# GEOPHYSICAL LOG SHEET

Cruise

Station No. 6/73. Date 2/7/73 DECCA. IRISH CAPTAIN TD

No 1

| Ships Time | Stn No | Lat. N | Long W | R. | G. | P | Method. | Log. | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 1600 | 1 | 55°07' | 12°21' | E 20.5 | B 33.6 | N/A. | DECCA. | 23.2 | E.O.P. Heave to on station 2.7 on |
| 1605 | | | | | | | " | | Pressure ½ over on hydrographic wire. |
| 25 | | | | | | | " | 23.4 | " " recovered |
| 33 | | | | | | | " | | " ½ over. |
| 45 | | | | 20.8 | 33.4 | — | " | 23.9 | " " recovered B.T. OFF |
| 1715 | | | | 22.8 | 31.8 | 56.0 | " | 26.5 | steaming to Station. |
| 1810 | 2 | 55 03½ | 12 31½ | E 3.3 | A 45.6 | — | " | 32.0 | Stream sledge. B.T. ON. |
| 1822 | | | | | | | | | 100 m. Chain weight attached. 345 B.T. OFF |
| 1840 | | | | | | | | | 1000 m. |
| 1900 | | 55 03 | 12 30 | 3.1 | 45.0 | — | " | 33.1 | 2000 |
| 22 | | | | 3.0 | 44.9 | - | " | 33.5 | 3000 |
| 43 | | 2.8 | 29 | 2.7 | 45.0 | — | " | 34.0 | 4000 Stop. |
| 52 | | | | | | | | | resume. |
| 57 | | ~~24~~ | ~~4~~ | 2.4 | 45.1 | — | | | 4201 Stop. |
| 2016 | | | | | | | | | 4400 Pay out 200 m. total out 4400 m. |
| 2045 | | | | | | | | | Commence heave in trawl. |
| 2120 | | | | 0.9 | 45.4 | — | " | ~~55.6~~ | 3000 |
| 2140 | | | | ~~.6~~ | ~~44.5~~ | | | | 2000 |
| 2202 | | | | .6 | 44.5 | | | | 1000 |

Senior Scientist's Report on

CHALLENGER Cruise 6/73

1-5 July 1973

The main objectives of the cruise were: a) to complete two 24-hour periods of continuous steaming at 10 knots and 8 knots in order to accurately gauge fuel consumption for future cruise planning; b) to take deep water bottom samples using the Anchor Box Dredge and Epibenthic Sledge samplers; and c) to test equipment for underway autoanalysis of the nutrient chemistry of sea water.

The working area was the Rockall Trough. After sailing on schedule at 1100 hrs on 1 July 1973 CHALLENGER arrived at the first bottom sampling station at 1400 hrs 2 July, after completing the 24-hour run, at 10 knots. The second and final bottom sampling station was completed at 2255 hrs on 4 July and CHALLENGER made course for Dunstaffnage.

Weather conditions during the cruise were fairly good, with a southwesterly or southerly wind, force 4-5, and moderate S. or S.W. swell in which the vessel rolled and pitched easily whilst steaming.

The two periods of steaming for 24 hrs were both successfully accomplished; the first (at 10 knots) whilst steaming for the first bottom sampling station at 55°07'N, 12°21'W, and the second period between this station and the second bottom sampling station at 56°35'N 11°10'W, although in order to obtain a full 24-hours steaming, the vessel steamed some distance past this position, then turning back.

At Station 1, a temperature/depth recorder package, for use with the submersible pump (not on board) for sampling sea water for chemical analysis, was tested by lowering it together with the Pinger from the hydrographic davit to 100M. It was found that The Pinger signal could just be recorded on the Atlas Echo Sounder. Three successive bottom hauls were then made with the epibenthic sledge sampler on the main wire at a charted depth of about 3000M, although the operation was hampered by the inoperative state of the Precision Depth Recorder. This precluded use of the Pinger and the operation thus took longer (more wire had to be put out than might be required otherwise) and with a decreased chance of a successful haul.

