SMBA Dunstaffnage Marine Research Laboratory

Preliminary Cruise Report: RRS Challenger Cruise 11A/78

Duration: 1000 h 11 July to 1200 h 25 July 1978

All times GMT. Barry to Stornoway.

Locality: Rockall Trough

Staff:

A. Edwards	(Principal Scientist)
R. Bowers	(Instruments)
D.T. Meldrum	(Instruments and surface TS mapping)
D.J. Edelsten	(Moorings)
A.M. Souter	(Technical)
M. Jackson	(Student)
D. Rae	(Student)
L.J. Garwin	(Rhodes Scholar, Oxford)

Aims:

1) To lay a shelf current meter mooring at 58°01'N, 8°46'W, north of St. Kilda, station E2.
2) To recover and re-lay a deep current meter mooring at 57°14'N 10°36'W, SMBA station M or E3.
3) To make an STD/CTD survey of the grid of triangles covering the JASIN experimental area.
4) To map the surface temperature and the depth.

Narrative: The ship left Barry at 1130, then lay at anchor until 1800, awaiting arrival of two crew. A Y-ARD engineer made torque measurements during passage to Ardrossan, where he disembarked on the 13th July. The SMBA mooring at 57°N 9°W, station R, was checked at 0445 the following morning and appeared to be in good condition. The mooring at E2 was successfully laid by 1315 h on the 14th. CTD winch speed trials were held at the shelf break and it was decided that all JASIN CTD casts would be done in Low Gear Notch 2 to depth 120 m, and subsequently in High Gear Notch 2: these speeds are a compromise between the need to lower slowly through the thermocline, and the need to complete casts in reasonable time.

After steaming at reduced speed to M in order to arrive soon before first light, the mooring was interrogated at 0220 h on the 15th; it replied but was then lost because of a steering gear fault. The morning passed in searching fruitlessly until at midday the mooring was released instead of interrogated and then was recovered. The replacement mooring E4 was laid by 2100 and course was set to start the JASIN grid at triangle A2.

From 0630 h on the 16th July to 1300 h on the 23rd July the ship made CTD/STD casts to within 5 m. of the seabed twice at each corner of triangles A2-A4, B4-B3, C2-C5, D4-D3. The work was uninterrupted by the weather, in calm to moderate seas, but was punctuated by various events:-

i) The CTD and a pinger were lost on the 16th of July (see appendix 1). The CTD was replaced by an STD 9006 on loan from RVS Barry. Bulkhead connectors on this instrument which had been damaged during departure from Barry were repaired and the instrument then performed satisfactorily.

ii) The 9006 STD was lost on the 23rd of July (appendix 2).

iii) Triangles were interrupted between B3 and C2 from 0400 h 19th until 1300 h 20th because "Challenger" moved to tend spar buoy P2 at $59^{o}27'N$, $12^{o}49'W$ for RRS "Discovery", which had to stop work in order to land a sick seaman in E. Loch Tarbert.

iv) "Challenger" and "Tydeman" made simultaneous STD casts at D4E at 2300 h 22nd July for intercomparison purposes.

After the loss of the second instrument, the ship sailed to Stornoway, arriving about 1400 h on 24th July. The scientific party left the following day.

Results:

1) The mooring at E2 was successfully laid.

2) Current meters recovered from M appeared to have functioned successfully. The re-laying of the mooring was uneventful.

3) Data gathered from the CTD/STD profiling seem reasonably clear of spikes and other faults. Results from triangle A2 depend upon the calibration of the lost CTD: results from A3 depend upon an unreliable calibration of the 9006,

which seems to have been drifting (in salinity) during its first 12 hours of use: thereafter the calibration seems steady and all following triangles are probably comparable to ~ 0.01°C and ~ 0.01‰ (away from strong vertical temperature gradients).

4) Echo sounding and logging of sea temperature at 3 m continued throughout the JASIN area.

Comments:

1) Comment arising from the losses of instruments are made in appendices 1 and 2.

2) The Grenway timing system is in need of overhaul. In particular, the terminal block and plugs at the rear of the master have been previously tampered with and should be repaired.

