas of well defined sand ribbons.
- c. Make surveys over the sand ribbons along WNW-ESE tracks where these are located within the area, using side scan sonar and high resolution acoustic profiling.
- d. Take closely spaced grab samples of the sediments over selected bedforms, and collect several large samples (about 1 cwt) for flume experiments.
- e. Record the nature of the bedforms using still photography, especially stereo-photography.

3. Scientific Party

D.Hamilton (Dr.)	Principia Scientist	Bristol
J.Hardisty (Dr.)	Research Assistant	Bristol
E.Wild (Miss)	Postgraduate	Bristol
J.Robson (Miss)	Postgraduate	Bristol
M.Trigg	Postgraduate	Bristol
J.Macquaker	Postgraduate	Bristol
M.Lawrence	Postgraduate	Bristol
S.Kehoe	Postgraduate	Univ. Coll. Lond.
P.Butcher	Postgraduate	Univ. Coll. Lond.
M.E.Overs	Research Technician	Bristol
W.Miller	R.V.S.	Barry
R.Powell	R.V.S.	Barry

4. Programme

The Bristol equipment will arrive at Barry on Monday, 1 March, for loading on to the ship.

The scientific party will join the ship about mid-day on Tuesday, 2 March. Bring your passport.

Sail at 10.00 hrs on Wednesday, 3 March, 1982.

After passing through the lock, mount the MS47 transducer.

Pass south of Lunday Island and set course for CM1 at $49^{\circ} 05'N$, $07^{\circ} 50'W$.

One hour before reaching CM1, stream sonar and profiling gear for testing.

On reaching CM1, start a S.S.S. and high resolution profiling survey over the proposed mooring positions from CM1 to CM6. Speed 4 kts.

Lay current meter moorings from CM6 to CM1.

At each station take a grab sample and underwater photographs before laying the mooring, if this is practicable.

Each mooring has to be located precisely on a sand ribbon, or in between sand ribbons, or on the crest of a sand ridge.

Ensure that a good quality fix is obtained at each mooring.

Inspect the line of moorings daily.

Make a survey of the area in the vicinity of the line of moorings using side scan sonar and acoustic profile to determine the pattern of sand ribbons in the area.

Photograph sea floor morphology using stereo still photography.

Carry out the first open sea tests of the prototype Boundary Layer Instrument Package (BLIP). Deployment and recovery are to be made at the slackest tidal flows and the length of a deployment is over two tidal flows, e.g. over an ebb + a flood. Fine deployments can be made to bracket the period of maximum spring tides.

Recover the current meter moorings at the latest prudent time before returning to Barry.

Lock in at Barry on the morning tide of 18 March so that our equipment can be returned to Bristol on the say day.

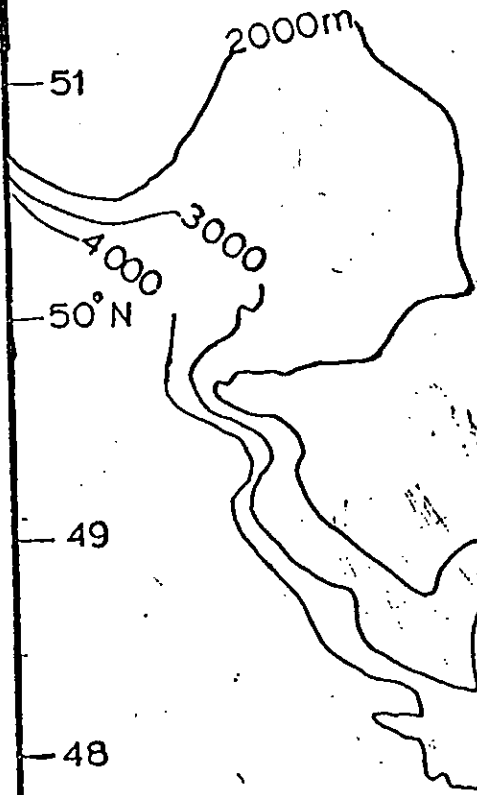
D.Hamilton

RRS CHALLENGER

CRUISE CH 4/82

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6 CM STATIONS
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AREA OF
SSS AND CSP
SURVEYS

D. Hamilton.

14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | W

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