# GEOPHYSICAL LOG SHEET

Nº 2

CRUISE

Station No. 6/73 Date 2·7·73 DECCA IRISH CHAIN TD.

| Ships Time | STATION NO | LAT N. | LONG W | R | G. | P | METHOD | LOG. METERS | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | - | |
| 2215 | 2 | | | | | | | 100M | No chain |
| | | | | | | | | - | |
| 2218 | | | | | | | | - 30 M | Chain visible. |
| | | | | | | | | - | |
| 2223 | | | | | | | | - | chain inboard. |
| | | | | | | | | - | |
| 2230 | | 54° 59½'N | 12° 21¼'W | 1·1 | 43·6 | N.A. | DECCA. | -147m | Trawl inboard 117m from chain fastening. |
| | | | | | | | | 40·41 | |
| 45 | | | | 1·3 | 43·1 | " | " | 000 m | Trawl outboard in water & lowering. |
| | | | | | | | | - | |
| 47 | | | | | | | | 100m | Attach chain to trawl wire. |
| 55 | | | | | | | | | Pay out trawl |
| 2310 | | | | 1·5 | 42·0 | " | " | 1000 m | |
| | | | | | | | | 42·03 | |
| 2325 | | | | | | | | 2000 m | |
| 47 | | | | | | | | 3000 m | |
| 0000 | | | | 2·4 | 40·3 | " | " | | |
| | | | | | | | | ~~43·90~~ | |
| 0008 | | | | | | | | 4000m | Stop paying out. |
| | | | | | | | | 43·90 | |
| 0018 | | | | 2·4 | 39·7 | | | | Commence paying out 100 m. |
| 0020 | | | | | | | | 4100 | stop paying out. |
| 0030 | | | | 2·8 | 39·1 | | | | Commence paying out 100 m. |
| | | | | | | | | 44·36 | |
| 0032 | | | | | | | | 4200 | Stop paying out. |
| 0108 | | | | 2·7 | 38·5 | | | 45·56 | Commence heaving in |
| 0225 | | | | | | | | 45·21 | Stop Heaving - head block sieged |
| 0350 | | | | | | | | | Block cleared Commence heaving |
| 0400 | | | | 2·3 | 34·5 | | | 50·82 | |

While heaving in the second haul, the main gantry sheave siezed and some 1½ hours were lost in attempting to free it. The sledge was eventually recovered but with no sample, probably because of winnowing from the sampler while the winch was stopped, caused by the pitching movement of the ship transmitted down the wire.

The third haul was accomplished by rigging the main wire through the starboard trawl-wire sheave. A fair sample was obtained but with strong evidence of winnowing caused probably by the fairly strong pitching movement of the ship, which had occurred continuously while on this station.

Owing to the inoperative state of the P.D.R., plans to bottom sample on the Continental Slope to the west of the Hebrides were abandoned. Instead, another station in the Rockall Trough at 56°35'N 11°08'W was worked. A successful haul with the Anchor Box Dredge yielded approx. 70 litres of bottom ooze, and this was followed by a single, successful, haul using the Epibenthic Sledge. The latter haul was very satisfactory, with little evidence of washing of the sample after heaving in at a relatively slow winch speed, although the reduced pitching movement of the ship at this station was probably also an important factor.

Although we managed to receive a bottom echo with the Atlas Echo Sounder on board, the indicated depth of 1944 metres was considerably less than that given on the charts for our position (approx. 2300M).

I was impressed by the general helpfulness and interest shown in the work by the Officers and Crew, and I would particularly like to mention the helpful attitude of the deck crew who were quick to turn out when required on this cruise.

The Master pointed out that the E.M. log was found to be inoperative soon after sailing when it was required for navigation. This was because, it was discovered, the power supply unit had been disconnected and moved. He would like it understood that while navigational equipment might be located in a scientific area of the ship, that it nevertheless constituted back-up equipment to the ship and as such should not be interfered with without consultation with him. The E.M. log was reactivated by Mr. J.A. Marlow.

Later on, during the second 24-hour steaming period, the E.M. log failed. John Marlow reported that the unit could not be repaired on board without a necessary sparepart. Fortunately, the breakdown did not seriously hamper the bottom sampling at station 2.

It was found that frequent activation of bow thruster fire alarm (caused by overheating) caused some irritation when the ship was on station as attention had to be temporarily diverted from the job in hand.