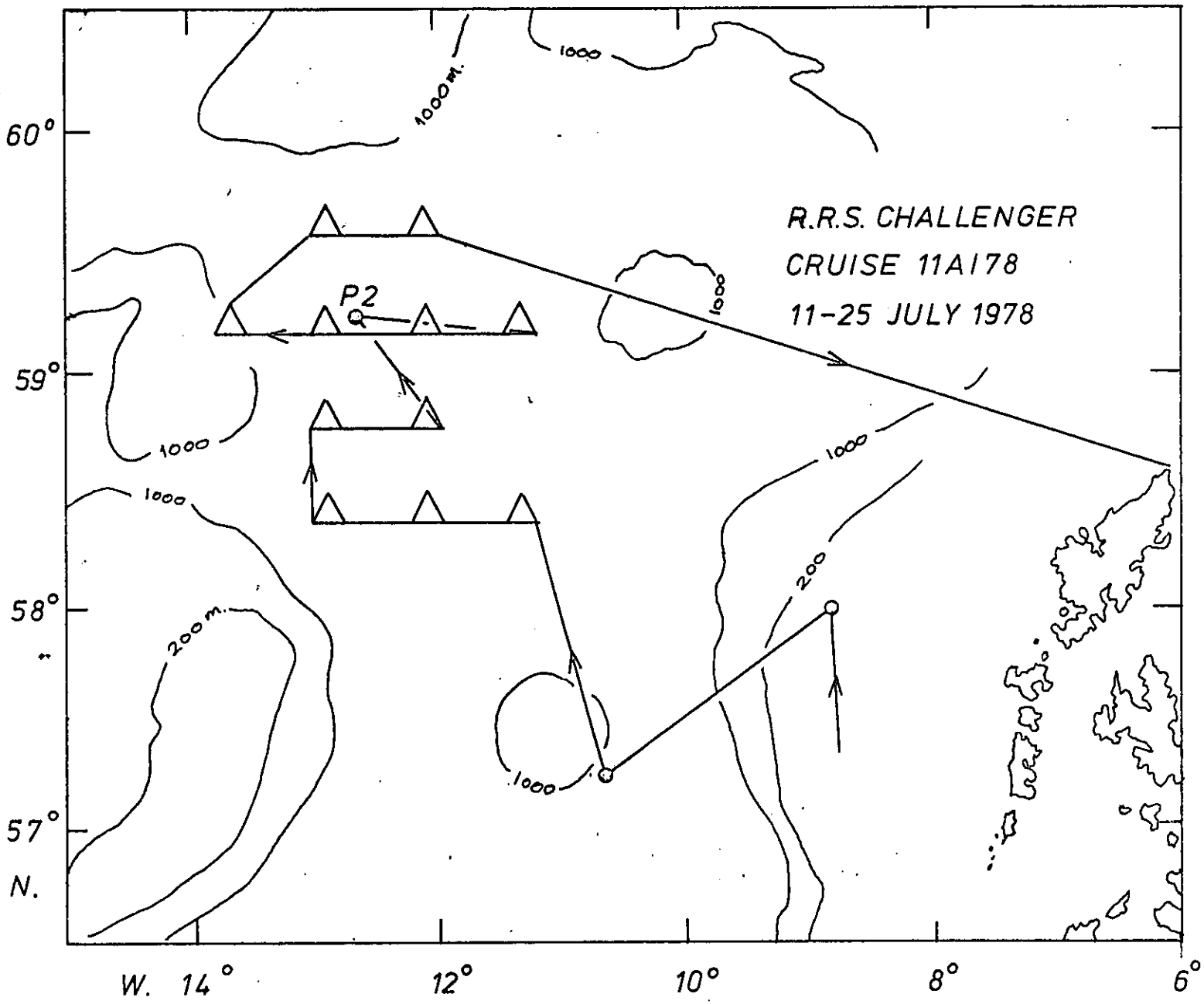
3) Communication with JASIN base via Oban Radio from the JASIN area proved time-consuming, difficult, and suffered from poor reception. I am grateful to Captain Maw for the effort he spent upon this job.

A. Edwards

August 1978.

App 1 - CTD Loss Report

App 2 - STD Loss letter


R.R.S. CHALLENGER
CRUISE 11A/78
11-25 JULY 1978
P2
1000m.
1000
200m.
200
60°
59°
58°
57°
N.
W. 14°
12°
10°
8°
6°

MBS 2130