SOUTHAMPTON OCEANOGRAPHY CENTRE

CRUISE REPORT No. 25

RRS *CHARLES DARWIN* CRUISE 112C
19 MAY - 24 JUN 1998

Atlantic Margin Environmental Survey:
Seabed survey of deep-water areas (17th round Tranches) to the north and west of Scotland

Principal Scientist
B J Bett

1999

George Deacon Division for Ocean Processes
Southampton Oceanography Centre
Empress Dock
European Way
Southampton SO14 3ZH
UK
Tel: +44 (0)1703 596355
Fax: +44 (0)1703 596247
Email: bjb@soc.soton.ac.uk

DOCUMENT DATA SHEET

AUTHOR
BETT, B J et al

PUBLICATION DATE
1999

TITLE
RRS *Charles Darwin* Cruise 112C, 19 May-24 Jun 1998. Atlantic Margin Environmental Survey: seabed survey of deep-water areas (17th round Tranches) to the north and west of Scotland.

REFERENCE
Southampton Oceanography Centre Cruise Report, No. 25, 171pp.

ABSTRACT

This cruise formed part of the Atlantic Margin Environmental Survey (AMES) 1998. The primary objective of the cruise was to carry out a large-scale seabed sampling survey of six areas of continental slope variously located north and west of Shetland and west of the Hebrides. In total over 100 seabed stations were sampled using either megacorer, box corer or Day grab, generating samples for the subsequent analysis of macrobenthos, hydrocarbons, heavy metals, particle size, total organic carbon and nitrogen and geology. Additional survey operations included photographic observation of the seafloor using still and video cameras mounted on the SOC WASP and epibenthic sledge vehicles and limited sampling with a gravity corer (British Geological Survey). The cruise also re-sampled (primarily for macrobenthos) a bathymetric transect of stations to the west of Shetland previously established during RRS *Charles Darwin* Cruise 112 C leg 2 (AMES 1996). Shipboard observations of seabed samples and video footage collected in the various survey areas are summarised in the report. Other general observations include (a) the effects of deep-sea trawling, observed to the west of Shetland and the Hebrides; (b) the widespread and mass occurrence of phytodetritus in the deeper waters of the Rockall Trough; (c) numerous observations of, frequently dense, populations of xenophyophores (*Syringammina fragilissima*) at around 1000 m depth in the Rockall Trough; and (d) the discovery of a field of coral (*Lophelia pertusa*) topped seabed mounds in the Rockall Trough immediately to the south of the Wyville-Thomson Ridge

ACKNOWLEDGEMENTS:
All data and survey results presented herein were acquired during a wide area survey project undertaken in 1998 on behalf of the Atlantic Frontier Environmental Network (AFEN). AFEN comprises: Agip (UK) Ltd., Amerada Hess Ltd., Amoco (UK) Exploration Company Limited, ARCO British Ltd, BG E&P Ltd., BP Exploration Operating Company Ltd., Chevron U.K. Ltd., Conoco (U.K.) Ltd, Deminex UK Oil and Gas Limited, Elf Exploration UK plc., Enterprise Oil plc., Esso Exploration and Production UK Ltd., Fina Exploration Ltd., Marathon Oil UK Ltd., Mobil North Sea Ltd., Phillips Petroleum Company U.K., Ltd., Saga Petroleum Ltd., Shell U.K. Exploration and Production, Statoil Ltd., Texaco Britain Ltd., Total Oil Marine plc., Joint Nature Conservation Committee, Fisheries Research Services, and the Department of Trade and Industry.

KEYWORDS
AMES, ATLANTIC MARGIN ENVIRONMENTAL SURVEY, BENTHIC COMMUNITIES, BOX CORER, *CHARLES DARWIN*, CONTINENTAL SLOPE, CORAL, CRUISE 112C 1998, CTD, DAY GRAB, DEEPWATER TRAWLING, FAEROE-SHETLAND CHANNEL, GRAVITY CORER, HEBRIDES, HEAVY METALS, HYDROCARBONS, *LOPHELIA PERTUSA*, MACROBENTHOS, MEGACORER, NE ATLANTIC, NITROGEN, PHOTOGRAPHY, PHOTOSLEDGE, PHYTODETRITUS, POCK MARKS, ROCKALL TROUGH, SEABED MOUNDS, SEDIMENTS, SHETLAND WATERS, *SYRINGAMMINA FRAGILISSIMA*, TOC, TOTAL ORGRANIC CARBON, VIDEOTAPE RECORDING, WASP, WEST OF SHETLAND, XENOPHYOPHORES

ISSUING ORGANISATION
Southampton Oceanography Centre
Empress Dock
European Way
Southampton SO14 3ZH UK
Director: Professor John Shepherd

Copies of this report are available from: **National Oceanographic Library, SOC** *PRICE*: £36.00
Tel: +44(0) 01703 596116 Fax: +44(0) 01703 596115 Email: nol@soc.soton.ac.uk

STN	DATE 1998	POSITION LAT.	POSITION LONG.	GEAR	DEPTH (M)	TIMES (GMT)	COMMENT	MEAN SOUND. (M)
13368 # 8	4/ 3 27/ 9	48 55.02N	16 27.91W	MAC	4848-4848	2138-1100	Good samples	4848
13368 # 9	4/ 3 28/ 9	48 56.52N	16 25.74W	MAP	4848-4848	2305-0854	Good samples current meter vane stuck	4848
13627 # 1	27/ 9	48 56.56N 48 56.67N	16 24.41W 16 24.44W	CTD MS	0- 152	1456-1515	Bottles 151m (6), 101m (6)	4844
13627 # 2	27/ 9	48 56.87N 48 56.53N	16 24.50W 16 25.10W	CTD MS	0-4840	1546-1935	Bottles 10-1000mab	4845
13627 # 3	27/ 9	48 49.34N	16 30.02W	BOX CORER	4845-4845	2206-	Moderately disturbed core	4845
13627 # 4	28/ 9	48 50.17N	16 29.30W	VEGEBOX	4844-4844	0200-	Good core	4844
13627 # 5	28/ 9	48 49.97N	16 29.41W	MLT.CORER	4845-4845	0616-	12 good cores	4845
13627 # 6	28/ 9	48 49.11N	16 30.16W	BOX CORER	4844-4844	1338-	Disturbed core	4844
13627 # 7	28/ 9	48 50.20N	16 29.75W	VEGEBOX	4844-4844	1724-	Good core	4844
13627 # 8	28/ 9	48 50.02N	16 29.72W	BOX CORER	4845-4845	2105-	Good core	4845
13627 # 9	29/ 9	48 50.90N 48 50.87N	16 28.90W 16 27.62W	WASP	4835-4844	0148-0338	Good video/camera. Power loss at end	4845
13627 #10	30/ 9	48 53.64N 49 01.98N	16 42.65W 16 53.26W	OTSB14	4835-4837	1600-2032	Good sample	4835
13627 #11	1/10	48 47.82N 48 54.14N	16 40.37W 16 53.95W	CP	4835-4835	0745-1330	Winch failure. Total tow c. 31 hours	4835
13627 #12	2/10	48 49.90N	16 29.77W	MLT.CORER	4836-4836	2030-	12 good cores	4836
13627 #13	3/10	48 50.17N	16 30.12W	VEGEBOX	4838-4838	0004-	Good core	4838
13627 #14	3/10	48 50.17N	16 30.53W	BOX CORER	4837-4837	0353-	Good core	4837

STN	DATE 1998	POSITION LAT.	POSITION LONG.	GEAR	DEPTH (M)	TIMES (GMT)	COMMENT	MEAN SOUND. (M)
13627 #15	3/10	48 49.93N	16 29.64W	MLT.CORER	4836-4836	0740-	12 good cores	4836
13627 #16	3/10	48 50.14N	16 29.34W	VEGEBOX	4837-4837	1121-	Good core	4837
13627 #17	3/10	48 49.90N	16 30.50W	BOX CORER	4837-4837	1323-1637	Good core	4837
13627 #18	3/10	48 49.99N 48 49.94N	16 29.99W 16 29.97W	CTD MS	0- 150	1711-1742	Bottles 150m (3), 50m (3), 20m (3)	4837
13627 #19	3/10	48 50.06N 48 50.30N	16 30.13W 16 29.46W	CTD MS	0-4833	1809-2225	Bottles 10-1000mab	4836
13627 #20	4/10	48 50.32N	16 29.91W	MLT.CORER	4838-4836	0057-	12 good cores	4838
13627 #21	4/10	48 49.86N	16 30.59W	BOX CORER	4837-4837	0437-	Small, very disturbed sample discarded	4837
13627 #22	4/10	48 50.47N	16 30.32W	MLT.CORER	4836-4836	0859-	11 cores, slight disturbance	4836
13627 #23	5/10	48 58.93N 49 03.88N	16 45.22W 16 40.66W	OTSB14	4814-4837	0130-0345	Good catch, over small abyssal hill	4840
13627 #24	5/10	48 50.47N 48 52.51N	16 44.37W 16 42.53W	CP	4840-4840	1400-1504	Good, if small, catch	4840
13627 #25	5/10	48 59.55N	16 26.39W	SED TRAP	4835-4835	2248-	SOC rig, for recovery Sept. 1999	4835

CONTENTS

1. SCIENTIFIC PERSONNEL

BETT, B J (PS)	George Deacon Division, SOC
BILLETT, D S M (DPS)	George Deacon Division, SOC
BAKER, T D	Oil Pollution Research Unit
FERNANDEZ-REINA, A	Environment & Resource Technology Ltd
HOLMES, R	British Geological Survey
HUNTER, C A	Research Vessel Services
KROEGER, K	Dunstaffnage Marine Laboratory
LONG, D	British Geological Survey
MERCER, T S	GEOTEK
NARAYANASWAMY, B E	Dunstaffnage Marine Laboratory
PEARCE, R O	Research Vessel Services
RIELLY, J M	Environment & Resource Technology Ltd
SCOTT, J E	Research Vessel Services
SMITH, J	Oil Pollution Research Unit
TURNER, D R	Research Vessel Services
WALLACE, R	Ocean Technology Division, SOC
WHITE, D	Ocean Technology Division, SOC

2. SHIP'S PERSONNEL

CHAMBERLAIN, R J	Master
NEWTON, P	Chief Officer
SYKES, S	2nd Officer
HOOD, M P	3rd Officer
MACASKILL, N	Electrical / Technical Officer
ADAMS, A	Chief Engineer
GREENHORN, A	2nd Engineer
PERRIAM, R	3rd Engineer
LUTEY, W D	Electrical Engineer
POOK, G	Bo'sun
LUCKHURST, K	Bo'sun's Mate
WYNESS, M	Seaman
DALE, J	Seaman
SQUIB, M	Seaman
DAY, S P	Seaman
BELL, R	Senior Catering Manager
LYNCH, P	Chef
DILLON, C	Steward
DUNCAN, A	Steward
STEPHENS, R	Steward
SEARLE, P	Motorman

3. ITINERARY

Sailed Fairlie	20 May 1998
Arrived Area 3B	22 May
Arrived Area 3A	24 May
Arrived AMES'96 Transect	29 May
Arrived Area 2	31 May
Arrived Area 1B	3 June
Arrived Area 0	10 June
Arrived Area 1A	14 June
Arrived Area 1B	16 June
Departed Area 1B	22 June
Docked Fairlie	24 June 1998

4. OBJECTIVES

1. To carry out a large-scale seafloor sampling programme in selected deep-water areas (17th round Tranches) to the north and west of Scotland. The sampling to be guided by a survey design promulgated in advance of the cruise and modified on the basis of field observations and sidescan sonar interpretations of the survey areas to be received during the course of the cruise.
2. To similarly carry out photographic surveys in the same areas.
3. To repeat seafloor sampling of 15 sites on a bathymetric transect west of Shetland, previously sampled during RRS *Charles Darwin* cruise 101 C leg 2 (Atlantic Margin Environmental Survey 1996).

5. NARRATIVE

5.1 Diary (see figure 1)

Monday 18 May.
Principal scientist joins the vessel. SOC equipment arrives and is loaded aboard.

Tuesday 19 May.
Scientific party arrive (0930-1900). BGS equipment arrives and is loaded aboard. Equipment is stowed in readiness to sail. Science party is given safety briefing/familiarisation by Chief Officer.

Wednesday 20 May.
Vessel sails Fairlie 0905. Science meeting held, survey objectives, protocols and safety are discussed. Ship's crew also briefed on the survey. Scientists new to the vessel are given a tour of the vessel.

Thursday 21 May.
Clocks retarded one hour to UTC. On passage to survey area 3B. Meeting held between PS, GEOTEK representative, Captain and ship's heads of department. At approximately 1400-1430 USBL system is calibrated and the precision echo-sounder fish deployed.

Friday 22 May.
Continue on passage to work area 3B. Survey time begins 1329. At position 62° 00′ N 000° 20′ E, turn on to echo sounding track that will form transect line A. Proceed at 6 knots to a WASP station two miles in to the track (at the approximate position of site 3BA350). Heave to and deploy USBL hydrophone. WASP successfully deployed (54501#1) for one hour of near-seabed operations. On recovery, video and still cameras appear to have worked well. Resume echo sounding track heading for position 62° 30′ N 000° 05′ E. Complete echo sounding track at 2059 and head for core site 3BA1000. The megacore deployment (station 54502#1) is rather disappointing, two total failures and two cloudy cores, giving 4/8 useful cores. The following deployment was fitted with 10 coring units to increase the chance of a successful biological sample. The USBL system was down from the start of the deployment - showing error H32 a hydrophone communication failure (the system remained inoperative for the remainder of the cruise).

Saturday 23 May.
Second deployment of the Megacorer at site 3B1000 (station 54502#2) produced the macrobenthos sample to complete the site. Two deployments of the megacorer (station 54503#1 and #2) completed a full sample set at site 3BA800. The first deployment (54504#1)

of the megacorer at site 3BA650 produced no samples, leading to a suspicion of hard ground; however, the following deployment (54504#2) produced a full set of chemical and geological samples. In the vain hope of getting some life out of the USBL, the beacons were swapped for the following deployment of the megacorer (54504#3) at site 3BA650, as expected the system showed no signs of life. In combination with the previous drop, this core provided enough material for the macrobenthos sample. Attempted a megacore at site 3BA500 as station 54505#1. The returning cores were empty or contained a minimal layer of sediment / gravel. Switched to box core and obtained a full set of samples at the first attempt (54505#2). Similar success followed with a box core drop at site 3BA450 (station 54506#1). The first attempt to box core at site 3BA350 (station 54507#1) produced no samples, as the core had only penetrated the sediment a short distance and the top water rushed from the base of the core on bringing it through the surface (*'a gusher'*). However, a perfect deep core, yielding a full set of samples was recovered on the second attempt (station 54507#2). Headed for the region of the transition from TOBI interpretation area 2 to area 4 and deployed the epibenthic sledge as station 54508#1. At recovery, mud around the sledge, a large *Umbellula*-like pennatulid draped across the front of the sledge (preserved as specimen material). Videotape had all run though. Camera not flashing, but all film run through. Head off for site 3BB900.

Sunday 24 May.

Two drops of the megacore at site 3BB900 (station 54509#1 and 2) collected a full set of samples plus obtained an additional core to freeze whole for organic chemistry. Two further drops of the megacore at site 3BC800 (stations 54510#1 and 2) produced the same result and completed standard survey operations in area 3B. Two drops of the BGS gravity corer completed all operations in this area. The first drop, at site 3BC800, as station 54510#3, produced a good core of about 2.8 m in TOBI interpretation area 3. The second, at site 3BA800 as station 54511#1, produced a good core of about 2.1 m in TOBI interpretation area 4. At noon, *Darwin* set course for survey area 3A. Arrived area 3A at 18:10. The first deployment of the megacorer at site 3AD1, as station 54512#1, failed completely with the core head locked up. During this deployment the cable metering system became unreliable. The digital rate meter would not stabilise and the wire out counter stopped ticking over. Subsequent deployments were monitored by reference to the analogue rate indicator on the starboard deck winch control panel and by reference to pinger traces on the waterfall display unit. The subsequent megacorer deployment at the same site (54512#2) produced sufficient material for a macrobenthos sample and a geology sample.

Monday 25 May.

The next deployment (54512#3) completed standard requirements for the site with a full set of chemistry samples. A BGS gravity core planned for site 3AD1 was cancelled in a worsening sea state. *Darwin* headed for site 3AC5, the first deployment of the megacorer (54513#1)

produced a full set of chemistry samples and an additional sample for organic chemistry (frozen whole). A period of about two hours was then spent on detailed investigation and repair of the cable metering system that precluded use of the winch. Operations restarted with the second deployment of the megacorer at site 3AC5 (54513#2) which produced a macrobenthos sample. *Darwin* then headed for site 3AD1 to deploy the BGS core (as per previous cancelled operation). Arrive at site 3AD1 and wait for final testing of repairs to cable metering system undertaken during the stream to this site. Testing quickly completed and the BGS gravity core deployed as station 54514#1. The cable metering system works well throughout the deployment and a good core (2.6 m) is recovered. *Darwin* proceeds to site 3AC4 and deploys the megacore as station (54515#1), this yields a full set of chemistry samples and a geology sample. The megacorer is deployed (54515#2) again at the same site but returns no samples, having obviously fallen over on the bottom (the weather has deteriorated). Three cores from 54515#1, retained as back-up against a macrobenthos sample, are now sectioned 0-10 cm and placed in formalin, having been warming up for some hours they can not be relied on for useful sectioning in 5 cm layers. A third attempt is made (54515#3) which yields 7 cores that are taken as a macrobenthos sample. In the increased seas, *Darwin* remains hove to until the sample sieving is completed. *Darwin* proceeds to site 3AC3.

Tuesday 26 May.

Megacore deployed at site 3AC3, station 54516#1, obtaining chemistry, geology and organic chemistry samples; also retaining one core for macrobenthos in combination with following deployment. Second deployment, 54516#2, yields 7 cores for macrobenthos, producing 8 for the site in total. In the rough weather, *Darwin* remains hove to while the macrobenthos sample is sieved. The megacore is then deployed (station 54517#1) at site 3AC1, producing chemistry and geology samples, and a core for organic chemistry. In rough sea *Darwin* tacks back to the same site position and the megacorer is deployed again (54517#2), this yields seven cores, which combined with one from the previous drop (54517#1) completes the sampling at this site. *Darwin* remains hove to for macrobenthos sample processing then, at 1650, tacks to site 3AC1. After eventually reaching 3AC1, it proves impossible to work in the prevailing wind and sea conditions. *Darwin* tacks towards TOBI interpretation area 4 and attempts to make an echo-sounding pass over the seafloor troughs (2129-2400).

Wednesday 27 May.

A return pass is made in the early hours of the morning, heading for the location of site 3AA1, with an inspection of the weather at around 0700. Sea conditions still excessive for sampling operations; continue echo-sounding, to review weather at 0900. Work recommences at 0900 with a megacore deployment (54518#1) at site 3AA1, which produces the 8 cores required for the macrobenthos sample. The second deployment at this site (54518#2) comes back empty

bar a little gravel. The third (54518#3) completed operations at this site, providing the required chemistry and geology cores and a core for organic chemistry. At site 3AB2, again three deployments of the megacorer proved necessary, 54519#1 providing the chemistry and geology samples, as well as a back-up set of three cores sieved for macrobenthos. The second drop (54519#2) returned with only a few very short samples which were all discarded. The third (54519#3) again collected only short cores, but long enough and in just sufficient number for a full macrobenthos sample. *Darwin* carries out a short echo-sounding run (1950-2020) to locate a seafloor furrow for WASP survey. WASP is deployed as station 54520#1 and is successfully flown through the target furrow.

Thursday 28 May.

Megacore deployed three times (54521#1-3) at site 3AA2, the furrow through which WASP had just traversed. A full set of samples are obtained including an extra metal sample from 54521#1 taken from a *'red spot'* located a few centimetres down core. Two drops of the megacore (54522#1-2) at site 3AB3, a *'flat furrow'* (terrace) echo-sounded just prior to the WASP run, produced a full set of samples. Thence to site 3AB5 for further megacoring, the first drop (54523#1) producing a full set of chemistry and geology samples, the second attempt (54523#2) only produced 6 cores which combined with one spare from the previous drop gave a macrobenthos sample of 7 cores only. *Darwin* headed to site 3AB4 and WASP was deployed as station 54524#1; it fishes well in the slight sea but there are very few camera data requests seen on the acoustic traces, on recovery only 120 shots are indicated of a potential 240 given the length of the run. Repositioned to site 3AB4, first megacore deployment (54524#2) produced nine good cores, providing a macrobenthos and a geology sample. During the second deployment, after the landing and hauling up to about 1000 mwo the winch tripped out for no apparent reason. The digital cable metering read-outs, other than the one in the lab, show error. The winch is restarted about ten minutes later with no ill effect - it's a mystery. The megacore returns with eight cores, providing more than enough for the full suite of samples (chemistry, geology, and frozen whole core). Reposition to site 3AB1 and make two megacorer drops (54525#1 and 2), in total providing the usual set of samples and an organic chemistry sample.

Friday 29 May.

Head for the last site in area 3A, site 3AC2, with the intention of carrying out a WASP run and a normal coring station. Two drops (54526#1 and 3) of the megacorer produce a full set of samples. The intervening WASP deployment (#2) was a failure; acoustic traces were lost on close approach to the bottom and the haul was aborted. This work completed operations in area 3A and at 0754 *Darwin* set course for the inshore end of the AMES '96 primary transect. At 1400, begin working the transect with the Day grab at site B5; three attempts (54527#1-3) are required, the last producing a 5 litre macrobenthos sample. At site Tr200 it takes six

attempts (54528#1-6) with the day grab, the last producing a 4.5 / 5 litre macrobenthos sample. At Tr250, it takes eight deployments (54529#1-8) of the Day grab to produce a macrobenthos sample, the last grab containing an excellent specimen of a large spatangoid, with commensal bivalves and polynoiid worm. Four deployments (54530#1-4) of the grab at site Tr300 produce a macrobenthos sample through the pooling of two small samples from the last two deployments.

Saturday 30 May.

Start megacoring operations on the transect at site Tr350, station 54531#1; using only four units on the corer to aid penetration. Four good cores are recovered and used for a) enzyme digestion analysis of organic matter (Steve Dewey, Southampton University MSc project), b) detailed organic chemistry (MIME project) and c) meiobenthos as per AMES '96 additional transect sampling. At site L5 (54532#1) the megacore produces another four cores which are used for the same set of samples. At site Tr450 the first megacorer deployment (54533#1) only recovers two cores, which are used for enzyme digestion and meiobenthos samples. The second deployment (54533#2) produces four cores, one of which is used for the detailed organic chemistry sample, the remaining three are used for meiobenthos samples. At site L4 the megacorer (54534#1) produces a full set of samples at the first attempt. The box core is then brought in to action to sample the macrobenthos at the same four sites. At site Tr350 (54535#1) it produces a good macrobenthos sample, and a surface scrape of the remaining area is also taken as qualitative material. The same result is produced first drop (54536#1) at site L5. At site Tr450 the box core (54537#1) returns with a sand wave feature (as per AMES '96); two macrobenthos samples are taken, one from the topographic high, one from the low.

Site L5 proves more problematic. Drop 54538#1 takes a good core but it drains on deck, a 0-10cm macrobenthos sample (0.1 m^2) sample is taken as back up. The second (54538#2) attempt produces a somewhat disturbed and rather unusual core. On removing the front panel the upper half of the core started slopping out, a black patch about 20 cm down becoming visible. This patch contained fibrous material and smelt strongly of hydrogen sulphide. Delving into the subsurface material over the rest of the core revealed the presents of large lumps of consolidated clay among the rather soupy sediment of the upper 20 cm of the core. Below 20 cm there was muddy sand layer of 3 cm underlain by the usual grey clag. The black layer occupied 60-75% of the cross-sectional area of the core, the fibrous material present was degraded sponge tissue. Presumably the site had been ploughed over by a trawler. An apparently normal fauna was present on the core surface including sponges 3-5 cm in length. The core profile was examined from subcores and photographed. The surface was scraped for a qualitative macrobenthos sample. The third box core (54538#3), like the first, drained on deck, and only a surface scrape sample was collected. The forth (54538#4) produced a good core with sand wave topography: two macrobenthos samples were taken, one from the

topographic high and one from the topographic low. Moving to site Tr550 the megacorer is brought into play. Two drops (54539#1 and 2) produce sufficient cores for a full set of samples (macrobenthos, enzyme digestion organics, organic chemistry and meiobenthos). Similarly at site Tr600, two drops (54540#1 and 2) complete the sampling requirement. At site Tr650 the first drop (54541#1) produces the eight cores required for the macrobenthos sample and all of the other samples are collected from the second drop (54541#2). Again the first drop (54542#1) at site S2 produces the eight cores required for the macrobenthos sample.

Sunday 31 May.

Continuing work at site S2, the second drop (54542#2) produces the remaining samples necessary. Sites Tr800, Tr900 and Tr1000 are completed in similar fashion, with a full set of samples obtained at each. Operations on the transect are completed with a BGS gravity core deployment at Tr650 (54546#1) which returns a 2.1 m core. At 1300, head for work area 2, the 204 blocks. Begin working in Area 2 at 1830 with an echo-sounding run up-slope in TOBI interpretation area 3, looking for the grooves/furrows; there appear to many, but the strong swell precludes a particularly clear bottom profile. In a fair breeze and sizeable swell, WASP is deployed as station 54547#1. A couple of camera altimeter data requests at the surface, but none at the bottom. On recovery, it is discovered that the Birns connector on the camera had flooded, knocking out the Mk7 camera and draining down the video battery. To add insult to injury, the video tape had not been replaced since the last aborted WASP - the video had, however, run in mid-water during that haul, consequently, the tape recovered from 54547#1, has 63 minutes of mid-water shots from the aborted haul and two minutes from site 2A. Box core deployed at site 2A1, as station 54548#1.

Monday 1 June.

On recovery of the box corer, the core was found to be short and disturbed. Rather than repeat the exercise, the megacorer was deployed as station 54548#2, yielding 8/8 good cores for a macrobenthos sample. A second deployment of the megacore (54548#3) produced sufficient material for hydrocarbon, heavy metal, particle size and geology studies. At site 2B1 two deployments of the megacore (54549#1 and 2) again produced all the required samples. Site 2C1 required three drops of the megacorer as the first (54550#1) produced nothing but a few pieces of gravel. The following two drops (54550#2 and 3) did, however, yield sufficient material for a full set of samples. *Darwin* then set off to the start position of an echo-sounding track that would cross the "trough" to the NW of the area. Although looking highly dramatic on a profile presented on the relevant BGS sheet, crossing the trough at 5 knots was not particularly exciting on the echo sounder (1401-1437). WASP was successfully fished along the axis of the trough heading to the north-east; with a big wire angle as we struggled with the current. All video and film run. The trough has plenty of rocks, but they have silt cover, so no

great scour. Continue working in the trough with two megacore drops (54552#2) at site 2T, which produce a full set of samples. A BGS core deployment at the same site (54552#3) manages to miss the rocks and returns a 2.6 m core.

Tuesday 2 June.

Continuing operations in area 2. First at site 2B3, where two drops (54553#1 and 2) produce a full set of samples. Then at site 2B2, the first drop (54554#1) returned fired but completely empty, the second and third attempts (54554#2 and 3) did, however, yield sufficient material for a full set of samples plus a core for organic chemistry (frozen whole). Headed for site 2B1 and deployed the BGS corer (54555#1) which produced a good long core. Returned to the 2A area and repeated the failed WASP across the furrows as deployment 54556#1; all film and tape run though no flashes seen on the video. On completion of the WASP run, set course for area 1BA at 1536.

Wednesday 3 June.

Arrived area 1B at 0400 and echo-sounded for two transect lines in the NW corner. Deployed WASP as station 54557#1 in the TOBI interpretation of '*halo pockmarks*'. The first half of the video tape shows high levels of suspended particulates, making it almost impossible to see the bottom itself. Later, '*normality*' returns, with a relatively featureless seafloor (some ripples), having a fauna dominated by echinothurids, large asteroids and cidarids. Plenty of fish are also seen (eels and rabbit fish). Return to first coring site position via a zigzag echo-sound track through the area of '*halo pocks*' - this run reveals the first indication of seabed mounds. Begin coring operations with a megacore at site 1AB5 (54558#1), this only produces one core from 8, and it is sloppy foram sand that is practically impossible to remove from the corer. The core has a fishy/seaweedy/marine smell. Megacore re-deployed (54558#2) at the same site with only four units on in the hope of penetrating more consolidated sediment. This produces four good cores for chemistry and geology. Trying with 6 cores on the next drop (54558#3), produces nothing but water. Switching back to four tubes for 54558#4; this does not help, nothing but water again. Tried the box core next (54558#5), but it returned with a short core which drained completely on surfacing. The surface of what was left was scrapped off and sieved through a 500µm mesh as a qualitative macrobenthos sample. This sample also had the same '*fishy smell*' as #2. A final attempt was made (54558#6) with four units on the megacorer and a home-made water bottle (a coring unit top on each end of a cut off core tube) fitted on top of the head. No cores were recovered, bottom water was clear, but the bottle leaked at the surface. Give up on a macrobenthos sample and head for site 1BA4. Two drops (54559#1 and 2) produce sufficient material for a full set of samples and an organic chemistry core.

Thursday 4 June.

Two drops (54560#1 and 2) of the megacorer at site 1BA1 produce a full sets of samples; the cores from the second drop have a light dusting of what appears to be phytodetritus (=fluff). Thin fluff layers are also found on cores from the two drops (54561#1 and 2) made at site 1BA2, which produce sufficient material for a full set of samples plus two cores for organic chemistry (Steve Dewey MSc and frozen whole) and two for a study of the fluff. At site 1BA3, three attempts (54562#1-3) were require to produce a similar set of samples (full set plus two for organic chemistry and one for fluff). These cores again had a thin layer of fluff; a xenophyophore was also recovered from one of the cores. The first core (54563#1) at site 1BA6 produced short cores with a good layer of fluff. The cores were used to produce the usual set of chemistry samples (fluff layer mostly removed) and to sample the fluff (samples preserved by freezing, chilling and in formalin). A xenophyophore was recovered from one core and preserved separately. The second attempt (54563#2) returned fired but totally empty. The third and fourth attempts (54563#3 and 4) both produced 4/4 cores which were pooled to produce the macrobenthos sample. All cores were topped with fluff (2-6 cm), which was sieved out with the 0-5 cm sediment layer. One core from each of the last two drops contained a xenophyophore. Proceed to an echo sounding run adjacent to three seabed mounds recorded on the TOBI profiler - six mounds seen on this first run (1703-1745). A second right-angle echo sound line was then run through the mound of greatest extent (1808-1829). Moved to site 1BA7, in the area of the last WASP deployment, and deployed the megacorer with the home-made bottle attached. Returned with one part core and three empties, the one core appeared similar to others in this vicinity. Water bottle well sealed on return, water clear. Moved to the echo-sounded mound and deployed WASP as station 54565#1. The 10kHz record suggests that the run started on another mound before reaching the intended mound (see inset figure on page 69). Video shows areas of rippled sand, what appear to be '*miniature terraced hillsides*', and at one point on each mound the occurrence of coral. Attempted to box core in the mound as station (54565#2), but sample washed out on recovery.

Friday 5 June.

Made second attempt to box core the mound (station 54565#3) with similar result, some of the recovered material retained in formalin and some frozen. Set off for NE corner of the area and echo sounded down to the SW (0141-0532) to locate a third line of standard transect stations. Began megacoring the new stations from deeper to shallower. Site 1BA10 required three drops of the megacorer (54566#1-3) to produce a full suite of samples. After the first attempt (54567#1) with an eight tube megacore at site 1BA9 failed to produce any cores, coring continued using four units only. Three drops (54567#2-4) produced 4/4 cores each providing sufficient material for all standard samples. Most cores had fluff (1-2 cm) a sample of which was frozen. Some fragments of (long) dead *Lophelia* were recovered from the 5-10 cm layer of the macrobenthos sample. At site 1BA8, three drops of the megacore (54568#1-3)

were required to generate the full set of samples. Headed back to the west and the area of mounds. Made three echo-sounding passes (2100-2219) perpendicular to the first mound sounding run at the location of the tallest mound seen on the first run. Two of the new passes picked up the mound. At this time the Aberdeen Seabird CTD (with transmissometer fitted) was given a quick wet test to confirm set up, operation and data downloading - all appeared fine. Located to make a WASP run through the mound just echo sounded.

Saturday 6 June.

Deployed WASP as station 54569#1 for a run through *'MOUND2'*. Video does not show any coral, but dense populations of xenophyophores are seen around the mound position. Then deploy BGS core on the mound as station 54569#2, but it fails to take a core; try again off the mound as 54569#3, but again recover no core; make a final attempt on the mound as station 54569#4, but yet again no core is recovered. The Seabird CTD is set up and mounted under the top ring of the megacorer with four units fitted. Four core- with-CTD deployments are then made at closely spaced sites in the '*halo pocks*' area. The first, site 1BA11, is nominally located in a *'halo'* region; the deployment (54570#1) produces hydrocarbon, heavy metal and geology samples together with a frozen core, a sample of fluff frozen and CTD data. The second, site 1BA12, is located in an *'open'* area; the deployment (54571#1) produces hydrocarbon, heavy metal and geology samples together with a frozen core and CTD data. The third, site 1BA13 (54572#1), located in a large *'halo'*, produces hydrocarbon and geology samples together with a frozen core and CTD data. The forth site, 1BA14 (54573#1), located in an *'open'* area, produces hydrocarbon, heavy metal and geology samples together with a frozen core and CTD data. Then head back to the vicinity of the tall mound of the previous WASP and BGS coring attempts. Echo-sound through mound on a down wind track and pick it up on the echo sounder. Deploy WASP (54574#1) and head in to the wind to cross the feature. During the run two mound tops are covered on the echo sounder. This run produces the best video yet, which confirms that WASP ran over two mound top features. Head down to the south of area 1BA to investigate the TOBI interpretation area of dense pockmarks with a standard core station and a sledge run. Weather worsening. Begin the coring operations at site 1BA15 with the CTD still fitted. The first drop, 54575#1, is completed without incident and returns 6/6 cores. However, the second drop, 54575#2, returned with no cores, as a result of the corer falling over on the bottom, with the additional consequence that the safety frame around the CTD was buckled at its lower end. The third drop, 54575#3, without the CTD, was completed without incident and returned the cores needed to complete a full set of samples at this station. Cancel the sledge deployment in worsening weather and head for station 1BA16.

Sunday 7 June.

Arriving at site 1BA16, weather too rough to work. Remain waiting for weather until 0900, then reposition to site 1BA16 and deploy the megacorer as station 54576#1. The corer

successfully retrieved in marginal conditions, producing a full set of chemistry and geology samples and four cores as part of a macrobenthos sample. Weather conditions no better, further deployments cancelled. Waiting for weather. After about 8 hours steaming back to site 1BA16, weather still too rough - review again in two hours. Review again in one hour. End the day still waiting for weather.

Monday 8 June.

With a slight moderation in the weather, coring operations at site 1BA16 are re-started at 0900. The megacore is deployed as station 54576#2. Eight cores are recovered though one is overlain by very cloudy water. Seven are sieved as a macrobenthos sample. (The four macrobenthos cores from 54576#1 having been retained separately). Head as best as possible, given the sea state, to echo sound the TOBI '*cable/biology*' feature, making two oblique passes over the '*cable*' line. Only slightly rolling seabed seen in the vicinity, but a little way west of the line cross a small scarp (10 m) on both passes. Also, on the initial run in to the echo-sounding track two small features having a 10 kHz signature similar to the seabed mounds to the north are seen. Head for last of the 1BA sites in the TOBI interpretation sediment wave area; waves of 15 m amplitude are seen on the echo-sounder on arrival at site 1BA17. Megacore deployed as station 54577#1, landed with a double touch and returned with eight cores, four cloudy the rest with some resuspension / suspended material; best cores taken for chemistry, the next best for geology; the three remaining cores were sieved out on 500μm to provide qualitative macrobenthos material. Second deployment, 54577#2, returned without the units having fired although the safety strings had pulled on 7/8 units: probably fell over after first touch - double bounce recorded again on the dynamometer trace. The third deployment, 54577#3, produced only one very short core and three xenophyophores in the bottom of an empty tube. Make forth attempt, station 54577#4, with only 4 units on - 4/4 long cores produced. And on the fifth attempt, 54577#5, the 4 unit megacore again returns 4/4 long cores and completes the sampling requirement for this site. At 2000, head into area 1BB, for an echo-sounding run in the shelf edge ploughmark zone 59° 00′ - 59° 10′ N. *En route* cross what are presumably along-slope furrows. Begin echo-sounding line at 2151, but are forced to heave to by fishing vessels working ahead of us. Then jink west to try and continue upslope on a parallel track. However, weather conditions are worsening and no work is possible.

Tuesday 9 June.

Impossible to work. With poor weather set in for some time, at 0830 steam on a fairly comfortable course (surfing) for area 0. Set course at approximately 0900. Run through the centre of the depression, where it calms a bit, but pressure drops very low. Approaching area 0, weather worsens - with horizontal rain overtaking the ship.

Wednesday 10 June.

Heave to in strong winds and large seas with no immediate prospect of working. In the early evening return to the first intended site to look at the weather. Arrive back at this site at around 2230, weather and sea have gone done appreciably, but with the wind and sea some 20 degrees apart, cancel intended deployment to review the situation in one hour.

Thursday 11 June.

Still waiting for weather. Work restarts at 0130, some 54 hours since the last sample was obtained. Working in area 0, sampling protocol changed to use of box core for macrobenthos to match existing data available from this area. Box core deployed (station 54578#1) at site 3 (LOIS), returning with only a short sample that washed out on deck. Megacore deployed (54578#2) at the same site, producing sufficient material for chemical samples, a geology sample of the core deeper than 10 cm and, the five remaining cores sieved to produce a reserve macrobenthos sample. Head for site 2.5 (LOIS addition). First deployment of the megacorer (54579#1) produces a full set of chemistry samples, a geology sample, and a core frozen for organic chemistry. The following box core (54579#2) deployment produces a good full box, although the supernatant is a little cloudy, probably from the recovery process. Two 0.1 m^2 inserts are used to generate two separate macrobenthos samples to the otherwise usual protocol. Deploy WASP (54579#3) at site 2.5. With no run in altimeter trace on approach to the seabed and no altimeter lock when in range - though very occasional in range single returns - the haul is aborted as unfishable after about 10 minutes. The tape from the aborted WASP (about 8 minutes worth) shows intermittent video activation. The near-bottom layer is again rather turbid - maybe this is not the season/year for photography. Head for site 2 (LOIS) and deploy the box core as station 54580#1, it returns with a good full box, though again with somewhat cloudy top water following a clangy recovery. The megacorer is then deployed (54580#2) on the same site and returns with 8/8 good cores, all with fluff: used for the full suite of chemistry and geology samples, with sufficient spare to freeze a core and freeze the fluff from three core tops. Head for site 1.5 (LOIS addition) and deploy WASP as station 54581#1. This time the altimeter does give returns in range at the bottom but only for about 50% of transmissions.

Friday 12 June.

WASP recovered to find no Mk7 film run as a result of miss-set alarm time and the video camera loose in the housing. The tape had run and the view was as central as ever. Plenty of fluff in the near-bottom water and on the seabed, and patchy with it. Synaphobranchiids, *Phormosoma* and galatheids in burrows most visually dominant. Continue working site 1.5 with deployment of megacore (54581#2), which produces a full set of chemistry samples and sufficient material for two geology samples and two frozen cores. Complete work at this site with a deployment (54581#3) of the box core, from which two 0.1m^2 macrobenthos samples

are obtained. Moving to site 1 (LOIS), the box core is deployed (54582#1) and again produces two 0.1m² macrobenthos samples. The following megacore deployment (54582#2) only collects four short cores from eight units, but provides sufficient material for the required chemistry samples. Moved to site 4, a BGS station where a previously collected gravity core has yielded a particularly good high-resolution stratigraphic record but which lacks a top. The megacore deployed (54583#1), returns with 6/6 good cores, providing two for geology and three for the standard chemistry set, the sixth core bubbled through a burrow and was discarded. Returned to site 2.5 to repeat the WASP aborted with no altimeter lock. The deployment 54584#1 turns out to be rather similar - with less than 10% altimeter lock. The video shows a very turbid (fluff) environment, and gives only a few brief views of the seafloor and its inhabitants - ?turbidity causing loss of altimeter lock. Move to site 5, a BGS location with suspicion of ascending gas or fluid near the seabed. Deploy the megacore as station 54585#1; it returns with 8/8 good cores which are used for the usual chemistry and geology samples, two further cores are frozen and a sample of fluff is also frozen. The box core is then deployed (54585#2) returning a good core that provides two 0.1 m² macrobenthos samples. The BGS corer is then deployed (54585#3) at the same site, producing a somewhat short core (1.2 m). WASP is then deployed (54585#4) for a mid-water video run to the bottom in an attempt to determine the extent of the turbidity layer.

Saturday 13 June.