J.D. Gage 5 July 1973.

# GEOPHYSICAL LOG SHEET

Nº 3.

Cruise Station No. 6/73 Date 3.7.73. Irish Chain 7D.

| Ships Time | STATION | LAT N | LONG W. | R | G | P | METHOD | LOG | METRES | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0420 | 2 | 54 47 | 12 7 | F 2·4 | A 33·8 | – | Decca | 51·6 | | Sledge recovered. |
| 58 | 2 | 54 46½ | 12 8¼ | 3·0 | 32·6 | – | " | | | " over |
| 0512 | | | | 3·1 | 32·2 | – | " | 53·3 | 100 | Chain on. |
| 35 | | | | 3·6 | 31·4 | – | " | 54·0 | 1000 | |
| 56 | | 45¼ | 9¼ | 4·2 | 30·9 | – | " | 54·6 | 2000 | |
| 0617 | | | | 4·6 | 30·5 | – | " | 55·0 | 3000 | |
| 37 | | | | 4·9 | 30·2 | – | " | 55·4 | 4000 | Stop |
| 49 | | | | | | | | | | resume. |
| 53 | | 44½ | 10¼ | 5·3 | J 47·8 | | | 55·7 | 4200 | stop |
| 0710 | | | | | | | | | | resume. |
| 14 | | | | 5·5 | 47·3 | | | 56·1 | 4400 | Stop. |
| 30 | | 44 | 11 | 5·8 | 47·1 | | | 56·4 | | Heave. |
| 40 | | | | 5·9 | 46·9 | | | 56·5 | 4000 | |
| 0806 | | | | | | | | | 3000 | |
| 0830 | | | | 6·8 | 45·9 | | | 57·6 | 2000 | |
| 50 | | | | | | | | | 1000 m | |
| 0920 | | | | | | | | | -003 m<br>-110 m. | chain off.<br>sledge inboard. |
| 0925 | | 54° 41½ | 12° 13W | 8·6 | 44·1 | – | " | 59·4 | | Steaming to station 3 |

# GEOPHYSICAL LOG SHEET

Cruise 6/73 — Date 4/7/73 — DECCA. N. BRITISH 3D/MP — № 4

| Ships Time | STN. | LAT N | LONG W | R. | C. | P | METHOD | LOG. | |
|---|---|---|---|---|---|---|---|---|---|
| 1454 1500 | 3 | 56° 35' | 11° 10' | 4·1 | N/a | 71·3 | Decca | 22·7 | E.O.P. Heave to on station. Wind 160° @ 25kn |
| 15 04 | | | | | | | | | Commence lowering bottom dredge |
| 15 56 | | | | | | | | | 2000 metres out. |
| 16 15 | | 56 36¼ | 11 11¼ | 3·9 | - | 71·9 | " | 25·4 | 3000 m. Stop. |
| 46 | | | | 3·6 | - | 72·4 | | | Comm Haul. |
| 17 11 | | | | 3·5 | - | 72·5 | | 27·4 | 2000 m |
| 17 25 | | | | | | | | | Bow thrust off 1500 m |
| 33 | | | | 3·2 | - | 72·9 | | 28·1 | 1000 m. |
| 55 | | | | | | | | | 73 m. Remove chain. |
| 18 01 | | | | 3·1 | — | 73·1 | " | 29·4 | Muddredge inboard. |
| 22 | | 37¼ | 8¼ | 3·0 | — | 73·3 | " | 30·2 | Sledge over |
| 29 | | | | | | | | | 100 m chain |
| 56 | | 37¼ | 4¼ | 2·7 | - | 73·5 | " | 31·4 | 1000 m. |
| 1917 | | | | 2·6 | - | 73·7 | " | | 2000 m |
| 38 | | 37¾ | 3¾ | 2·5 | — | 74·0 | " | | 3000 m. Stop |
| 50 | | | | | | | | | Resume. B.T. on. |
| 55 | | | | 2·3 | - | 74·3 | " | 33·3 | 3200 |
| 2015 | | | | | | | | | Resume paying out |
| 18 | | | | 2·1 | | 74·6 | " | 34·2 | 3340m stop. |

