

PROJECT GP/MG/74/6

CSUI CELTIC SEA

SHIP: Name: M.V. Briarthorn
Owner: Coe/Wimpey
Length: 264'
Tonnage: 2085 d.w.

SUMMARY OF SHIP MOVEMENTS:

22.4.74 Mobilisation began
28.4.74 Left South Shields
1.5.74 Refuelled off Falmouth
8.5.74 Port call Milford Haven
11.5.74 Sailed Milford Haven
22.5.74 Port call Barry
23.5.74 Sailed Barry
4.6.74 Port call Milford Haven
6.6.74 Sailed Milford Haven
15.6.74 Small boat call at Falmouth for CSU stores
19.6.74 Into Plymouth - end of cruise/start of cruise 74/03

Survey personnel and periods on ship

		<u>ON/OFF</u>	<u>ON/OFF</u>
A.S. Mould	MGU	26.4 - 9.5	5.6 - 19.6
P.R. Roberts	MGU	26.4 - 9.5	5.6 - 19.6
A.J. Davies	MGU	8.5 -19.6	
R. Wingfield	CSUI	26.4 - 9.5	
D. Tappin	CSUI	26.4 - 9.5	22.5 - 19.6
G. Bradley	CSUI	26.4 - 9.5	
A. Turner	CSUI	26.4 - 9.5	
B. Fletcher	CSUI	8.5 -22.5	
A. Crosby	CSUI	8.5 -22.5	
C. Ransome	CSUI	8.5 -22.5	
C. Evans	CSUI	22.5 - 5.6	
D. Bray	CSUI	22.5 - 5.6	
R. Dingwall	CSUI	5.6 -19.6	
M. Reed	CSUI	5.6 -19.6	
P. Wiggins	CSUII	26.4 - 1.5	22.5 - 19.6
H. Robertson	CSUII	8.5 -22.5	
T. Fitton	RVB	26.4 - 1.5	
P. Kimber	HUNTING SURVEYS LTD	26.4 -19.6	
T. Rooney	HUNTING SURVEYS LTD	26.4 -19.6	
R. Fayter	HUNTING SURVEYS LTD	26.4 - 9.5	
K. Cameron	HUNTING SURVEYS LTD	10.5 -19.6	

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AIMS

1. Sampling by CSUI in area between 50°N and 52°N in the SW Approaches.
2. Geophysical traversing during night-time periods with the purpose of (i) reconnoitring sample sites
and (ii) clarifying earlier sparker surveys
3. An incidental effect of the cruise was as a shakedown of MGU and RVB gear for subsequent MGU surveys.
4. It was intended to use the cruise for the installation testing and calibration of the new MGU integrated satellite navigation doppler sonar system but this had not been delivered before the end of the project.

Leg 1:

CHIEF SURVEYOR'S REPORT

Navigation

Position fixing was by main chain Decca, for which the errors were determined from an error chart supplied by CSUI. These errors were shown as constant values for map sheets covering areas of 1° (longitude) x $\frac{1}{2}^{\circ}$ (latitude) and as such could only be approximations. The estimated overall accuracy is within ± 500 metres although it must have been much better than this most of the time as the set functioned well and the lattice cuts were generally very good.

Siting of the equipment

Initially the Decca set was sited in the wheelhouse and plotting was to be done in the chartroom. This was a poor arrangement, particularly as the programme of work called for nightwork, and the Decca set had to be reinstalled in the chartroom. The echo-sounder was also sited in the wheelhouse which was a little awkward and it would also have been better in the chartroom. In general however the system worked well and it is always a good idea to have direct contact with the bridge where the availability of space permits.

P.D.K.

GEOPHYSICS REPORT

After initial technical difficulties very good sparker results were obtained using up to 3000 joules over good reflectors. The presence of the CSUI area geologist to comment on actual and potential record quality was a useful asset to the MGU team. Transit sonar was used with good results and some major sandwaves in the Lundy area were clearly detected. The magnetometer was streamed for test purposes but not used in earnest.

A.S.M.

TECHNICIAN I/C'S REPORT

Mobilisation

Mobilisation was satisfactorily completed with the aid of Tom Fitton and Mike Roberts of RVB.

Operational Tests

Subsequent operational tests of the various systems revealed the following problems:-

- (a) Excessive electrical noise on hydrophone systems - both Bolt and Geomechanique. This was overcome by re-routing hydrophone cables away from mains supplies. After two nights of survey work and minor adjustments to recorder and hydrophone systems the results obtained were good.
- (b) After fitting airline hoses from compressor to control console it was found that hose reducing connectors had been omitted - Tom Fitton to arrange connectors for next port call.
The system still remains untested.
- (c) E.G and G Sparker Trigger unit gave intermittent firing problems. Continuous adjustment was required to maintain operation. Lack of a back up system delayed major maintenance of this unit and it has been arranged to change unit at Milford Haven on 8/9 May.

Since CSU sampled during the day time and MGU ran geophysical lines during the night it was not possible to spend sufficient time preparing and adjusting the systems. Although good results were obtained from the Geomechanique hydrophone it would have been desirable to have used the Bolt hydrophone more often in order to adjust for optimum results with both.

A great deal of time was spent building an interface unit for Data Logger system. At the end of the cruise there was still outstanding work, but this will be completed in ample time for MGU survey.

P.R.R.

Leg 2:

CHIEF SURVEYOR'S REPORT

Navigation on this leg was the same as on the previous leg but due to high lane expansion, range from transmitter and poor lattice cuts, the accuracy was not as good as on the previous leg. These difficulties were partially resolved by the use of combined 7D and 1B Decca chains west of $7^{\circ}00'W$, but the track plotter could not be used on the combined cross chain mode. Also this method of fixing meant that an extra man had to be used as there was no echo-sounder available in the navigation container where the two decca sets were sited, and the required information had to be relayed to the surveyor over the intercom. In this situation it was found that for sampling it was preferable to work from the bridge and relay the 7D readings from the navigation container to the bridge, and that for geophysical traverses it was better to work from the navigation container and update the sounder records after the line had been run.