Make for site 3 to repeat attempt to get a macrobenthos sample from this site. Deploy box core as station 54586#1; on recovery all the top water drains out. Cause is a large burrow in the centre of the core. The burrow is carefully excavated to determine its nature and a good-sized echiuran is found *in situ* in the burrow. Second deployment (54586#2) of the box core produces the required macrobenthos sample. Head for T19 sites. Locate 1500 m site on the run in and deploy the box core as station 54587#1. The core returns with a good sample, though with the usual somewhat cloudy supernatant water, that is processed to produce two 0.1m² macrobenthos samples. The megacore is deployed at the same site (54587#2) producing 8/8 good cores with fluff up to 6 cm deep. They are sampled for chemistry and geology as normal plus two frozen and a sample of fluff also frozen. In storing the geology sample, the core fractured on a natural surface about 5 cm below sediment surface revealing a '*field of pimples*' on the lower surface and their impressions on the upper surface. Together they / it has the appearance of a plimsoll footprint: ? similarities with a know xenophyophore that produces a hexagonal pattern at the sediment surface - though these '*pimples*' are sub-circular. One of the pimples was partly dislodged from the lower surface and could be lifted out as a coherent entity, the others could not be removed cleanly. The first was preserved in formaldehyde for further study. Moved to locate the 800 m site. Deployed megacore as station 54588#1, it returned with 7/8 rather short cores with some gravel, used for normal chemistry and geology, plus one core frozen - no fluff apparent. Layering in the geology core suggested

that the ground might have been turned over by trawling. The subsequent box core deployment (54588#2) led to a similar conclusion. Large pieces of clay were exposed at the surface and there was widespread blackening in patches in the deeper layers. Head for the 300 m contour. Deploy WASP as station 52589#2, the altimeter works perfectly confirming that the previous loss of altimeter lock resulted from the high turbidity of the near-bottom water. The video shows it is nice clear water - big aggregations / drifts of serpulid polychaetes (*Ditrupa*?), some large rocks, possible trawl scars, hermit crabs and flat fish. Deploy box core at the 300 m site (as station 54590#1). An enormous 5 tonne pull out results in one of the best samples we have had with good clear overlying water. Standard box core protocol used to generate a full set of samples (hydrocarbons, heavy metals, particle size, macrobenthos and geology). Set off for area 1A at 2154, just as *Colonel Templer* is arriving in T19-22.

Sunday 14 June.

Arrive area 1A around 0700, echo-sounding in from the east. Deploy megacore (54591#1) at site 1AA1, recovering 8/8 cores with fluff (up to 6 cm deep) which are processed as a macrobenthos sample. Second deployment (54591#2) again yields 8/8 cores with fluff (up to 4 cm), which are used for the standard chemistry and geology samples, plus one is frozen whole, some fluff is preserved in formalin, two aliquots of fluff frozen, and a third fluff sample is taken by ERT for hydrocarbon analysis. Head for site 1AA2 and deploy the megacore as station 54592#1, it returns with 8/8 cores, although one is short (has slipped), used for normal chemistry and geology; no fluff apparent on these cores. Re-deploy the megacorer as station 54592#2, it returns 8/8 good cores with only a few blobs of fluff, all cores used for a macrobenthos sample. Lest there be a lot of fluff in the near-bottom water the sledge rather than WASP is deployed as station 54593#1 at a 1AA location. At recovery, the lamp in the low position on the starboard side was full of mud and the bulb and its holder burnt out - from insufficient cooling once clogged with mud. Head for the north-east of the area and a group of three sites. Begin at site 1AA5 with a deployment (54594#1) of the BGS gravity core, which returns with a 1.8 m sample.

Monday 15 June.

Continue working site 1AA5 with two deployments (54594#2 and 3) of the megacore; between them they produce sufficient material for the standard suite of samples plus a core to freeze. Similarly at site 1AA4, two drops (54595#1 and 2) of the megacore produce the full suite of samples plus a frozen core and a frozen sample of phytodetritus. And continuing the same pattern, two drops (54596#1 and 2) at site 1AA3 produce a full suite plus a frozen core. Head to the north-west corner of the area and run an echo sounding line up and down the flank of Rosemary Bank and the moat that surrounds its base (1045-1240). Deploy WASP (with second lamp made from a Mk4 camera pressure case) at site 1AB, in the moat, as station 54597#1. The Mk4 light is rather focused and works for a while before a wire comes loose;

nevertheless when fluff permits one lamp is sufficient to illuminate the bottom. Fauna similar to previous sledge, though no brisingiids seen. A few rocks towards the end of the run, a couple with large plate like sponges lying vertically. Deploy megacore (54598#1) at site 1AB1, on the crest of the ridge before the dip into Rosemary Bank moat; it produces a full set of good cores which are all used for a macrobenthos sample. The second deployment (54598#2) is similarly successful, and yields the usual set of chemistry and geology samples together with one frozen core. Relocate to site 1AB2, adjacent to the 1900 m contour as per the WASP deployment. The first deployment of the megacore (54599#1) again recovers 8/8 cores which are used to generate a macrobenthos sample. The second (54599#2) does as well and generates a full set of chemistry and geology samples together with one frozen core. Head for site 1AB3, located at a similar depth to 1AB2, but clearly within the TOBI interpretation area of very high backscatter.

Tuesday 16 June.

Megacore deployed (54600#2) twice at site 1AB3, in total producing a complete set of macrobenthos, chemistry and geology samples and a core for freezing. At 0224 head for area 1BC. Deployed megacore (54601#1) at site 1BC1. Second deployment (54601#2) at site 1BC1 returns with swivel hung up under corer top plate, a rope is run through the frame and made fast, the gear is lowered back in to the water until the main warp comes clear. The wire between the two crimps of the termination is dented but there are no broken strands. Combined, the two drops (54601#1 and #2) provide material for the usual suite of macrobenthos, chemistry and geology. Head for site 1BC2, the deepest of a transect of stations to be run in the SE corner of area 1B. First drop of the megacore (54602#1) yields sufficient material for the standard suite of chemistry and geology together with a core for the MSc project on organic chemistry and a sample of phytodetritus. However, the second drop (54602#2) returns completely empty. Switch to the yellow box core as it has two open boxes - only to discover that the box retaining bar has not been supplied and the firing bolt retracting spring is not connected because there is no connector - as a timesaving measure it costs over an hour and a half to repair and replace these components. Then to add insult to injury, when deployed (54602#3) the corer fails to fire as a result of insufficient tension in the bolt retractor mechanism. Try to increase tension by removing small shackle and replacing it with a bolt - it breaks, give up on the yellow corer and swap back to the stainless steel version. Time lost including the pointless drop is over three hours! For further pain the following deployment (54602#4) of the stainless steel box core returns with only a short core and the top water is not held. Last attempt with the box core (54602#5) is another short core from which the top water gushes on recovery. Move up slope to 1000m, site 1BC3, and deploy the megacore as station 54603#1; hooray it returns with 6/6 good cores providing for the usual suite of chemistry and geology samples, and in addition a core for Steve's project and a core to freeze; fluff is also retained. Back to the box core (54603#2) with the same result as the previous station - a short

core, top water not held, discarded. Make the megacore up to eight units and add four lead blocks from the multicore. Deployed as station 54603#3, it returns with 7 good long cores and one completely empty tube. The seven cores taken as a macrobenthos sample. Relocate to 900 m (site 1BC4) and again deploy the 8 unit megacore with extra lead as station 54604#1, it produces sufficient material for the standard suite of chemistry and geology, together with one core frozen and one used for a detailed study of organic matter (Steve Dewey, as before).

Wednesday 17 June.

Deploy box core (54604#2) at site 1BC4, generating two 0.1 m^2 macrobenthos samples. Relocate to site 1BC5 at 850 m for an intensive replicated sampling station to match with depth of AGIP sites in the near vicinity. Box core successfully deployed five times in succession (54605#1 to 5), on each occasion generating a full suite of samples (hydrocarbons, heavy metals, particle size and macrobenthos), a geology sample is also taken from #2. Move up to 800 m, site 1BC6, and deploy the megacore as station 54606#1, obtaining a full set of chemistry and geology samples plus a sample for organic chemistry (Steve Dewey). Deploy the box core (54606#2) at the same site and generate two 0.1 m^2 samples. Return to site 1BC5 to obtain replicate chemistry samples using the megacorer. Megacore deployed five times (54607#1 to 5) generating five replicate samples for hydrocarbons, heavy metals and particle size. Small (4-5 megacore cores) macrobenthos samples were also collected from the last four of these five drops. Move to 700 m, site 1BC7, and deploy the megacore (54608#1), producing a full set of chemistry and geology samples and a core for organic chemistry (Steve Dewey). Successfully deploy box core at the same site and obtained two 0.1 m^2 macrobenthos samples from it. Relocate to 600 m, site 1BC8, deploy the box core (54609#1) and again generate two 0.1 m^2 macrobenthos samples from it. The subsequent megacore (54609#2) at the same site produces a full set of chemistry and geology samples and a core for organic chemistry (Steve Dewey). Run upslope through the 500 and 400 m contours, noting positions, and deploy WASP (54610#1) just upslope of the 400 m position. Video shows uniform ground throughout with frequent colonies of serpulids and a high density of ? cerianthids / polychaetes, also some large rocks. Return to the position of the 500 m contour, site 1BC9, and deploy the megacore (54611#1) which produces a full set of chemistry and geology samples and a core for organic chemistry (Steve Dewey).

Thursday 18 June.

Continue operations at site 1BC9 with a deployment (54611#2) of the box core which yields two 0.1 m^2 macrobenthos samples. Move up to the 400 m contour, site 1BC10, and deploy the megacore (54612#1) producing the usual chemistry and geology samples together with a core to freeze and a core for organic chemistry (Steve Dewey). The following box core (54612#2) at the same site is also successful and yields two 0.1 m^2 macrobenthos samples. Move to 300 m, site 1BC11, where the first drop of the megacore (54613#1) produces 6/6 cores providing

sufficient material for the usual suite of chemistry samples plus samples for geology and organic chemistry and a core to freeze. The box core is then deployed as station (54613#2), returning with a short but good core that yields two 0.1 m^2 macrobenthos samples. Move to 200 m, site 1BC12, where progress gets somewhat slower. Three drops of the megacore (54614#1 to 3) generate only hydrocarbon, heavy metal and particle size samples. An attempt with the box core (54614#4) returns a short core with significant topography, but it flushes on deck and is discarded. Break out the Day grab, and at the third attempt (54614#5 to 7) it produces the required 5 litre macrobenthos sample. Relocate to site 1BC3 and deploy the box core (54615#1) in an attempt to improve on previous visit to this site. There is essentially no pull out and all expect a short washed out core; however, a good core is obtained and what is more it appears to have fluff !, both in suspension and on the core surface. Two 0.1 m^2 macrobenthos samples are generated from the core. Head for 1BC2, to try and pick up a box core sample. The first deployment (54616#1) recovers a short core, but it gushes its top water and is discarded. The second deployment (54616#2) returns a good core and two 0.1 m^2 macrobenthos samples are generated from it. That ends operations on the 1BC transect. At 1512 head for the 1BB transect via a couple of waypoints that take us over the active channels on the TOBI interpretation. Echo sound down the 1BB transect getting positions for the 200 - 500 m stations. Deploy WASP (54617#1) at about 450 m on the transect; however, the video unit was not switched on, so no videotape had run. Echo sound from the 500 m site (1BB4) towards the 700 m AGIP site, getting a position for a 600 m station. Deploy the box core (54618#1) at site 1BB5 (600 m) and recover a good deep core which generates a 0.1 m^2 macrobenthos sample and a geology sample. Deploy the megacore (54618#2) at the same site, getting a full set of chemistry samples and a core to freeze.

Friday 19 June.

Head for site 1BB4 (500 m) and deploy the megacore as station 54619#1. The corer returns with all tubes empty; however, a second attempt (54619#2) produces sufficient material for a full set of chemistry and geology samples plus a core to freeze. The following box core deployment (54619#3) is also successful and produces the required macrobenthos sample. Move up to 400 m, site 1BB3, where the first drop of the megacore (54620#1) produces a full set of chemistry and geology samples. Similarly, a box core deployment (54620#2) at the same site produces the macrobenthos sample at the first attempt. On to 300 m and site 1BB2. Here the first deployment (54621#1) with the box core results in some damage to the box core box on contact with a rock. Switch to Day grab for this site. Eight Day grab deployments are made (54621#2 to 9), producing one good grab for a full set of chemistry samples and two grabs of small macrobenthos samples (#7, 2.5 litres; #9, 4 litres); the two macrobenthos samples are preserved separately. Relocate to the 200 m site (1BB1), Day grab deployed 12 times (54622#0-11) to obtain the full sample set of samples (#2 chemistry; #5 and #11 preserved separately for macrobenthos). Note use of #0 - the simplest fix of a failure to record

the first failed deployment at this site. Relocate to midway between sites 1BB2 and 1BB3, about 350 m, and deploy WASP (54623#1). Video shows a rather rough ground, with areas of more and less rocks - possibly a surface expression of iceberg ploughmarks? Fauna dominated by an encrusting? / branched? / white creature; looks calcareous (?polychaetes) but when dislodged it / they appears light, ?sponge. High numbers of mysids in patches, ?swarms. A close encounter with a large rock affords a nice view of a dromid crab carrying a sponge. Head for site 1BB6, at approximately 1200 m, first two deployments of the megacore (54624#1 and 2) return with water only and no sign of sediment. Reduce to four coring units only; all four return with samples, although one is disturbed by bubbling through a burrow. The latter is used for geology, the others for chemistry. A final attempt at the same site with the box core (54624#4) does the expected flush at the surface. When the contents are revealed two fine xenophyophores appear, these are retained (dry) and the remainder is discarded. Head for site 1BB7 at a depth of about 1350 m.

Saturday 20 June.

At site 1BB7, deploy megacore twice (54625#1 and 2) recovering sufficient material for a full set of chemistry, macrobenthos and geology samples plus a core to freeze. At 0830 make transit back to the northern part of area 1B (1BA) to site 1BA18 in an area of TOBI interpretation pockmarks. It is hard sandy ground again and difficult to work; two deployments of the megacore (54626#1 and 2) yield only one core each, providing a hydrocarbon and a heavy metal sample. In addition, the second drop (#2) also recovers a xenophyophore and a sponge, which are retained. A third attempt at the same site with the box corer (54626#3) produced only a short sample which washed out on recovery and was discarded. Head for the start point of an echo sounding run over the TOBI '*cable and biology*' features. Echo sounding record (0927-1230) is as per previous run, low scarps and rolling terrain with no obvious targets that would correspond with the TOBI record. Establish site 1BA19 in the centre of the TOBI interpretation area of '*biology*' and deploy the megacore as station 54627#1. Megacore returns with 5/6 cores which are all used for a macrobenthos sample. WASP deployed (54627#2) at the same site, poor altimeter lock suggests turbid conditions, so make a short (half-hour) run only. Megacore deployed (54627#3) again at the same site, returning with 5 good and one slightly cloudy core, which are used for chemistry samples and to augment the macrobenthos sample from the previous core. Start another echo sounding run (1650-1820) to the north-west of the '*cable*' line, nothing seen on this initial run, turn to head south through the small features seen on *Darwin* 10 kHz record as we left this area from previous visit. Those small features do not appear, abandon work on the '*cable / biology*' feature with no identifiable targets to work with. Head to the TOBI interpretation area of dense pockmarks with the intention of sledging through the centre of that area. At the sledge start position a long-line top mark is seen and the start position is moved a mile off.

Deploy the sledge as station 54628#1, weather worsening, winds to 30 knots at time of sledge recovery.

Sunday 21 June.

Make for echo sounding track start position to examine the new TOBI interpretation area of different mounds ('*green mounds*'), a few small mounds like targets observed during the run. Head for site 1BA5 where previous coring attempts had only provided chemistry samples. Even working the ground with a four unit megacore with extra lead ballast proves difficult, giving large pull outs for little return. The first two attempts (54629#1 and 2) yield nothing but a specimen spatangoid. From the third (#3) one core is carefully sectioned for analysis of organic constituents that may help determine the origin of the '*fishy*' smell previously noted at this site and a second core frozen whole. From the forth (#4) only a single core that is used for geology. The next two drops (#5 and 6) take 4/4 cores each that are all taken for a macrobenthos sample. The final attempt (#7) produces another core for the analysis of organic constituents. Then head for the start position of an echo sounding run through the new TOBI interpretation of '*biological target*' just north-west of the mound area, nothing particularly different is noted on the 10kHz record (1148-1238). Deploy WASP (54630#1) in the '*biological target*' area, revealing a rippled seafloor with occasional small clumps of coral and lots of xenophyophores. Head for a sledge start position to tow into the mound area. The sledge is re-rigged: all conventional electronics and cameras removed, an OTSB acoustic monitor fitted, a net fitted with the ground line held a few inches above bottom. The first tow (54631#1) produces only a small catch with no '*mound fauna*'. For a second attempt the ground line of the net is lowered to a '*normal*' bottom scraping position and a tickler chain is fitted ahead of the net. This tow (54631#2) produces a larger catch but still no '*mound fauna*'. During the recovery of the sledge, one of its skids catches below the BGS core recovery chute, parting the weak link. The sledge is recovered backwards and turned upright on deck using a crane. There is no damage to the sledge or the catch. Make for the vicinity of site 1BA5 and deploy WASP as station 54632#1.

Monday 22 June.

After recovering WASP, head for site 1BA20, in the centre of the new TOBI interpretation of '*biological target*' and deploy the megacore. The first drop (54633#1) produces 4/4 which are used for the usual set of chemistry and geology. The second drop (54633#2) returns with 8/8 cores that are all used for a macrobenthos sample. Advised that science cut off time has been revised downwards from 1900 to 1200 as a result of strong headwinds on the return route. Head for site 1BA18, where previously only samples for hydrocarbons and heavy metals were obtained. A cruise debrief meeting is held between the PS, GEOTEK representative, Captain and heads of department - no significant issues arise. Megacore deployed (54634#1) at site 1BA18, returning one useful core that provides the needed particle size sample and a

specimen xenophyophore (stored dry). The second drop (54634#2) returns with four good cores that are all used for a part macrobenthos sample. Likewise, the third drop (54634#3) returns with four good cores that are all used for macrobenthos and which complete the sampling requirement for this site. The Bridge advises that no further sampling will be possible. Set course for Fairlie at 1145. The precision echo sounder fish is retrieved ending scientific operations. On watch members of the scientific party begin packing up and cleaning up.

Tuesday 23 June.
Clocks advanced one hour to BST. Scientific party continue packing and cleaning.

Wednesday 24 June.
Dock Fairlie at 0800, unloading begins and the scientific party disperses. The last items are removed around 1700 and the principal scientist leaves the vessel.

5.2 Time allocation record

Cruise statistics		
Mobilisation, Fairlie	24 hrs	
Outward passage	54 hrs	
Survey	742 hrs	(31.0 days)
Inward passage	44 hrs	
Demobilisation, Fairlie	9 hrs	
TOTAL	**873 hrs**	**(36.4 days)**
Survey statistics		
Active survey	584.7 hrs	78.8 %
Inter-area transits	43.7 hrs	5.9 %
Weather-limited time	16.4 hrs	2.2 %
Weather-stopped time	93.5 hrs	12.6 %
Box core repairs	1.7 hrs	0.2 %
Winch metering system repairs	2.0 hrs	0.3 %
TOTAL	**742 hrs**	**100.0 %**

5.3 CONCLUSIONS

Progress towards objectives

1. *Large-scale seabed sampling programme.* All survey areas were successfully sampled to designs essentially as planned. The communication of TOBI sidescan data to *Charles Darwin* from *Colonel Templer* worked well throughout, enabling the sampling programme to be closely tuned to variations in the seafloor environment. The absence of TOBI data for

survey area 0 (tranches 19-20) in advance of the seabed sampling was unfortunate, but has not adversely influenced the survey. Although the total number of stations successfully sampled during the cruise was somewhat less than hoped for, sufficient information will be available to provide a general characterisation of each survey area.

2. *Photographic surveys.* A higher level of success was achieved in the photographic operations (video at least, film not yet assessed). Some photographic coverage is available from each survey area and a number of specific seafloor features were also successfully surveyed.

3. *AMES '96 Transect.* The re-sampling of the previously established bathymetric transect to the west of Shetland was fully achieved.

Overall this cruise has been very successful. The survey objectives were largely achieved despite some quite significant limitations to survey operations. Bad weather, that stopped the survey, occupied some 13% of the survey time. Given that the weather statistics consulted in cruise planning suggested that weather sufficient to stop the survey should, on average, only occur with a frequency less than 1%, it would be fair to say that we were unlucky with the weather. The rate of work during the survey was at the high level expected, though the rate of return was in part somewhat lower. Although it is difficult to compare across cruises, it is interesting to note that the number of corer deployments made during the present cruise is essentially identical to that of RRS *Charles Darwin* cruise 101 (AMES '96), respectively 242 and 256. Overall the rate at which sites were successfully sampled was, however, somewhat lower during the present cruise. This can be attributed almost solely to the difficult nature of the ground in survey area 1BA, the most intensively investigated region. The foraminiferal sands that carpet the seafloor throughout area 1BA are particularly resistant to coring, a fact that must be noted in any future survey of that area. Although deployed only a few times, neither gravity corer nor box corer recovered a useful sample in this area; even the megacorer struggled.

5.4 ACKNOWLEDGEMENTS

I would like to thank everyone onboard for a very successful and thoroughly pleasant cruise. This would not have been possible without the part each of you played in the cruise. I am also grateful to those aboard the *Colonel Templer*, particularly Principal Scientists Doug Masson and Colin Jacobs, for supplying me with sidescan sonar interpretations that even a biologist could understand. I would also like to thank all those at the Marine Laboratory in Aberdeen who made it possible for me to borrow their CTD. Finally I must thank all the unsung heroes and heroines ashore in various offices, workshops and stores for flawless logistics and support throughout. The Royal Research Ship *Charles Darwin* also merits acknowledgement, she continues to be just the right ship for this job.

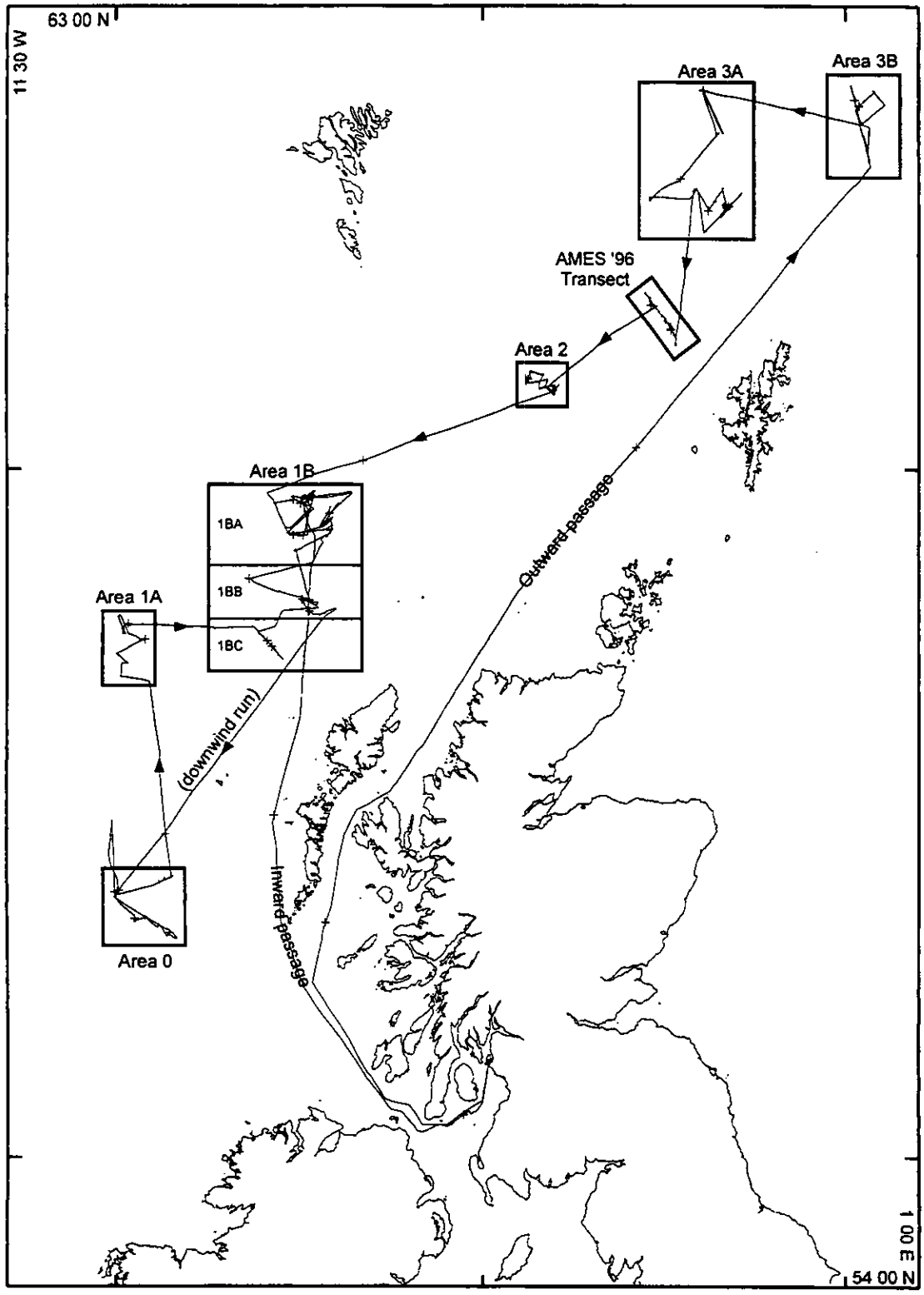


Figure 1. RRS *Charles Darwin* cruise 112C, Atlantic Margin Environmental Survey 1998: seabed survey of deep-water areas (17th round tranches) to the north and west of Scotland. The ship's track is shown with a schematic representation of the survey areas investigated.

Area 0:	Tranches 19, 21, 22	Area 2:	Blocks 204/14, 204/15
Area 1A:	Tranche 30	Area 3A:	Tranches 60, 61, 62, 63
Area 1B:	Tranches 36, 37, 38, 43, 44, 47, 48, 52, 53	Area 3B:	Tranches 65, 66, 67

6. SURVEY DESIGN

The survey was to be spread across several separate locations (see figure 1), span a significant range of soundings (<200 m to >2000 m), and was likely to encounter a wide range of seafloor types. Consequently, the pre-cruise survey design was conceived to place emphasis on assessing the range of variation throughout the region rather than the intensive investigation of any single location. The initial design attempted to target survey effort proportional to the range of environmental variation likely to be encountered. This initial design was based around a physiographic classification of the various separate survey areas, and principally considered variations in depth, seabed type and topographic setting. Given the imperfect knowledge of these factors, this initial design was modified as additional information became available. Some modifications were made as a result of field observations during the survey; however, the principal source of new information was the TOBI sidescan survey of the same areas being carried out in parallel with the present cruise.

The TOBI survey, carried out from the DERA vessel *Colonel Templer* (see separate SOC cruise report), began before the *Darwin* cruise to enable interpreted sidescan data to be transmitted to *Darwin* to assist in the final planning of the seabed survey operations. This two-ship exercise worked well; interpreted sidescan sonar maps of the seafloor in each survey area were available aboard *Darwin* in advance of arriving at each survey area except Area 0.

6.1 Area 3B

Area 3B comprised tranches 65, 66 and 67 (see figure 2). In the initial design this area was classified as a simple slope, apparently fully occupied by the North Sea Fan. Seabed sampling was planned to be carried out as a simple transect, with stations at 100m intervals between 400 and 1000m. The new TOBI data emphasised the significance of downslope variation, showing a range of banded facies essentially identical to those recorded on the slope to the west of Shetland, as surveyed during AMES '96 (see SOC cruise reports 6 and 7). A linear, bathymetric transect of stations was established (sites 3BA350-3BA1000, see figure 3) placing one station in each of the six downslope TOBI bands. Two further TOBI facies were also sampled: an area with a similar acoustic signature to the Faeroe-Shetland Channel (AMES '96) was sampled as site 3BB900, and a location on the North Sea Fan was sampled as site 3BC800. The depth of the latter site was selected to match that of 3BA800 to enable a direct comparison of the fan with the adjacent slope. Two photographic deployments were also carried out (see figures 2 and 3): a WASP deployment at site 3BA350, and an epibenthic sledge deployment in the vicinity of a transition between TOBI facies located between sampling sites 3BA800 and 3BA1000.

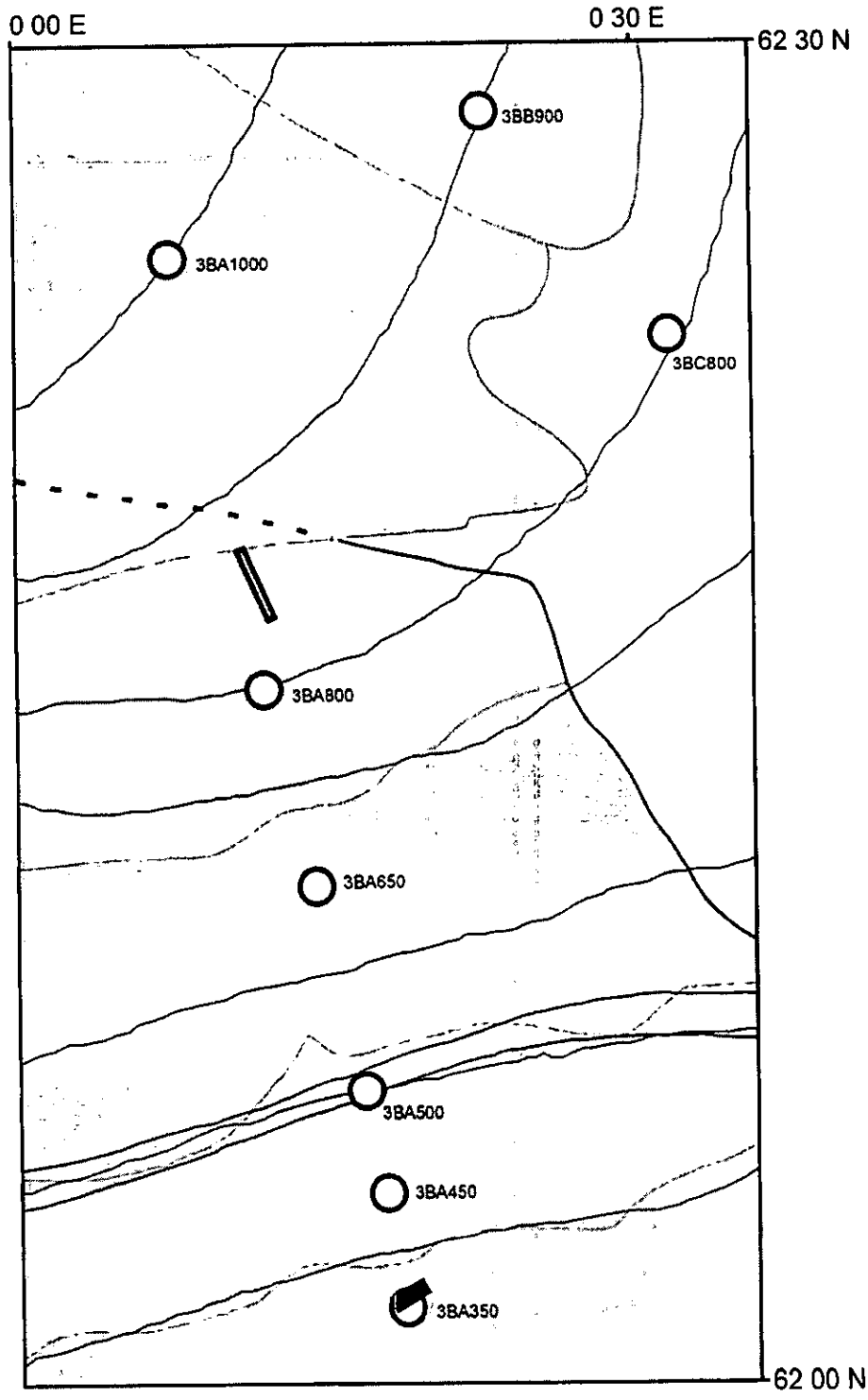


Figure 2. Survey area 3B (tranches 65-67) showing the disposition of seabed sampling stations and tow gear tracks in relation to interpreted TOBI facies.

Key: 3BA350 Seabed sampling station
Epibenthic sledge track
WASP track

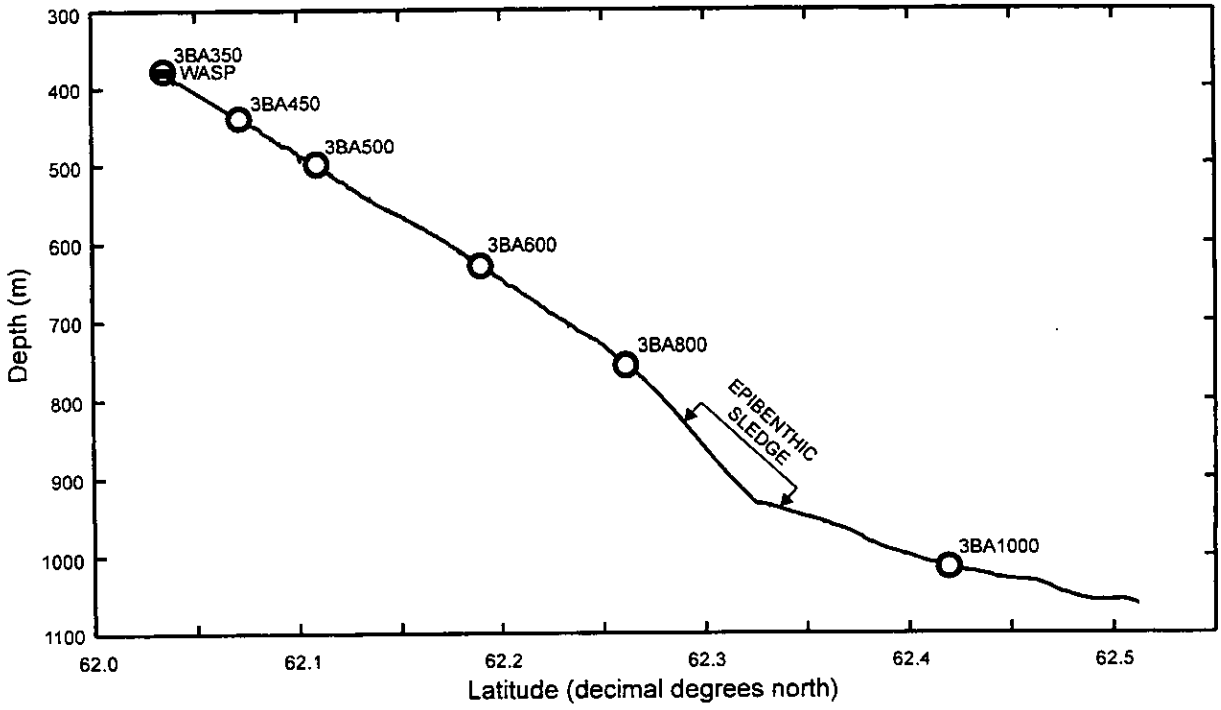


Figure 3. Bathymetric profile of the transect established in survey area 3B (tranches 65-67) showing the positions of seabed sampling stations and tow gear deployments. (Vertical exaggeration X42).

6.2 Area 3A

Area 3A comprised tranches 60, 61, 62, and 63 (see figure 4) and abuts the area surveyed during AMES '96. In the initial survey design the area appeared to be influenced by the Miller Slide / slump and the North Sea Fan. Seabed sampling was planned to accommodate this potential variation and that introduced by variations in depth. However, the TOBI data indicated that the area was very largely occupied by a homogeneous seafloor with (not surprisingly) an acoustic signature equivalent to that of the floor of the Faeroe-Shetland Channel as surveyed during AMES '96. Consequently the planned level of sampling effort in this area was reduced to reflect the reduced level of environmental variation encountered.

Five seabed sampling stations (sites 3AC1-3AC5) were located at random positions within this large homogeneous area. Another deep basin site (3AD1) was located in the extreme northwest of the survey area in a small region of different acoustic fabric, possibly influenced by proximity to the western flank of the channel. All other operations were concentrated in the southeast of the survey area where the greatest range of environmental variation occurred: a 600 m bathymetric range encompassing two TOBI facies. At approximately 1100-1500 m a low backscatter region corresponding with the lower slope contourite ("black hole") of AMES '96, and between 900 and 1100 m a higher backscatter region cut by a number of north northeast trending lineations (see figure 5). Five sites were located in the former region, three at 1400 m (3AB1, 4 and 5) and two at 1200 m (3AB2 and 3) and two in the latter region (3AA1 and 2). One photographic deployment was made in each of these two regions, a routine WASP deployment at site 3AB4 and a targeted WASP deployment in region 3AA that traversed the most marked of three seabed lineations (furrows / terraces) revealed by echo-sounding in that area (see figure 5).

6.3 AMES '96 transect

The AMES '96 transect (see figures 6 and 7) was re-sampled as planned. Macrobenthos samples were collected from each of the sites using the first choice sampler (megacore>box core>Day grab) employed during the 1996 survey:

SITE	GEAR	SITE	GEAR
B5	Day grab	Tr550	Megacorer
Tr200	Day grab	Tr600	Megacorer
Tr250	Day grab	Tr650	Megacorer
Tr300	Day grab	S2	Megacorer
Tr350	Box corer	Tr800	Megacorer
L5	Box corer	Tr900	Megacorer
Tr450	Box corer	Tr1000	Megacorer
L4	Box corer		

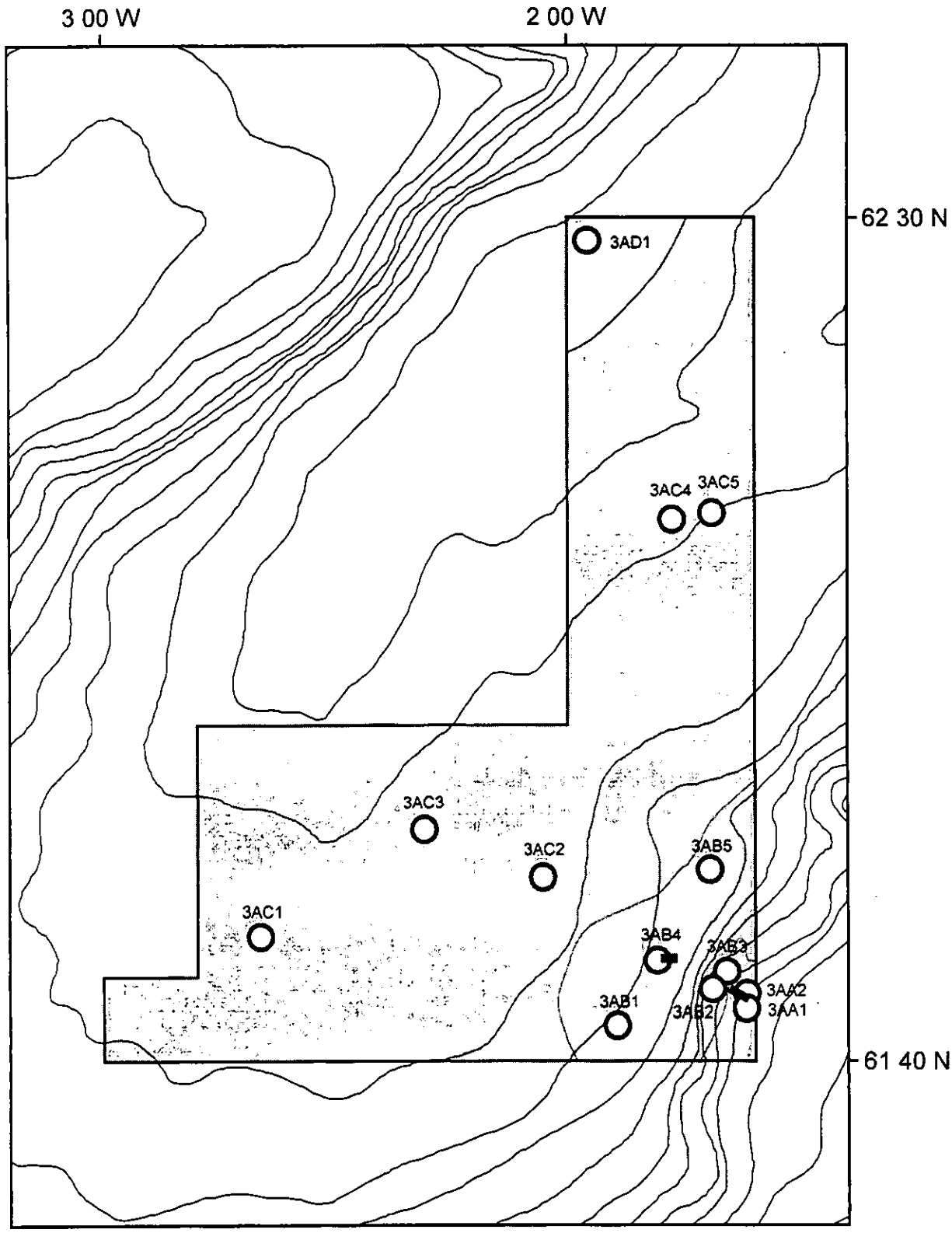


Figure 4. Survey area 3A (tranches 60-63) showing the disposition of seabed sampling stations and tow gear tracks in relation to interpreted TOBI facies.