Cruise 6/73

# GEOPHYSICAL LOG SHEET

№ 5

**Station No.** 3 **Date** 4-7-73 DECCA N. BRITISH 3B/MP.

| Ships Time | Station | Lat "N" | Long "W" | R. | G. | P. | Method | Log. | |
|---|---|---|---|---|---|---|---|---|---|
| 20 38 | 3 | | | | | | | | Commence Leave in trawl. |
| 49 | " | | | 1·9 | | 74·9 | DECCA | 35·1 | 3000 m |
| 21 23 | " | | | 1·8 | | 45·4 | | 36·2 | 2000 m. |
| 45 | " | | | | | | | | Bow thrust off overheating. |
| 2200 | " | | | 1·8 | | 75·0 | | 37·4 | 1114 m. |
| 2205 | " | | | | | | | | 1000 m |
| 35 | " | | | 1·8 | | 74·9 | | 38·7 | 100 m chain |
| 43 | " | | | | | | | | Sledge inboard. 000 m. |
| 2255 | " | | | | | | | | Set to 101° T & G 000 Revs. |
| 2300 | 3 | 56° 37½'N | 10° 57¼'W | 1·6 | - | 75·1 | | 40·7 | |

## NOON POSITION VOUCHER

R.R.S. CHALLENGER From DUNSTAFFNAGE To DUNSTAFFNAGE Date 5/7/73

| Zone Time at Noon | NOON POSITION | | |
|---|---|---|---|
| Z-1 | Latitude | Longitude | Method |
| | 56° 12' N | 07° 01' W | DECCA |

| | Course | Distance | Steaming Time | Average Speed | Station Time | Set and Drift |
|---|---|---|---|---|---|---|
| Past 24 Hrs. | VAR | 148·5 | 16 | 9·28 | 8 | |
| Voyage Total | — | 590·5 | 68 | 8·68 | 26 | |

Last Station Worked/~~Working~~ N° 3.

Clocks to be Advanced/Retarded ——— ~~mins~~ ~~at~~ ———

Sunrise | Sunset

Age of Moon

GENERAL REMARKS

E.T.A. DUNSTAFFNAGE 1742 BST.

L.W. DUNSTAFFNAGE 1617 BST.

Copies to:- Master/Chief Engineer/Senior Scientist

1PM Second Officer.

## NOON POSITION VOUCHER

R.R.S. Challenger From Dunstaffnage To Dunstaffnage Date 4/7/73

| Zone Time at Noon | NOON POSITION | | |
|---|---|---|---|
| | Latitude | Longitude | Method |
| 2-1 | 56° 52.5' N | 10° 54.5' W | Decca |

| | Course | Distance | Steaming Time | Average Speed | Station Time | Set and Drift |
|---|---|---|---|---|---|---|
| Past 24 Hrs. | Var | 182 | 24 | 7.58 | — | |
| Voyage Total | | 442 | 52 | 8.50 | 18 | |

| | | | |
|---|---|---|---|
| Last Station Worked/Working | | Sunrise | Sunset |
| Clocks to be Advanced/Retarded | mins at | Age of Moon | |

**GENERAL REMARKS**

E.T.A. STATION N°3 1450 BST.

Copies to:- Master/Chief Engineer/Senior Scientist

J-9M Second Officer.

## NOON POSITION VOUCHER

R.R.S. CHALLENGER From DUNSTAFFNAGE To DUNSTAFFNAGE Date 3/7/73

| Zone Time at Noon | NOON POSITION | | |
|---|---|---|---|
| | Latitude | Longitude | Method |
| 2-1 | 54° 59'N | 12° 03'W | Decca |

| | Course | Distance | Steaming Time | Average Speed | Station Time | Set and Drift |
|---|---|---|---|---|---|---|
| Past 24 Hrs. | Var | 55 | ~~97~~ 6 | 9.17 | 18 | |
| Voyage Total | | 260 | 28 | 9.28 | — | |

| | | | |
|---|---|---|---|
| Last Station Worked/~~Working~~ | No2. | Sunrise | Sunset |
| Clocks to be Advanced/Retarded | — mins at | Age of Moon | |

**GENERAL REMARKS** E.T.A. STN 3 1000/4

Copies to:- Master/Chief Engineer/Senior Scientist

Second Officer.