Despite the above problems navigational accuracy was improved by the use of cross chain fixes and the system could usefully be extended to cover the area $6^{\circ}-7^{\circ}$ West.

P.K.

TECHNICIAN I/C's REPORT

All equipment worked well on this leg, although the K.H. side scan was probably out of its depth.

Minor problems with the Huntec recorder were caused mainly by paper chaff and dust. The recorder was vacuum cleaned as much as was possible and since then there have been no recurrences. The 9 element array was used initially but later exchanged for the "Toothbrush" Sparker. No problems here at all.

Other than periodic maintenance (spark gap setting etc.,) the E.G & G power and trigger units performed well in general.

A.J.D.

GEOLOGY/GEOPHYSICS REPORT

CSUI sampled during the day mainly with the gravity corer and ran geophysical traverses at night.

The records were mainly satisfactory, especially farther off shore over the chalk beds when we picked up very good reflectors. The weather was not good resulting in a couple of lines having to be abandoned.

A.J.D.

Leg 3:

CHIEF SURVEYOR'S REPORT

During this leg further work was done in the more westerly areas although most of the work on the Haig Fras West area was restricted to sampling rather than geophysical traverses.

Navigation and navigational problems were as described in the report on the previous leg. On this leg the track plotter was used in the Haig Fras West area for running between sampling sites but fixing on site was done by cross chain fixing.

Discrepancies in positions obtained by using both modes of fixing were observed and were attributed to poor lattice cuts

and high lane expansion on chain 1B, and also to a lack of fixed error values for chain 7D.

B.K.

GEOLOGY/GEOPHYSICS REPORT

Geophysical traversing was carried out as on Leg 2 with similar good results.

A.J.D.

Leg 4:

CHIEF SURVEYOR'S REPORT

This leg consisted mostly of further work around the Haig Fras area and navigation was as before. There were however more geophysical traverses run, using cross chain fixing in the Haig Fras West area, and the additional work of editing the echo sounder's records after the traverse was time consuming and should be reduced as soon as possible by the installation of an echo sounder display in the navigation container.

P.K.

GEOPHYSICS REPORT

Sparker and transit sonar were operated at night along lines designed to clarify the geological structure of the sampling areas. Results obtained with sparker were uniformly good in conditions up to sea state 6.

Owing to the non arrival of the SAT/NAV system, an extra MGU man was carried at the expense of CSU manning. Assistance in sampling on a regular basis was therefore rendered by MGU personnel.

A.S.M.

TECHNICIAN I/C's REPORT

Equipment

E.P.C. Recorder. Although fully functional, when in operation

it gives off most nauseating fumes. It is recommended that it should not be used until adequate ventilation is provided. - Tubing for this purpose to be purchased in Plymouth.

Air Gun. Owing to work programme (and lack of practical experience) there has been insufficient daylight hours in which to test this system.

Seismic Systems. Checked and in good working order.

Data Logger. With the exception of "Loran 'C'" interface and gravity inputs - the system has been checked and is functional.

General

This leg has proved most satisfactory in terms of preparation for MGU cruises.

P.R.R.

SUMMARY REPORT

1. Seismic profiling was carried out to the requirements of CSUI. This was most successful after early technical difficulties had been overcome.
2. An extensive shakedown of MGU gear for subsequent projects was carried out. Operational status at the end of the project was:-

Sparker systems	- all satisfactory
Transit sonar	- satisfactory
Magnetometer	- satisfactory when tested early May.
Data Logger	- satisfactory
Air gun	- not tested
Gravity meter	- installation not complete
ORE pinger	- not yet delivered
SAT/NAV	- not yet delivered

3. Early planning and fitting out of the containers made for a good operational environment. Power supplies were fairly reliable although access along the deck to the generators in

rough weather was dangerous. Access to the gravimeter container in the hold required express bridge permission at all times and was impossible in rough conditions. This access was also physically dangerous at such times.

The combination of sampling and geophysical activities on the one ship is undoubtedly of great advantage both in terms of cost-efficiency and feedback of information from one activity to the other. However on Briarthorn the day to day practicalities of such a combined organisation are excessively complex. In particular there is insufficient deck space for MGU containers and CSU sampling gear, thus resulting in some of latter having to be located in extremely inconvenient and inefficient locations. From a sampling point of view the present layout cannot be recommended.

4. Comments on general domestic facilities of Briarthorn are summarised below:

- (i) Food was appetising, plentiful and well served.
- (ii) The lower deck double-berth cabins are very cramped. Wherever possible they should only be occupied by one person.
- (iii) The ablutions are communal, few cabins having running water, leading to a general lack of privacy and a tendency towards grubbiness.
- (iv) The social atmosphere was good.

A.S.M.

Line No.	Fixes	N.M.	K.M.	Equipment Run (Fix# - Fix##)
S1/74/06/33	1-56	54	100	E.S., S(n), 1s.
" " " 34	1-60	64	119	E.S., S(n), 1s.
" " " 35	1-69	68	126	E.S., S(n), 1s.
" " " 36	1-58	67	124	E.S., S(n), 1s.
" " " 37	1-68	86	159	E.S., S(n), 1s.
" " " 38	-	52	096	-
" " " 39	-	36	066	-
" " " 40	1-74	75	139	E.S., S(n), 1s.
" " " 41	1-65	73	135	E.S., S(n), 1s.
" " " 42	54-77	24	044	E.S., S(n), 1s.