Key: O 3AC1 Seabed sampling station

WASP track

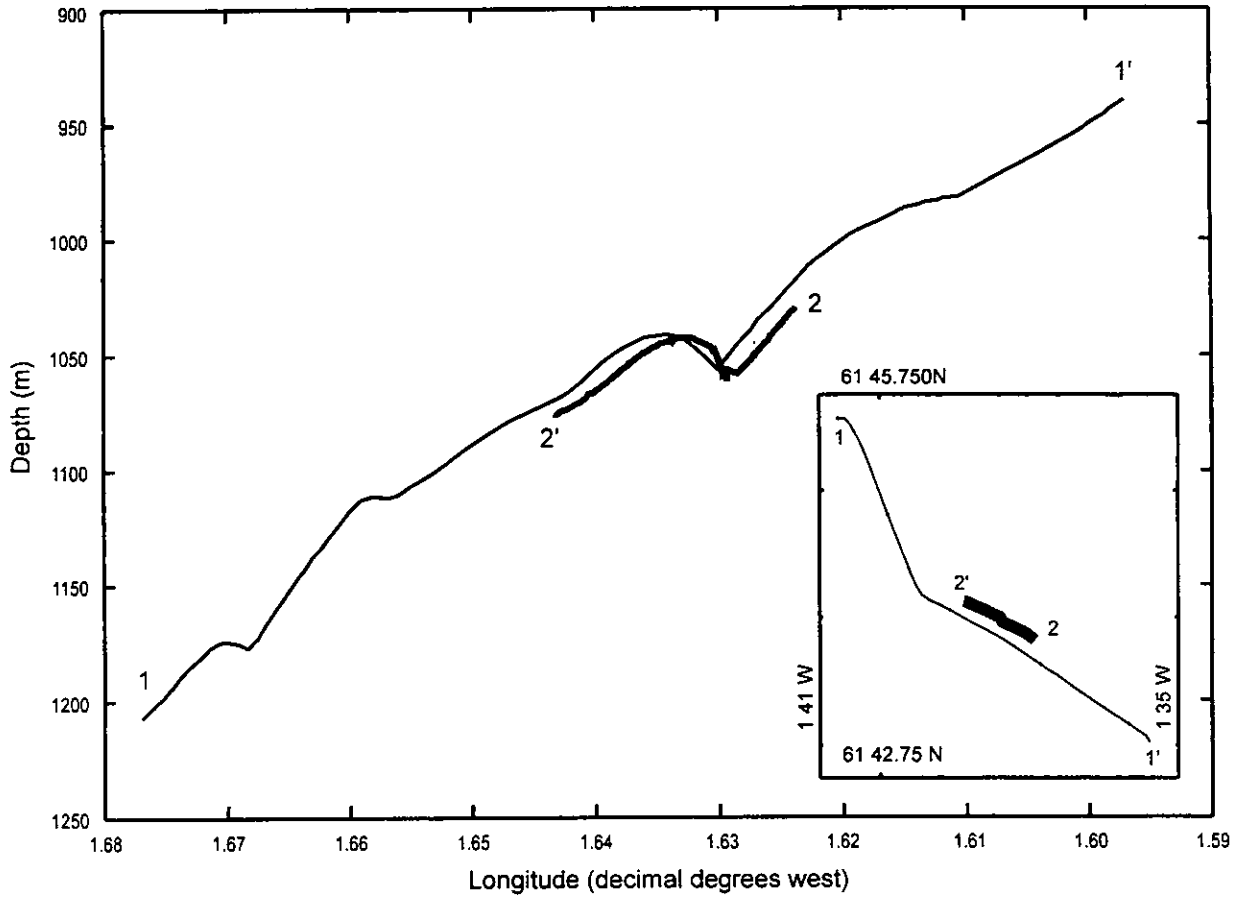


Figure 5. Bathymetric profiles from survey area 3A (tranches 60-63) in the region of seabed furrows (vertical exaggeration X12). Inset chartlet shows corresponding ship's tracks. Line 1-1' shows initial echo-sounding profile, line 2-2' the profile obtained during the period of near-bottom WASP (54520#1) operations.

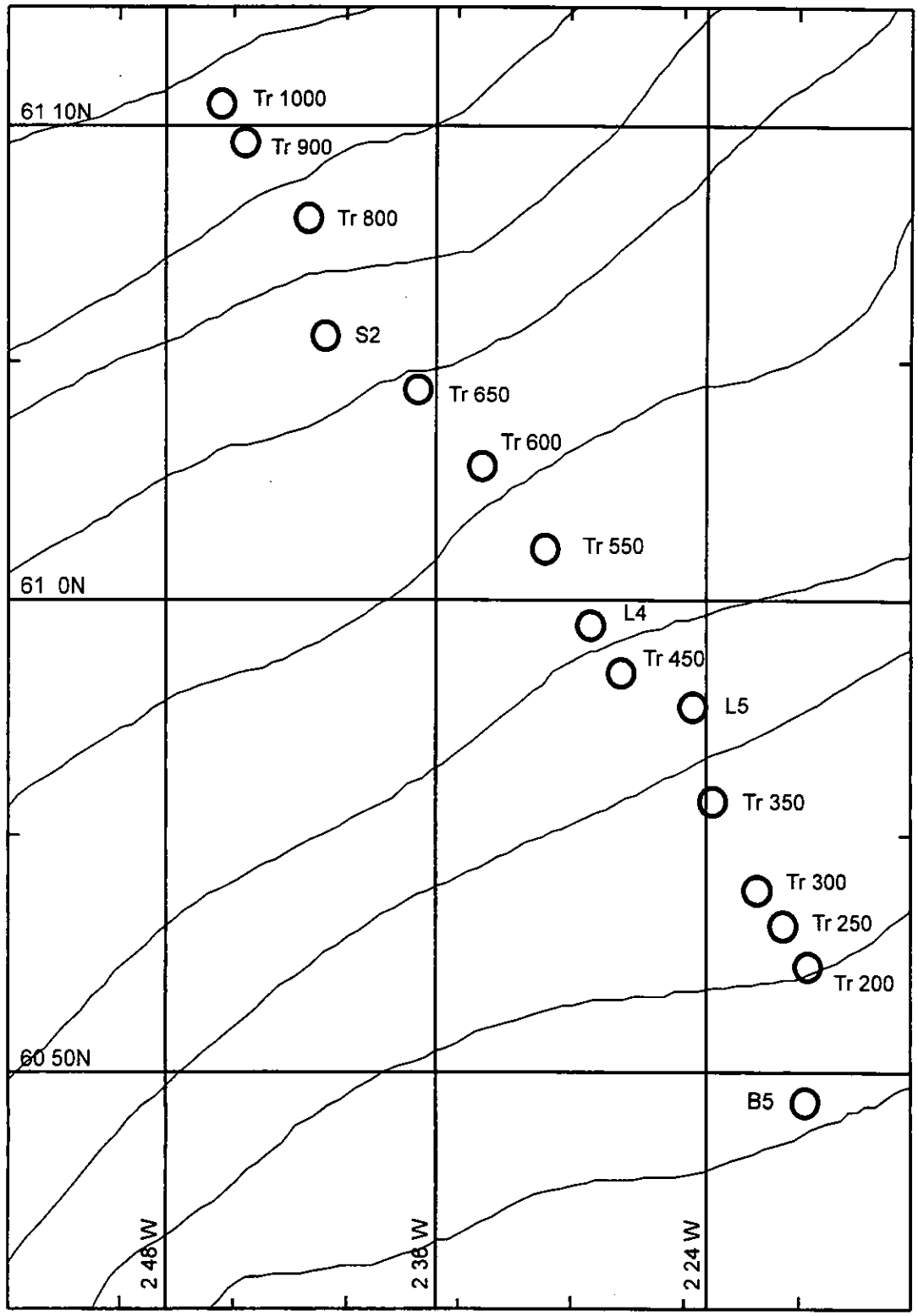


Figure 6. The AMES '96 transect area showing the locations of seabed sampling stations re-visited during RRS *Charles Darwin* cruise 112C.

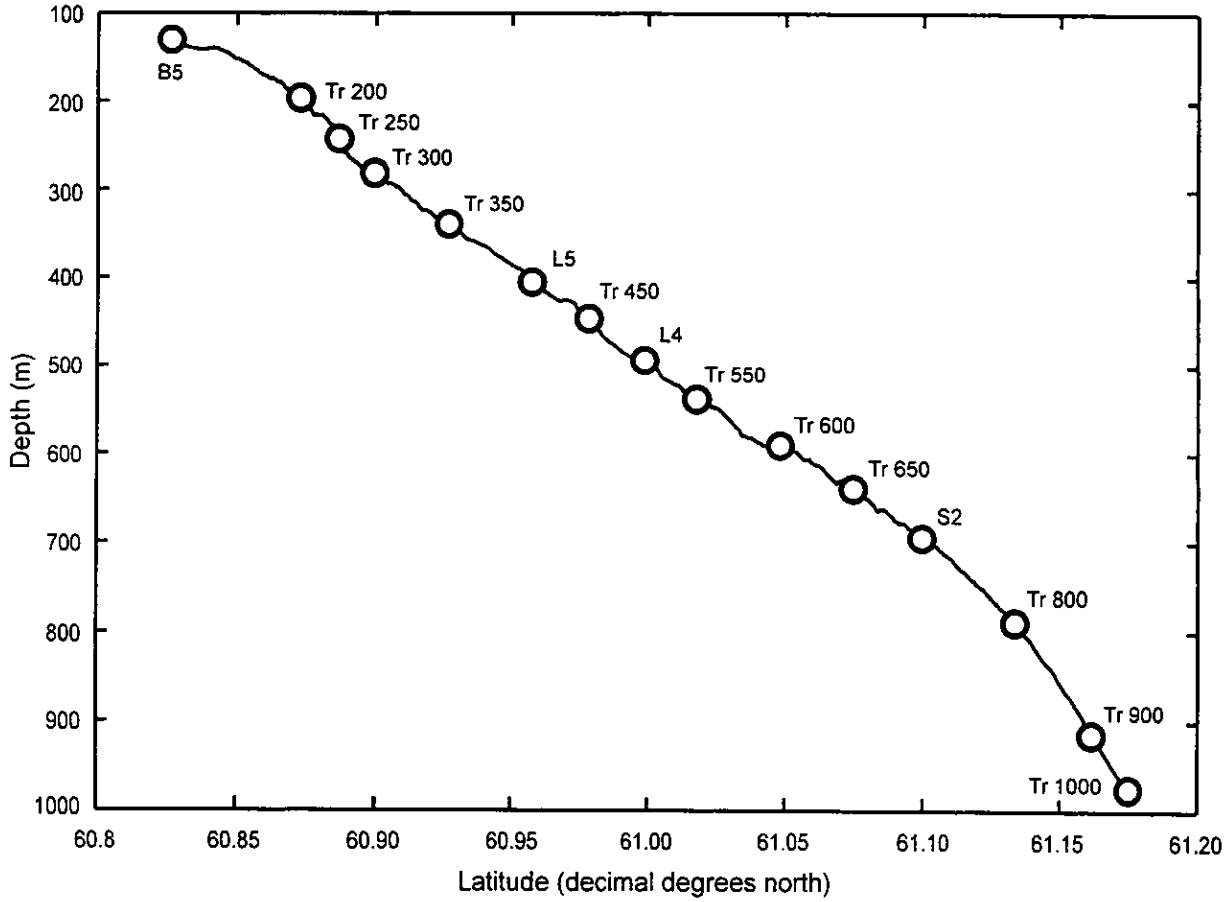


Figure 7. Bathymetric profile of the AMES '96 transect showing the positions of seabed sampling stations revisited during RRS *Charles Darwin* cruise 112C. (Vertical exaggeration X35).

6.4 Area 2

Area 2 comprised blocks 204/14 and 15 (see figure 8) and abuts the area surveyed during AMES '96. The initial design considered this area as homogeneous and planned to sample the seabed at five randomly selected locations. The TOBI interpretation for this area did show the seafloor to be more-or-less homogeneous with one dominant facies (2B), though two other somewhat indistinct facies were also recognised (2A and 2C). Given this variation, sampling sites were specifically, rather than randomly, selected. The three TOBI facies and the bathymetric range of the area were spanned by a curving transect of four sites (2A1, 2C1, 2B2 and 2B3). A fifth site, 2B1, was located at a similar depth to site 2C1 to contrast these two facies. In addition to the seafloor facies, TOBI also imaged a significant seafloor feature, a trough, in the area (see figures 8 and 9). A sixth sampling site, 2T, was located near the base of this trough.

Two photographic deployments were carried out in the area. The first, in facies 2A, a WASP run over the field of dense seafloor grooves / furrows in the extreme southeast of the area. The second, another WASP run, along the axis of the trough feature (see figure 9).

6.5 Area 0

Area 0 comprised tranches 19, 21 and 22 (see figure 10). The sampling design for this area was not finalised prior to the cruise. This area has been the subject of a number of scientific studies, principally the LOIS SES programme. The survey design adopted recognises this existing work in two ways, a) an existing bathymetric transect ('site 1' to 'site 3') was re-sampled and augmented, and b) survey sampling protocols were revised to match existing data / samples. No new TOBI data were available for this area prior to commencing the seabed sampling programme, though subsequently the locations sampled during the present cruise were surveyed by TOBI (with the exception of 'site 3' which lies some 10 nautical miles outside the survey area).

Seabed sampling procedures were modified in respect of macrobenthos samples, which were preferentially collected by box core (rather than megacore) in this area. Two linear bathymetric transects were established in the area (see figures 10 and 11), the first on the LOIS SES line between sites 1 and 3 and the second on the steep slope in the north of the survey area (sites '300 m', '800 m' and '1500 m'). LOIS SES sites 1, 2 and 3 were re-sampled and samples were also collected at two additional sites (1.5 and 2.5) located at intermediate depths. Two other seabed sampling sites were established with the help of the British Geological Survey representatives onboard: site 4, at a previously sampled location that had yielded a highly detailed stratigraphic record, but lacked the superficial sediment layer; and site 5, were earlier studies had suggested the presence of gas/fluid near the seabed.

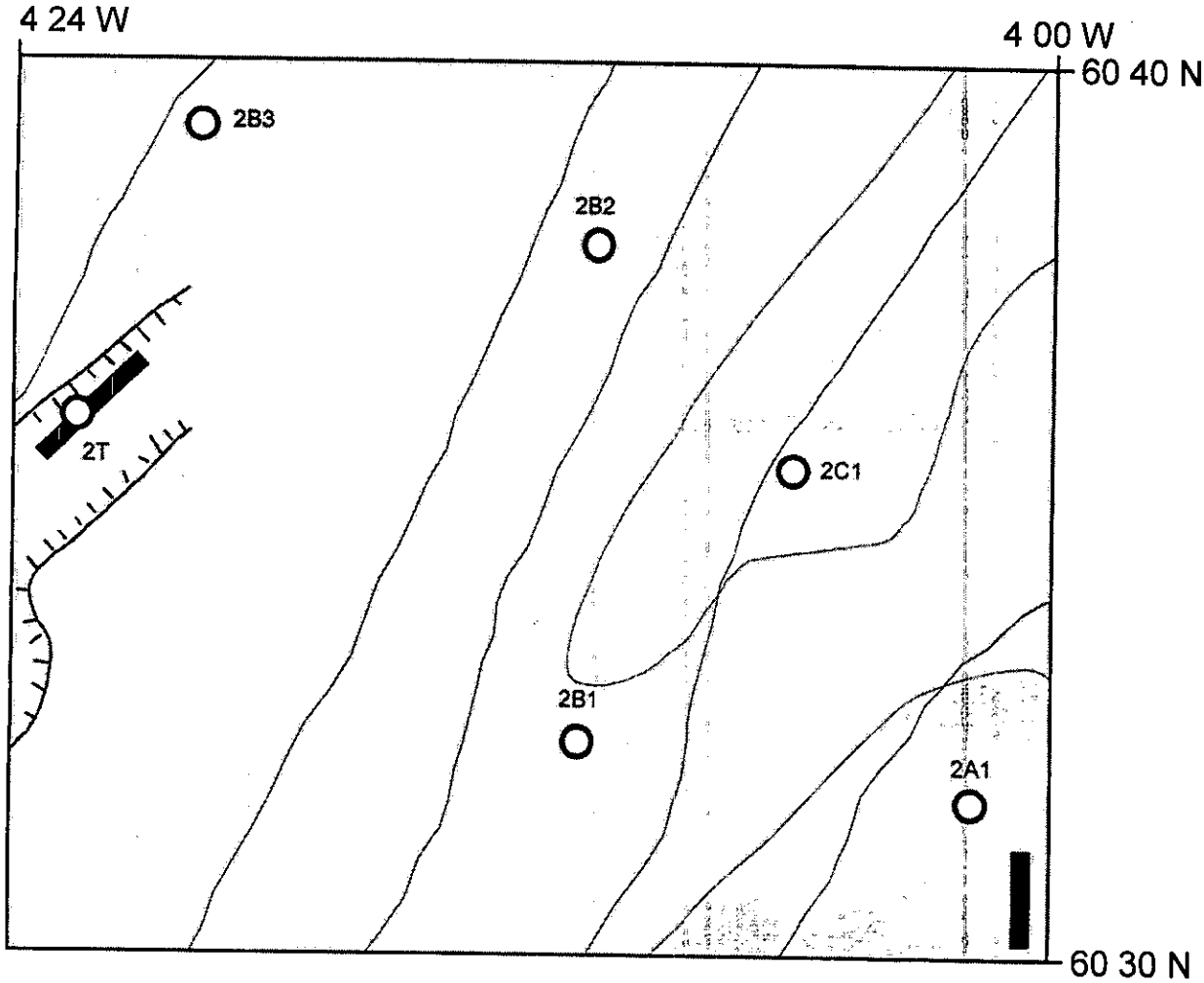


Figure 8. Survey area 2 (blocks 204/14 and 15) showing the disposition of seabed sampling stations and tow gear tracks in relation to interpreted TOBI facies and a trough feature.

Key: O 2B3 Seabed sampling station

WASP track

Seabed trough

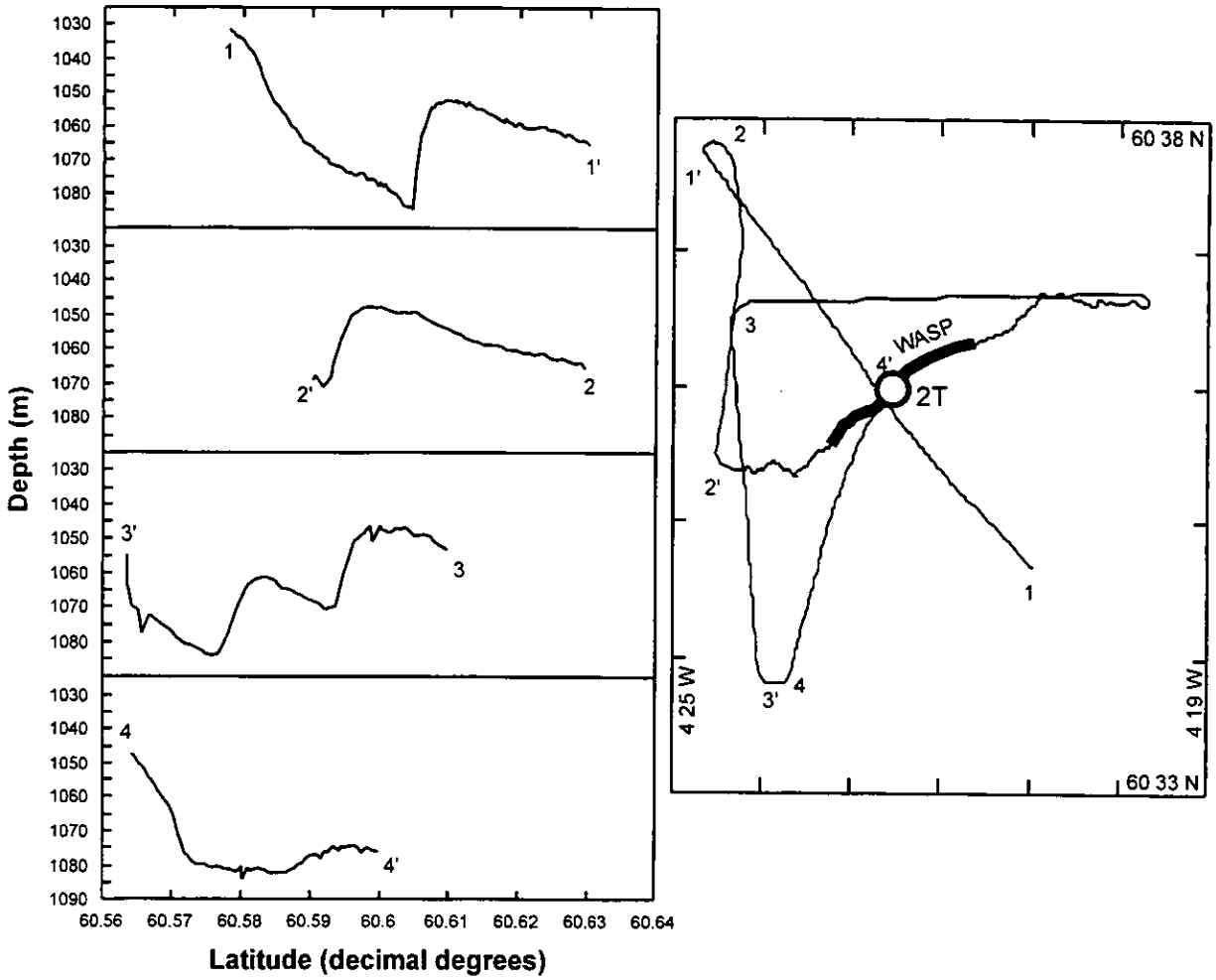


Figure 9. Bathymetric profiles (vertical exaggeration X54) and corresponding ship's track chart with superimposed survey operations in area 2 (blocks 204/14 and 115) in the vicinity of the trough feature. Note that the double scarp on line 3-3' is not present on lines 4-4' nor 1-1'.

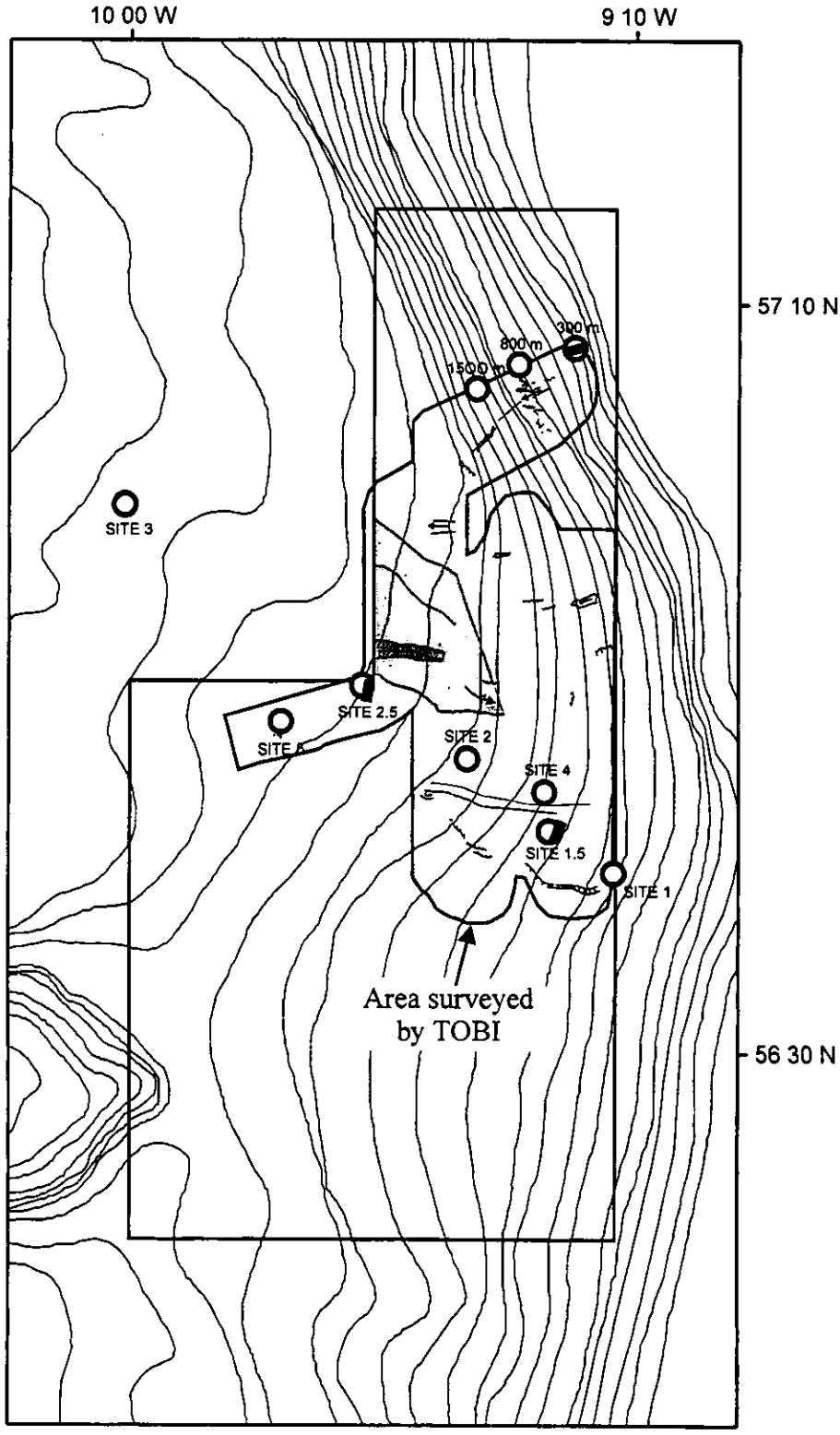


Figure 10. Survey area 0 (tranches 19-22) showing the disposition of seabed sampling stations and tow gear tracks in relation to interpreted TOBI facies.

Key: O SITE 1 Seabed sampling station

WASP track

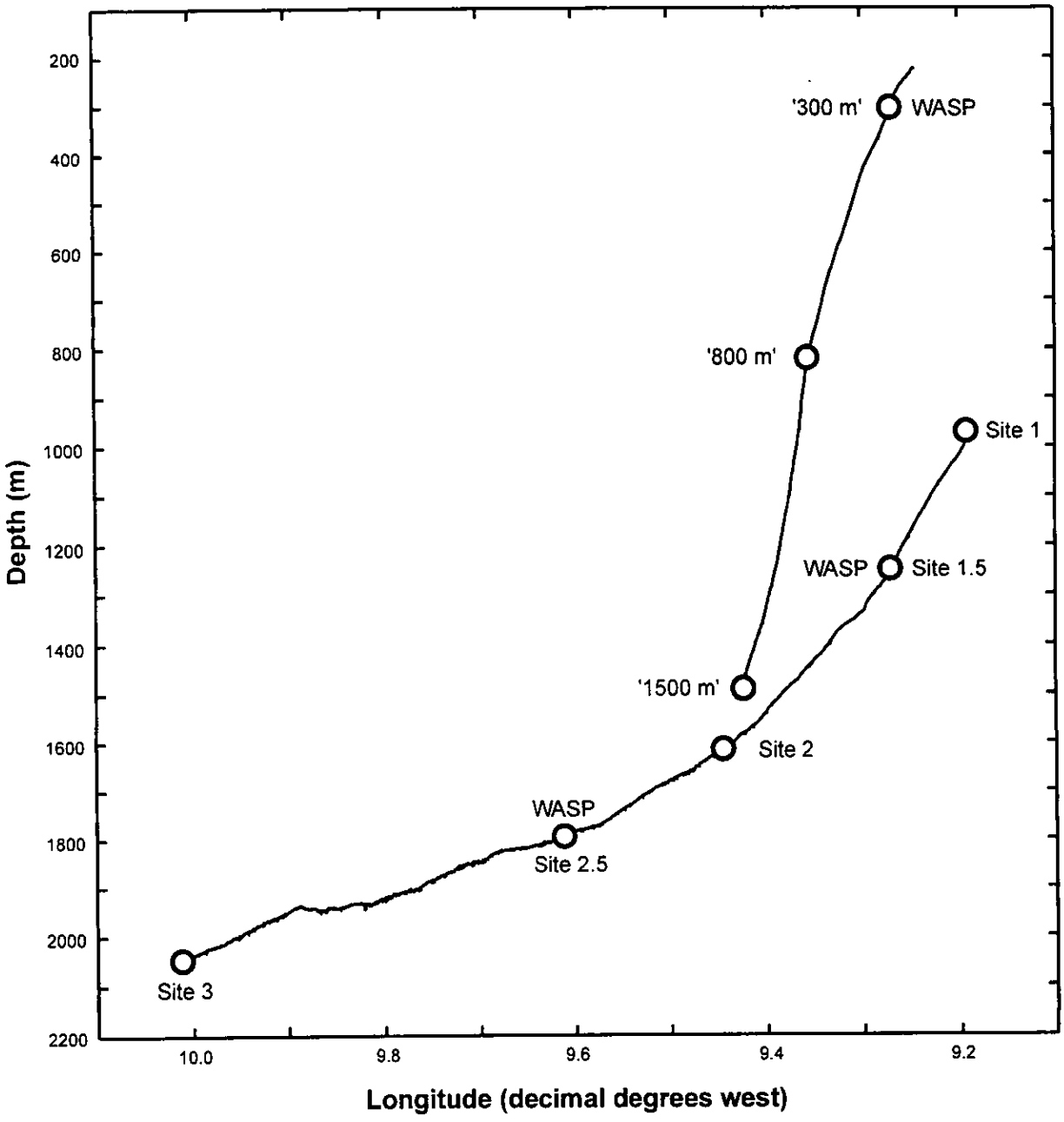


Figure 11. Bathymetric profiles of the two transects established in survey area 0 (tranches 19-22) showing the positions of seabed sampling and WASP stations. (Vertical exaggeration X30).

WASP deployments were made at three of the sites, the two new sites on the LOIS SES transect (sites 1.5 and 2.5) and at the 300 m site on the northern transect. (An additional WASP deployment was made at site 5 to investigate the distribution of detrital material in the water column, providing quasi-transmissometer data for a full depth cast).

6.6 Area 1A

Area 1A comprised tranche 30 (see figure 12). The initial survey design divided this area into four physiographic regions, the Hebrides slope, the slope of Rosemary bank, a moat around the bank, and a large, presumably homogeneous, sediment basin between the Hebrides slope and Rosemary Bank. The new TOBI data essentially confirmed this classification of the area. The seabed sampling undertaken during the cruise addressed the sediment basin and the Rosemary Bank moat, but no sampling was undertaken in the slope regions as a result of time limitations and the practical difficulties of working on steep slopes. The sediment basin was sampled at five randomly located sites (1AA1 to 1AA5). The Rosemary Bank moat was investigated with three stations (see figure 13): the first (1AB1) located on the slight rise that marks the edge of the moat, the second (1AB2) at a depth of approximately 1900 m on the southern wall of the moat, and the third (1AB3) in an essentially identical location a little further to the northeast to bring it within an area of very high backscatter on the interpreted TOBI data.

Two photographic deployments were made in this area. The first an epibenthic sledge deployment in the sediment basin (see figure 12). The sledge was used here rather than WASP as the preceding coring work had indicated the presence of substantial quantities of phytodetritus, and experience in Area 0 had shown that high levels of suspended phytodetritus near-bottom would both degrade the quality of seafloor images and severely limit altitude telemetry (see narrative). Given the nature of the terrain (see figure 13) the sledge could not be deployed in the moat, and WASP was used to give coverage of the moat's southern wall at a similar depth to sampling sites 1AB2 and 3 (i.e. approximately 1900 m).

6.7 Area 1BC

Area 1BC, the southern part of Area 1B, comprised tranches 36, 37 and 38 (see figure 14). The initial survey design considered this area to be a *'simple'* slope to be addressed with a bathymetric transect of stations at 100 m intervals down to 1000 m and at 200 m intervals thereafter. The new TOBI data emphasised the significance of the bathymetric trend, showing depth banded facies, from shelf to basin as follows: dense iceberg ploughmarks; less dense, but larger, ploughmarks; region of medium-high backscatter (a band not identified in Area 1BB, see below); steep slope (Geike escarpment) with high backscatter; low backscatter lower slope and basin floor sediments. The area was sampled, as planned, with a linear bathymetric transect of sites (1BC12, at 200 m, to 1BC2, at 1200 m; see figures 14 and 15). An additional

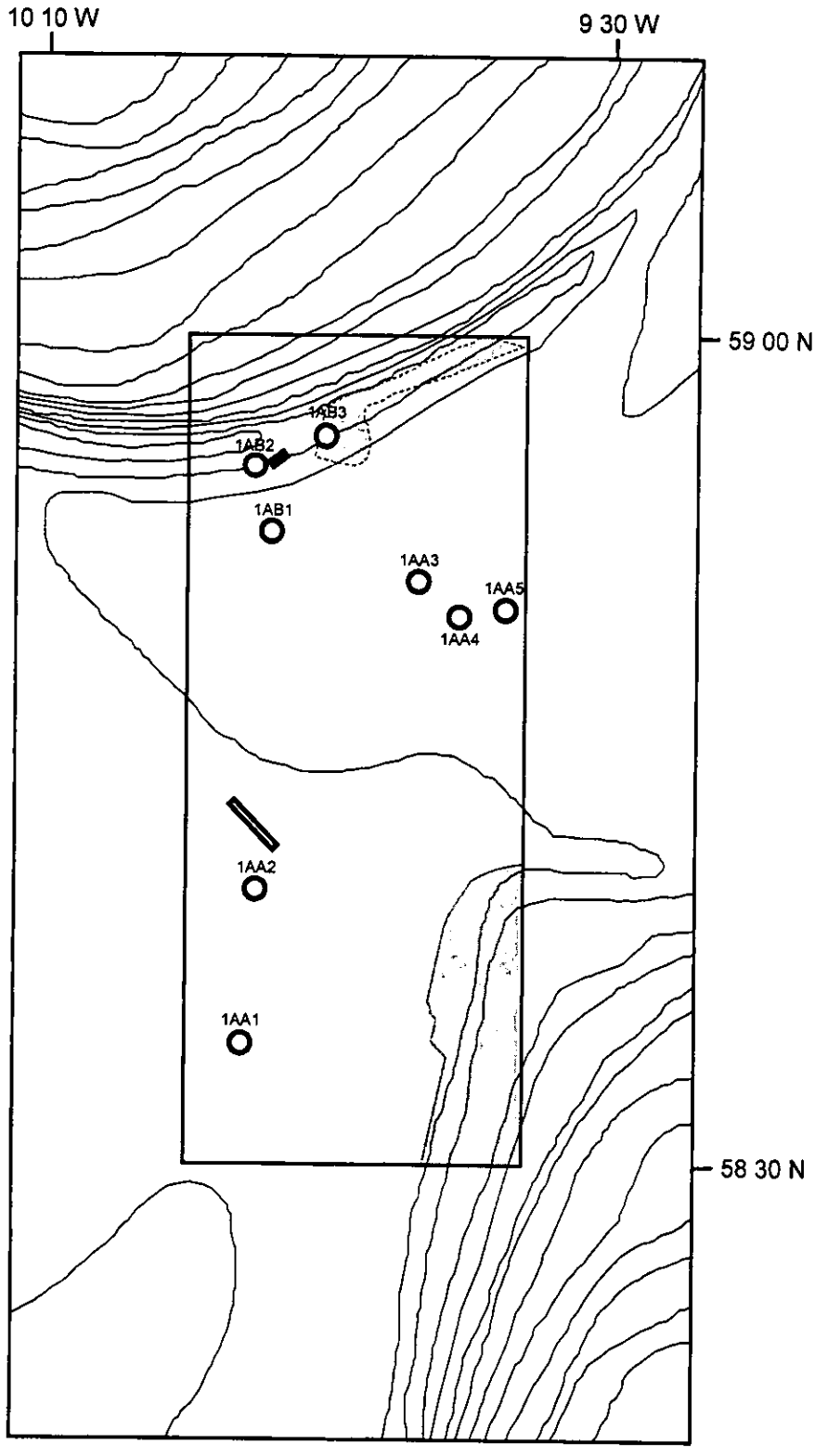


Figure 12. Survey area 1A (tranche 30) showing the disposition of seabed sampling stations and tow gear tracks in relation to interpreted TOBI facies.

Key: O 1AA1 Seabed sampling station
Epibenthic sledge track
WASP track

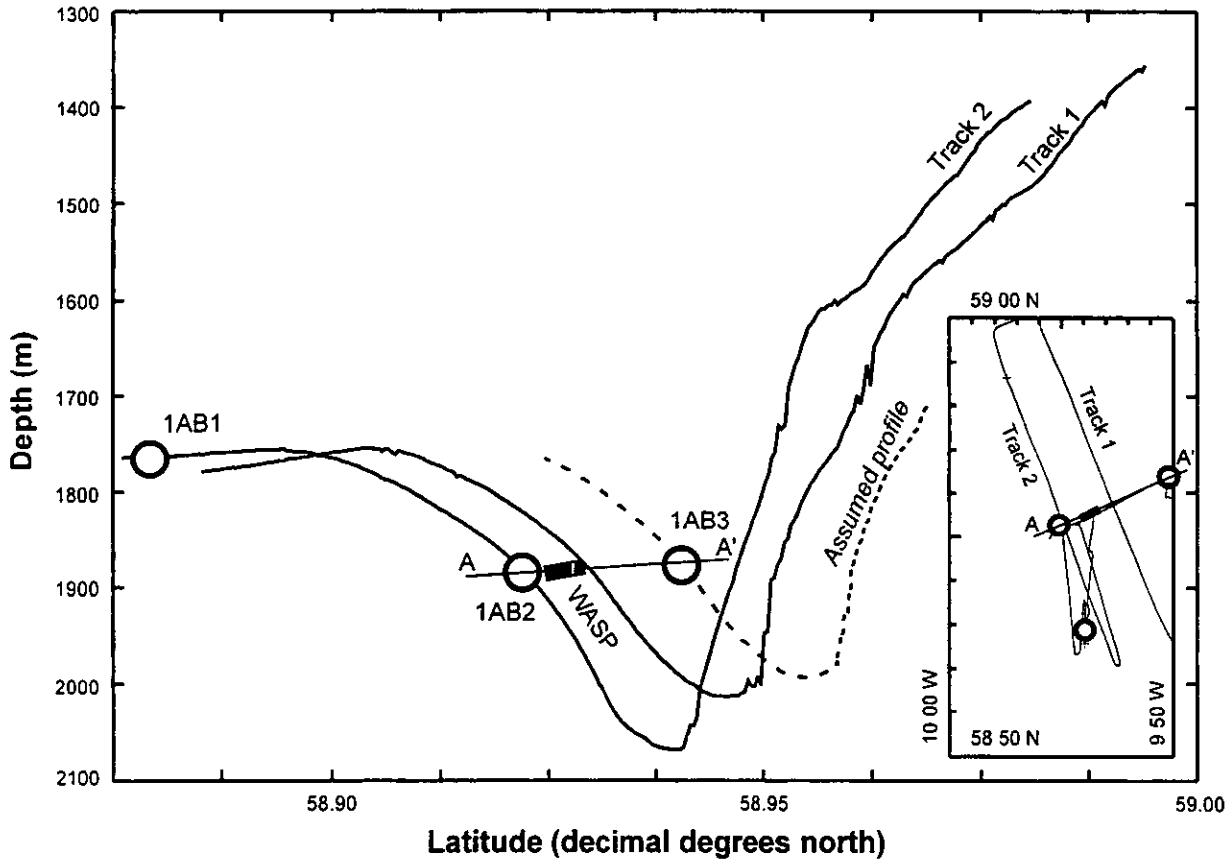


Figure 13. Bathymetric profiles of the moat and lower slopes of Rosemary Bank (northern part of tranche 30) showing the locations of survey operations in that region (sampling stations 1AB1 - 1AB3 and a WASP deployment). See inset chartlet of ship's track for geographic orientation. (Vertical exaggeration X12).

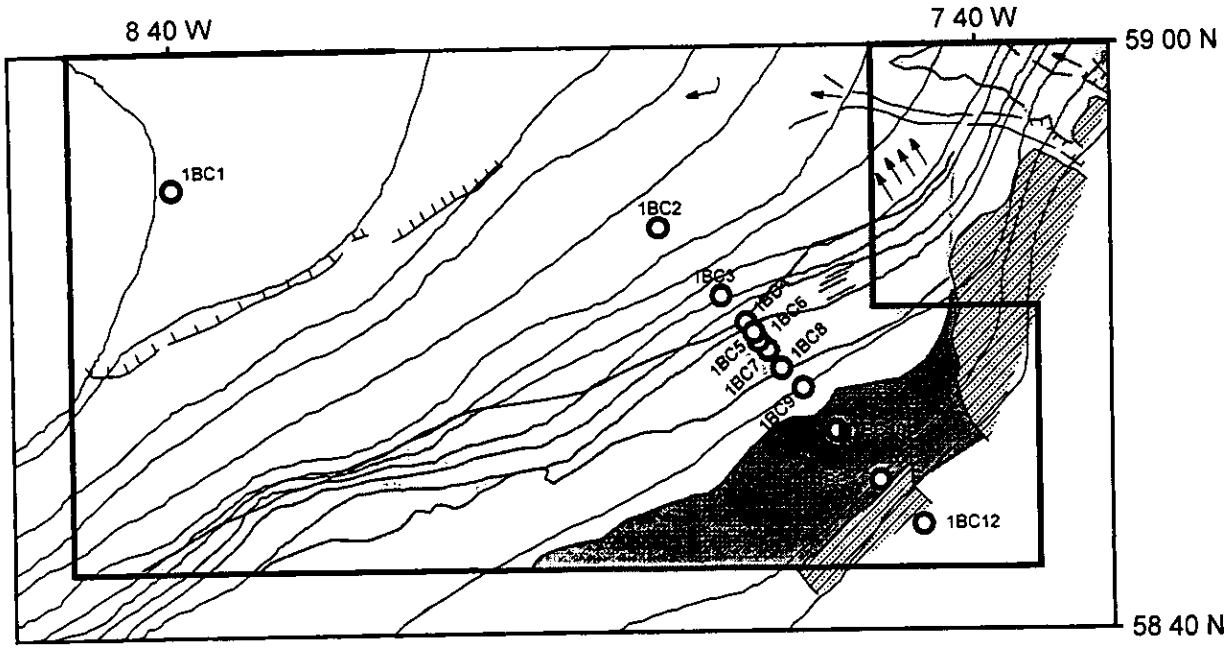


Figure 14. Survey area 1BC (the southern part of tranches 36-53) showing the disposition of seabed sampling stations and tow gear tracks in relation to interpreted TOBI facies and features.

Key: O 1BC12 Seabed sampling station

WASP track

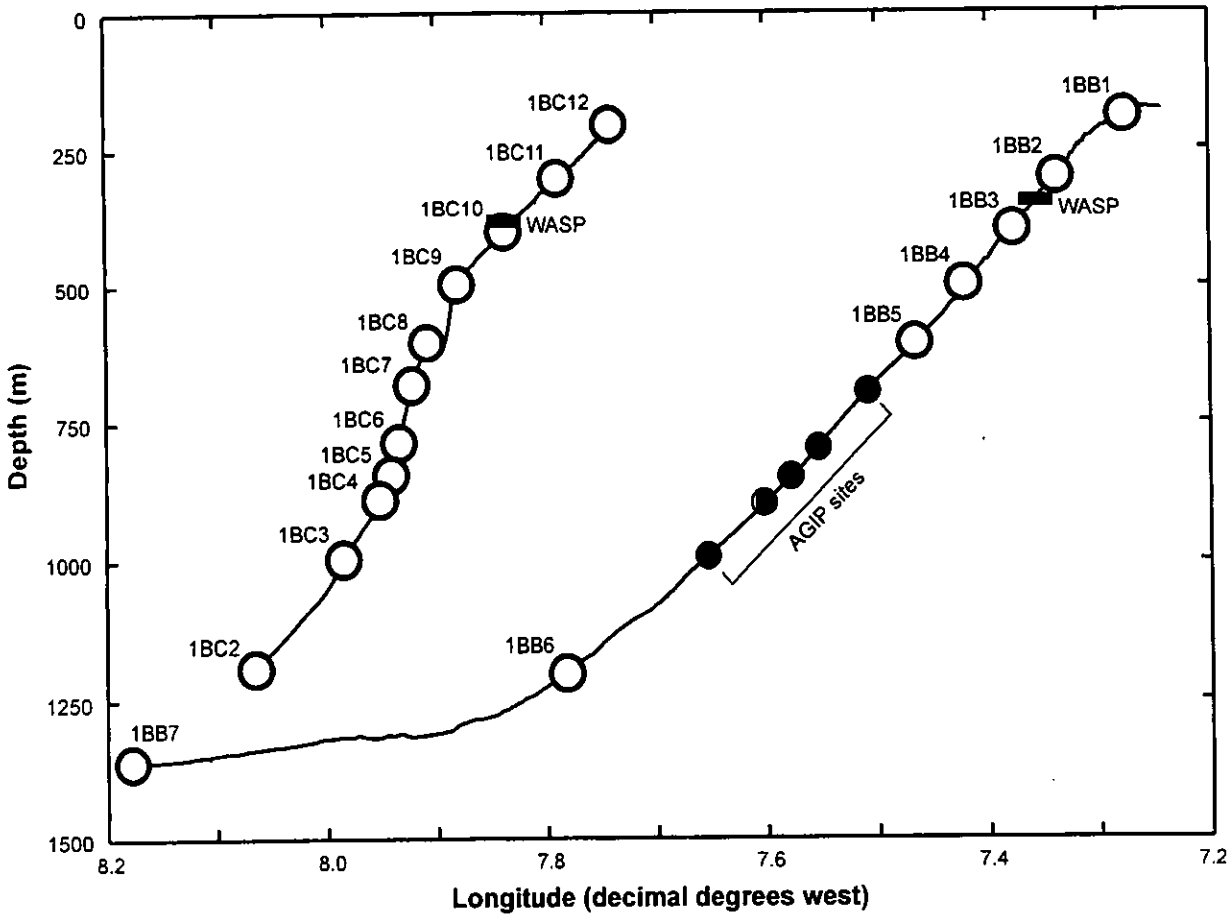


Figure 15. Bathymetric profiles of the two transects established in survey area 1B (tranches 36-53) showing the positions of seabed sampling stations and WASP deployments. Note that the locations of AGIP survey sites on the 1BB transect line are also shown. (Vertical exaggeration X28).

site, 1BC1 was located in the deepest part of the basin, in the northwest of the area. The initial design also called for the replicated sampling of one of the sites on this transect, planned to be at 1000 m. This proposed depth was revised in light of samples and data already available from a location in the adjacent area (1BB). A sampling programme by AGIP established a transect of stations between 700 and 1000 m, with three stations on the 850 m contour (see figure 16). Consequently, 850 m was selected as the depth for the replicated station in Area 1BC and five replicate sets of samples were obtained from site 1BC5. Note that seabed sampling procedures were modified in respect of macrobenthos samples, which were preferentially collected by box core (rather than megacore) throughout this area to match with existing samples and data from Areas 1BC and 1BB. One photographic deployment was made in the area, a WASP deployment on the transect line, at a depth of approximately 400 m (adjacent to site 1BC10). Note that photographic data for deeper sites are available from the AGIP study and a survey carried out by Statoil (see respective sites on figure 16).

6.8 Area 1BB

Area 1BB, the mid section of Area 1B, comprised tranches 43, 44, and the southern halves of tranches 47 and 48 (see figure 17). The initial survey design considered this area to be essentially similar in character to Area 1BC, though potentially influenced by the Sula Sgeir Slide and Fan, and therefore to be addressed with a similar bathymetric transect. The new TOBI data again emphasised the importance of the bathymetric trend, showing depth banded facies, from shelf to basin as follows: dense iceberg ploughmarks; less dense, but larger, ploughmarks; high backscatter upper slope; low backscatter lower slope and basin floor sediments. The area was sampled, as planned, with a linear bathymetric transect of sites (1BB1, at 200 m, to 1BB7, at 1350 m; see figures 15 and 17). Note that depths between 700 and 1000 m were omitted, having already been sampled by the AGIP survey (see figure 16). Note that seabed sampling procedures were modified in respect of macrobenthos samples, which were preferentially collected by box core (rather than megacore) throughout this area to match with these existing samples. One photographic deployment was made in the area, a WASP deployment on the transect line, at a depth of approximately 350 m (between sites 1BB2 and 3). Note that photographic data for deeper sites are available from the AGIP study and a survey carried out by Statoil (see respective sites on figure 16).

6.9 Area 1BA

Area 1BA, the northern part of Area 1B, comprised the northern halves of tranches 47 and 48, and tranches 52 and 53 (see figure 18). The initial survey design considered this area to be relatively homogeneous, being largely occupied by a sediment drift, and having a limited bathymetric range by comparison to Areas 1BB and 1BC. The planned sampling comprised three bathymetric transects, a prime transect running from the northeast corner to the southwest corner of the area, and two short transects in the northwest corner of the area. The

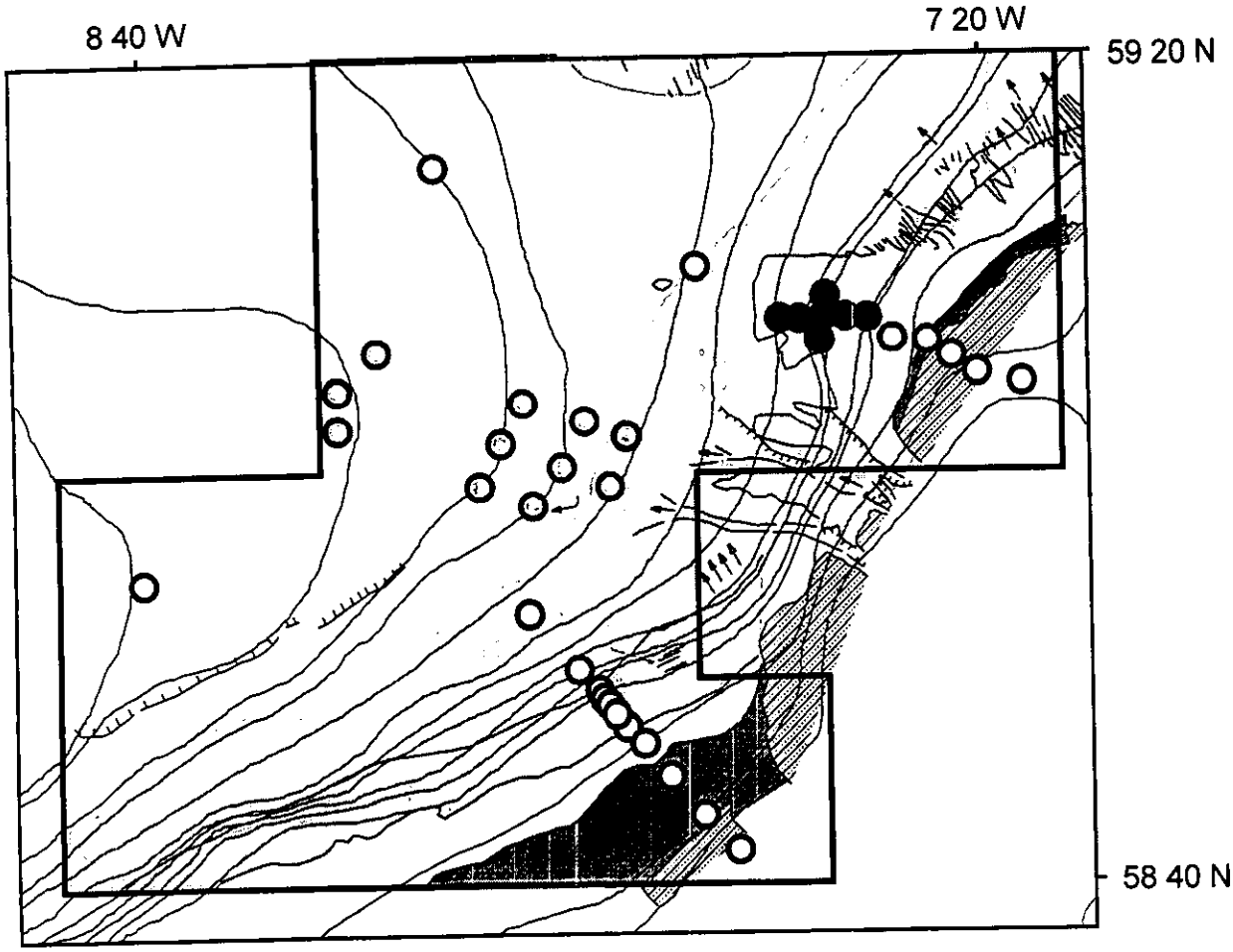


Figure 16. Survey areas 1BB and 1BC (southern part of tranches 36-53) showing the location of seabed sampling stations in relation to the distribution of existing sampling sites in the region.

Key: ○ Present cruise (AMES '98)

◎ Statoil survey sites

● AGIP survey sites

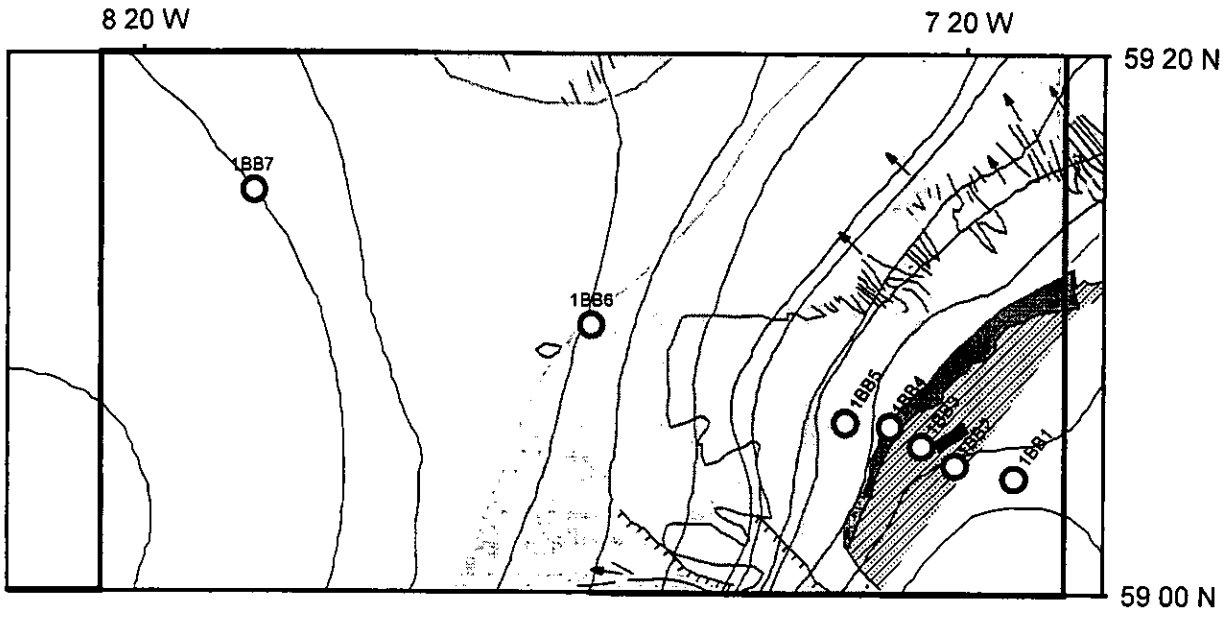


Figure 17. Survey area 1BB (the mid section of tranches 36-53) showing the disposition of seabed sampling stations and tow gear tracks in relation to interpreted TOBI facies and features.

Key: O 1BB6 Seabed sampling station

WASP track

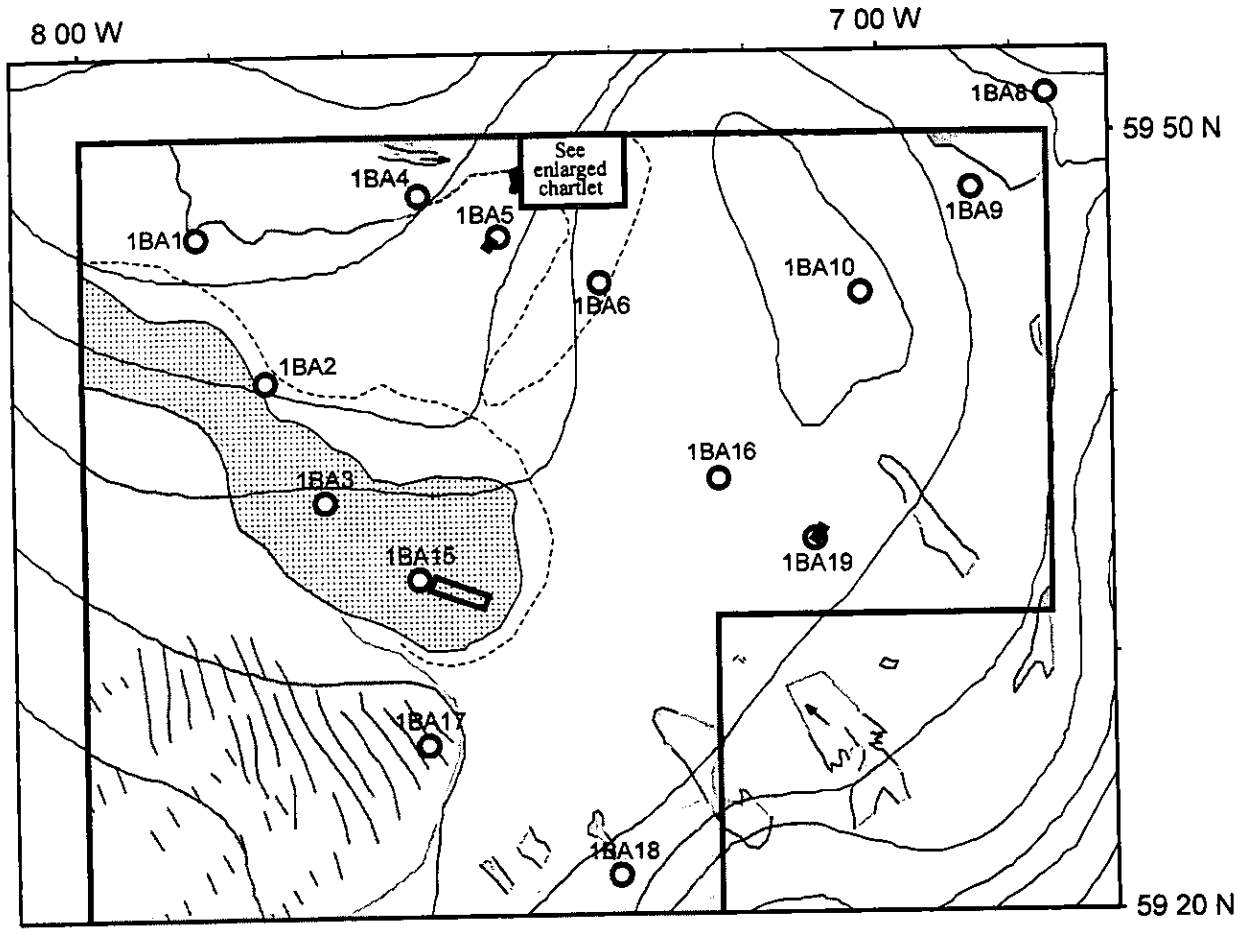


Figure 18. Survey area 1BA (the northern part of tranches 36-53) showing the disposition of seabed sampling stations and tow gear tracks in relation to interpreted TOBI facies and features. Note that operations in the area of seabed mounds, north central region of this chartlet, are not shown here (see figure 19).

Key: 1BA18 Seabed sampling station
Epibenthic sledge track
WASP track

new TOBI data prompted significant addition to this sampling plan. The three planned reconnaissance transects were carried out (see figure 18):

Depth	Transect 1	Transect 2	Transect 3
700 m		1BA1	
800 m		1BA2	1BA4
900 m	1BA8	1BA3	1BA5
1000 m	1BA9		1BA6
1100 m	1BA10		
1000 m	1BA16		
1100 m	1BA17		

Note that site 1BA8 had to be located a little way outside the survey area to obtain the required depth contour and that site 1BA17 was specifically located in the field of sediment waves identified by TOBI (at the sampled position these waves had a surface expression of 15 m amplitude). In addition to the reconnaissance transects other stations were located in the general survey area to target particular features identified by TOBI as follows: site 1BA15 in the centre of a dense pockmark field (note that a CTD was deployed on the corer at this site and that site 1BA3 also falls within the same TOBI interpretation area); site 1BA18 also located in an area of pockmarks, site 1BA19 located in an area of *'blotchy'* seafloor having potentially similar characteristics to the region of seabed mounds (see below). Three photographic deployments were also made within the general survey area: a WASP deployment adjacent to site 1BA19, the area of *'blotchy'* seafloor noted above; a WASP deployment adjacent to site 1BA5, where seabed samples had a strong *'fishy'* odour (see narrative); and an epibenthic sledge deployment in the field of dense pockmarks adjacent to site 1BA15.

In addition to the sampling carried out in the general survey area an intensive investigation was made of a small region near to the centre of the northern boundary of survey area 1BA (see figure 19). The new TOBI data identified two features of particular interest in this small area: a) a field of *'haloed'* seabed mounds, and b) a larger single target, tentatively referred to as a *'biological'* feature. This latter target was sampled, by standard survey procedures, as site 1BA20, and a WASP deployment (*'BIOTARG'*) was also made over the target adjacent to the sampling site. A limited sampling programme was carried out in the area of *'haloed'* seabed mounds, limited as a result of the difficult nature of the ground. Four sites (1BA11-14) were located to attempt to give a series of ranges from the seabed *'haloes'*. Only chemistry samples were collected at these sites, though in addition a CTD was deployed on the corer at each of these sites. Four photographic deployments, using WASP, were made in this area, the first (*'HALOPOC'*) on the fringe of the area. The following three deployments were targeted specifically on seabed mounds, runs *'MOUND1'* and *'MOUND3'* appeared to

traverse mound features, as interpreted from the 10 kHz sounder record for the periods of near-bottom operations (see e.g. inset figure on page 69), while run *'MOUND2'* did not. In addition to the photographic tows, two epibenthic sledge tows were also made in the area; these hauls were made with nets but no cameras fitted, neither haul appear to run through a mound (note that these mounds appear to be of the order of only 200 m in diameter and are located in 1000 m water depth).

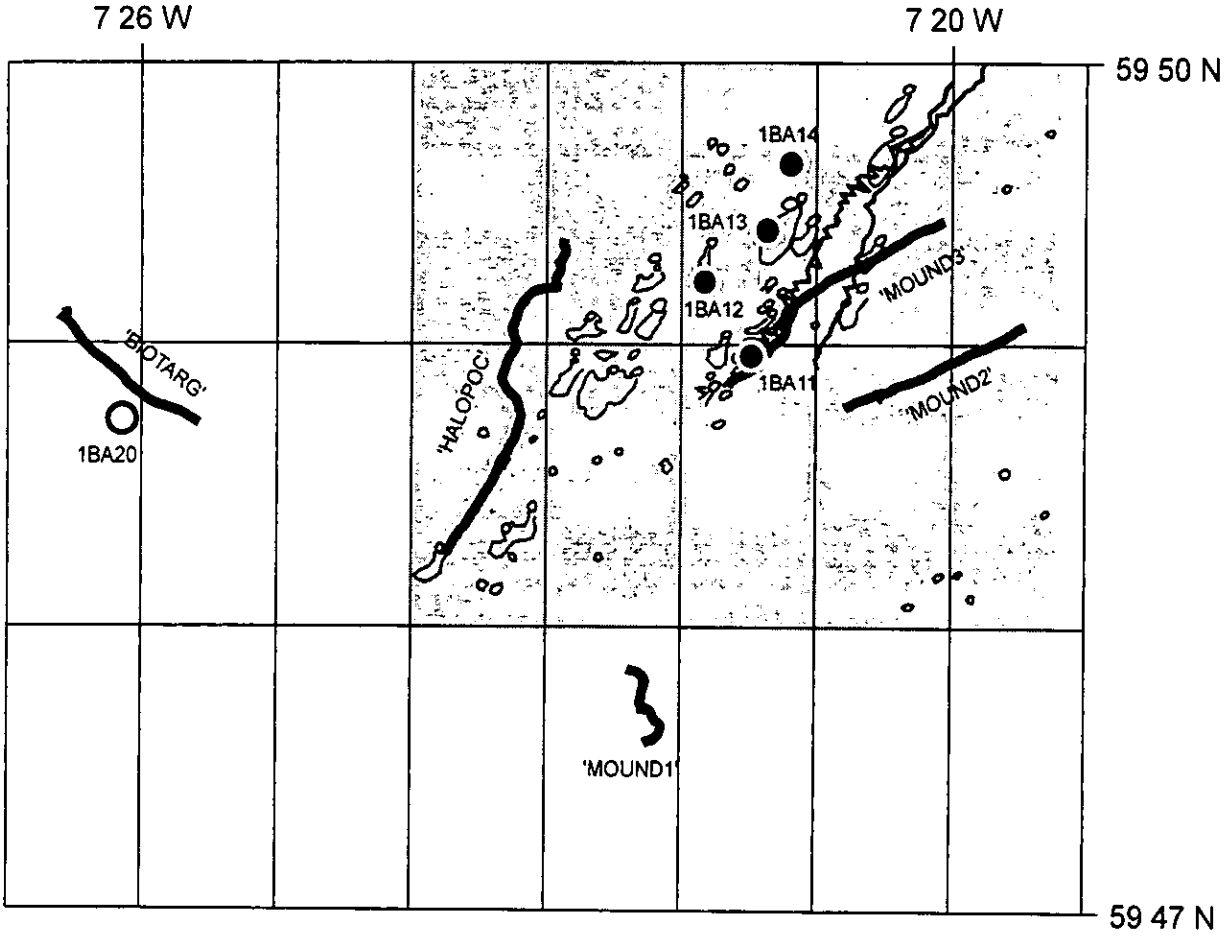


Figure 19. Survey area 1BA (the northern part of tranches 36-53), enlargement of the region of seabed mounds showing the disposition of seabed sampling stations and tow gear tracks. The shaded area includes seabed features from the interpreted TOBI record.

Key: ○ 1BA20 Seabed sampling station

● 1BA14 Seabed sampling station, plus CTD

WASP track

Epibenthic sledge track

7. SAMPLING PROTOCOLS

7.1 Standard sampling protocol

Of necessity, variant protocols were followed for samples from the megacorer, box corer and Day grab.

Megacorer

On recovery of the corer, the function of each coring unit was checked and recorded. Core lengths were measured and recorded and any surface and profile features noted. Sample acceptance was based on the following criteria: cores > 10 cm in length; core surfaces essentially level; and, the sediment-water interface intact. The latter criterion was partly relaxed where localised disturbance had been caused by the dislodgement of gravel during core penetration. Acceptable cores were removed from the corer and transferred to the ship's laboratories for subsequent processing. In all cases, processing began with the careful removal of the supernatant water using gentle overflow, pump siphon and/or syringe as appropriate to the sediment type.

For macrobenthos samples, cores were further processed as follows. Cores were extruded (by plunger from below) and sectioned into two horizons, 0-5 cm and 5-10 cm. Corresponding horizons from successive cores were pooled to produce a nominal sample size of eight cores. Macrobenthos samples were then elutriated through 0.5 mm and 0.25 mm sieve meshes. The four resultant residues (0-5 cm - 0.5 mm, 0-5 cm - 0.25 mm, 5-10 cm - 0.5 mm, 5-10 cm - 0.25 mm) were then fixed and preserved in 10 % borax buffered formalin. (Note that where phytodetritus was present on core tops it was all processed with the 0-5 cm sample.)

Hydrocarbon samples were processed by extruding the cores into a pre-cleaned metal collar and sectioning off the 0-2 cm horizon. The samples were preserved, in pre-cleaned glass pots, by freezing at -20 °C. (Note that where phytodetritus was present on core tops it was very largely removed prior to the sampling procedure).

Heavy metal samples were processed by extruding the cores into a pre-cleaned polycarbonate collar and sectioning off the 0-2 cm horizon. The samples were preserved, in pre-cleaned polycarbonate pots, by freezing at -20 °C. (Note that where phytodetritus was present on core tops it was very largely removed prior to the sampling procedure).

Particle size samples were processed by extruding the cores into a polycarbonate collar and sectioning off the 0-5 cm horizon. The samples were preserved, in polythene bags, by freezing at -20 °C. (Note that where phytodetritus was present on core tops it was very largely removed prior to the sampling procedure).

Box corer

On recovery of the corer, its function was checked and recorded. If, on inspection through the top vents, the core appeared to be acceptable, the box and spade were dismounted and moved to a clear deck space. Sample acceptance was based on the following criteria: cores > 10 cm in length; core surfaces essentially level (excepting relief deemed to be natural); sediment surface covering the full cross-sectional area of the box (excepting limited, 5 cm or less, lateral compression); and, essentially clear supernatant water (limited resuspension, particularly following a recovery that crashed the box core off the ship's hull was deemed acceptable). Processing of acceptable cores started with the division of the core's surface into macrobenthos and chemistry areas. A metal insert of either 0.1 m^2 or 0.15 m^2 was pushed into the sediment with one of its edges against one side of the box. The open sediment area and that enclosed by the insert were then separately drained of supernatant water using a pump siphon. The overlying water from the 0.1 m^2 area (whether enclosed or open) was drained through a 0.25 mm sieve and any sieve residue subsequently combined with the 0-5 cm sediment layer (see below). The overlying water from the 0.15 m^2 area (whether enclosed or open) was drained to waste. Once drained, the surface of the core was examined and a record made of any surface features and / or fauna of note.

For macrobenthos samples, cores were further processed as follows. The front of the box was removed and the sediment underlying the 0.1 m^2 area trowelled out in two horizons: 0-5 and 5-10 cm. Macrobenthos samples were then elutriated through 0.5 mm and 0.25 mm sieve meshes. The four resultant residues (0-5 cm - 0.5 mm, 0-5 cm - 0.25 mm, 5-10 cm - 0.5 mm, 5-10 cm - 0.25 mm) were fixed and preserved in 10 % borax buffered formalin.

Hydrocarbon samples were collected from the 0.15 m^2 area using a pre-cleaned metal scoop to a nominal depth of 2 cm. The samples were preserved, in pre-cleaned glass pots, by freezing at -20 °C.

Heavy metal samples were collected from the 0.15 m^2 area using a pre-cleaned plastic scoop to a nominal depth of 2 cm. The samples were preserved, in pre-cleaned polycarbonate pots, by freezing at -20 °C.

Particle size samples were collected from the 0.15 m^2 area using a plastic scoop to a nominal depth of 5 cm. The samples were preserved, in polythene bags, by freezing at -20 °C.

Day grab

On recovery of the grab, its function was checked and recorded. Sample acceptance was based on the following criteria: grab fully closed; grab holding or only slowly leaking supernatant water. In the case of macrobenthos samples, potentially acceptable samples were measured for volume in a calibrated bucket. A sample of 5 litres or more was taken to be

acceptable; on resistant ground it was necessary to pool grab material to achieve the target sample size.

Macrobenthos samples were then processed by elutriating the complete contents of one or more grabs though 0.5 mm and 0.25 mm sieve meshes. The two resultant residues were fixed and preserved in 10 % borax buffered formalin.

Hydrocarbon samples were collected from the chemistry grab using a pre-cleaned metal scoop to a nominal depth of 2 cm. The samples were preserved, in pre-cleaned glass pots, by freezing at -20 °C.

Heavy metal samples were collected from the chemistry grab using a pre-cleaned plastic scoop to a nominal depth of 2 cm. The samples were preserved, in pre-cleaned polycarbonate pots, by freezing at -20 °C.

Particle size samples were collected from the chemistry grab using a plastic scoop to a nominal depth of 5 cm. The samples were preserved, in polythene bags, by freezing at -20 °C.

7.2 Additions to the standard sampling protocol

Second macrobenthos sample

Where the box core was preferentially used to collect macrobenthos samples (see survey design section above) and the megacore was used to collect the corresponding chemistry samples, in some cases additional macrobenthos samples were collected. A second quantitative sample was taken by inserting a second 0.1 m^2 insert and processing the contained sediment in the same manner as described in the standard sampling protocol above.

7.2 Other sampling protocols

Geological samples

Geological core samples were collected using the megacore, box core and BGS gravity core. The box core was sub-sampled by pushing a half-pipe (plastic guttering) through the length of the sediment column adjacent to one side of the box, the pipe was subsequently dug out after other sampling procedures had been completed. Megacore samples were extruded (by plunger from below) into a second megacore tube that had been prepared by cutting in two length-ways and taping back together. Once extruded the sample was split by cutting the tape and cheese-wiring the sample. Gravity core samples were taken complete. Some other material (gravel, cobbles) was also collected. Sample description, shipboard analysis, preservation and documentation followed standard BGS protocols. A summary of shipboard observations is included as Appendix 1 to this report.

Frozen material

A variety of additional frozen material was collected during the course of the survey, principally for use in studies of organic chemistry; all such samples were collected by megacore. Whole frozen cores were prepared by extruding (by plunger from below) the bulk of the overlying water, leaving 2-3 cm, and inserting a top bung. The plunger was then withdrawn and the bottom of the core tube bunged. The core was then transferred and stored, in an upright position, in a -20°C freezer. When frozen solid (12-24 hours) the sediment core was extruded (after some warming in air or by running cold water over the core tube) on to dichloromethane-cleaned aluminium foil. The core was well wrapped in foil, then bagged in polythene and returned to the freezer. Sectioned sediment samples were also taken for two studies of organic chemistry: a) an MSc project (Steven Dewey) at Southampton University, that will employ enzyme digestion techniques to assess biologically available organic matter, and b) samples from site 1BA5, taken to assess the unusual 'fishy' odour detected in sediments from this site. In both cases the samples were processed as follows. Cores were extruded (by plunger from below) using a low-geared motorised plunger to give precise control. One centimetre sediment horizons were cut with a pre-cleaned metal plate, the outer edge of the sediment section (approximately 5 mm around the circumference) was removed to waste, the remainder was sampled with a pre-cleaned scoop. Samples were bagged for study (a) and placed in pre-clean pots for study (b). In both cases the resultant samples were stored at -20°C. Samples of phytodetritus (=fluff) were also retained frozen. The samples were obtained by siphoning the phytodetritus from core tops.

Other biological samples

Material for the analysis of meiobenthos was collected on the AMES '96 transect. The samples were taken by inserting two 2.6 cm internal diameter (syringe) subcores into a single megacorer core to a depth in excess of 5 cm. The subcores were then dug out, extruded to give a length of 5 cm and fixed jointly in 10 % borax buffered formalin (pooled sample size = 10.62 cm^2, 0 - 5 cm horizon). Biological specimen material was also collected opportunistically throughout the cruise (see sample catalogue for range of material collected). In the main this material was fixed and preserved in 10 % borax buffered formalin, however, in some cases (dead sponge and coral material, and some live xenophyophores) the material was stored dry.

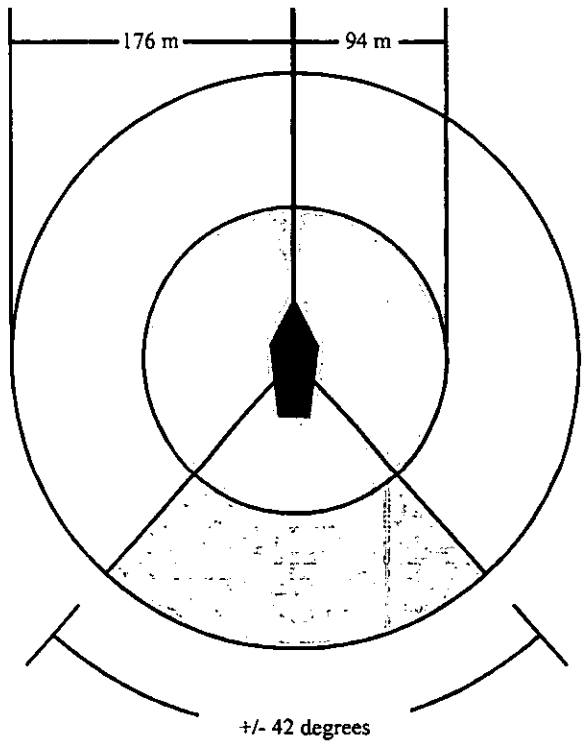
8. GEAR REPORTS

8.1 Acoustic systems

The 10 kHz sounding system (SIMRAD) generally performed well, though occasionally it reset its internal time and date, producing spurious data on the printed record. The logged data was unaffected, being time-stamped by the ship's clock. Acoustic monitoring systems (PC-based Waterfall display) worked well, though one PC blew its power supply unit taking the serial port with it. This PC was replaced with a back-up system. The Nautronix ultra-short baseline navigation (USBL) system functioned for only the first deployment of the survey. Thereafter the system was never operational, no obvious wiring or power faults could be detected in the accessible parts of the system. The cause of the fault is unknown at time of writing.

With the loss of the USBL, all positional data, other than the first deployment of the survey, are based on the ship's DGPS position. In the case of corers and WASP, positions are given as that of the ship. In the case of the epibenthic sledge, the sledge's position was estimated by back-calculation from the ship's position based on the known length of wire deployed, water depth and the ship's heading / course made good. These calculations were performed using routines embedded in the RVS computer group's 'BIOSTATION' software.

An indication of the potential accuracy of the positions recorded for the corers and WASP during the present survey can be taken from the navigation data recorded during the AMES '96 survey (RRS *Charles Darwin* cruise 101C). For corers, in 90% of cases the USBL position was within 9.4% of the deployment depth from the ship's position; e.g. for a corer deployed to 1000 m, on nine out of ten occasions the gear hit the seafloor within a horizontal range of 94 m from the ship's position. For WASP, in 90% of cases the USBL gear position was within 17.6% of the deployment depth from the ship's position. During active towing of WASP the area of uncertainty in position may be reduced in that in 90% of cases the vehicle was located ±42° astern of the ship.



8.2 Day Grab

A standard 0.1 m² Day grab, supplied by RVS, was employed during the survey, it was rigged and deployed in the conventional manner. A total of 44 Day grab deployments were made during the cruise, of which only 12 produced useful samples (i.e. an overall success rate of 27.3 %). The failures can be categorised as follows:

Sample lost in handling	3.1 %
Gear failed to trigger	6.3 %
Grab fired but empty	6.3 %
Jaw closure obstructed (pebbles or rocks)	65.6 %
Poor and/or small sample only	18.8 %

The high failure rate is very largely attributable to the nature of the ground and is likely to be common to all grab types operated in the same areas. The overall success rate and primary cause of failure are very similar to that recorded in the AMES '96 survey (31 % success; 66.5 % of failures resulting from obstructions in the jaws). Other than varying the ballast loading no repairs or modifications were necessary.

8.3 Box core

Two modified USNEL-type 0.25 m² spade box cores, supplied by RVS, were used during the survey, they were rigged and deployed in the conventional manner. The two corers were essentially identical in design, differing only in their construction material: one in stainless steel, the other in galvanised steel (known as the *'yellow corer'*). A total of 52 box core deployments were made during the cruise, of which 33 produced useful samples (i.e. an overall success rate of 63.5 %). The failures can be categorised as follows:

Gear failed to trigger	5.3 %
Triggered but empty	5.3 %
Disturbed samples	10.5 %
Top water not held (mostly short samples)	78.9 %

The box core performed very well throughout the cruise, giving an overall success rate similar to the AMES '96 survey (65 %). The key problem, as in 1996 (61 %), was the gear's inability to hold the top water over short cores when recovered to the deck. This problem was most marked in area 1BA (the northern part of tranches 36-53), where the megacore suffered from similar difficulties. On two occasions the corer's box was bent, once little more than cosmetic and once a substantial deformation. No modifications were made to the corer during the survey; however, some repairs were necessary: panel beating to restore a bent box,

re-drilling of a poorly fitting box retaining bar, and reconnection of the link between the trigger bar and its activating spring.

8.4 Megacore

A Bowers & Connelly megacore equipped with twelve 10 cm internal diameter cores was used during the survey. Following the recommendations of the AMES '96 survey, the corer's frame had been modified to fully enclose the coring units. Generally the corer was rigged and deployed in the conventional manner, with the number of coring units on the head and the ballast load varied to suit seabed conditions. For six deployments the corer was additionally fitted with a self contained CTD and transmissometer. A further two deployments were made with a '*home-made*' water sampler fitted to the coring head. The water sampler was constructed from a megacore tube and two core top closing units. The sampler was triggered by pin removal on descent of the coring head. With sufficient shockcord over the top closers this construction did collect a well sealed sample of bottom water. A total of 190 megacore deployments were made during the cruise, of which 164 produced useful samples (i.e. an overall success rate of 86.3 %). The total failures can be categorised as follows:

Head locked up	3.8 %
Fell over, no samples	11.5 %
Short cores / empty	84.6 %

Of those deployments yielding useful samples the following tabulation details the number of unusable cores obtained against the number of coring units deployed:

		Unusable cores (%)			
Coring units	Deployments	0	1	2	more
10-12	40	5.0	7.5	30.0	57.5
8-9	80	51.3	28.8	7.5	12.6
6	12	75.0	8.3	0.0	16.6
4	30	66.7	13.3	10.0	10.1

The megacorer worked well throughout the survey achieving a similar success rate to the AMES '96 survey (88 %). In the early stages of the cruise the success rate of individual coring units was somewhat lower than expected, this undoubtedly resulted from the use of the megacore during the preceding RRS *Charles Darwin* cruise (111, BENBO), during which it is clear that the essential routine tuning of core units had not been carried out. The megacore is mechanically more complex than most corers and requires regular monitoring and tuning of the performance of each coring unit if it is to be operated efficiently. Other than such minor mechanical failures, the major cause of failures was the nature of the seabed. This was particularly true in area 1BA (the northern part of tranches 36-53) where the foraminiferal

sand is rather resistant to coring. In this area, even reducing to only four coring units and adding additional lead ballast could not guarantee success.

The megacorer suffered little significant damage during the survey, this can be very largely attributed to the improved frame (cf. AMES '96 survey). All the damage that did occur, mostly smashed (some spectacularly) core tubes, probably resulted from direct contact with rocks during the descent of the core head. Other than the addition of other items of equipment (see above) no modifications were made to the corer during the survey. No repairs other than fine tuning of the closing mechanisms were necessary other than the replacement of one chipped bottom slider.

8.5 WASP

The WASP (wide-angle seabed photography) system was deployed on 23 occasions during the cruise to rather varied degrees of success. In addition to the standard WASP set up (Mk7 camera, 1200 J flash gun, altimeter, monitor, and 2 x 24 V external batteries), the vehicle also carried the new SOC Ocean Cam 6000 V digital video system, comprising a digital video camera, 2 x 250 W video lamps and a 24 V external battery. The video camera was mounted centrally in the vehicle and aimed vertically downwards, and the lamps placed one to each end of the vehicle also aimed vertically downwards.

Despite being recently commissioned, the video system performed well throughout the cruise; however, the same can not be said for the Ocean Instrumentation Limited Mk7 camera system, which proved to be more-or-less persistently problematic. The acoustic telemetry system worked well throughout, though the altimeter was struggling when deployed in turbid conditions (see narrative).

The problems with the Mk7 system all derived from leaks to the camera-monitor cable at the camera bulkhead connector. This cable is of a non-wet-mateable type and, as is now apparent, is clearly not suited to the rigours of normal WASP operations at sea and should be replaced with a wet-mateable cable. The cable leaked on five separate deployments, in the most serious case (54526#2) causing excessive current drain that knocked out the Mk7 camera (scrambling its software) and the monitor, and fried pins in the connector. The cable termination was remade several times, re-routing the lines through spare pins as those in use were fried one by one. These problems had two consequences, a) with limited lines available through the cable, camera activation was switched to alarm mode (camera runs continuously after a pre-set time), and b) flash firing became intermittent. Flash firing was always perfect during bench tests and in deck start-ups, however, firing underwater (as witnessed from video footage) was highly intermittent. Consequently, although full film runs were recorded for most deployments the number of useful photographs obtained may be very low (no film had been developed at time of writing).

Another significant problem to beset WASP was the damage to one of the video lamps that occurred during an epibenthic sledge deployment (54593#1, see below). Although this video lamp was irreparably damaged, a back-up light source was produced at sea. A Mk4 camera pressure case, a video lamp bulb, a length of 13 A domestic wiring, some bent coat-hangers, and appropriate fuse and diode protection were combined to make a, rather focused, replacement video lamp.

8.6 Epibenthic sledge

The epibenthic sledge was deployed in two modes during the survey: a) photosledge only (BN1.5/P), and b) net sledge only (BN1.5/C).

In photosledge mode the sledge was fitted with its conventional Mk4 camera and 25 J flashgun (though in a new orientation, see below) and the new Ocean Cam 6000 V digital video system with two 250 W video lamps. Acoustic telemetry was provided by the standard sledge monitor mounted in conventional fashion with the standard set of sensors. The photographic set up was as follows:

Video system - forward side

Item	From video	From forward	Above deck	Down angle
Lamp1	40 cm s'board	0 degrees	75 cm	0 degrees
Video	-	25 degrees s'board	88 cm	17 degrees
Lamp2	146 cm port	50 degrees s'board	103 cm	30 degrees

Still camera system - port side

Item	From camera	From port	Above deck	Down angle
Flash	89 cm aft	15 degrees fore	86 cm	25 degrees
Camera	-	10 degrees fore	84 cm	30 degrees

When operated in photosledge mode no net was attached to the sledge, to compensate for the lack of drag and therefore reduced stability, a drogue (plastic breadcrate) was fitted to the trailing edge of the sledge with two 3 metre bridles. The photosledge fished easily on all three deployments made during the cruise, with all onboard systems apparently functioning well. During the second tow (54593#1) the starboard video lamp filled with mud, and with the resultant lack of cooling, burnt out also irreparably damaging the lamp holder and pressure dome. The third tow (54628#1) was completed with the port lamp only; the quality of illumination on the resultant video was not noticeably degraded.

When operated in net sledge mode all conventional electronics (cameras, lighting, telemetry and sensors) were removed from the sledge to reduced the financial consequences of any loss. The sledge was re-rigged with a standard net (coarse mesh, 4.5 mm stretch) and fitted with an otter trawl acoustic monitor (providing depth, temperature and fore-aft attitude

telemetry). For the first net tow (54631#1) the lower edge of the net was set some 5 cm above deck level; for the second tow (54631#2) the net position was reset to allow the lower edge of the net to drag on the seafloor and a tickler chain was added ahead of the net. The sledge suffered no damage during either tow.

All sledge launches and recoveries were complicated by the presence of the BGS gravity core chute on the after deck. The stern overhang of the chute always threatened the sledge on recovery; inevitably, on the final recovery (54631#2) the port side skid of the sledge caught under the chute overhang, before hauling could be stopped the weak-link system in the sledge towing arrangement parted dumping the sledge back in the water. The sledge was recovered back to front and upside down on its safety bridles and set upright with a ship's crane. No damage to the sledge or its catch occurred, though clearly this situation should be avoided in the future.

8.7 BGS gravity core

The BGS gravity core (500 kg bomb, 3 m barrel), was operated from a launch / recovery chute mounted on the port side of the afterdeck (as a consequence of the need to deploy the epibenthic sledge from the midships position). It was not possible to run the main coring warp to a portside block under the A-frame, consequently the launch and recovery phases of the corer's deployments were carried out using the crane on the portside A-frame pedestal, with the load transferred to the main warp once the corer had been lifted over the stern and positioned near midships. This was a straightforward process, though it limited use of this gear to fair weather conditions. For future reference it may be worth operating this corer from the midships gantry using a recovery sling as is conventional in the operation of the functionally identical Kasten corer.

In total the corer was deployed 11 times during the cruise, producing seven good long cores (1.8-2.8 m). An eighth, short (1.2 m) core was also recovered from a deployment on which the bottom catcher had everted. The three failures occurred in the difficult ground of area 1BA (see above).

9. PRELIMINARY OBSERVATIONS

Note that this section is based only on observations and other notes made during the cruise and consequently must be rather tentative in advance of the full analysis of the samples and data obtained. Note also that observations made from video footage are of an incomplete nature. A summary of geological observations made during the cruise is given as appendix 1 to this report.

9.1 Observations by survey area

Area 3B

This area is generally very similar, not surprisingly, to that west of Shetland as surveyed during AMES '96. At 350 m there are patches of dense gravel cover ploughed through by spatangoid urchins, fairly numerous rocks colonised by a variety of sponges, and on the video footage two sightings of small, isolated colonies of *Lophelia*. At 450 m there is a well developed epifauna (sponges, bryozoans, ophiuroids and crinoids) on small stones and gravel. From 550-650 m there is some gravel, but the band is otherwise unremarkable. Similarly there is little to note between 800 and 1000 m. The sledge run at around 900 m does show a somewhat varied ground, largely dominated by cerianthid anemones and brittlestars, seapens (in three species) are also common. Some large rocks and large sponges are present (including *'club'* sponges).

Area 3A

Again this area is very similar in character to the corresponding bathymetric range in the west of Shetland region. At the scale of cores the area is rather featureless, with worm tubes and ophiuroids common throughout with a few sea spiders recorded. The WASP run at 1400 m confirms this view of a rather featureless environment; asteroids and ophiuroids are dominant. The WASP run through the furrow (1000 m), shows a west of Shetland type *'Black Hole'* (sandy contourite) seafloor and fauna, with the furrow itself marked by a noticeable increase in the number of rocks seen at the seabed.

AMES '96 Transect

Essentially as per the previous visit to this transect. Little of note between 150 and 400 m; small sand waves at 450 and 500 m; epifauna best developed between 400 and 650 m; little to note other than worm tubes between 700 and 1000 m. One of the cores recovered from the 500 m site appeared to have been trawled over (see below).

Area 2

Yet again, essentially similar to the AMES '96 observations, with little to add to that. The WASP run through the trough feature does show a number of large rocks / boulders at the

seabed, these are sediment covered, presumably indicating that the trough is not (continuously) scoured.

Area 0

General features of note include the occurrence of phytodetritus (see below) at all sites located deeper than 1000 m. Echiuran worm burrows were encountered in cores from three of the sites sampled indicating their likely significance throughout the deeper reaches of this area. A core from the '800 m' site showed substantial seafloor disturbance, presumably the result of trawling (see below).

Area 1A

This area was perhaps most notable for the widespread and relatively massive occurrence of phytodetritus: 7/8 sites, up to 6 cm in depth (see below). The sledge deployment further confirms these observations, showing exceptional quantities of suspended phytodetritus immediately above the seafloor - but only for part of the tow ! - its distribution both on the seafloor and in the near-bottom water column is **extremely** patchy. Neither coring, nor the WASP deployment suggest any marked difference in the seafloor environment or associated fauna between the southern wall of Rosemary Bank moat and the adjacent basin.

Areas 1BC and 1BB

Phytodetritus was recorded at three of the five sites located at 1000 m or deeper (see below). There was little to note on the transects generally, other than that the epifauna was best developed between 500 and 700 m (squat lobsters, brachiopods and anemones). Two xenophyophores (see below) were recovered from site 1BB6, from ground that was hard to work and potentially similar in character to that of area 1BA.

Area 1BA

Although rich in TOBI *'features'*, the background sediment and associated fauna throughout the area appears to be rather consistent. At the scale of cores, the sediment surface was essentially featureless with little obvious fauna beyond occasional worm tubes. The major exception to this being the relatively common occurrence of xenophyophores (see below). This observation was more than supported by seafloor imagery, which indicates that xenophyophores are one of the, if not the dominant form throughout the area. Another feature of general note was the widespread occurrence of phytodetritus (see below). At two sites, 1BA5 and 1BA12, a *'fishy'* odour was noticeable on processing the sediments recovered; at the latter site, gas bubbles were also noted on processing and bubble voids were present in the upper part of the sediment column. The two WASP deployments that traversed seabed mounds recorded groups of coral colonies on the mounds features (see below). Coral was also noted at two other locations: a single isolated, small colony was observed during WASP run

'BIOTARG', and small fragments of dead coral were recovered from the 5-10 cm sediment horizon of a core at site 1BA9.

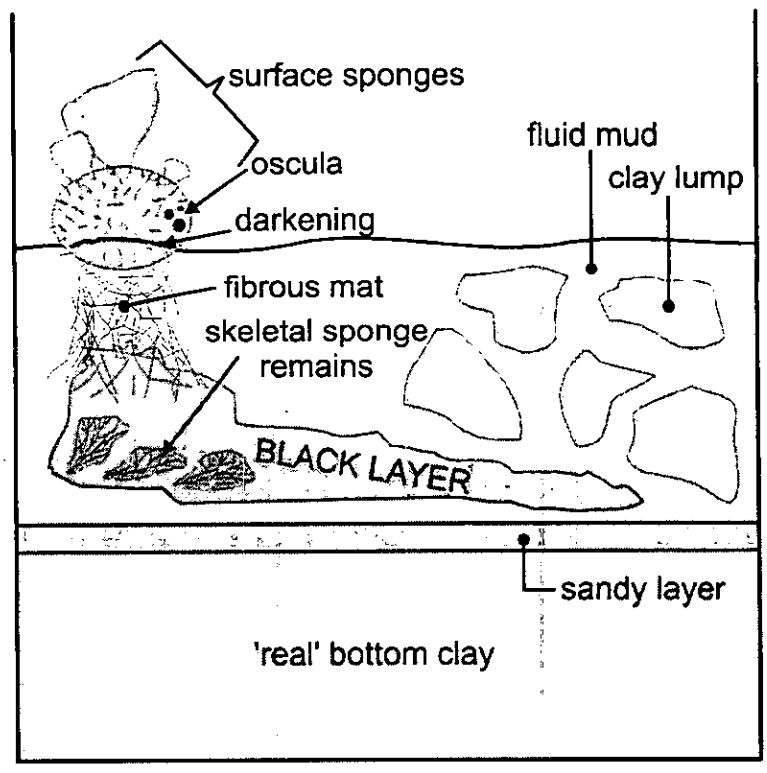
9.2 General observations

Deep-sea trawling

Commercial fishing vessels, both trawlers and long-liners were observed throughout the course of this survey, and they clearly operate in all of the areas surveyed. At present commercial trawling on the Atlantic Margin certainly extends to depths in excess of 1000 m. It is therefore not entirely surprising that this survey appears to have encountered two instances of seafloor disturbance that might readily be ascribed to the effects of deep-water trawling. The most dramatic observation was a box core from site '800 m' in Area 0 (station 54588#2) where large lumps of clay were exposed on the sediment surface having, presumably, been dredged up by a trawl biting some 20 cm or more into the seafloor.

The second, and potentially more interesting, example was a box core from site L4 on the AMES '96 transect (station 54538#2, 500 m depth). It was recorded as follow in the narrative:

"On removing the front panel the upper half of the core started slopping out, a black patch about 20 cm down becoming visible. This patch contained fibrous material and smelt strongly of hydrogen sulphide. Delving into the subsurface material over the rest of the core revealed the presence of large lumps of consolidated clay among the rather soupy sediment of the upper 20 cm of the core. Below 20 cm, was a muddy sand layer of 3 cm underlain by the usual grey clag. The black layer occupied 60-75% of the cross-sectional area of the core, the fibrous material present was degraded sponge tissue. ... An apparently normal fauna was present on the core surface including sponges 3-5 cm in length."

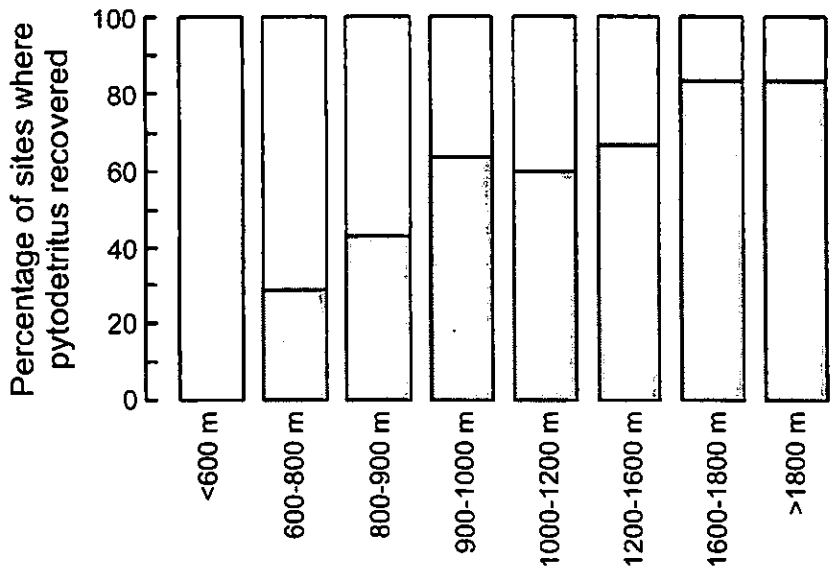


There are several features of note. Firstly, on visual inspection of the core surface, and by extension possibly on remote observation of the seabed at this site, this core appeared *'normal'*. The presence of a sponge epifauna contributed to this apparent normality. However, the ovoid sponge that formed the attachment point for the other sponges was itself effectively

unattached. It is possible that it was loosely connected to the fibrous mat below it, this mat may well have been the remains of a once larger sponge to which the ovoid sponge was attached. Further evidence for a change in life orientation of the ovoid sponge may be the presence of the dark band on its lower surface and the orientation of the oscula. Overall the arrangement of the surface sponges suggests that the ovoid sponge survived the 'trawling' event and that the fan sponges attached to it may likewise have survived or have instead colonised the ovoid sponge's surface since that event. Given that the core's surface appeared normal, contrasting markedly with the grossly disturbed core from site '800 m', it is possible that this core represents a later stage in the *'recovery'* from trawling. The presence of the extensive black layer, with the remains of dead sponges, nevertheless indicates the destructive effects of trawling.

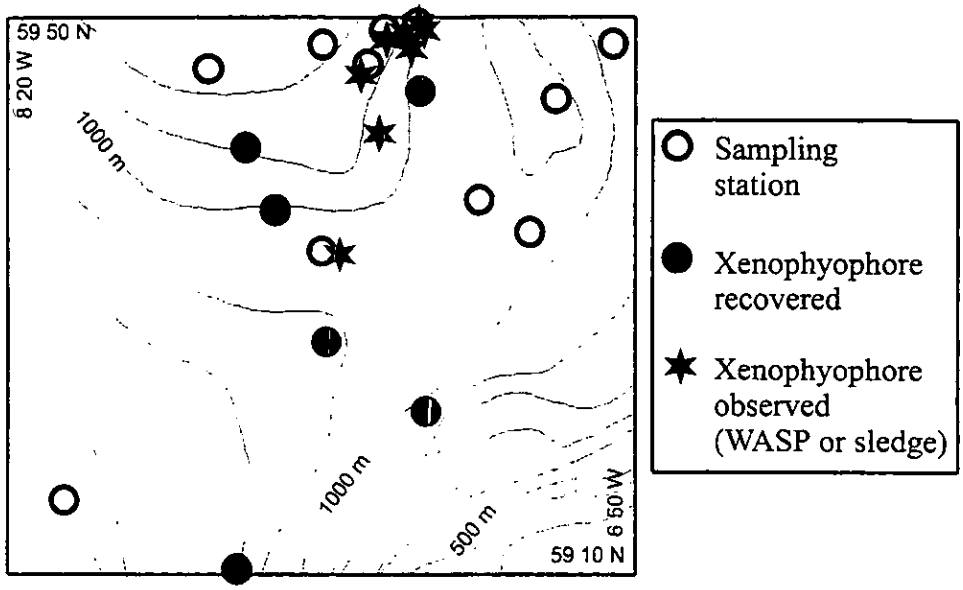
Phytodetritus

The deposition of phytodetritus, the degraded remains of surface ocean phytoplankton, on the deep-sea floor is now a well documented phenomenon in several oceanic areas around the world, having initially been described by the deep-sea benthic biology group at SOC (then at the Institute of Oceanographic Sciences). Although its seasonality and inter-annual variation are now well known in areas to the southwest of Ireland (Porcupine Seabight, Porcupine Abyssal Plain), there has been little documentation of its occurrence in the northern part of the Rockall Trough. The results of the present study will therefore be particularly valuable in this respect. Phytodetritus was not noted in any of the survey areas to the north of the Wyville-Thompson Ridge, but was recovered, and samples retained, from all survey areas in the Rockall Trough (Areas 0, 1A and 1B). In these areas, phytodetritus was encountered over a wide bathymetric range (700-2000 m), showing a trend of increasing occurrence with depth:



Xenophyophores

Xenophyophores, so-called *'giant'* protozoans, are a very poorly known group of organisms that are more-or-less restricted to the deep sea in their distribution. Specimens were recovered or observed at many of the survey sites in the northern part of Area 1B:

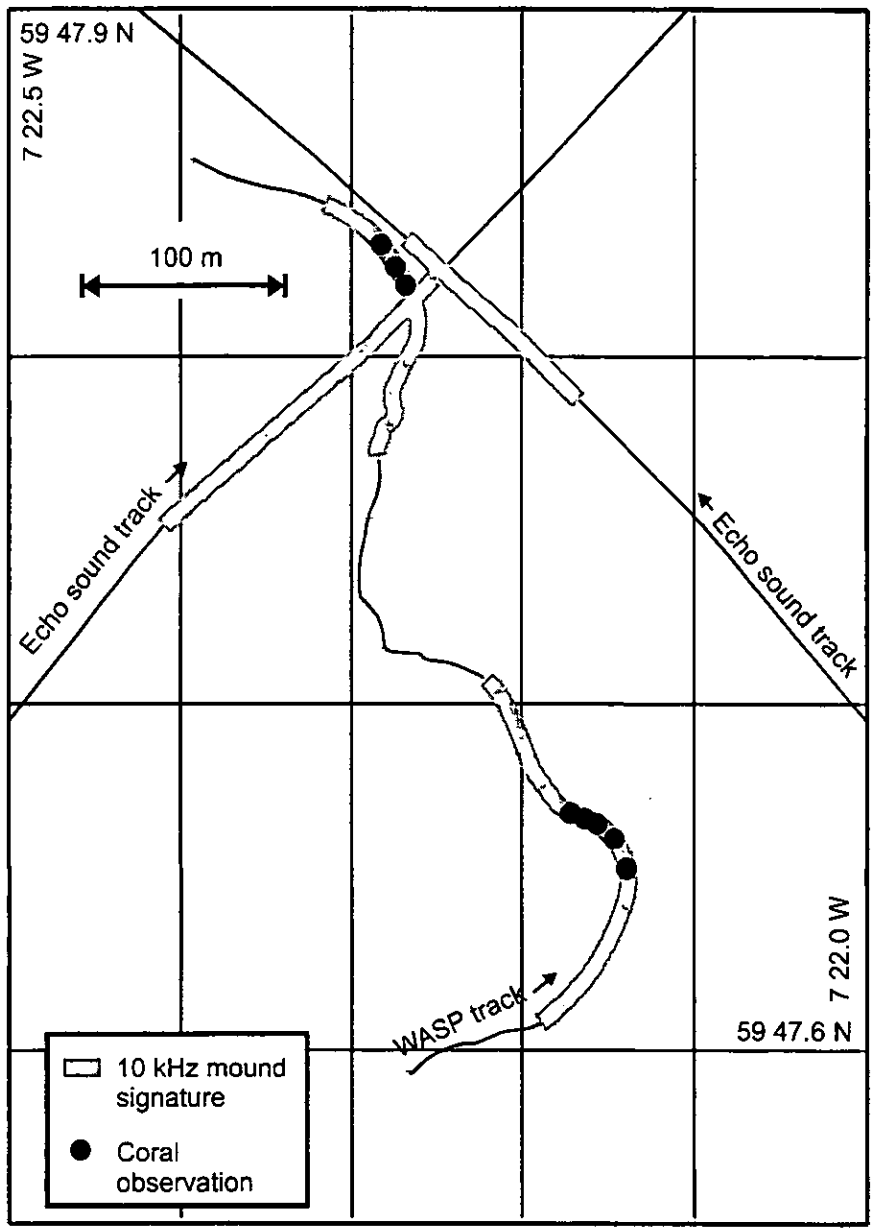


All of the recovered material and observed specimens appear to belong to a single species, *Syringammina fragilissima* (Brady, 1883). Although originally classified as a foraminiferan, this species was the first member of the class Xenophyophorea to be described. Preliminary observations made during the cruise suggest three points of note: 1. Xenophyophores appeared to be more abundant on, or in the vicinity of, seabed mounds, this may be related to an increased availability of food. 2. Where dense phytodetritus cover was present on the seafloor, some specimens were surrounded by a sub-circular patch of cleared seafloor, potentially providing evidence for the mode and extent of their feeding behaviour. 3. One of the larger specimens recovered showed evidence of what might be predator damage to the test. In at least two cases video footage shows white gastropods on top of xenophyophores, these may be predators, previously only monoplacophoran molluscs have been implicated as predators of xenophyophores.

Pockmarks and seabed mounds

The pockmarks and seabed mounds recorded in the northern part of Area 1B are of considerable interest, not least because they suggest the possibility of fluid escape from the seafloor. Based on shipboard observations there is no convincing evidence for or against currently active fluid escapes. From a biological perspective, there was certainly no obvious evidence of *'cold seep'*-type communities at any of the sites sampled or observed during the survey. However, observations made around the seabed mounds of the *'haloed mounds'* region suggest that appreciable biological zonation may attend these features. As noted above,

aggregations of coral colonies and xenophyophores appear to be associated with the mounds. The following illustration represents a preliminary assessment of the distribution of the coral observed in one WASP deployment (*'MOUND1'*, station 54565#1) with the apparent extent of seabed mounds as interpreted from the 10 kHz echo-sounder returns recorded during operations in that area. Identification of the mound acoustic signature was based on three characters relative to the surrounding seafloor: a) slight elevation, b) apparently spiky topography, and c) appreciably reduced return strength. Note that two mound features were covered by the WASP track and that, presumably, correspondingly two coral aggregations were observed.



10. SAMPLE CATALOGUE

The following catalogue details the various samples and data retained during the cruise, separate listings are provided for different sample types as follows:

Section	Content
10.1 Primary survey samples	Routine samples that address the primary survey objective, i.e. for hydrocarbon, heavy metal, particle size and macrobenthos analysis.
10.2 Additional survey samples	Similar types of samples to 10.1 that may be used to augment the primary survey samples.
10.3 Other samples	Samples of other types (principally geological and frozen) collected opportunistically during the survey.
10.4 Photographic material	Video tapes and 35 mm format films retained from WASP and epibenthic sledge deployments.
10.5 CTD data	Stations for which water column conductivity, temperature, depth and transmissometer data are available.

In addition to the above listings, section 10.6 provides a summary of the samples and data collected on a tranche by tranche basis. The various abbreviations used in the catalogue are as follows:

SURVEY: Survey area (see section 6. SURVEY DESIGN for corresponding tranche numbers)
SITE: Survey site name (see also section 11.1 Station data)
STATION: Station number, unique identification of individual deployment (see also section 11.1 Station data)
DEPTH: Mean depth / sounding at / over which sample(s) / data were collected (m)
GEAR: Equipment used to collect samples / data (see section 11.1 Station data for gear abbreviations)
HC: Hydrocarbons sample
Y: sample available, 2xY: two samples available, etc. (-: no sample)
HM: Heavy metal (elemental analysis) sample
PS: Particle size sample
MACROB / QUANT MACROB / MAC: Quantitative macrobenthos sample of quoted size available
QUAL MACROB / QMAC: Qualitative macrobenthos sample of quoted size or type available
GEOL: Geological sample (Y: standard core; x.x m: long core; other sample or observation as quoted)
FROZ: Frozen whole core sample
CLN: Organic chemistry sample (see section 7. SAMPLING PROTOCOLS for further details)
F-20: Frozen sample of phytodetritus
FF: Preserved (formalin) sample of phytodetritus
MEIOB: Meiobenthos sample
SD O: Organic chemistry sample (see section 7. SAMPLING PROTOCOLS for further details)
SPEC: Biological specimen retained, or retained separately from macrobenthos sample (type as quoted)
VIDEO / VID: Digital video tape (approximate duration of tape as quoted)
FILM: 35 mm film (length of film run as quoted; B+W, black and white)
DATA / CTD: Conductivity, temperature, depth and transmissometer data
TRANCHE: tranche number, or block number as appropriate (Tr: AMES '96 transect)

10.1 Sample catalogue - primary survey samples

SURVEY	SITE	STATION	DEPTH	GEAR	HC	HM	PS	MACROB.
0	300m	54590#1	308	BOX CORE	Y	Y	Y	0.100 m2
0	800m	54588#2	808	BOX CORE	-	-	-	0.100 m2
0	800m	54588#1	836	MEGA08	Y	Y	Y	-
0	1500m	54587#2	1488	MEGA08	Y	Y	Y	-
0	1500m	54587#1	1498	BOX CORE	-	-	-	0.100 m2
0	SITE1	54582#1	991	BOX CORE	-	-	-	0.100 m2
0	SITE1	54582#2	965	MEGA08	Y	Y	Y	-
0	SITE1.5	54581#2	1253	MEGA08	Y	Y	Y	-
0	SITE1.5	54581#3	1266	BOX CORE	-	-	-	0.100 m2
0	SITE2	54580#1	1612	BOX CORE	-	-	-	0.100 m2
0	SITE2	54580#2	1610	MEGA08	Y	Y	Y	-
0	SITE2.5	54579#1	1796	MEGA08	Y	Y	Y	-
0	SITE2.5	54579#2	1796	BOX CORE	-	-	-	0.100 m2
0	SITE3	54578#2	2044	MEGA10	Y	Y	Y	-
0	SITE3	54586#2	2046	BOX CORE	-	-	-	0.100 m2
0	SITE4	54583#1	1373	MEGA06	Y	Y	Y	-
0	SITE5	54585#1	1846	MEGA08	Y	Y	Y	-
0	SITE5	54585#2	1854	BOX CORE	-	-	-	0.100 m2
1A	1AA1	54591#1	1859	MEGA08	-	-	-	0.063 m2
1A	1AA1	54591#2	1859	MEGA08	Y	Y	Y	-
1A	1AA2	54592#1	1834	MEGA08	Y	Y	Y	-
1A	1AA2	54592#2	1832	MEGA08	-	-	-	0.063 m2
1A	1AA3	54596#1	1783	MEGA08	-	-	-	0.063 m2
1A	1AA3	54596#2	1783	MEGA08	Y	Y	Y	-
1A	1AA4	54595#1	1783	MEGA08	-	-	-	0.063 m2
1A	1AA4	54595#2	1783	MEGA08	Y	Y	Y	-
1A	1AA5	54594#2	1774	MEGA08	-	-	-	0.063 m2
1A	1AA5	54594#3	1775	MEGA08	Y	Y	Y	-
1A	1AB1	54598#1	1766	MEGA08	-	-	-	0.063 m2
1A	1AB1	54598#2	1766	MEGA08	Y	Y	Y	-
1A	1AB2	54599#1	1886	MEGA08	-	-	-	0.063 m2
1A	1AB2	54599#2	1884	MEGA08	Y	Y	Y	-
1A	1AB3	54600#1	1887	MEGA08	Y	Y	Y	-
1A	1AB3	54600#2	1871	MEGA08	-	-	-	0.063 m2
1BA	1BA1	54560#1	706	MEGA08	-	-	-	0.063 m2
1BA	1BA1	54560#2	705	MEGA08	Y	Y	Y	-
1BA	1BA2	54561#1	797	MEGA08	-	-	-	0.063 m2
1BA	1BA2	54561#2	792	MEGA08	Y	Y	Y	-
1BA	1BA3	54562#1	899	MEGA08	Y	Y	Y	0.008 m2
1BA	1BA3	54562#3	895	MEGA08	-	-	-	0.055 m2

10.1 Sample catalogue - primary survey samples

SURVEY	SITE	STATION	DEPTH	GEAR	HC	HM	PS	MACROB.
1BA	1BA4	54559#1	797	MEGA08	-	-	-	0.063 m2
1BA	1BA4	54559#2	800	MEGA08	Y	Y	Y	-
1BA	1BA5	54558#2	892	MEGA04	Y	Y	Y	-
1BA	1BA5	54629#5	895	MEGA04	-	-	-	0.031 m2
1BA	1BA5	54629#6	888	MEGA04	-	-	-	0.031 m2
1BA	1BA6	54563#1	996	MEGA08	Y	Y	Y	-
1BA	1BA6	54563#3	996	MEGA04	-	-	-	0.031 m2
1BA	1BA6	54563#4	996	MEGA04	-	-	-	0.031 m2
1BA	1BA8	54568#1	896	MEGA06	Y	Y	Y	0.008 m2
1BA	1BA8	54568#2	892	MEGA06	-	-	-	0.024 m2
1BA	1BA8	54568#3	890	MEGA04	-	-	-	0.031 m2
1BA	1BA9	54567#2	996	MEGA04	Y	Y	Y	-
1BA	1BA9	54567#3	996	MEGA04	-	-	-	0.031 m2
1BA	1BA9	54567#4	996	MEGA04	-	-	-	0.031 m2
1BA	1BA10	54566#1	1095	MEGA08	-	-	-	0.008 m2
1BA	1BA10	54566#2	1094	MEGA08	Y	Y	Y	0.008 m2
1BA	1BA10	54566#3	1092	MEGA08	-	-	-	0.039 m2
1BA	1BA15	54575#1	962	M06+CTD	Y	Y	Y	0.016 m2
1BA	1BA15	54575#3	964	MEGA06	-	-	-	0.047 m2
1BA	1BA16	54576#1	1034	MEGA08	Y	Y	Y	-
1BA	1BA16	54576#2	1035	MEGA08	-	-	-	0.055 m2
1BA	1BA17	54577#1	1090	MEGA08	Y	Y	Y	-
1BA	1BA17	54577#4	1098	MEGA04	-	-	-	0.031 m2
1BA	1BA17	54577#5	1098	MEGA04	-	-	-	0.031 m2
1BA	1BA18	54626#1	942	MEGA08	Y	-	-	-
1BA	1BA18	54626#2	936	MEGA08	-	Y	-	-
1BA	1BA18	54634#1	937	MEGA04	-	-	Y	-
1BA	1BA18	54634#2	937	MEGA04	-	-	-	0.031 m2
1BA	1BA18	54634#3	936	MEGA04	-	-	-	0.031 m2
1BA	1BA19	54627#1	1034	MEGA06	-	-	-	0.039 m2
1BA	1BA19	54627#3	1036	MEGA06	Y	Y	Y	0.024 m2
1BA	1BA20	54633#1	898	MEGA04	Y	Y	Y	-
1BA	1BA20	54633#2	900	MEGA08	-	-	-	0.063 m2
1BB	1BB1	54622#2	189	DAY GRAB	Y	Y	Y	-
1BB	1BB1	54622#5	188	DAY GRAB	-	-	-	0.100 m2
1BB	1BB1	54622#11	192	DAY GRAB	-	-	-	0.100 m2
1BB	1BB2	54621#6	304	DAY GRAB	Y	Y	Y	-
1BB	1BB2	54621#7	306	DAY GRAB	-	-	-	0.100 m2
1BB	1BB2	54621#9	295	DAY GRAB	-	-	-	0.100 m2
1BB	1BB3	54620#1	398	MEGA06	Y	Y	Y	-
1BB	1BB3	54620#2	390	BOX CORE	-	-	-	0.100 m2

10.1 Sample catalogue - primary survey samples

SURVEY	SITE	STATION	DEPTH	GEAR	HC	HM	PS	MACROB.
1BB	1BB4	54619#2	493	MEGA08	Y	Y	Y	-
1BB	1BB4	54619#3	496	BOX CORE	-	-	-	0.100 m2
1BB	1BB5	54618#1	602	BOX CORE	-	-	-	0.100 m2
1BB	1BB5	54618#2	605	MEGA08	Y	Y	Y	-
1BB	1BB6	54624#3	1209	MEGA04	Y	Y	Y	-
1BB	1BB7	54625#1	1364	MEGA08	Y	Y	Y	0.008 m2
1BB	1BB7	54625#2	1365	MEGA08	-	-	-	0.055 m2
1BC	1BC1	54601#1	1582	MEGA08	Y	Y	Y	0.016 m2
1BC	1BC1	54601#2	1584	MEGA08	-	-	-	0.047 m2
1BC	1BC2	54602#1	1198	MEGA08	Y	Y	Y	-
1BC	1BC2	54616#2	1195	BOX CORE	-	-	-	0.100 m2
1BC	1BC3	54603#1	994	MEGA06	Y	Y	Y	-
1BC	1BC3	54615#1	991	BOX CORE	-	-	-	0.100 m2
1BC	1BC4	54604#1	890	MEGA08	Y	Y	Y	-
1BC	1BC4	54604#2	894	BOX CORE	-	-	-	0.100 m2
1BC	1BC5	54605#1	846	BOX CORE	-	-	-	0.100 m2
1BC	1BC5	54605#2	840	BOX CORE	-	-	-	0.100 m2
1BC	1BC5	54605#3	842	BOX CORE	-	-	-	0.100 m2
1BC	1BC5	54605#4	858	BOX CORE	-	-	-	0.100 m2
1BC	1BC5	54605#5	836	BOX CORE	-	-	-	0.100 m2
1BC	1BC5	54607#1	840	MEGA08	Y	Y	Y	-
1BC	1BC5	54607#2	850	MEGA08	Y	Y	Y	-
1BC	1BC5	54607#3	844	MEGA08	Y	Y	Y	-
1BC	1BC5	54607#4	838	MEGA08	Y	Y	Y	-
1BC	1BC5	54607#5	843	MEGA08	Y	Y	Y	-
1BC	1BC6	54606#1	783	MEGA08	Y	Y	Y	-
1BC	1BC6	54606#2	791	BOX CORE	-	-	-	0.100 m2
1BC	1BC7	54608#1	689	MEGA08	Y	Y	Y	-
1BC	1BC7	54608#2	684	BOX CORE	-	-	-	0.100 m2
1BC	1BC8	54609#1	602	BOX CORE	-	-	-	0.100 m2
1BC	1BC8	54609#2	608	MEGA08	Y	Y	Y	-
1BC	1BC9	54611#1	499	MEGA08	Y	Y	Y	-
1BC	1BC9	54611#2	498	BOX CORE	-	-	-	0.100 m2
1BC	1BC10	54612#1	398	MEGA06	Y	Y	Y	-
1BC	1BC10	54612#2	398	BOX CORE	-	-	-	0.100 m2
1BC	1BC11	54613#1	300	MEGA06	Y	Y	Y	-
1BC	1BC11	54613#2	301	BOX CORE	-	-	-	0.100 m2
1BC	1BC12	54614#1	202	MEGA06	-	Y	-	-
1BC	1BC12	54614#2	203	MEGA04	Y	-	-	-
1BC	1BC12	54614#3	203	MEGA04	-	-	Y	-
1BC	1BC12	54614#7	198	DAY GRAB	-	-	-	0.100 m2

10.1 Sample catalogue - primary survey samples

SURVEY	SITE	STATION	DEPTH	GEAR	HC	HM	PS	MACROB.
2	2A1	54548#2	615	MEGA08	-	-	-	0.063 m2
2	2A1	54548#3	619	MEGA08	Y	Y	Y	-
2	2B1	54549#1	748	MEGA08	Y	Y	Y	0.024 m2
2	2B1	54549#2	750	MEGA08	-	-	-	0.039 m2
2	2B2	54554#2	914	MEGA08	Y	Y	Y	0.008 m2
2	2B2	54554#3	919	MEGA08	-	-	-	0.055 m2
2	2B3	54553#1	1070	MEGA08	Y	Y	Y	-
2	2B3	54553#2	1072	MEGA08	-	-	-	0.063 m2
2	2C1	54550#2	753	MEGA08	Y	Y	Y	-
2	2C1	54550#3	755	MEGA08	-	-	-	0.063 m2
2	2T	54552#1	1074	MEGA08	-	-	-	0.063 m2
2	2T	54552#2	1075	MEGA08	Y	Y	Y	-
3A	3AA1	54518#1	978	MEGA10	-	-	-	0.063 m2
3A	3AA1	54518#3	1006	MEGA10	Y	Y	Y	-
3A	3AA2	54521#1	1006	MEGA10	Y	Y	Y	0.016 m2
3A	3AA2	54521#3	1022	MEGA10	-	-	-	0.047 m2
3A	3AB1	54525#1	1387	MEGA10	Y	Y	Y	0.008 m2
3A	3AB1	54525#2	1384	MEGA10	-	-	-	0.055 m2
3A	3AB2	54519#1	1175	MEGA10	Y	Y	Y	-
3A	3AB2	54519#3	1192	MEGA11	-	-	-	0.063 m2
3A	3AB3	54522#1	1174	MEGA10	Y	Y	Y	0.016 m2
3A	3AB3	54522#2	1170	MEGA10	-	-	-	0.047 m2
3A	3AB4	54524#2	1393	MEGA10	-	-	-	0.063 m2
3A	3AB4	54524#3	1380	MEGA10	Y	Y	Y	-
3A	3AB5	54523#1	1367	MEGA10	Y	Y	Y	0.008 m2
3A	3AB5	54523#2	1359	MEGA10	-	-	-	0.047 m2
3A	3AC1	54517#1	1579	MEGA10	Y	Y	Y	0.008 m2
3A	3AC1	54517#2	1582	MEGA10	-	-	-	0.055 m2
3A	3AC2	54526#1	1527	MEGA10	Y	Y	Y	0.008 m2
3A	3AC2	54526#3	1531	MEGA10	-	-	-	0.055 m2
3A	3AC3	54516#1	1601	MEGA10	Y	Y	Y	0.008 m2
3A	3AC3	54516#2	1601	MEGA10	-	-	-	0.055 m2
3A	3AC4	54515#1	1633	MEGA12	Y	Y	Y	-
3A	3AC4	54515#3	1636	MEGA10	-	-	-	0.055 m2
3A	3AC5	54513#1	1629	MEGA09	Y	Y	Y	-
3A	3AC5	54513#2	1629	MEGA09	-	-	-	0.063 m2
3A	3AD1	54512#2	1727	MEGA10	-	-	-	0.063 m2
3A	3AD1	54512#3	1727	MEGA09	Y	Y	Y	-
3B	3BA350	54507#2	377	BOX CORE	Y	Y	Y	0.100 m2

10.1 Sample catalogue - primary survey samples

SURVEY	SITE	STATION	DEPTH	GEAR	HC	HM	PS	MACROB.
3B	3BA450	54506#1	440	BOX CORE	Y	Y	Y	0.100 m2
3B	3BA500	54505#2	500	BOX CORE	Y	Y	Y	0.100 m2
3B	3BA650	54504#3	625	MEGA10	-	-	-	0.047 m2
3B	3BA650	54504#2	630	MEGA08	Y	Y	Y	0.016 m2
3B	3BA800	54503#1	753	MEGA10	-	-	-	0.063 m2
3B	3BA800	54503#2	755	MEGA08	Y	Y	Y	-
3B	3BA1000	54502#1	1011	MEGA08	Y	Y	Y	-
3B	3BA1000	54502#2	1018	MEGA10	-	-	-	0.063 m2
3B	3BB900	54509#1	901	MEGA10	Y	Y	Y	-
3B	3BB900	54509#2	901	MEGA10	-	-	-	0.063 m2
3B	3BC800	54510#1	796	MEGA10	Y	Y	Y	-
3B	3BC800	54510#2	796	MEGA10	-	-	-	0.063 m2
Transect	B5	54527#3	126	DAY GRAB	-	-	-	0.100 m2
Transect	Tr200	54528#6	194	DAY GRAB	-	-	-	0.100 m2
Transect	Tr250	54529#8	241	DAY GRAB	-	-	-	0.100 m2
Transect	Tr300	54530#4	283	DAY GRAB	-	-	-	0.100 m2
Transect	Tr300	54530#3	284	DAY GRAB	-	-	-	0.100 m2
Transect	Tr350	54535#1	341	BOX CORE	-	-	-	0.100 m2
Transect	L5	54536#1	403	BOX CORE	-	-	-	0.100 m2
Transect	Tr450	54537#1	446	BOX CORE	-	-	-	0.100 m2
Transect	L4	54538#4	492	BOX CORE	-	-	-	0.100 m2
Transect	Tr550	54539#1	539	MEGA10	-	-	-	0.039 m2
Transect	Tr550	54539#2	539	MEGA10	-	-	-	0.024 m2
Transect	Tr600	54540#1	588	MEGA10	-	-	-	0.008 m2
Transect	Tr600	54540#2	590	MEGA10	-	-	-	0.055 m2
Transect	Tr650	54541#1	638	MEGA10	-	-	-	0.063 m2
Transect	S2	54542#1	695	MEGA10	-	-	-	0.063 m2
Transect	Tr800	54543#1	790	MEGA10	-	-	-	0.063 m2
Transect	Tr900	54544#1	918	MEGA08	-	-	-	0.063 m2
Transect	Tr1000	54545#1	985	MEGA08	-	-	-	0.063 m2

10.2 Sample catalogue - additional survey samples

SURVEY	SITE	STATION	DEPTH	GEAR	HC	HM	PS	MACROB.	MACROB.	COMMENT	POTENTIAL APPLICATION
0	800m	54588#2	808	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size / trawled ground
0	1500m	54587#1	1498	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
0	SITE1	54582#1	991	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
0	SITE1.5	54581#3	1266	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
0	SITE2	54580#1	1612	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
0	SITE2.5	54579#2	1796	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
0	SITE3	54578#2	2044	MEGA10	-	-	-	0.039 m2	-	Megacore sample	Contrast mega and box cores
0	SITE3	54586#2	2046	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
0	SITE5	54585#2	1854	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
1A	1AA1	54591#2	1859	MEGA08	Y	-	-	-	-	Fluff sample	Investigate feature
1BA	1BA5	54558#1	891	MEGA08	-	-	-	0.008 m2	-	0-15 cm 250 sieved	Additional material
1BA	1BA5	54558#5	890	BOX CORE	-	-	-	-	surface	500 sieved	Additional material
1BA	1BA11	54570#1	954	M04+CTD	Y	Y	-	-	-	Additional site	Better characterise area
1BA	1BA12	54571#1	946	M04+CTD	Y	Y	-	-	-	Additional site	Better characterise area
1BA	1BA13	54572#1	949	M04+CTD	Y	-	-	-	-	Additional site	Better characterise area
1BA	1BA14	54573#1	946	M04+CTD	Y	Y	-	-	-	Additional site	Better characterise area
1BA	1BA16	54576#1	1034	MEGA08	-	-	-	0.031 m2	-	Back up sample	Additional material
1BA	1BA17	54577#1	1090	MEGA08	-	-	-	-	0.024 m2	Disturbed	Additional material
1BA	MOUND	54565#3	956	BOX CORE	-	-	-	-	surface	Un-sieved	Additional material
1BC	1BC2	54616#2	1195	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
1BC	1BC3	54603#3	996	MEGA08	-	-	-	0.055 m2	-	Megacore sample	Contrast mega and box cores
1BC	1BC3	54615#1	991	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
1BC	1BC4	54604#2	894	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
1BC	1BC5	54605#1	846	BOX CORE	Y	Y	Y	-	-	Box core sample	Contrast mega and box cores
1BC	1BC5	54605#2	840	BOX CORE	Y	Y	Y	-	-	Box core sample	Contrast mega and box cores
1BC	1BC5	54605#3	842	BOX CORE	Y	Y	Y	-	-	Box core sample	Contrast mega and box cores
1BC	1BC5	54605#4	858	BOX CORE	Y	Y	Y	-	-	Box core sample	Contrast mega and box cores
1BC	1BC5	54605#5	836	BOX CORE	Y	Y	Y	-	-	Box core sample	Contrast mega and box cores
1BC	1BC5	54607#2	850	MEGA08	-	-	-	0.039 m2	-	Megacore sample	Contrast mega and box cores
1BC	1BC5	54607#3	844	MEGA08	-	-	-	0.031 m2	-	Megacore sample	Contrast mega and box cores
1BC	1BC5	54607#4	838	MEGA08	-	-	-	0.031 m2	-	Megacore sample	Contrast mega and box cores
1BC	1BC5	54607#5	843	MEGA08	-	-	-	0.039 m2	-	Megacore sample	Contrast mega and box cores
1BC	1BC6	54606#2	791	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size

10.2 Sample catalogue - additional survey samples

SURVEY	SITE	STATION	DEPTH	GEAR	HC	HM	PS	MACROB.	MACROB.	COMMENT	POTENTIAL APPLICATION
1BC	1BC7	54608#2	684	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
1BC	1BC8	54609#1	602	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
1BC	1BC9	54611#2	498	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
1BC	1BC10	54612#2	398	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
1BC	1BC11	54613#2	301	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Increase sample size
3A	3AA2	54521#1	1006	MEGA10	-	Y	-	-	-	From red spot	Investigate feature
3A	3AB2	54519#1	1175	MEGA10	-	-	-	0.024 m2	-	0-10 cm back up sample	Additional material
3A	3AC4	54515#1	1633	MEGA12	-	-	-	0.024 m2	-	0-10 cm back up sample	Additional material
Transect	Tr350	54535#1	341	BOX CORE	-	-	-	-	surface	-	Additional material
Transect	L5	54536#1	403	BOX CORE	-	-	-	-	surface	-	Additional material
Transect	Tr450	54537#1	446	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Investigate sand wave
Transect	L4	54538#1	493	BOX CORE	-	-	-	0.100 m2	-	0-10 cm back up sample	Additional material / trawled ground
Transect	L4	54538#2	499	BOX CORE	-	-	-	-	surface	-	Additional material / trawled ground
Transect	L4	54538#3	492	BOX CORE	-	-	-	-	surface	-	Additional material / trawled ground
Transect	L4	54538#4	492	BOX CORE	-	-	-	0.100 m2	-	2nd sample	Investigate sand wave / trawled ground

10.3 Sample catalogue - other samples

SURVEY	SITE	STATION	DEPTH	GEAR	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC
0	300m	54590#1	308	BOX CORE	Y	-	-	-	-	-	-	-
0	800m	54588#1	836	MEGA08	Y	Y	-	-	-	-	-	-
0	800m	54588#2	808	BOX CORE	Y	-	-	-	-	-	-	geryonid
0	1500m	54587#2	1488	MEGA08	Y	2xY	-	-	-	-	-	"plimsoll mark"
0	SITE1.5	54581#2	1253	MEGA08	2xY	2xY	-	-	-	-	-	-
0	SITE2	54580#2	1610	MEGA08	Y	Y	-	Y	-	-	-	-
0	SITE2.5	54579#1	1796	MEGA08	Y	Y	-	-	-	-	-	-
0	SITE3	54578#2	2044	MEGA10	Y	-	-	-	-	-	-	-
0	SITE3	54586#1	2046	BOX CORE	Y	-	-	-	-	-	-	echiuran
0	SITE4	54583#1	1373	MEGA06	2xY	-	-	-	-	-	-	-
0	SITE5	54585#1	1846	MEGA08	Y	2xY	-	Y	-	-	-	-
0	SITE5	54585#3	1853	BGS CORE	1.2 m	-	-	-	-	-	-	-
1A	1AA1	54591#2	1859	MEGA08	Y	Y	-	2xY	Y	-	-	-
1A	1AA2	54592#1	1834	MEGA08	Y	-	-	-	-	-	-	-
1A	1AA3	54596#2	1783	MEGA08	Y	Y	-	-	-	-	-	-
1A	1AA4	54595#2	1783	MEGA08	Y	Y	-	Y	-	-	-	-
1A	1AA5	54594#1	1776	BGS CORE	1.8 m	-	-	-	-	-	-	-
1A	1AA5	54594#3	1775	MEGA08	Y	Y	-	-	-	-	-	-
1A	1AB1	54598#2	1766	MEGA08	Y	Y	-	-	-	-	-	-
1A	1AB2	54599#2	1884	MEGA08	Y	Y	-	-	-	-	-	-
1A	1AB3	54600#1	1887	MEGA08	Y	Y	-	-	-	-	-	-
1BA	1BA1	54560#2	705	MEGA08	Y	-	-	-	-	-	-	-
1BA	1BA2	54561#2	792	MEGA08	Y	Y	-	Y	Y	-	2xY	-
1BA	1BA3	54562#1	899	MEGA08	Y	Y	-	-	-	-	-	-
1BA	1BA4	54559#2	800	MEGA08	Y	Y	-	-	-	-	-	-
1BA	1BA5	54558#1	891	MEGA08	description	-	-	-	-	-	-	-
1BA	1BA5	54558#2	892	MEGA04	Y	-	-	-	-	-	-	-
1BA	1BA5	54629#1	899	MEGA04	-	-	-	-	-	-	-	spatangoid
1BA	1BA5	54629#3	896	MEGA04	-	Y	Y	-	-	-	-	-

10.3 Sample catalogue - other samples

SURVEY	SITE	STATION	DEPTH	GEAR	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC
1BA	1BA5	54629#4	892	MEGA04	Y	-	-	-	-	-	-	-
1BA	1BA5	54629#7	892	MEGA04	-	-	Y	-	-	-	-	-
1BA	1BA6	54563#1	996	MEGA08	-	-	-	Y	Y	-	-	xenophyophore
1BA	1BA6	54563#3	996	MEGA04	Y (>10cm)	-	-	-	-	-	-	-
1BA	1BA7	54564#1	936	MEGA04	Y	-	-	-	-	-	-	-
1BA	1BA8	54568#1	896	MEGA06	Y	-	-	-	-	-	-	-
1BA	1BA8	54568#2	892	MEGA06	Y	-	-	-	-	-	-	-
1BA	1BA9	54567#1	994	MEGA08	Y	-	-	-	-	-	-	-
1BA	1BA9	54567#2	996	MEGA04	Y	-	-	Y	-	-	-	-
1BA	1BA9	54567#4	996	MEGA04	-	-	-	-	-	-	-	Lophelia
1BA	1BA10	54566#2	1094	MEGA08	Y	-	-	-	-	-	-	-
1BA	1BA11	54570#1	954	M04+CTD	Y	Y	-	Y	-	-	-	-
1BA	1BA12	54571#1	946	M04+CTD	Y	Y	-	-	-	-	-	-
1BA	1BA13	54572#1	949	M04+CTD	Y	Y	-	-	-	-	-	-
1BA	1BA14	54573#1	946	M04+CTD	Y	Y	-	-	-	-	-	-
1BA	1BA15	54575#1	962	M06+CTD	Y	-	-	-	-	-	-	-
1BA	1BA16	54576#1	1034	MEGA08	Y	-	-	-	-	-	-	-
1BA	1BA17	54577#1	1090	MEGA08	y	-	-	-	-	-	-	-
1BA	1BA17	54577#3	1096	MEGA08	-	-	-	-	-	-	-	2 x xenophyophores
1BA	1BA17	54577#4	1098	MEGA04	Y (>10cm)	-	-	-	-	-	-	-
1BA	1BA18	54626#2	936	MEGA08	-	-	-	-	-	-	-	xenophyophore + sponge
1BA	1BA18	54634#1	936	MEGA04	-	-	-	-	-	-	-	xenophyophore
1BA	1BA18	54634#2	937	MEGA04	Y (>10cm)	-	-	-	-	-	-	-
1BA	1BA18	54634#3	936	MEGA04	Y (>10cm)	-	-	-	-	-	-	-
1BA	1BA19	54627#1	1034	MEGA06	Y (>10cm)	-	-	-	-	-	-	-
1BA	1BA19	54627#3	1036	MEGA06	Y (>10cm)	-	-	-	-	-	-	-
1BA	1BA20	54633#1	898	MEGA04	Y	-	-	-	-	-	-	-
1BA	MOUND	54565#2	960	BOX CORE	Y	-	-	-	-	-	-	-
1BA	MOUND2	54569#4	966	BGS CORE	description	-	-	-	-	-	-	-
1BA	NETSLED	54631#1	956	BN1.5/C	-	-	-	-	-	-	-	megabenthos + fish
1BA	NETSLED	54631#2	960	BN1.5/C	-	-	-	-	-	-	-	megabenthos + fish

10.3 Sample catalogue - other samples

SURVEY	SITE	STATION	DEPTH	GEAR	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC
1BB	1BB1	54622#3	188	DAY GRAB	description	-	-	-	-	-	-	-
1BB	1BB2	54621#1	296	BOX CORE	cobbles	-	-	-	-	-	-	-
1BB	1BB3	54620#1	398	MEGA06	Y	-	-	-	-	-	-	-
1BB	1BB4	54619#2	493	MEGA08	Y	Y	-	-	-	-	-	-
1BB	1BB5	54618#1	602	BOX CORE	Y	-	-	-	-	-	-	-
1BB	1BB5	54618#2	605	MEGA08	-	Y	-	-	-	-	-	-
1BB	1BB6	54624#3	1209	MEGA04	Y	-	-	-	-	-	-	-
1BB	1BB6	54624#4	1210	BOX CORE	-	-	-	-	-	-	-	2 x xenophyophores
1BB	1BB7	54625#1	1364	MEGA08	Y	Y	-	-	-	-	-	-
1BC	1BC1	54601#1	1582	MEGA08	Y	-	-	-	-	-	-	-
1BC	1BC2	54602#1	1198	MEGA08	Y	-	-	Y	-	-	Y	-
1BC	1BC2	54602#5	1180	BOX CORE	Y	-	-	-	-	-	-	-
1BC	1BC3	54603#1	994	MEGA06	Y	Y	-	Y	-	-	Y	-
1BC	1BC4	54604#1	890	MEGA08	Y	Y	-	-	-	-	Y	-
1BC	1BC5	54605#2	840	BOX CORE	Y	-	-	-	-	-	-	-
1BC	1BC6	54606#1	783	MEGA08	Y	-	-	-	-	-	Y	-
1BC	1BC7	54608#1	689	MEGA08	Y	-	-	-	-	-	Y	-
1BC	1BC8	54609#2	608	MEGA08	Y	-	-	-	-	-	Y	-
1BC	1BC9	54611#1	499	MEGA08	Y	-	-	-	-	-	Y	-
1BC	1BC10	54612#1	398	MEGA06	Y	Y	-	-	-	-	Y	-
1BC	1BC11	54613#1	300	MEGA06	Y	Y	-	-	-	-	Y	-
1BC	1BC12	54614#4	196	BOX CORE	Y	-	-	-	-	-	-	-
2	2A1	54548#3	619	MEGA08	Y	-	-	-	-	-	-	-
2	2B1	54549#1	748	MEGA08	Y	-	-	-	-	-	-	-
2	2B1	54555#1	748	BGS CORE	2.4 m	-	-	-	-	-	-	-
2	2B2	54554#2	914	MEGA08	Y	Y	-	-	-	-	-	-
2	2B3	54553#1	1070	MEGA08	Y	-	-	-	-	-	-	-
2	2C1	54550#2	753	MEGA08	Y	-	-	-	-	-	-	-

10.3 Sample catalogue - other samples

SURVEY	SITE	STATION	DEPTH	GEAR	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC
2	2T	54552#2	1075	MEGA08	Y	Y	-	-	-	-	-	-
2	2T	54552#3	1073	BGS CORE	2.6 m	-	-	-	-	-	-	-
3A	3AA1	54518#3	1006	MEGA10	Y	Y	-	-	-	-	-	-
3A	3AA2	54521#1	1006	MEGA10	Y	-	-	-	-	-	-	-
3A	3AB1	54525#1	1387	MEGA10	Y	-	-	-	-	-	-	-
3A	3AB2	54519#1	1175	MEGA10	Y	-	-	-	-	-	-	-
3A	3AB3	54522#1	1174	MEGA10	Y	-	-	-	-	-	-	-
3A	3AB3	54522#2	1170	MEGA10	Y (>10cm)	-	-	-	-	-	-	-
3A	3AB4	54524#2	1393	MEGA10	Y	-	-	-	-	-	-	-
3A	3AB4	54524#3	1380	MEGA10	Y	Y	-	-	-	-	-	-
3A	3AB5	54523#1	1367	MEGA10	Y	-	-	-	-	-	-	-
3A	3AC1	54517#1	1579	MEGA10	Y	Y	-	-	-	-	-	-
3A	3AC2	54526#1	1527	MEGA10	Y	Y	-	-	-	-	-	-
3A	3AC3	54516#1	1601	MEGA10	Y	Y	-	-	-	-	-	-
3A	3AC4	54515#1	1633	MEGA12	Y	-	-	-	-	-	-	-
3A	3AC5	54513#1	1629	MEGA09	Y	Y	-	-	-	-	-	-
3A	3AD1	54512#2	1727	MEGA10	Y	-	-	-	-	-	-	-
3A	3AD1	54514#1	1726	BGS CORE	2.6 m	-	-	-	-	-	-	-
3B	3BA350	54507#2	377	BOX CORE	Y	-	-	-	-	-	-	-
3B	3BA450	54506#1	440	BOX CORE	Y	-	-	-	-	-	-	-
3B	3BA500	54505#1	500	MEGA10	gravel	-	-	-	-	-	-	-
3B	3BA500	54505#2	500	BOX CORE	Y	-	-	-	-	-	-	-
3B	3BA650	54504#2	630	MEGA08	Y	-	-	-	-	-	-	-
3B	3BA800	54503#1	753	MEGA10	Y	-	-	-	-	-	-	-
3B	3BA800	54508#1	893	BN1.5/P	-	-	-	-	-	-	-	Umbellula
3B	3BA800	54511#1	754	BGS CORE	2.1 m	-	-	-	-	-	-	-
3B	3BA1000	54502#1	1011	MEGA08	Y	-	-	-	-	-	-	-
3B	3BB900	54509#1	901	MEGA10	Y	-	-	-	-	-	-	-
3B	3BB900	54509#2	901	MEGA10	-	Y	-	-	-	-	-	-

10.3 Sample catalogue - other samples

SURVEY	SITE	STATION	DEPTH	GEAR	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC
3B	3BC800	54510#1	796	MEGA10	Y	Y	-	-	-	-	-	-
3B	3BC800	54510#3	795	BGS CORE	2.8 m	-	-	-	-	-	-	-
Transect	Tr350	54531#1	341	MEGA04	-	Y	-	-	-	Y	Y	-
Transect	L5	54532#1	406	MEGA04	-	Y	-	-	-	Y	Y	-
Transect	Tr450	54533#2	443	MEGA04	-	Y	-	-	-	Y	-	-
Transect	Tr450	54533#1	450	MEGA04	-	-	-	-	-	Y	Y	-
Transect	L4	54534#1	491	MEGA04	-	Y	-	-	-	Y	Y	-
Transect	L4	54538#2	499	BOX CORE	Y	-	-	-	-	-	-	sponge remains
Transect	Tr550	54539#1	539	MEGA10	-	Y	-	-	-	Y	Y	-
Transect	Tr600	54540#1	588	MEGA10	description	Y	-	-	-	2xY	Y	-
Transect	Tr650	54541#2	636	MEGA10	Y	Y	-	-	-	Y	Y	-
Transect	Tr650	54546#1	641	BGS CORE	2.1 m	-	-	-	-	-	-	-
Transect	S2	54542#2	695	MEGA10	Y	Y	-	-	-	Y	Y	-
Transect	Tr800	54543#2	787	MEGA08	Y	Y	-	-	-	Y	Y	-
Transect	Tr900	54544#2	912	MEGA08	Y	Y	-	-	-	Y	Y	-
Transect	Tr1000	54545#2	969	MEGA08	Y	Y	-	-	-	Y	Y	-

10.4 Sample catalogue - photographic material

SURVEY	SITE	STATION	DEPTH	GEAR	VIDEO	FILM
0	300m	54589#1	298	WASP	60 mins	15 m colour
0	SITE1.5	54581#1	1247	WASP	60 mins	-
0	SITE2.5	54579#3	1790	WASP	8 mins	-
0	SITE2.5	54584#1	1796	WASP	60 mins	15 m colour
0	SITE5	54585#4	1855	WASP	(60 mins)	-
1A	1AASLED	54593#1	1824	BN1.5/P	60 mins	15 m colour
1A	1ABWASP	54597#1	1884	WASP	60 mins	15 m colour
1BA	1BA5	54632#1	886	WASP	60 mins	15 m colour
1BA	1BA19	54627#2	1038	WASP	30 mins	10 m colour
1BA	BIOTARG	54630#1	896	WASP	60 mins	15 m colour
1BA	HALOPOC	54557#1	934	WASP	60 mins	15 m colour
1BA	MOUND	54565#1	962	WASP	60 mins	15 m colour
1BA	MOUND2	54569#1	974	WASP	60 mins	15 m colour
1BA	MOUND3	54574#1	961	WASP	60 mins	15 m colour
1BA	POCKS	54628#1	979	BN1.5/P	60 mins	15 m colour
1BB	1BBWASP	54617#1	475	WASP	-	15 m colour
1BB	1BBWASP	54623#1	348	WASP	60 mins	11 m colour
1BC	1BCWASP	54610#1	383	WASP	60 mins	15 m colour
2	2AWASP	54547#1	580	WASP	2 mins	-
2	2AWASP	54556#1	563	WASP	60 mins	15 m colour
2	2TWASP	54551#1	1095	WASP	60 mins	15 m colour
3A	3AAWASP	54520#1	1062	WASP	60 mins	15 m colour
3A	3ABWASP	54524#1	1366	WASP	60 mins	5 m colour
3A	3AC2	54526#2	1532	WASP	(60 mins)	-
3B	3BA350	54501#1	382	WASP	60 mins	10 m B+W
3B	3BA800	54508#1	893	BN1.5/P	60 mins	5 m B+W

10.5 Sample catalogue - CTD data

SURVEY	SITE	STATION	DEPTH	GEAR	DATA
1BA	1BA11	54570#1	954	M04+CTD	CTD + transmissometer
1BA	1BA12	54571#1	946	M04+CTD	CTD + transmissometer
1BA	1BA13	54572#1	949	M04+CTD	CTD + transmissometer
1BA	1BA14	54573#1	946	M04+CTD	CTD + transmissometer
1BA	1BA15	54575#1	962	M06+CTD	CTD + transmissometer
1BA	1BA15	54575#2	962	M06+CTD	CTD + transmissometer

10.6 Sample catalogue - summary by tranche

LOCATION		PRIMARY SAMPLES				ADDITIONAL SAMPLES					OTHER SAMPLES								OTHER MATERIAL		
TRANCHE	SITE	HC	HM	PS	MAC	HC	HM	PS	MAC	QMAC	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC	VID	FILM	CTD
204/14	2TWASP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
204/14	2B3	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
204/14	2T	Y	Y	Y	Y	-	-	-	-	-	2xY	Y	-	-	-	-	-	-	-	-	-
204/15	2A1	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
204/15	2B2	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
204/15	2AWASP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
204/15	2B1	Y	Y	Y	Y	-	-	-	-	-	2xY	-	-	-	-	-	-	-	-	-	-
204/15	2C1	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
Tr	L4	-	-	-	Y	-	-	-	2xY	3xY	Y	Y	-	-	-	Y	Y	Y	-	-	-
Tr	Tr800	-	-	-	Y	-	-	-	-	-	Y	Y	-	-	-	Y	Y	-	-	-	-
Tr	Tr1000	-	-	-	Y	-	-	-	-	-	Y	Y	-	-	-	Y	Y	-	-	-	-
Tr	Tr900	-	-	-	Y	-	-	-	-	-	Y	Y	-	-	-	Y	Y	-	-	-	-
Tr	S2	-	-	-	Y	-	-	-	-	-	Y	Y	-	-	-	Y	Y	-	-	-	-
Tr	Tr650	-	-	-	Y	-	-	-	-	-	2xY	Y	-	-	-	Y	Y	-	-	-	-
Tr	Tr250	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tr	B5	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tr	Tr600	-	-	-	Y	-	-	-	-	-	Y	Y	-	-	-	2xY	Y	-	-	-	-
Tr	Tr200	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tr	Tr300	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tr	L5	-	-	-	Y	-	-	-	-	-	-	Y	-	-	-	Y	Y	-	-	-	-
Tr	Tr450	-	-	-	Y	-	-	-	Y	-	-	Y	-	-	-	2xY	Y	-	-	-	-
Tr	Tr350	-	-	-	Y	-	-	-	-	Y	-	Y	-	-	-	Y	Y	-	-	-	-
Tr	Tr550	-	-	-	Y	-	-	-	-	-	-	Y	-	-	-	Y	Y	-	-	-	-

10.6 Sample catalogue - summary by tranche

LOCATION		PRIMARY SAMPLES				ADDITIONAL SAMPLES					OTHER SAMPLES								OTHER MATERIAL		
TRANCHE	SITE	HC	HM	PS	MAC	HC	HM	PS	MAC	QMAC	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC	VID	FILM	CTD
19	800m	Y	Y	Y	Y	-	-	-	Y	-	2xY	Y	-	-	-	-	-	Y	-	-	-
19	1500m	Y	Y	Y	Y	-	-	-	Y	-	Y	2xY	-	-	-	-	-	Y	-	-	-
19	300m	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	Y	Y	-
21	SITE2.5	Y	Y	Y	Y	-	-	-	Y	-	Y	Y	-	-	-	-	-	-	Y	Y	-
21	SITE5	Y	Y	Y	Y	-	-	-	Y	-	2xY	2xY	-	Y	-	-	-	-	(Y)	-	-
nr21	SITE3	Y	Y	Y	Y	-	-	-	2xY	-	2xY	-	-	-	-	-	-	Y	-	-	-
22	SITE2	Y	Y	Y	Y	-	-	-	Y	-	Y	Y	-	Y	-	-	-	-	-	-	-
22	SITE1.5	Y	Y	Y	Y	-	-	-	Y	-	2xY	2xY	-	-	-	-	-	-	Y	-	-
22	SITE1	Y	Y	Y	Y	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-
22	SITE4	Y	Y	Y	-	-	-	-	-	-	2xY	-	-	-	-	-	-	-	-	-	-
30	1AB1	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
30	1ABWASP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
30	1AA5	Y	Y	Y	Y	-	-	-	-	-	2xY	Y	-	-	-	-	-	-	-	-	-
30	1AB2	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
30	1AASLED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
30	1AA1	Y	Y	Y	Y	Y	-	-	-	-	Y	Y	-	2xY	Y	-	-	-	-	-	-
30	1AB3	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
30	1AA2	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
30	1AA4	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	Y	-	-	-	-	-	-	-
30	1AA3	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-

10.6 Sample catalogue - summary by tranche

LOCATION		PRIMARY SAMPLES				ADDITIONAL SAMPLES				OTHER SAMPLES									OTHER MATERIAL		
TRANCHE	SITE	HC	HM	PS	MAC	HC	HM	PS	MAC	QMAC	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC	VID	FILM	CTD
36	1BC1	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
37	1BC2	Y	Y	Y	Y	-	-	-	Y	-	2xY	-	-	Y	-	-	Y	-	-	-	-
38	1BC4	Y	Y	Y	Y	-	-	-	Y	-	Y	Y	-	-	-	-	Y	-	-	-	-
38	1BC9	Y	Y	Y	Y	-	-	-	Y	-	Y	-	-	-	-	-	Y	-	-	-	-
38	1BCWASP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
38	1BC10	Y	Y	Y	Y	-	-	-	Y	-	Y	Y	-	-	-	-	Y	-	-	-	-
38	1BC12	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
38	1BC3	Y	Y	Y	Y	-	-	-	2xY	-	Y	Y	-	Y	-	-	Y	-	-	-	-
38	1BC7	Y	Y	Y	Y	-	-	-	Y	-	Y	-	-	-	-	-	Y	-	-	-	-
38	1BC11	Y	Y	Y	Y	-	-	-	Y	-	Y	Y	-	-	-	-	Y	-	-	-	-
38	1BC6	Y	Y	Y	Y	-	-	-	Y	-	Y	-	-	-	-	-	Y	-	-	-	-
38	1BC5	5xY	5xY	5xY	5xY	5xY	5xY	5xY	4xY	-	Y	-	-	-	-	-	-	-	-	-	-
38	1BC8	Y	Y	Y	Y	-	-	-	Y	-	Y	-	-	-	-	-	Y	-	-	-	-
43	1BB7	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
44	1BB6	Y	Y	Y	-	-	-	-	-	-	Y	-	-	-	-	-	-	2xY	-	-	-
44	1BB2	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
44	1BBWASP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	2xY	-
44	1BB5	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
44	1BB3	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
44	1BB1	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
44	1BB4	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-

10.6 Sample catalogue - summary by tranche

LOCATION		PRIMARY SAMPLES				ADDITIONAL SAMPLES					OTHER SAMPLES								OTHER MATERIAL		
TRANCHE	SITE	HC	HM	PS	MAC	HC	HM	PS	MAC	QMAC	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC	VID	FILM	CTD
48	1BA18	Y	Y	Y	Y	-	-	-	-	-	2xY	-	-	-	-	-	-	3xY	-	-	-
48	1BA17	Y	Y	Y	Y	-	-	-	-	Y	2xY	-	-	-	-	-	-	2xY	-	-	-
52	1BA20	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
52	POCKS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
52	1BA4	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
52	1BA5	Y	Y	Y	Y	-	-	-	Y	Y	3xY	Y	2xY	-	-	-	-	Y	Y	Y	-
52	1BA3	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
52	BIOTARG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
52	1BA1	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
52	1BA2	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	Y	Y	-	2xY	-	-	-	-
52	1BA15	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	2xY
53	1BA6	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	Y	Y	-	-	Y	-	-	-
53	1BA7	-	-	-	-	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
53	1BA9	Y	Y	Y	Y	-	-	-	-	-	2xY	-	-	Y	-	-	-	Y	-	-	-
53	1BA14	-	-	-	-	Y	Y	-	-	-	Y	Y	-	-	-	-	-	-	-	-	Y
53	MOUND2	-	-	-	-	-	-	-	-	-	Y	-	-	-	-	-	-	-	Y	Y	-
53	1BA10	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
53	1BA12	-	-	-	-	Y	Y	-	-	-	Y	Y	-	-	-	-	-	-	-	-	Y
53	MOUND	-	-	-	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	Y	Y	-
53	NETSLED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2xY	-	-	-
53	1BA13	-	-	-	-	Y	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	Y

10.6 Sample catalogue - summary by tranche

LOCATION		PRIMARY SAMPLES				ADDITIONAL SAMPLES					OTHER SAMPLES								OTHER MATERIAL		
TRANCHE	SITE	HC	HM	PS	MAC	HC	HM	PS	MAC	QMAC	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC	VID	FILM	CTD
53	1BA19	Y	Y	Y	Y	-	-	-	-	-	2xY	-	-	-	-	-	-	-	Y	Y	-
53	1BA11	-	-	-	-	Y	Y	-	-	-	Y	Y	-	Y	-	-	-	-	-	-	Y
53	1BA16	Y	Y	Y	Y	-	-	-	Y	-	Y	-	-	-	-	-	-	-	-	-	-
53	HALOPOC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
53	MOUND3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
nr53	1BA8	Y	Y	Y	Y	-	-	-	-	-	2xY	-	-	-	-	-	-	-	-	-	-
60	3AC1	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
61	3AC2	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	(Y)	-	-
61	3AC3	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
62	3ABWASP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
62	3AB2	Y	Y	Y	Y	-	-	-	Y	-	Y	-	-	-	-	-	-	-	-	-	-
62	3AA1	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
62	3AB5	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
62	3AB4	Y	Y	Y	Y	-	-	-	-	-	2xY	Y	-	-	-	-	-	-	-	-	-
62	3AAWASP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
62	3AB1	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
62	3AA2	Y	Y	Y	Y	-	Y	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
62	3AB3	Y	Y	Y	Y	-	-	-	-	-	2xY	-	-	-	-	-	-	-	-	-	-

10.6 Sample catalogue - summary by tranche

LOCATION		PRIMARY SAMPLES				ADDITIONAL SAMPLES					OTHER SAMPLES								OTHER MATERIAL		
TRANCHE	SITE	HC	HM	PS	MAC	HC	HM	PS	MAC	QMAC	GEOL	FROZ	CLN	F-20	FF	MEIOB	SD O	SPEC	VID	FILM	CTD
63	3AC4	Y	Y	Y	Y	-	-	-	Y	-	Y	-	-	-	-	-	-	-	-	-	-
63	3AD1	Y	Y	Y	Y	-	-	-	-	-	2xY	-	-	-	-	-	-	-	-	-	-
63	3AC5	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
65	3BB900	Y	Y	Y	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-
65	3BA1000	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
65	3BC800	Y	Y	Y	Y	-	-	-	-	-	2xY	Y	-	-	-	-	-	-	-	-	-
66	3BA650	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
66	3BA800	Y	Y	Y	Y	-	-	-	-	-	2xY	-	-	-	-	-	-	Y	Y	Y	-
67	3BA350	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	Y	Y	-
67	3BA450	Y	Y	Y	Y	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
67	3BA500	Y	Y	Y	Y	-	-	-	-	-	2xY	-	-	-	-	-	-	-	-	-	-

11 STATION LIST

11.1 Station data

The following listing details basic station information and the primary survey samples collected. Further information is given in section 11.2 which provides a comment on each deployment and lists other samples collected.

Station Station and series number. The first five digits are the station number which is separated from the series number by the hash (#) mark. The station number increments by one each time the vessel locates to another nominal site, regardless of whether that site has been sampled previously. The series number increments by one for each deployment made at a station.

Site Site name. The site name identifies a particular nominal survey location. Site names are unique within the cruise but do not uniquely identify particular deployments.

Date Date on which deployment was made (note that towed gear deployments may span two dates).

Time The time or times given relate to sample / data collection. In the case of cores and grabs the time given is that of bottom contact. In the case of towed gears (WASP and epibenthic sledge) the times reflect the duration of near- or on-bottom operations. All times given are UTC / GMT.

Depth Depth or depths given relate to sample / data collection. In the case of cores and grabs the depth given is that below the vessel at the time of bottom contact. In the case of towed gears (WASP and epibenthic sledge) the depths reflect the range covered during the time of near- or on-bottoms operations. For WASP these are the range of depths covered below the vessel between the times given. For the epibenthic sledge these are the range of depths covered by the gear as estimated by back calculation of the sledge's position. All depths given are in corrected metres.

Sounding Mean sounding. In the case of cores and grabs the mean sounding given is the same as depth. However, in the case of towed gears (WASP and epibenthic sledge) the mean sounding is the average depth covered during the times given (below the vessel in the case of WASP or back calculated to the gear in the case of the epibenthic sledge). All soundings given are in corrected metres.

Gear Gear deployed.

BGS CORE	British Geological Survey gravity corer
BN1.5/C	Epibenthic sledge with single coarse mesh net fitted
BN1.5/P	Epibenthic sledge with video and still cameras fitted
BOX CORE	USNEL-type spade box corer
DAY GRAB	Standard Day grab
M0x+CTD	Megacorer with x=4 or 6 core units, a Seabird Conductivity, Temperature and Depth probe and transmissometer fitted.

MEGAxx	Megacorer with xx=04 to 12 core units fitted.
WASP	Wide-Angle Seabed Photography vehicle with video and still cameras fitted.

Position Sample position / track. In the case of cores and grabs the position given is that of the vessel at the time of bottom contact. In the case of towed gears (WASP and epibenthic sledge) the positions given are the start and end points of the track of near- or on-bottoms operations. For WASP these are the positions of the vessel between the times given. For the epibenthic sledge these are the positions of the gear estimated by back calculation. Note that towed gears do not follow a linear track between the start and end positions given, consult the corresponding deployment track chart in section 12 for details of individual tows. All positions are given in degrees and decimal minutes based on the WGS84 datum.

HC Hydrocarbon. Y = sample for hydrocarbon analysis collected (- = no sample collected).

HM Heavy metals. Y = sample for elemental analysis collected (- = no sample collected).

PS Particle size. Y = sample for particle size analysis collected (- = no sample collected).

Macrob Macrobenthos. x.xxx m2 = sample of surface area x.xxx m^2 collected for analysis of macrobenthos (- = no sample collected).

Oth Other samples. Y = sample of another type collected, see section 11.2 for details, (- = no sample collected).

Station	Site	Date	Time	Depth	Sound	Gear	Position			HC	HM	PS	Macrob	Oth
54501#1	3BA350	22/05/98	14:24	374	382	WASP	62 02.13N	000 18.97E		-	-	-	-	Y
		22/05/98	15:25	386			62 02.06N	000 18.99E						
54502#1	3BA1000	22/05/98	23:04	1011	1011	MEGA08	62 25.07N	000 07.93E		Y	Y	Y	-	Y
54502#2	3BA1000	23/05/98	00:57	1018	1018	MEGA10	62 25.42N	000 07.33E		-	-	-	0.063 m2	-
54503#1	3BA800	23/05/98	03:26	753	753	MEGA10	62 15.71N	000 12.10E		-	-	-	0.063 m2	Y
54503#2	3BA800	23/05/98	05:10	755	755	MEGA08	62 15.75N	000 12.12E		Y	Y	Y	-	-
54504#1	3BA650	23/05/98	07:09	628	628	MEGA08	62 11.35N	000 14.76E		-	-	-	-	-
54504#2	3BA650	23/05/98	08:19	630	630	MEGA08	62 11.42N	000 14.79E		Y	Y	Y	0.016 m2	Y
54504#3	3BA650	23/05/98	09:50	625	625	MEGA10	62 11.27N	000 14.36E		-	-	-	0.047 m2	-
54505#1	3BA500	23/05/98	11:48	500	500	MEGA10	62 06.54N	000 16.74E		-	-	-	-	Y
54505#2	3BA500	23/05/98	12:45	500	500	BOX CORE	62 06.57N	000 16.89E		Y	Y	Y	0.100 m2	Y
54506#1	3BA450	23/05/98	14:28	440	440	BOX CORE	62 04.36N	000 17.78E		Y	Y	Y	0.100 m2	Y
54507#1	3BA350	23/05/98	16:24	377	377	BOX CORE	62 01.84N	000 18.76E		-	-	-	-	-
54507#2	3BA350	23/05/98	17:12	377	377	BOX CORE	62 01.83N	000 18.67E		Y	Y	Y	0.100 m2	Y
54508#1	3BA800	23/05/98	20:50	830	893	BN1.5/P	62 17.20N	000 12.30E		-	-	-	-	Y
		23/05/98	22:31	940			62 19.56N	000 09.92E						
54509#1	3BB900	24/05/98	01:37	901	901	MEGA10	62 28.44N	000 22.73E		Y	Y	Y	-	Y
54509#2	3BB900	24/05/98	03:07	901	901	MEGA10	62 28.38N	000 22.95E		-	-	-	0.063 m2	Y
54510#1	3BC800	24/05/98	05:30	796	796	MEGA10	62 23.56N	000 31.82E		Y	Y	Y	-	Y
54510#2	3BC800	24/05/98	06:57	796	796	MEGA10	62 23.52N	000 31.87E		-	-	-	0.063 m2	-
54510#3	3BC800	24/05/98	08:41	795	795	BGS CORE	62 23.49N	000 31.83E		-	-	-	-	Y
54511#1	3BA800	24/05/98	11:18	754	754	BGS CORE	62 15.71N	000 12.02E		-	-	-	-	Y
54512#1	3AD1	24/05/98	19:07	1727	1727	MEGA10	62 28.47N	001 57.00W		-	-	-	-	-
54512#2	3AD1	24/05/98	21:17	1727	1727	MEGA10	62 28.79N	001 57.35W		-	-	-	0.063 m2	Y
54512#3	3AD1	25/05/98	00:10	1727	1727	MEGA09	62 28.71N	001 57.36W		Y	Y	Y	-	-
54513#1	3AC5	25/05/98	04:11	1629	1629	MEGA09	62 12.64N	001 41.93W		Y	Y	Y	-	Y

Station	Site	Date	Time	Depth	Sound	Gear	Position			HC	HM	PS	Macrob	Oth
54513#2	3AC5	25/05/98	07:52	1629	1629	MEGA09	62 12.63N	001 41.39W		-	-	-	0.063 m2	-
54514#1	3AD1	25/05/98	12:43	1726	1726	BGS CORE	62 28.92N	001 57.89W		-	-	-	-	Y
54515#1	3AC4	25/05/98	16:24	1633	1633	MEGA12	62 11.91N	001 46.72W		Y	Y	Y	-	Y
54515#2	3AC4	25/05/98	18:26	1637	1637	MEGA10	62 12.27N	001 46.85W		-	-	-	-	-
54515#3	3AC4	25/05/98	20:13	1636	1636	MEGA10	62 12.38N	001 46.01W		-	-	-	0.055 m2	-
54516#1	3AC3	26/05/98	01:02	1601	1601	MEGA10	61 54.01N	002 18.55W		Y	Y	Y	0.008 m2	Y
54516#2	3AC3	26/05/98	03:23	1601	1601	MEGA10	61 53.87N	002 18.70W		-	-	-	0.055 m2	-
54517#1	3AC1	26/05/98	07:26	1579	1579	MEGA10	61 47.50N	002 40.73W		Y	Y	Y	0.008 m2	Y
54517#2	3AC1	26/05/98	10:33	1582	1582	MEGA10	61 47.53N	002 39.42W		-	-	-	0.055 m2	-
54518#1	3AA1	27/05/98	09:52	978	978	MEGA10	61 43.13N	001 36.74W		-	-	-	0.063 m2	-
54518#2	3AA1	27/05/98	11:42	997	997	MEGA10	61 43.10N	001 37.60W		-	-	-	-	-
54518#3	3AA1	27/05/98	13:11	1006	1006	MEGA10	61 43.26N	001 37.65W		Y	Y	Y	-	Y
54519#1	3AB2	27/05/98	15:09	1175	1175	MEGA10	61 44.23N	001 41.12W		Y	Y	Y	-	Y
54519#2	3AB2	27/05/98	16:41	1180	1180	MEGA11	61 44.17N	001 41.39W		-	-	-	-	-
54519#3	3AB2	27/05/98	18:15	1192	1192	MEGA11	61 44.40N	001 41.56W		-	-	-	0.063 m2	-
54520#1	3AAWASP	27/05/98	22:00	1030	1062	WASP	61 43.82N	001 37.42W		-	-	-	-	Y
		27/05/98	23:37	1102			61 44.23N	001 39.12W						
54521#1	3AA2	28/05/98	01:12	1006	1006	MEGA10	61 43.93N	001 36.94W		Y	Y	Y	0.016 m2	Y
54521#2	3AA2	28/05/98	02:47	1042	1042	MEGA10	61 43.96N	001 37.46W		-	-	-	-	-
54521#3	3AA2	28/05/98	04:01	1022	1022	MEGA10	61 43.87N	001 37.28W		-	-	-	0.047 m2	-
54522#1	3AB3	28/05/98	05:56	1174	1174	MEGA10	61 45.52N	001 39.68W		Y	Y	Y	0.016 m2	Y
54522#2	3AB3	28/05/98	07:33	1170	1170	MEGA10	61 45.25N	001 39.82W		-	-	-	0.047 m2	Y
54523#1	3AB5	28/05/98	09:56	1367	1367	MEGA10	61 51.50N	001 41.89W		Y	Y	Y	0.008 m2	Y
54523#2	3AB5	28/05/98	11:54	1359	1359	MEGA10	61 51.47N	001 41.60W		-	-	-	0.047 m2	-
54524#1	3ABWASP	28/05/98	14:17	1353	1366	WASP	61 46.11N	001 47.72W		-	-	-	-	Y
		28/05/98	15:25	1375			61 46.14N	001 46.87W						

Station	Site	Date	Time	Depth	Sound	Gear	Position		HC	HM	PS	Macrob	Oth
54524#2	3AB4	28/05/98	17:15	1393	1393	MEGA10	61 45.95N	001 48.81W	-	-	-	0.063 m2	Y
54524#3	3AB4	28/05/98	18:53	1380	1380	MEGA10	61 46.20N	001 47.81W	Y	Y	Y	-	Y
54525#1	3AB1	28/05/98	21:32	1387	1387	MEGA10	61 42.26N	001 53.90W	Y	Y	Y	0.008 m2	Y
54525#2	3AB1	28/05/98	23:17	1384	1384	MEGA10	61 42.20N	001 53.73W	-	-	-	0.055 m2	-
54526#1	3AC2	29/05/98	02:12	1527	1527	MEGA10	61 51.00N	002 02.71W	Y	Y	Y	0.008 m2	Y
54526#2	3AC2	29/05/98	04:25	1532	1532	WASP	61 50.38N	002 04.38W	-	-	-	-	Y
54526#3	3AC2	29/05/98	06:55	1531	1531	MEGA10	61 51.06N	002 03.45W	-	-	-	0.055 m2	-
54527#1	B5	29/05/98	14:44	129	129	DAY GRAB	60 49.45N	002 20.02W	-	-	-	-	-
54527#2	B5	29/05/98	14:56	128	128	DAY GRAB	60 49.42N	002 20.03W	-	-	-	-	-
54527#3	B5	29/05/98	15:07	126	126	DAY GRAB	60 49.36N	002 20.01W	-	-	-	0.100 m2	-
54528#1	Tr200	29/05/98	15:56	198	198	DAY GRAB	60 52.42N	002 19.49W	-	-	-	-	-
54528#2	Tr200	29/05/98	16:13	196	196	DAY GRAB	60 52.36N	002 19.56W	-	-	-	-	-
54528#3	Tr200	29/05/98	16:30	198	198	DAY GRAB	60 52.44N	002 19.54W	-	-	-	-	-
54528#4	Tr200	29/05/98	16:48	201	201	DAY GRAB	60 52.47N	002 19.69W	-	-	-	-	-
54528#5	Tr200	29/05/98	17:10	201	201	DAY GRAB	60 52.45N	002 19.74W	-	-	-	-	-
54528#6	Tr200	29/05/98	17:36	194	194	DAY GRAB	60 52.30N	002 19.56W	-	-	-	0.100 m2	-
54529#1	Tr250	29/05/98	18:12	243	243	DAY GRAB	60 53.25N	002 20.60W	-	-	-	-	-
54529#2	Tr250	29/05/98	18:31	246	246	DAY GRAB	60 53.30N	002 20.62W	-	-	-	-	-
54529#3	Tr250	29/05/98	18:48	247	247	DAY GRAB	60 53.35N	002 20.68W	-	-	-	-	-
54529#4	Tr250	29/05/98	19:07	249	249	DAY GRAB	60 53.39N	002 20.71W	-	-	-	-	-
54529#5	Tr250	29/05/98	19:35	244	244	DAY GRAB	60 53.20N	002 21.00W	-	-	-	-	-
54529#6	Tr250	29/05/98	19:53	252	252	DAY GRAB	60 53.36N	002 20.88W	-	-	-	-	-
54529#7	Tr250	29/05/98	20:36	227	227	DAY GRAB	60 53.03N	002 20.59W	-	-	-	-	-
54529#8	Tr250	29/05/98	21:13	241	241	DAY GRAB	60 53.17N	002 20.72W	-	-	-	0.100 m2	Y
54530#1	Tr300	29/05/98	21:56	282	282	DAY GRAB	60 53.86N	002 21.81W	-	-	-	-	-
54530#2	Tr300	29/05/98	22:13	281	281	DAY GRAB	60 53.88N	002 21.70W	-	-	-	-	-

Station	Site	Date	Time	Depth	Sound	Gear	Position		HC	HM	PS	Macrob	Oth
54530#3	Tr300	29/05/98	22:41	284	284	DAY GRAB	60 53.90N	002 21.88W	-	-	-	0.100 m2	-
54530#4	Tr300	29/05/98	23:17	283	283	DAY GRAB	60 53.95N	002 21.66W	-	-	-	0.100 m2	-
54531#1	Tr350	30/05/98	00:44	341	341	MEGA04	60 55.80N	002 23.32W	-	-	-	-	Y
54532#1	L5	30/05/98	02:13	406	406	MEGA04	60 57.89N	002 24.37W	-	-	-	-	Y
54533#1	Tr450	30/05/98	03:21	450	450	MEGA04	60 58.57N	002 27.94W	-	-	-	-	Y
54533#2	Tr450	30/05/98	04:34	443	443	MEGA04	60 58.45N	002 27.82W	-	-	-	-	Y
54534#1	L4	30/05/98	05:41	491	491	MEGA04	60 59.56N	002 28.99W	-	-	-	-	Y
54535#1	Tr350	30/05/98	06:58	341	341	BOX CORE	60 55.64N	002 24.11W	-	-	-	0.100 m2	Y
54536#1	L5	30/05/98	08:59	403	403	BOX CORE	60 57.66N	002 24.88W	-	-	-	0.100 m2	Y
54537#1	Tr450	30/05/98	10:15	446	446	BOX CORE	60 58.54N	002 27.75W	-	-	-	0.100 m2	Y
54538#1	L4	30/05/98	11:30	493	493	BOX CORE	60 59.58N	002 29.01W	-	-	-	-	Y
54538#2	L4	30/05/98	12:44	499	499	BOX CORE	60 59.87N	002 28.88W	-	-	-	-	Y
54538#3	L4	30/05/98	13:58	492	492	BOX CORE	60 59.53N	002 28.99W	-	-	-	-	Y
54538#4	L4	30/05/98	15:08	492	492	BOX CORE	60 59.43N	002 29.21W	-	-	-	0.100 m2	Y
54539#1	Tr550	30/05/98	16:47	539	539	MEGA10	61 01.21N	002 30.82W	-	-	-	0.039 m2	Y
54539#2	Tr550	30/05/98	17:50	539	539	MEGA10	61 00.96N	002 31.52W	-	-	-	0.024 m2	-
54540#1	Tr600	30/05/98	19:02	588	588	MEGA10	61 02.74N	002 33.89W	-	-	-	0.008 m2	Y
54540#2	Tr600	30/05/98	20:07	590	590	MEGA10	61 02.93N	002 34.09W	-	-	-	0.055 m2	-
54541#1	Tr650	30/05/98	21:17	638	638	MEGA10	61 04.49N	002 36.81W	-	-	-	0.063 m2	-
54541#2	Tr650	30/05/98	22:16	636	636	MEGA10	61 04.48N	002 36.74W	-	-	-	-	Y
54542#1	S2	30/05/98	23:38	695	695	MEGA10	61 05.54N	002 40.96W	-	-	-	0.063 m2	-
54542#2	S2	31/05/98	00:57	695	695	MEGA10	61 05.54N	002 40.95W	-	-	-	-	Y
54543#1	Tr800	31/05/98	02:34	790	790	MEGA10	61 08.11N	002 41.67W	-	-	-	0.063 m2	-
54543#2	Tr800	31/05/98	03:59	787	787	MEGA08	61 08.05N	002 41.75W	-	-	-	-	Y
54544#1	Tr900	31/05/98	05:32	918	918	MEGA08	61 09.75N	002 44.49W	-	-	-	0.063 m2	-
54544#2	Tr900	31/05/98	06:55	912	912	MEGA08	61 09.61N	002 44.48W	-	-	-	-	Y

Station	Site	Date	Time	Depth	Sound	Gear	Position			HC	HM	PS	Macrob	Oth
54545#1	Tr1000	31/05/98	08:30	985	985	MEGA08	61 10.49N	002 45.94W		-	-	-	0.063 m2	-
54545#2	Tr1000	31/05/98	09:52	969	969	MEGA08	61 10.37N	002 45.25W		-	-	-	-	Y
54546#1	Tr650	31/05/98	11:59	641	641	BGS CORE	61 04.64N	002 36.74W		-	-	-	-	Y
54547#1	2AWASP	31/05/98	20:18	559	580	WASP	60 30.91N	004 00.45W		-	-	-	-	Y
		31/05/98	21:25	600			60 32.43N	003 58.85W						
54548#1	2A1	01/06/98	00:06	614	614	BOX CORE	60 31.84N	004 01.65W		-	-	-	-	-
54548#2	2A1	01/06/98	01:43	615	615	MEGA08	60 31.78N	004 01.94W		-	-	-	0.063 m2	-
54548#3	2A1	01/06/98	03:34	619	619	MEGA08	60 31.84N	004 02.03W		Y	Y	Y	-	Y
54549#1	2B1	01/06/98	05:49	748	748	MEGA08	60 32.52N	004 10.85W		Y	Y	Y	0.024 m2	Y
54549#2	2B1	01/06/98	07:26	750	750	MEGA08	60 32.42N	004 11.14W		-	-	-	0.039 m2	-
54550#1	2C1	01/06/98	09:37	752	752	MEGA08	60 35.49N	004 06.01W		-	-	-	-	-
54550#2	2C1	01/06/98	10:42	753	753	MEGA08	60 35.48N	004 06.10W		Y	Y	Y	-	Y
54550#3	2C1	01/06/98	12:03	755	755	MEGA08	60 35.51N	004 06.17W		-	-	-	0.063 m2	-
54551#1	2TWASP	01/06/98	16:17	1092	1095	WASP	60 35.63N	004 23.18W		-	-	-	-	Y
		01/06/98	17:50	1100			60 36.65N	004 20.92W						
54552#1	2T	01/06/98	20:36	1074	1074	MEGA08	60 35.99N	004 22.34W		-	-	-	0.063 m2	-
54552#2	2T	01/06/98	21:58	1075	1075	MEGA08	60 36.04N	004 22.44W		Y	Y	Y	-	Y
54552#3	2T	01/06/98	23:59	1073	1073	BGS CORE	60 36.12N	004 21.95W		-	-	-	-	Y
54553#1	2B3	02/06/98	02:13	1070	1070	MEGA08	60 39.19N	004 19.36W		Y	Y	Y	-	Y
54553#2	2B3	02/06/98	03:51	1072	1072	MEGA08	60 39.26N	004 19.95W		-	-	-	0.063 m2	-
54554#1	2B2	02/06/98	05:51	914	914	MEGA08	60 38.08N	004 10.32W		-	-	-	-	-
54554#2	2B2	02/06/98	07:10	914	914	MEGA08	60 38.00N	004 10.44W		Y	Y	Y	0.008 m2	Y
54554#3	2B2	02/06/98	08:41	919	919	MEGA08	60 37.88N	004 10.86W		-	-	-	0.055 m2	-
54555#1	2B1	02/06/98	10:57	748	748	BGS CORE	60 32.51N	004 10.90W		-	-	-	-	Y
54556#1	2AWASP	02/06/98	13:16	548	563	WASP	60 30.11N	004 00.90W		-	-	-	-	Y
		02/06/98	14:59	581			60 31.12N	004 00.77W						

Station	Site	Date	Time	Depth	Sound	Gear	Position		HC	HM	PS	Macrob	Oth
54557#1	HALOPOC	03/06/98	10:13	930	934	WASP	59 48.25N	007 23.75W	-	-	-	-	Y
		03/06/98	12:00	937			59 49.39N	007 22.86W					
54558#1	1BA5	03/06/98	14:40	891	891	MEGA08	59 46.33N	007 28.90W	-	-	-	-	Y
54558#2	1BA5	03/06/98	15:54	892	892	MEGA04	59 46.48N	007 28.68W	Y	Y	Y	-	Y
54558#3	1BA5	03/06/98	17:05	896	896	MEGA06	59 46.35N	007 28.52W	-	-	-	-	-
54558#4	1BA5	03/06/98	18:18	896	896	MEGA04	59 46.40N	007 28.49W	-	-	-	-	-
54558#5	1BA5	03/06/98	19:30	890	890	BOX CORE	59 46.27N	007 28.90W	-	-	-	-	Y
54558#6	1BA5	03/06/98	20:49	896	896	MEGA04	59 46.13N	007 28.61W	-	-	-	-	-
54559#1	1BA4	03/06/98	22:14	797	797	MEGA08	59 47.86N	007 34.75W	-	-	-	0.063 m2	-
54559#2	1BA4	03/06/98	23:22	800	800	MEGA08	59 47.78N	007 34.70W	Y	Y	Y	-	Y
54560#1	1BA1	04/06/98	01:21	706	706	MEGA08	59 46.25N	007 51.67W	-	-	-	0.063 m2	-
54560#2	1BA1	04/06/98	02:27	705	705	MEGA08	59 46.41N	007 50.95W	Y	Y	Y	-	Y
54561#1	1BA2	04/06/98	04:05	797	797	MEGA08	59 40.63N	007 46.13W	-	-	-	0.063 m2	-
54561#2	1BA2	04/06/98	05:25	792	792	MEGA08	59 40.84N	007 46.24W	Y	Y	Y	-	Y
54562#1	1BA3	04/06/98	07:09	899	899	MEGA08	59 35.96N	007 41.93W	Y	Y	Y	0.008 m2	Y
54562#2	1BA3	04/06/98	08:35	898	898	MEGA08	59 36.00N	007 41.91W	-	-	-	-	-
54562#3	1BA3	04/06/98	09:37	895	895	MEGA08	59 36.14N	007 41.94W	-	-	-	0.055 m2	-
54563#1	1BA6	04/06/98	12:19	996	996	MEGA08	59 44.46N	007 21.21W	Y	Y	Y	-	Y
54563#2	1BA6	04/06/98	13:40	996	996	MEGA04	59 44.48N	007 21.19W	-	-	-	-	-
54563#3	1BA6	04/06/98	14:49	996	996	MEGA04	59 44.49N	007 21.19W	-	-	-	0.031 m2	Y
54563#4	1BA6	04/06/98	16:01	996	996	MEGA04	59 44.43N	007 21.14W	-	-	-	0.031 m2	-
54564#1	1BA7	04/06/98	19:03	936	936	MEGA04	59 48.28N	007 23.73W	-	-	-	-	Y
54565#1	MOUND	04/06/98	20:29	957	962	WASP	59 47.59N	007 22.27W	-	-	-	-	Y
		04/06/98	21:40	966			59 47.86N	007 22.40W					
54565#2	MOUND	04/06/98	23:13	960	960	BOX CORE	59 47.78N	007 22.33W	-	-	-	-	Y
54565#3	MOUND	05/06/98	00:45	956	956	BOX CORE	59 47.85N	007 22.54W	-	-	-	-	Y

Station	Site	Date	Time	Depth	Sound	Gear	Position		HC	HM	PS	Macrob	Oth
54566#1	1BA10	05/06/98	06:34	1095	1095	MEGA08	59 44.09N	007 01.66W	-	-	-	0.008 m2	-
54566#2	1BA10	05/06/98	07:59	1094	1094	MEGA08	59 44.13N	007 01.44W	Y	Y	Y	0.008 m2	Y
54566#3	1BA10	05/06/98	09:32	1092	1092	MEGA08	59 43.91N	007 01.54W	-	-	-	0.039 m2	-
54567#1	1BA9	05/06/98	11:37	994	994	MEGA08	59 47.84N	006 53.04W	-	-	-	-	Y
54567#2	1BA9	05/06/98	12:48	996	996	MEGA04	59 47.82N	006 53.13W	Y	Y	Y	-	Y
54567#3	1BA9	05/06/98	14:01	996	996	MEGA04	59 47.99N	006 53.22W	-	-	-	0.031 m2	-
54567#4	1BA9	05/06/98	15:11	996	996	MEGA04	59 47.96N	006 53.09W	-	-	-	0.031 m2	Y
54568#1	1BA8	05/06/98	16:55	896	896	MEGA06	59 50.30N	006 48.12W	Y	Y	Y	0.008 m2	Y
54568#2	1BA8	05/06/98	18:12	892	892	MEGA06	59 50.21N	006 47.71W	-	-	-	0.024 m2	Y
54568#3	1BA8	05/06/98	19:25	890	890	MEGA04	59 50.19N	006 47.66W	-	-	-	0.031 m2	-
54569#1	MOUND2	06/06/98	00:01	967	974	WASP	59 48.77N	007 20.80W	-	-	-	-	Y
		06/06/98	01:16	983			59 49.07N	007 19.44W					
54569#2	MOUND2	06/06/98	03:14	978	978	BGS CORE	59 49.00N	007 19.73W	-	-	-	-	-
54569#3	MOUND2	06/06/98	05:41	980	980	BGS CORE	59 49.11N	007 19.39W	-	-	-	-	-
54569#4	MOUND2	06/06/98	07:46	966	966	BGS CORE	59 48.90N	007 20.49W	-	-	-	-	Y
54570#1	1BA11	06/06/98	09:27	954	954	M04+CTD	59 48.96N	007 21.48W	Y	Y	-	-	Y
54571#1	1BA12	06/06/98	10:45	946	946	M04+CTD	59 49.23N	007 21.83W	Y	Y	-	-	Y
54572#1	1BA13	06/06/98	12:05	949	949	M04+CTD	59 49.41N	007 21.36W	Y	-	-	-	Y
54573#1	1BA14	06/06/98	13:29	946	946	M04+CTD	59 49.65N	007 21.19W	Y	Y	-	-	Y
54574#1	MOUND3	06/06/98	15:18	954	961	WASP	59 48.85N	007 21.65W	-	-	-	-	Y
		06/06/98	16:40	968			59 49.45N	007 20.05W					
54575#1	1BA15	06/06/98	20:06	962	962	M06+CTD	59 33.20N	007 34.72W	Y	Y	Y	0.016 m2	Y
54575#2	1BA15	06/06/98	21:34	962	962	M06+CTD	59 33.11N	007 35.13W	-	-	-	-	Y
54575#3	1BA15	06/06/98	23:08	964	964	MEGA06	59 32.98N	007 35.06W	-	-	-	0.047 m2	-
54576#1	1BA16	07/06/98	10:43	1034	1034	MEGA08	59 36.58N	007 12.33W	Y	Y	Y	0.031 m2	Y
54576#2	1BA16	08/06/98	08:13	1035	1035	MEGA08	59 37.11N	007 12.50W	-	-	-	0.055 m2	-

Station	Site	Date	Time	Depth	Sound	Gear	Position			HC	HM	PS	Macrob	Oth
54577#1	1BA17	08/06/98	13:37	1090	1090	MEGA08	59 26.44N	007 34.71W		Y	Y	Y	-	Y
54577#2	1BA17	08/06/98	15:03	1092	1092	MEGA08	59 26.51N	007 34.62W		-	-	-	-	-
54577#3	1BA17	08/06/98	16:17	1096	1096	MEGA08	59 26.55N	007 34.43W		-	-	-	-	Y
54577#4	1BA17	08/06/98	17:33	1098	1098	MEGA04	59 26.69N	007 34.09W		-	-	-	0.031 m2	Y
54577#5	1BA17	08/06/98	18:55	1098	1098	MEGA04	59 26.71N	007 34.33W		-	-	-	0.031 m2	-
54578#1	SITE3	11/06/98	02:27	2040	2040	BOX CORE	56 59.00N	010 00.17W		-	-	-	-	-
54578#2	SITE3	11/06/98	05:11	2044	2044	MEGA10	56 58.95N	010 00.47W		Y	Y	Y	0.039 m2	Y
54579#1	SITE2.5	11/06/98	09:13	1796	1796	MEGA08	56 49.82N	009 36.97W		Y	Y	Y	-	Y
54579#2	SITE2.5	11/06/98	11:47	1796	1796	BOX CORE	56 49.66N	009 36.94W		-	-	-	0.100 m2	Y
54579#3	SITE2.5	11/06/98	14:37	1790	1790	WASP	56 49.32N	009 36.74W		-	-	-	-	Y
		11/06/98	14:48	1790			56 49.44N	009 36.75W						
54580#1	SITE2	11/06/98	17:53	1612	1612	BOX CORE	56 45.92N	009 26.71W		-	-	-	0.100 m2	Y
54580#2	SITE2	11/06/98	19:55	1610	1610	MEGA08	56 46.03N	009 26.62W		Y	Y	Y	-	Y
54581#1	SITE1.5	11/06/98	22:41	1239	1247	WASP	56 41.80N	009 18.08W		-	-	-	-	Y
		11/06/98	23:45	1252			56 42.35N	009 17.83W						
54581#2	SITE1.5	12/06/98	01:44	1253	1253	MEGA08	56 41.91N	009 18.49W		Y	Y	Y	-	Y
54581#3	SITE1.5	12/06/98	03:33	1266	1266	BOX CORE	56 42.11N	009 18.61W		-	-	-	0.100 m2	Y
54582#1	SITE1	12/06/98	05:48	991	991	BOX CORE	56 39.78N	009 12.25W		-	-	-	0.100 m2	Y
54582#2	SITE1	12/06/98	07:20	965	965	MEGA08	56 39.79N	009 11.81W		Y	Y	Y	-	-
54583#1	SITE4	12/06/98	09:30	1373	1373	MEGA06	56 44.14N	009 19.02W		Y	Y	Y	-	Y
54584#1	SITE2.5	12/06/98	12:55	1793	1796	WASP	56 49.82N	009 36.69W		-	-	-	-	Y
		12/06/98	14:10	1800			56 49.13N	009 36.72W						
54585#1	SITE5	12/06/98	17:01	1846	1846	MEGA08	56 47.74N	009 45.10W		Y	Y	Y	-	Y
54585#2	SITE5	12/06/98	19:13	1854	1854	BOX CORE	56 48.02N	009 45.32W		-	-	-	0.100 m2	Y
54585#3	SITE5	12/06/98	21:25	1853	1853	BGS CORE	56 48.00N	009 45.20W		-	-	-	-	Y

Station	Site	Date	Time	Depth	Sound	Gear	Position		HC	HM	PS	Macrob	Oth
54585#4	SITE5	12/06/98	22:36	60	1855	WASP	56 48.13N	009 45.04W	-	-	-	-	Y
		12/06/98	23:41	1848			56 48.91N	009 45.04W					
54586#1	SITE3	13/06/98	03:11	2046	2046	BOX CORE	56 59.80N	010 00.53W	-	-	-	-	Y
54586#2	SITE3	13/06/98	06:00	2046	2046	BOX CORE	56 59.84N	010 00.49W	-	-	-	0.100 m2	Y
54587#1	1500m	13/06/98	11:10	1498	1498	BOX CORE	57 05.50N	009 25.84W	-	-	-	0.100 m2	Y
54587#2	1500m	13/06/98	13:11	1488	1488	MEGA08	57 05.66N	009 25.83W	Y	Y	Y	-	Y
54588#1	800m	13/06/98	15:42	836	836	MEGA08	57 06.77N	009 21.62W	Y	Y	Y	-	Y
54588#2	800m	13/06/98	17:05	808	808	BOX CORE	57 06.90N	009 21.58W	-	-	-	0.100 m2	Y
54589#1	300m	13/06/98	19:20	248	298	WASP	57 07.45N	009 16.70W	-	-	-	-	Y
		13/06/98	20:30	351			57 07.80N	009 15.39W					
54590#1	300m	13/06/98	21:16	308	308	BOX CORE	57 07.58N	009 16.10W	Y	Y	Y	0.100 m2	Y
54591#1	1AA1	14/06/98	09:08	1859	1859	MEGA08	58 34.49N	009 55.86W	-	-	-	0.063 m2	-
54591#2	1AA1	14/06/98	11:10	1859	1859	MEGA08	58 34.45N	009 55.95W	Y	Y	Y	-	Y
54592#1	1AA2	14/06/98	13:40	1834	1834	MEGA08	58 40.02N	009 54.75W	Y	Y	Y	-	Y
54592#2	1AA2	14/06/98	15:19	1832	1832	MEGA08	58 40.07N	009 55.07W	-	-	-	0.063 m2	-
54593#1	1AASLED	14/06/98	18:28	1820	1824	BN1.5/P	58 41.60N	009 53.70W	-	-	-	-	Y
		14/06/98	20:12	1836			58 42.97N	009 56.55W					
54594#1	1AA5	14/06/98	23:33	1776	1776	BGS CORE	58 49.98N	009 37.23W	-	-	-	-	Y
54594#2	1AA5	15/06/98	01:31	1774	1774	MEGA08	58 50.24N	009 37.11W	-	-	-	0.063 m2	-
54594#3	1AA5	15/06/98	03:05	1775	1775	MEGA08	58 49.97N	009 37.44W	Y	Y	Y	-	Y
54595#1	1AA4	15/06/98	04:49	1783	1783	MEGA08	58 49.74N	009 40.90W	-	-	-	0.063 m2	-
54595#2	1AA4	15/06/98	06:21	1783	1783	MEGA08	58 49.93N	009 40.60W	Y	Y	Y	-	Y
54596#1	1AA3	15/06/98	08:00	1783	1783	MEGA08	58 50.98N	009 43.72W	-	-	-	0.063 m2	-
54596#2	1AA3	15/06/98	09:34	1783	1783	MEGA08	58 51.25N	009 43.42W	Y	Y	Y	-	Y
54597#1	1ABWASP	15/06/98	14:24	1880	1884	WASP	58 55.48N	009 53.97W	-	-	-	-	Y
		15/06/98	15:35	1888			58 55.62N	009 53.53W					

Station	Site	Date	Time	Depth	Sound	Gear	Position	HC	HM	PS	Macrob	Oth
54598#1	1AB1	15/06/98	17:24	1766	1766	MEGA08	58 52.88N 009 53.88W	-	-	-	0.063 m2	-
54598#2	1AB1	15/06/98	18:54	1766	1766	MEGA08	58 52.91N 009 54.08W	Y	Y	Y	-	Y
54599#1	1AB2	15/06/98	20:46	1886	1886	MEGA08	58 55.30N 009 55.22W	-	-	-	0.063 m2	-
54599#2	1AB2	15/06/98	22:13	1884	1884	MEGA08	58 55.32N 009 55.06W	Y	Y	Y	-	Y
54600#1	1AB3	16/06/98	00:03	1887	1887	MEGA08	58 56.45N 009 50.24W	Y	Y	Y	-	Y
54600#2	1AB3	16/06/98	01:42	1871	1871	MEGA08	58 56.34N 009 50.18W	-	-	-	0.063 m2	-
54601#1	1BC1	16/06/98	06:41	1582	1582	MEGA08	58 54.71N 008 40.02W	Y	Y	Y	0.016 m2	Y
54601#2	1BC1	16/06/98	08:46	1584	1584	MEGA08	58 54.91N 008 40.04W	-	-	-	0.047 m2	-
54602#1	1BC2	16/06/98	12:16	1198	1198	MEGA08	58 53.13N 008 03.83W	Y	Y	Y	-	Y
54602#2	1BC2	16/06/98	13:26	1195	1195	MEGA08	58 53.12N 008 03.70W	-	-	-	-	-
54602#3	1BC2	16/06/98	16:14	1196	1196	BOX CORE	58 53.05N 008 03.97W	-	-	-	-	-
54602#4	1BC2	16/06/98	17:46	1202	1202	BOX CORE	58 53.08N 008 04.27W	-	-	-	-	-
54602#5	1BC2	16/06/98	18:52	1180	1180	BOX CORE	58 52.77N 008 03.74W	-	-	-	-	Y
54603#1	1BC3	16/06/98	20:30	994	994	MEGA06	58 50.55N 007 59.04W	Y	Y	Y	-	Y
54603#2	1BC3	16/06/98	21:28	996	996	BOX CORE	58 50.50N 007 59.39W	-	-	-	-	-
54603#3	1BC3	16/06/98	22:33	996	996	MEGA08	58 50.50N 007 59.31W	-	-	-	0.055 m2	-
54604#1	1BC4	16/06/98	23:50	890	890	MEGA08	58 49.43N 007 57.13W	Y	Y	Y	-	Y
54604#2	1BC4	17/06/98	00:46	894	894	BOX CORE	58 49.43N 007 57.29W	-	-	-	0.100 m2	Y
54605#1	1BC5	17/06/98	02:25	846	846	BOX CORE	58 49.07N 007 56.68W	Y	Y	Y	0.100 m2	-
54605#2	1BC5	17/06/98	03:37	840	840	BOX CORE	58 49.01N 007 56.76W	Y	Y	Y	0.100 m2	Y
54605#3	1BC5	17/06/98	05:10	842	842	BOX CORE	58 49.05N 007 56.65W	Y	Y	Y	0.100 m2	-
54605#4	1BC5	17/06/98	06:16	858	858	BOX CORE	58 49.14N 007 56.74W	Y	Y	Y	0.100 m2	-
54605#5	1BC5	17/06/98	07:29	836	836	BOX CORE	58 48.96N 007 56.80W	Y	Y	Y	0.100 m2	-
54606#1	1BC6	17/06/98	08:42	783	783	MEGA08	58 48.74N 007 56.47W	Y	Y	Y	-	Y
54606#2	1BC6	17/06/98	09:55	791	791	BOX CORE	58 48.79N 007 56.45W	-	-	-	0.100 m2	Y
54607#1	1BC5	17/06/98	10:50	840	840	MEGA08	58 49.03N 007 56.67W	Y	Y	Y	-	-

Station	Site	Date	Time	Depth	Sound	Gear	Position				HC	HM	PS	Macrob	Oth
54607#2	1BC5	17/06/98	11:54	850	850	MEGA08	58	49.11N	007	56.62W	Y	Y	Y	0.039 m2	-
54607#3	1BC5	17/06/98	12:56	844	844	MEGA08	58	49.15N	007	56.36W	Y	Y	Y	0.031 m2	-
54607#4	1BC5	17/06/98	13:52	838	838	MEGA08	58	49.02N	007	56.68W	Y	Y	Y	0.031 m2	-
54607#5	1BC5	17/06/98	14:50	843	843	MEGA08	58	49.10N	007	56.52W	Y	Y	Y	0.039 m2	-
54608#1	1BC7	17/06/98	16:01	689	689	MEGA08	58	48.40N	007	55.64W	Y	Y	Y	-	Y
54608#2	1BC7	17/06/98	16:59	684	684	BOX CORE	58	48.41N	007	55.52W	-	-	-	0.100 m2	Y
54609#1	1BC8	17/06/98	18:21	602	602	BOX CORE	58	47.77N	007	54.59W	-	-	-	0.100 m2	Y
54609#2	1BC8	17/06/98	19:04	608	608	MEGA08	58	47.75N	007	54.67W	Y	Y	Y	-	Y
54610#1	1BCWASP	17/06/98	20:40	377	383	WASP	58	45.03N	007	49.92W	-	-	-	-	Y
		17/06/98	21:50	388			58	45.29N	007	49.91W					
54611#1	1BC9	17/06/98	22:56	499	499	MEGA08	58	46.99N	007	53.05W	Y	Y	Y	-	Y
54611#2	1BC9	18/06/98	00:01	498	498	BOX CORE	58	46.94N	007	53.12W	-	-	-	0.100 m2	Y
54612#1	1BC10	18/06/98	01:22	398	398	MEGA06	58	45.35N	007	50.58W	Y	Y	Y	-	Y
54612#2	1BC10	18/06/98	02:12	398	398	BOX CORE	58	45.40N	007	50.39W	-	-	-	0.100 m2	Y
54613#1	1BC11	18/06/98	03:42	300	300	MEGA06	58	43.49N	007	47.41W	Y	Y	Y	-	Y
54613#2	1BC11	18/06/98	04:25	301	301	BOX CORE	58	43.42N	007	47.56W	-	-	-	0.100 m2	Y
54614#1	1BC12	18/06/98	05:56	202	202	MEGA06	58	41.87N	007	44.00W	-	Y	-	-	-
54614#2	1BC12	18/06/98	06:37	203	203	MEGA04	58	41.82N	007	44.27W	Y	-	-	-	-
54614#3	1BC12	18/06/98	07:17	200	200	MEGA04	58	41.79N	007	44.16W	-	-	Y	-	-
54614#4	1BC12	18/06/98	07:55	196	196	BOX CORE	58	41.74N	007	44.09W	-	-	-	-	Y
54614#5	1BC12	18/06/98	08:35	196	196	DAY GRAB	58	41.72N	007	44.15W	-	-	-	-	-
54614#6	1BC12	18/06/98	08:57	195	195	DAY GRAB	58	41.68N	007	44.13W	-	-	-	-	-
54614#7	1BC12	18/06/98	09:27	198	198	DAY GRAB	58	41.73N	007	44.14W	-	-	-	0.100 m2	-
54615#1	1BC3	18/06/98	11:33	991	991	BOX CORE	58	50.46N	007	59.21W	-	-	-	0.100 m2	Y
54616#1	1BC2	18/06/98	13:16	1200	1200	BOX CORE	58	53.17N	008	03.81W	-	-	-	-	-
54616#2	1BC2	18/06/98	14:29	1195	1195	BOX CORE	58	53.07N	008	03.83W	-	-	-	0.100 m2	Y

Station	Site	Date	Time	Depth	Sound	Gear	Position		HC	HM	PS	Macrob	Oth
54617#1	1BBWASP	18/06/98	19:33	453	475	WASP	59 06.21N	007 24.46W	-	-	-	-	Y
		18/06/98	20:43	499			59 06.91N	007 24.84W					
54618#1	1BB5	18/06/98	22:31	602	602	BOX CORE	59 06.41N	007 28.80W	-	-	-	0.100 m2	Y
54618#2	1BB5	18/06/98	23:40	605	605	MEGA08	59 06.45N	007 28.85W	Y	Y	Y	-	Y
54619#1	1BB4	19/06/98	00:45	495	495	MEGA08	59 06.33N	007 25.49W	-	-	-	-	-
54619#2	1BB4	19/06/98	01:30	493	493	MEGA08	59 06.31N	007 25.46W	Y	Y	Y	-	Y
54619#3	1BB4	19/06/98	02:17	496	496	BOX CORE	59 06.31N	007 25.54W	-	-	-	0.100 m2	-
54620#1	1BB3	19/06/98	03:18	398	398	MEGA06	59 05.60N	007 23.28W	Y	Y	Y	-	Y
54620#2	1BB3	19/06/98	03:59	390	390	BOX CORE	59 05.53N	007 23.18W	-	-	-	0.100 m2	-
54621#1	1BB2	19/06/98	05:03	296	296	BOX CORE	59 04.93N	007 20.86W	-	-	-	-	Y
54621#2	1BB2	19/06/98	05:46	295	295	DAY GRAB	59 04.93N	007 20.85W	-	-	-	-	-
54621#3	1BB2	19/06/98	06:04	297	297	DAY GRAB	59 04.93N	007 20.90W	-	-	-	-	-
54621#4	1BB2	19/06/98	06:27	308	308	DAY GRAB	59 05.03N	007 21.11W	-	-	-	-	-
54621#5	1BB2	19/06/98	06:54	305	305	DAY GRAB	59 04.99N	007 21.06W	-	-	-	-	-
54621#6	1BB2	19/06/98	07:16	304	304	DAY GRAB	59 05.01N	007 21.04W	Y	Y	Y	-	-
54621#7	1BB2	19/06/98	07:42	306	306	DAY GRAB	59 04.98N	007 21.08W	-	-	-	0.100 m2	-
54621#8	1BB2	19/06/98	08:21	318	318	DAY GRAB	59 05.24N	007 21.18W	-	-	-	-	-
54621#9	1BB2	19/06/98	08:56	295	295	DAY GRAB	59 04.97N	007 20.67W	-	-	-	0.100 m2	-
54622#0	1BB1	19/06/98	09:43	191	191	DAY GRAB	59 04.14N	007 17.12W	-	-	-	-	-
54622#1	1BB1	19/06/98	09:53	194	194	DAY GRAB	59 04.28N	007 17.17W	-	-	-	-	-
54622#2	1BB1	19/06/98	10:15	189	189	DAY GRAB	59 04.13N	007 16.95W	Y	Y	Y	-	-
54622#3	1BB1	19/06/98	10:34	188	188	DAY GRAB	59 04.23N	007 16.90W	-	-	-	-	Y
54622#4	1BB1	19/06/98	10:55	186	186	DAY GRAB	59 04.05N	007 17.06W	-	-	-	-	-
54622#5	1BB1	19/06/98	11:11	188	188	DAY GRAB	59 04.17N	007 16.88W	-	-	-	0.100 m2	-
54622#6	1BB1	19/06/98	11:40	183	183	DAY GRAB	59 04.00N	007 16.90W	-	-	-	-	-
54622#7	1BB1	19/06/98	12:08	188	188	DAY GRAB	59 04.20N	007 16.84W	-	-	-	-	-

Station	Site	Date	Time	Depth	Sound	Gear	Position		HC	HM	PS	Macrob	Oth
54622#8	1BB1	19/06/98	12:21	190	190	DAY GRAB	59 04.36N	007 16.70W	-	-	-	-	-
54622#9	1BB1	19/06/98	12:35	188	188	DAY GRAB	59 04.54N	007 16.52W	-	-	-	-	-
54622#10	1BB1	19/06/98	12:47	190	190	DAY GRAB	59 04.67N	007 16.38W	-	-	-	-	-
54622#11	1BB1	19/06/98	13:01	192	192	DAY GRAB	59 04.82N	007 16.09W	-	-	-	0.100 m2	-
54623#1	1BBWASP	19/06/98	14:31	336	348	WASP	59 05.72N	007 21.70W	-	-	-	-	Y
		19/06/98	15:40	360			59 06.25N	007 20.24W					
54624#1	1BB6	19/06/98	18:25	1194	1194	MEGA08	59 09.81N	007 46.80W	-	-	-	-	-
54624#2	1BB6	19/06/98	19:37	1198	1198	MEGA08	59 09.93N	007 46.97W	-	-	-	-	-
54624#3	1BB6	19/06/98	20:45	1209	1209	MEGA04	59 10.01N	007 47.37W	Y	Y	Y	-	Y
54624#4	1BB6	19/06/98	21:47	1210	1210	BOX CORE	59 09.86N	007 47.39W	-	-	-	-	Y
54625#1	1BB7	20/06/98	00:35	1364	1364	MEGA08	59 15.02N	008 11.99W	Y	Y	Y	0.008 m2	Y
54625#2	1BB7	20/06/98	01:55	1365	1365	MEGA08	59 14.98N	008 12.16W	-	-	-	0.055 m2	-
54626#1	1BA18	20/06/98	05:52	942	942	MEGA08	59 21.59N	007 20.16W	Y	-	-	-	-
54626#2	1BA18	20/06/98	06:50	936	936	MEGA08	59 21.44N	007 20.06W	-	Y	-	-	Y
54626#3	1BA18	20/06/98	08:01	934	934	BOX CORE	59 21.46N	007 19.85W	-	-	-	-	-
54627#1	1BA19	20/06/98	13:04	1034	1034	MEGA06	59 34.37N	007 05.05W	-	-	-	0.039 m2	Y
54627#2	1BA19	20/06/98	14:10	1035	1038	WASP	59 34.50N	007 05.20W	-	-	-	-	Y
		20/06/98	14:43	1040			59 34.72N	007 04.83W					
54627#3	1BA19	20/06/98	15:50	1036	1036	MEGA06	59 34.59N	007 05.23W	Y	Y	Y	0.024 m2	Y
54628#1	POCKS	20/06/98	22:04	971	979	BN1.5/P	59 32.87N	007 33.86W	-	-	-	-	-
		20/06/98	23:29	986			59 32.41N	007 30.83W					
54629#1	1BA5	21/06/98	04:36	899	899	MEGA04	59 46.29N	007 28.42W	-	-	-	-	Y
54629#2	1BA5	21/06/98	05:44	902	902	MEGA04	59 45.93N	007 28.41W	-	-	-	-	-
54629#3	1BA5	21/06/98	06:51	896	896	MEGA04	59 46.03N	007 28.75W	-	-	-	-	Y
54629#4	1BA5	21/06/98	07:54	892	892	MEGA04	59 46.05N	007 28.91W	-	-	-	-	Y
54629#5	1BA5	21/06/98	08:59	895	895	MEGA04	59 46.04N	007 28.68W	-	-	-	0.031 m2	-

Station	Site	Date	Time	Depth	Sound	Gear	Position		HC	HM	PS	Macrob	Oth
54629#6	1BA5	21/06/98	09:55	888	888	MEGA04	59 46.17N	007 29.19W	-	-	-	0.031 m2	-
54629#7	1BA5	21/06/98	10:51	892	892	MEGA04	59 46.06N	007 28.89W	-	-	-	-	Y
54630#1	BIOTARG	21/06/98	13:33	884	896	WASP	59 49.12N	007 26.56W	-	-	-	-	Y
		21/06/98	14:40	908			59 48.71N	007 25.56W					
54631#1	NETSLED	21/06/98	16:49	954	956	BN1.5/C	59 49.95N	007 20.12W	-	-	-	-	Y
		21/06/98	17:56	964			59 48.98N	007 21.48W					
54631#2	NETSLED	21/06/98	20:16	959	960	BN1.5/C	59 50.18N	007 19.56W	-	-	-	-	Y
		21/06/98	21:15	966			59 48.90N	007 20.99W					
54632#1	1BA5	21/06/98	23:41	884	886	WASP	59 46.05N	007 29.42W	-	-	-	-	Y
		22/06/98	00:50	889			59 45.90N	007 29.35W					
54633#1	1BA20	22/06/98	02:24	898	898	MEGA04	59 48.70N	007 26.22W	Y	Y	Y	-	Y
54633#2	1BA20	22/06/98	03:31	900	900	MEGA08	59 48.73N	007 26.14W	-	-	-	0.063 m2	-
54634#1	1BA18	22/06/98	09:06	936	936	MEGA04	59 21.45N	007 19.86W	-	-	Y	-	Y
54634#2	1BA18	22/06/98	10:13	937	937	MEGA04	59 21.49N	007 20.11W	-	-	-	0.031 m2	Y
54634#3	1BA18	22/06/98	11:14	936	936	MEGA04	59 21.43N	007 20.23W	-	-	-	0.031 m2	Y

11.2 Comments and other samples

The following listing provides a simple comment on each deployment made during the cruise and lists samples collected other than primary survey samples. For station data and information on primary survey samples see the preceding listing in section 11.1.

Station & Site See section 11.1 for definitions.

Comment & Other samples Refer to glossary below.

Glossary

2nd 0.1 m2 mac sample	A second macrobenthos sample collected in addition to the primary survey sample.
CLEAN ORGANICS	A sample for detailed analysis of organic constituents collected (see section 7. for protocol).
CTD	Conductivity, temperature, depth and transmissometer data collected.
DV	Digital video.
echiuran	A type of worm.
FLUFF PRES	Phytodetritus sample collected and preserved in formaldehyde.
fluff (present, some, x cm, to x cm)	Phytodetritus recorded (observed, occurring in an x cm layer or in up to an x cm layer).
FLUFF-20	Phytodetritus sample collected and preserved by freezing at -20°C.
for mac	For macrobenthos (sample).
FROZEN	A whole core retained frozen (-20°C).
GEOL	A core retained for geological analysis (by British Geological Survey).
geryonid	A type of crab.
long core (x m)	A core of length x retained for geological analysis (by British Geological Survey).
Lophelia	A type of coral.
mab	metres above bottom.
mac	Macrobenthos.
Megabenthos and fish specimens	Selected specimens of large invertebrates and fish retained (preserved in formaldehyde).
MEIOB	Meiobenthos sample retained (see section 7. for protocol).
Midwater	In the water column.
Mk4, Mk7	Types of still camera: Mk4 used on epibenthic sledge; Mk7 used on WASP.
SD.ORG	Samples for a study of biologically available organic matter (MSc project Southampton University).
spatangoid	A type of sea urchin.
topo hi, lo	Topographic high, topographic low.
traces (lost)	Acoustic telemetry signals not present or undetectable.
Umbellula	A type of sea pen.
x m colour, B+W	x m of colour or black and white film exposed and retained.
x mins DV	x minutes of digital video tape run and retained.
xeno, xenos	Xenophophore(s), a type of giant single-celled organism.
x/x	x good quality cores recovered from /x core units deployed on the megacorer.
"plimsoll mark"	An enigmatic (?) organism.
(damage)	Damage to the deployed equipment.
(dry)	Specimen preserved by drying.
(GEOL - xxxxx)	Geological sample or data other than a retained core sample.

Station	Site	Comment	Other samples
54501#1	3BA350	Good run.	60 mins DV, 10 m B+W
54502#1	3BA1000	4/8 cores.	GEOL
54502#2	3BA1000	8/10 cores.	
54503#1	3BA800	10/10 cores.	GEOL
54503#2	3BA800	8/8 cores.	
54504#1	3BA650	0/8 cores, no samples.	
54504#2	3BA650	6/8, 2 combined with 54504#3 for mac.	GEOL
54504#3	3BA650	6/10, 6 combined with 54504#2 .	
54505#1	3BA500	0/10 cores, no samples.	(GEOL - bag of gravel only)
54505#2	3BA500	Good core.	GEOL
54506#1	3BA450	Good core.	GEOL
54507#1	3BA350	Short core, top water not held, no samples.	
54507#2	3BA350	Good core (gravely).	GEOL
54508#1	3BA800	Good tow, MK4 dislodged stopped early.	60 mins DV, 5m B+W, Umbelulla specimen
54509#1	3BB900	7/10 cores.	GEOL
54509#2	3BB900	10/10 cores.	FROZEN
54510#1	3BC800	8/10 cores.	GEOL, FROZEN
54510#2	3BC800	9/10 cores.	
54510#3	3BC800	Good long core (2.8 m).	Long core (2.8m)
54511#1	3BA800	Good long core (2.3 m).	Long core (2.1m)
54512#1	3AD1	Head locked, no samples.	
54512#2	3AD1	9/10 cores.	GEOL
54512#3	3AD1	6/9 cores.	
54513#1	3AC5	7/9 cores.	GEOL, FROZEN
54513#2	3AC5	8/9 cores.	
54514#1	3AD1	Good long core (2.6 m).	Long core (2.6 m)
54515#1	3AC4	7/12 cores.	GEOL, 0-10cm 3 core backup macrobenthos
54515#2	3AC4	No samples, corer fell over on bottom.	

Station	Site	Comment	Other samples
54515#3	3AC4	7/10, 7 only for mac sample.	
54516#1	3AC3	7/10, 1 combined with 54516#2 for mac.	GEOL, FROZEN
54516#2	3AC3	7/10, 7 combined with 54516#1 for mac.	
54517#1	3AC1	7/10, 1 combined with 54517#2 for mac.	GEOL, FROZEN
54517#2	3AC1	7/10, 7 combined with 54517#1 for mac.	
54518#1	3AA1	8/10 cores.	
54518#2	3AA1	0/10, all fired but gravel only.	
54518#3	3AA1	7/10 cores.	GEOL, FROZEN.
54519#1	3AB2	7/10 cores.	GEOL, 0-10cm 3 core backup macrobenthos
54519#2	3AB2	0/11, short cores only, discarded.	
54519#3	3AB2	8/10 cores.	
54520#1	3AAWASP	Good tow through furrow.	60 mins DV, 15 m colour
54521#1	3AA2	8/10, 2 combined with 54521#3 for mac.	GEOL, metals sample from a 'red spot' down core
54521#2	3AA2	0/10, a little gravel only.	
54521#3	3AA2	6/10, 6 combined with 54521#1 for mac.	
54522#1	3AB3	7/10, 2 combined with 54522#2 for mac.	GEOL
54522#2	3AB3	6/10, 6 combined with 54522#1 for mac.	(GEOL >10 cm)
54523#1	3AB5	5/10, 1 combined with 54523#1 for mac.	GEOL
54523#2	3AB5	6/10, 6 combined with 54523#1 for mac.	
54524#1	3ABWASP	Mk7 software wiped by power surge, DV OK.	60 mins DV, 5 m colour
54524#2	3AB4	9/10 cores.	GEOL
54524#3	3AB4	8/10 cores.	GEOL, FROZEN
54525#1	3AB1	6/10, 1 combined with 54525#2 for mac, (damage).	GEOL
54525#2	3AB1	7/10, 7 combined with 54525#1 for mac.	
54526#1	3AC2	7/10, 1 combined with 54526#3 for mac.	GEOL, FROZEN
54526#2	3AC2	Traces lost, haul aborted, DV on in midwater.	Midwater DV - 60 mins
54526#3	3AC2	7/10, 7 combined with 54526#1 for mac.	
54527#1	B5	Rock in jaws, no sample.	

Station	Site	Comment	Other samples
54527#2	B5	Rock in jaws, no sample.	
54527#3	B5	Sample of 5 litres.	
54528#1	Tr200	Rock in jaws, no sample.	
54528#2	Tr200	Small 31 grab, discarded, no sample.	
54528#3	Tr200	Rock in jaws, no sample.	
54528#4	Tr200	Rock in jaws, no sample.	
54528#5	Tr200	Rock in jaws, no sample.	
54528#6	Tr200	Sample of 4.5 / 5l.	
54529#1	Tr250	Rock in jaws, no sample.	
54529#2	Tr250	Rock in jaws, no sample.	
54529#3	Tr250	Rock in jaws, no sample.	
54529#4	Tr250	Rock in jaws, no sample.	
54529#5	Tr250	Rock in jaws, no sample.	
54529#6	Tr250	Small grab, discarded, no sample.	
54529#7	Tr250	Rock in jaws, no sample.	
54529#8	Tr250	Sample of 4l.	Spatangoid preserved separately
54530#1	Tr300	Not fired, no sample.	
54530#2	Tr300	Rock in jaws, no sample.	
54530#3	Tr300	Small (2 l) sample, combined with 54530#4.	
54530#4	Tr300	Small (2 l) sample, combined with 54530#3.	
54531#1	Tr350	4/4 cores.	SD.ORG, FROZEN, MEIOB
54532#1	L5	3/4 cores.	SD.ORG, FROZEN, MEIOB
54533#1	Tr450	2/4 cores.	SD.ORG, MEIOB
54533#2	Tr450	4/4 cores.	FROZEN, 3xMEIOB
54534#1	L4	4/4 cores.	SD.ORG, FROZEN, MEIOB
54535#1	Tr350	Good core.	Surface scrape (1-2 cm) macrobenthos (0.15 m2)
54536#1	L5	Good core.	Surface scrape (1-2 cm) macrobenthos (0.15 m2)
54537#1	Tr450	Good, sand wave type, topo hi and low samples.	Second 0.1 m2 macrobenthos sample

Station	Site	Comment	Other samples
54538#1	L4	Drained on deck (poor seal).	0-10 cm macrobenthos (0.1 m2) - backup
54538#2	L4	Disturbed, strange core (see text).	GEOL, sponges remains, surface scrape mac
54538#3	L4	Drained on deck (poor seal).	Surface scrape macrobenthos
54538#4	L4	Good, sand wave type, topo hi and low samples.	Second 0.1 m2 macrobenthos sample
54539#1	Tr550	8/10, 5 combined with 54539#2 for mac.	SD.ORG, FROZEN, MEIOB
54539#2	Tr550	3/10, 3 combined with 54539#1 for mac.	
54540#1	Tr600	6/10, 1 combined with 54540#2 for mac.	(GEOL - description), SD.ORG, FROZEN, 2xMEIOB
54540#2	Tr600	7/10, 7 combined with 54540#1 for mac.	
54541#1	Tr650	8/10 cores.	
54541#2	Tr650	8/10 cores.	GEOL, SD.ORG, FROZEN, MEIOB
54542#1	S2	8/10 cores.	
54542#2	S2	8/10 cores.	GEOL, SD.ORG, FROZEN, MEIOB
54543#1	Tr800	8/10 cores.	
54543#2	Tr800	8/10 cores.	GEOL, SD.ORG, FROZEN, MEIOB
54544#1	Tr900	8/10 cores.	
54544#2	Tr900	8/10 cores.	GEOL, SD.ORG, FROZEN, MEIOB
54545#1	Tr1000	8/10 cores.	
54545#2	Tr1000	8/10 cores.	GEOL, SD.ORG, FROZEN, MEIOB
54546#1	Tr650	Good long core (2.1 m).	Long core (2.1 m)
54547#1	2AWASP	Mk7 failed, video 2 mins only.	2 mins DV
54548#1	2A1	Short core, disturbed, no samples.	
54548#2	2A1	8/8 cores.	
54548#3	2A1	6/8 cores.	GEOL
54549#1	2B1	7/8, 3 combined with 54549#2 for mac.	GEOL
54549#2	2B1	5/8, 5 combined with 54549#1 for mac.	
54550#1	2C1	0/8, gravel only, no samples.	
54550#2	2C1	4/8 cores.	GEOL
54550#3	2C1	8/8 cores.	

Station	Site	Comment	Other samples
54551#1	2TWASP	Using Mk7 camera on alarm mode.	60 mins DV, 15 m colour
54552#1	2T	8/8 cores.	
54552#2	2T	8/8 cores.	GEOL, FROZEN
54552#3	2T	Good long core (2.6 m).	Long core 2.6 m
54553#1	2B3	7/8 cores.	GEOL
54553#2	2B3	8/8 cores.	
54554#1	2B2	0/8 cores, bar gravel, no samples.	
54554#2	2B2	6/8, 1 combined with 54554#3 for mac (tube snap).	GEOL, FROZEN
54554#3	2B2	7/8, 7 combined with 54554#2 for mac.	
54555#1	2B1	Good long core (2.4 m).	Long core (2.4 m)
54556#1	2AWASP	No flashes on video ?.	60 mins DV, 15 m colour
54557#1	HALOPOC	Good tow, very turbid.	60 mins DV, 15 m colour
54558#1	1BA5	1/8, sloppy foram sand, fishy smell, some fluff.	(GEOL - description), 15 cm core sieved to 250 um
54558#2	1BA5	4/4 good cores, some fluff.	GEOL
54558#3	1BA5	0/6 cores.	
54558#4	1BA5	0/4 cores.	
54558#5	1BA5	Short core, top water not held, fishy smell.	Surface scrape sieved on 500 um.
54558#6	1BA5	0/4 cores, clear bottom water.	
54559#1	1BA4	8/8 cores.	
54559#2	1BA4	8/8 cores.	GEOL, FROZEN
54560#1	1BA1	8/8 cores.	
54560#2	1BA1	8/8 cores, fluff present.	GEOL
54561#1	1BA2	8/8 cores, fluff present.	
54561#2	1BA2	8/8 cores, fluff present (xeno).	GEOL, FROZEN, 2xSD.ORG, FLUFF-20, FLUFF PRES
54562#1	1BA3	8/8, 1 with 54562#3 for mac, fluff pres (xeno).	GEOL, FROZEN
54562#2	1BA3	0/8, almost nothing, no samples.	
54562#3	1BA3	7/8, 7 combined with 54562#1 for mac, fluff pres.	
54563#1	1BA6	7/8 short cores, 4 cm fluff.	FLUFF-20, FLUFF PRES, Xeno specimen

Station	Site	Comment	Other samples
54563#2	1BA6	0/4, no samples.	
54563#3	1BA6	4/4 cores, 2-6 cm fluff (2 x xenos).	(GEOL > 10 cm), (Xeno with mac sample)
54563#4	1BA6	4/4 cores, 2-6 cm fluff (xeno).	
54564#1	1BA7	0/4, clear bottom water.	GEOL
54565#1	MOUND	Two mounds, two occurrences of coral.	65 mins DV, 15 m colour
54565#2	MOUND	Short core, top water not held, washed out.	GEOL
54565#3	MOUND	Short core, washed out.	Surface scrape in formalin
54566#1	1BA10	1/7, 1 combined with 54566#2+3 for mac.	
54566#2	1BA10	5/8, 1 combined with 54566#1+3 for mac.	GEOL
54566#3	1BA10	5/8, 5 combined with 54566#1+2 for mac.	
54567#1	1BA9	0/8, 1 washed out core, no samples.	GEOL
54567#2	1BA9	4/4 cores, 1 cm fluff.	GEOL, FLUFF-20
54567#3	1BA9	4/4, all with 54567#4 for mac, fluff to 2 cm.	
54567#4	1BA9	4/4, all with 54567#3 for mac, fluff to 3 cm.	Lophelia (dry)
54568#1	1BA8	6/6, 1 with 54568#2+3 for mac, fluff to 6 cm.	GEOL
54568#2	1BA8	3/6, 3 with 54568#1+3 for mac, 1 cm fluff.	GEOL
54568#3	1BA8	4/4, all with 54568#1+2 for mac, 2 cm fluff.	
54569#1	MOUND2	Missed mound top ?	60 mins DV, 15 m colour
54569#2	MOUND2	No core.	
54569#3	MOUND2	Off mound attempt, no core.	
54569#4	MOUND2	No core.	(GEOL - description)
54570#1	1BA11	4/4+CTD, fluff present.	GEOL, FROZEN, FLUFF-20, CTD
54571#1	1BA12	4/4+CTD, fishy smell.	GEOL, FROZEN, CTD
54572#1	1BA13	3/4+CTD, fluff present.	GEOL, FROZEN, CTD
54573#1	1BA14	4/4+CTD, fluff present.	GEOL, FROZEN, CTD
54574#1	MOUND3	Run over two targets.	60 mins DV, 15 m colour
54575#1	1BA15	6/6+CTD, 2 with 54575#3 of mac, fluff to 6 cm.	GEOL, CTD
54575#2	1BA15	0/6+CTD, core fell over, damaged CTD frame.	CTD

Station	Site	Comment	Other samples
54575#3	1BA15	6/6, 6 with 54575#1 for mac, fluff to 1 cm.	
54576#1	1BA16	7/8, spare mac material, fluff present.	GEOL
54576#2	1BA16	7/8 cores.	
54577#1	1BA17	7/8 cores.	GEOL, (qual mac 3 disturbed cores)
54577#2	1BA17	0/8 cores, ? fell over.	
54577#3	1BA17	0/8, short cores (3 x xenos).	Xenos (dry)
54577#4	1BA17	4/4 cores, combined with 54577#5 for mac.	(GEOL > 10 cm)
54577#5	1BA17	4/4 cores, combined with 54577#4 for mac.	
54578#1	SITE3	Sample washed out, discarded.	
54578#2	SITE3	8/10 cores, fluff present.	GEOL
54579#1	SITE2.5	7/8 cores.	GEOL, FROZEN.
54579#2	SITE2.5	Good core.	Second 0.1 m2 macrobenthos sample
54579#3	SITE2.5	No altimeter lock, abort after 10 mins on bottom.	8 mins DV
54580#1	SITE2	Good core, ? echiuran burrow.	Second 0.1 m2 macrobenthos sample
54580#2	SITE2	8/8 good cores, fluff present.	GEOL, FROZEN, FLUFF-20
54581#1	SITE1.5	MK7 alarm wrong, no film run.	60 mins DV
54581#2	SITE1.5	8/8 cores, fluff present.	2xGEOL, 2xFROZEN
54581#3	SITE1.5	Good core.	Second 0.1m2 macrobenthos sample
54582#1	SITE1	Good core.	Second 0.1m2 macrobenthos sample
54582#2	SITE1	3/8 short cores.	
54583#1	SITE4	6/6 cores, one with large fluff aggregate.	2xGEOL
54584#1	SITE2.5	Very turbid, altimeter struggling.	60 mins DV, 15 m colour
54585#1	SITE5	8/8 cores, fluff to 3 cm.	GEOL, 2xFROZEN, FLUFF-20
54585#2	SITE5	Good core, ? echiuran gash, fluff present !!	Second 0.1m2 macrobenthos sample
54585#3	SITE5	Catcher everted, short core (1.2 m).	Long core (1.2 m)
54585#4	SITE5	Midwater run as a transmissometer (60m - 7mab).	60 mins DV
54586#1	SITE3	Drained through echiuran burrow (see text).	GEOL, echiuran specimen
54586#2	SITE3	Fair core.	Second 0.1m2 macrobenthos sample

Station	Site	Comment	Other samples
54587#1	1500m	Fair core.	Second 0.1m2 macrobenthos sample
54587#2	1500m	8/8 cores, fluff to 6 cm.	GEOL, 2xFROZEN, FLUFF-20, "plimsoll mark"
54588#1	800m	7/8 short cores, gravely, odd layers ? trawled.	GEOL, FROZEN
54588#2	800m	Trawled ground ?, exposed clay lumps.	GEOL, 2nd 0.1m2 mac sample, geryonid separate
54589#1	300m	Clear water - altimeter works fine.	60 mins DV, 15 m colour
54590#1	300m	5 T pull out !!!!, good core.	GEOL
54591#1	1AA1	8/8 cores, fluff to 6 cm.	
54591#2	1AA1	8/8 cores, fluff to 4 cm.	GEOL, FROZEN, FLUFF: 2x-20, PRES, HC-20
54592#1	1AA2	7/8 cores, fluff present.	GEOL
54592#2	1AA2	8/8 cores, fluff present.	
54593#1	1AASLED	One lamp full of mud, bulb and fitting burnt out.	60 mins DV, 15 m colour
54594#1	1AA5	Good long core (1.8 m).	Long core (1.8 m)
54594#2	1AA5	8/8 cores, fluff present.	
54594#3	1AA5	8/8 cores, fluff present.	GEOL, FROZEN
54595#1	1AA4	8/8 cores, fluff present.	
54595#2	1AA4	8/8 cores, fluff to 2 cm.	GEOL, FROZEN, FLUFF-20
54596#1	1AA3	8/8 cores, fluff to 1 cm.	
54596#2	1AA3	8/8 cores, fluff to 1 cm.	GEOL, FROZEN
54597#1	1ABWASP	Good tow.	60 mins DV, 15 m colour
54598#1	1AB1	8/8 cores, fluff present.	
54598#2	1AB1	8/8 cores, fluff present.	GEOL, FROZEN
54599#1	1AB2	8/8 cores, fluff present.	
54599#2	1AB2	8/8 cores, fluff present.	GEOL, FROZEN
54600#1	1AB3	6/8 cores.	GEOL, FROZEN
54600#2	1AB3	8/8 cores.	
54601#1	1BC1	8/8, 2 combined with 54601#2 for mac.	GEOL
54601#2	1BC1	8/8, 6 combined with 54601#1 for mac.	
54602#1	1BC2	7/8 cores, fluff to 1 cm.	GEOL, SD.ORG, FLUFF-20

Station	Site	Comment	Other samples
54602#2	1BC2	0/8 cores.	
54602#3	1BC2	Failed to fire, lack tension in bolt retractor.	
54602#4	1BC2	Short core, top water not held, discarded.	
54602#5	1BC2	Short core, top water not held, discarded.	GEOL
54603#1	1BC3	6/6 cores, fluff to 1 cm.	GEOL, SD.ORG, FROZEN, FLUFF-20
54603#2	1BC3	Short core, top water not held, discarded.	
54603#3	1BC3	7/8 cores, fluff present.	
54604#1	1BC4	7/8 cores, one tube smashed.	GEOL, FROZEN, SD.ORG
54604#2	1BC4	Good core.	2nd 0.1 m2 macrobenthos sample
54605#1	1BC5	Good core.	
54605#2	1BC5	Good core.	GEOL
54605#3	1BC5	Good core.	
54605#4	1BC5	Good core.	
54605#5	1BC5	Good core.	
54606#1	1BC6	5/8 cores.	GEOL, SD.ORG
54606#2	1BC6	Good core.	2nd 0.1 m2 macrobenthos sample
54607#1	1BC5	5/8 cores.	
54607#2	1BC5	8/8 cores.	
54607#3	1BC5	7/8 cores.	
54607#4	1BC5	7/8 cores.	
54607#5	1BC5	8/8 cores.	
54608#1	1BC7	7/8 cores.	GEOL, SD.ORG
54608#2	1BC7	Good core.	2nd 0.1 m2 macrobenthos sample
54609#1	1BC8	Good core.	2nd 0.1 m2 macrobenthos sample
54609#2	1BC8	7/8 cores.	GEOL, SD.ORG
54610#1	1BCWASP	Good tow.	60 mins DV, 15 m colour
54611#1	1BC9	7/8 cores.	GEOL, SD.ORG
54611#2	1BC9	Good core.	2nd 1m2 macrobenthos sample

Station	Site	Comment	Other samples
54612#1	1BC10	6/6 cores.	GEOL, SD.ORG, FROZEN
54612#2	1BC10	Good core.	2nd 0.1m2 macrobenthos sample
54613#1	1BC11	6/6 cores.	GEOL, SD.ORG, FROZEN
54613#2	1BC11	Good core.	2nd 0.1m2 macrobenthos sample
54614#1	1BC12	2/6 cores (one lost on deck).	
54614#2	1BC12	1/4 cores.	
54614#3	1BC12	2/4 cores (one lost on deck).	
54614#4	1BC12	Short core, top water not held, discarded.	GEOL
54614#5	1BC12	3 litre sample, discarded.	
54614#6	1BC12	4 litre sample, discarded.	
54614#7	1BC12	5 litre sample.	
54615#1	1BC3	A box core with fluff !!!!	2nd 0.1m2 macrobenthos sample
54616#1	1BC2	Short core, top water not held, discarded.	
54616#2	1BC2	Good core.	2nd 0.1m2 macrobenthos sample
54617#1	1BBWASP	DV not switched on !	15 m colour
54618#1	1BB5	Good core.	GEOL
54618#2	1BB5	7/8 cores.	FROZEN
54619#1	1BB4	0/8 cores.	
54619#2	1BB4	6/8 cores.	GEOL, FROZEN
54619#3	1BB4	Good core.	
54620#1	1BB3	6/6 cores.	GEOL
54620#2	1BB3	Good core.	
54621#1	1BB2	Empty, box damaged.	(GEOL - cobbles only)
54621#2	1BB2	Rock in jaws - no samples.	
54621#3	1BB2	Rock in jaws - no samples.	
54621#4	1BB2	Rock in jaws - no samples.	
54621#5	1BB2	Rock in jaws - no samples.	
54621#6	1BB2	Good grab.	

Station	Site	Comment	Other samples
54621#7	1BB2	Sample of 2.5 litres (kept separate from 54621#9).	
54621#8	1BB2	Rock in jaws - no samples.	
54621#9	1BB2	Sample of 4 litres (kept separate from 54621#7).	
54622#0	1BB1	Not triggered - no samples.	
54622#1	1BB1	Pebbles only - no samples.	
54622#2	1BB1	Good grab.	
54622#3	1BB1	+/- empty - no samples.	(GEOL - description)
54622#4	1BB1	Water only - no samples.	
54622#5	1BB1	Small sample (3 l), kept separate from 54622#11.	
54622#6	1BB1	Rock in jaws - no samples.	
54622#7	1BB1	Water only - no samples.	
54622#8	1BB1	Lost on deck - no samples.	
54622#9	1BB1	Rock in jaws - no samples.	
54622#10	1BB1	Very small sample, discarded.	
54622#11	1BB1	Small sample (4 l), kept separate from 54622#5.	
54623#1	1BBWASP	Good tow.	60 mins DV, 11 m colour
54624#1	1BB6	0/8, water only.	
54624#2	1BB6	0/8, water only.	
54624#3	1BB6	3/4 good, 4th bubbling through burrow (GEOL).	GEOL
54624#4	1BB6	Short core, water not held, discarded (2 x xenos).	2xXenos (dry)
54625#1	1BB7	7/8, 1 combined with 5455#2, fluff to 2 cm.	GEOL, FROZEN
54625#2	1BB7	7/8, 7 combined with 5455#1, fluff to 2 cm.	
54626#1	1BA18	1/8 cores.	
54626#2	1BA18	1/8 cores (xeno).	Xeno and sponge specimens in formalin
54626#3	1BA18	Short core, top water not held, discarded.	
54627#1	1BA19	5/6 cores, fluff present.	(GEOL > 10 cm)
54627#2	1BA19	Short tow (altimeter says very turbid).	30 mins DV, 10 m colour
54627#3	1BA19	6/6 cores.	(GEOL > 10 cm)

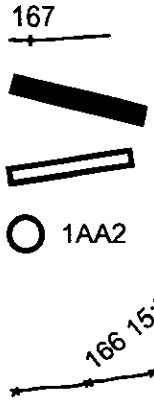
Station	Site	Comment	Other samples
54628#1	POCKS	Good tow in bad weather.	
54629#1	1BA5	0/4 cores (3.0 T pull out).	Spatangoid specimen
54629#2	1BA5	0/4 cores (3.3 T pull out).	
54629#3	1BA5	2/4 cores (3.4 T pull out).	FROZEN, CLEAN ORGANICS
54629#4	1BA5	1/4 cores (3.3 T pull out).	GEOL
54629#5	1BA5	4/4 cores, fishy smell.	
54629#6	1BA5	4/4 cores, fishy smell.	
54629#7	1BA5	1/4 cores.	CLEAN ORGANICS
54630#1	BIOTARG	Good tow, some coral, lots of xenos.	60 mins DV, 15 m colour
54631#1	NETSLED	Good tow, small catch.	Megabenthos and fish specimens (see text)
54631#2	NETSLED	Good tow, better catch, weaklink goes on recovery.	Megabenthos and fish specimens (see text)
54632#1	1BA5	Good tow.	60 mins DV, 15 m colour
54633#1	1BA20	4/4 cores.	GEOL
54633#2	1BA20	8/8 cores.	
54634#1	1BA18	3/4 cores (xeno).	Xeno (dry)
54634#2	1BA18	4/4 cores.	(GEOL > 10 cm)
54634#3	1BA18	4/4 cores.	(GEOL > 10 cm)

12. CHARTS

The following compilation of charts includes three types of chart for each survey area: a) ship's track, b) survey operations, and c) tow gear tracks. In addition, a chart showing the ship's track for the full duration of the survey is also included.

12.1 Chart list

Key:



Ship's track (Dates - Julian days)

WASP deployment

Epibenthic sledge deployment

Seabed sampling station

Tow gear track (Date and time - Julian day and UTC)

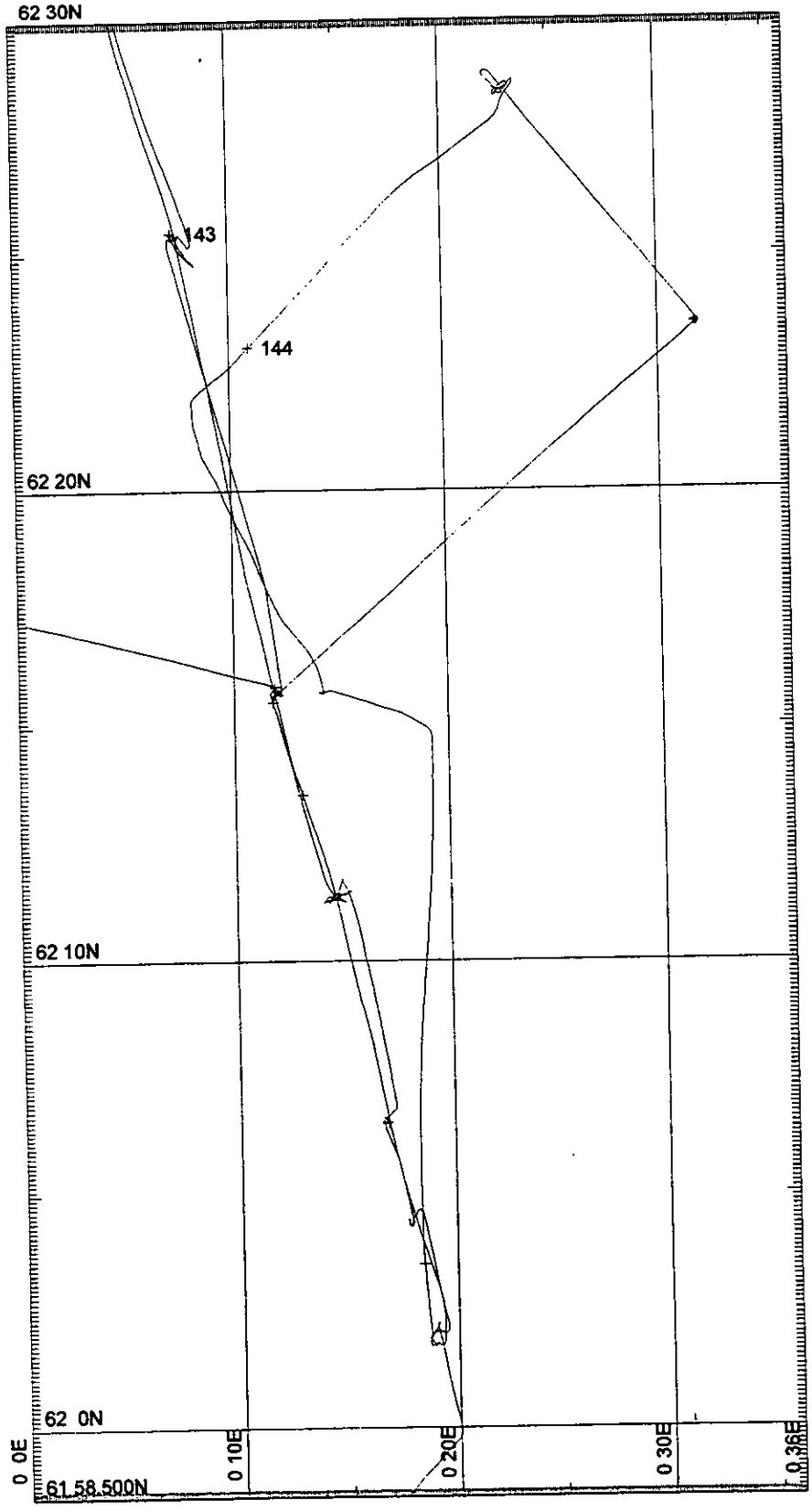


Chart 1. Ship's track through survey area 3B.

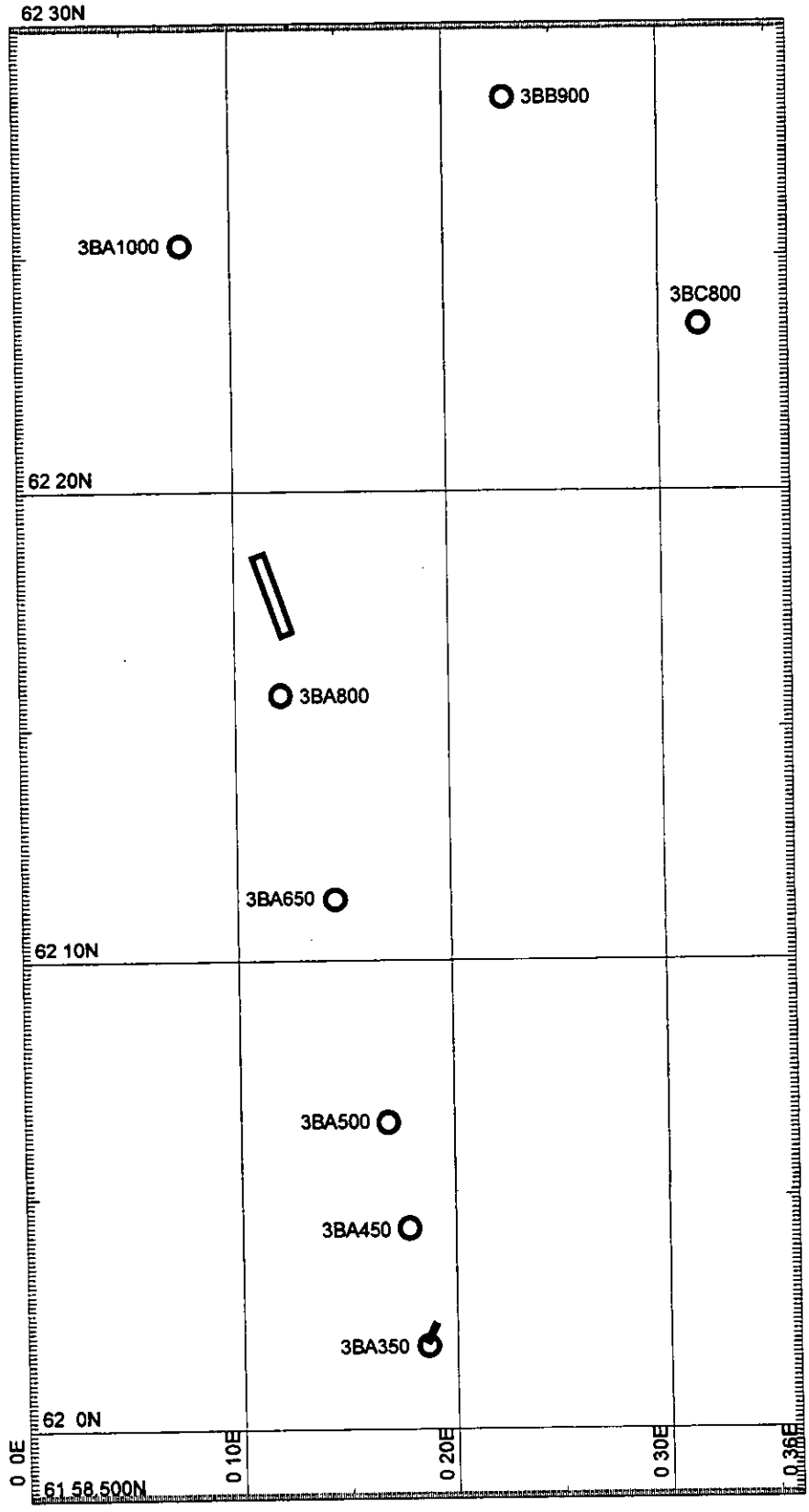


Chart 2. Survey operations in area 3B.

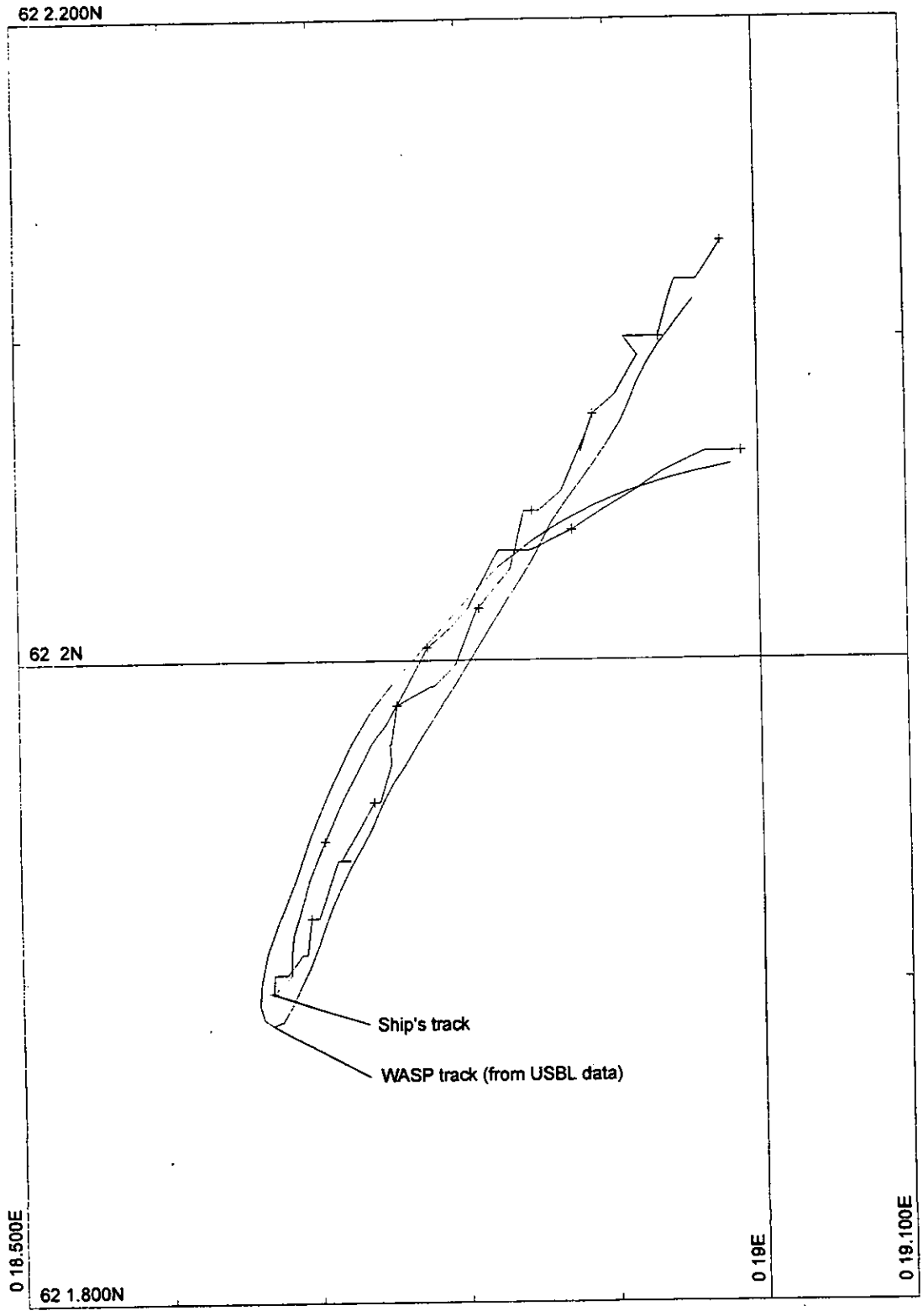


Chart 3. WASP track, station 54501#1 (Area 3B).

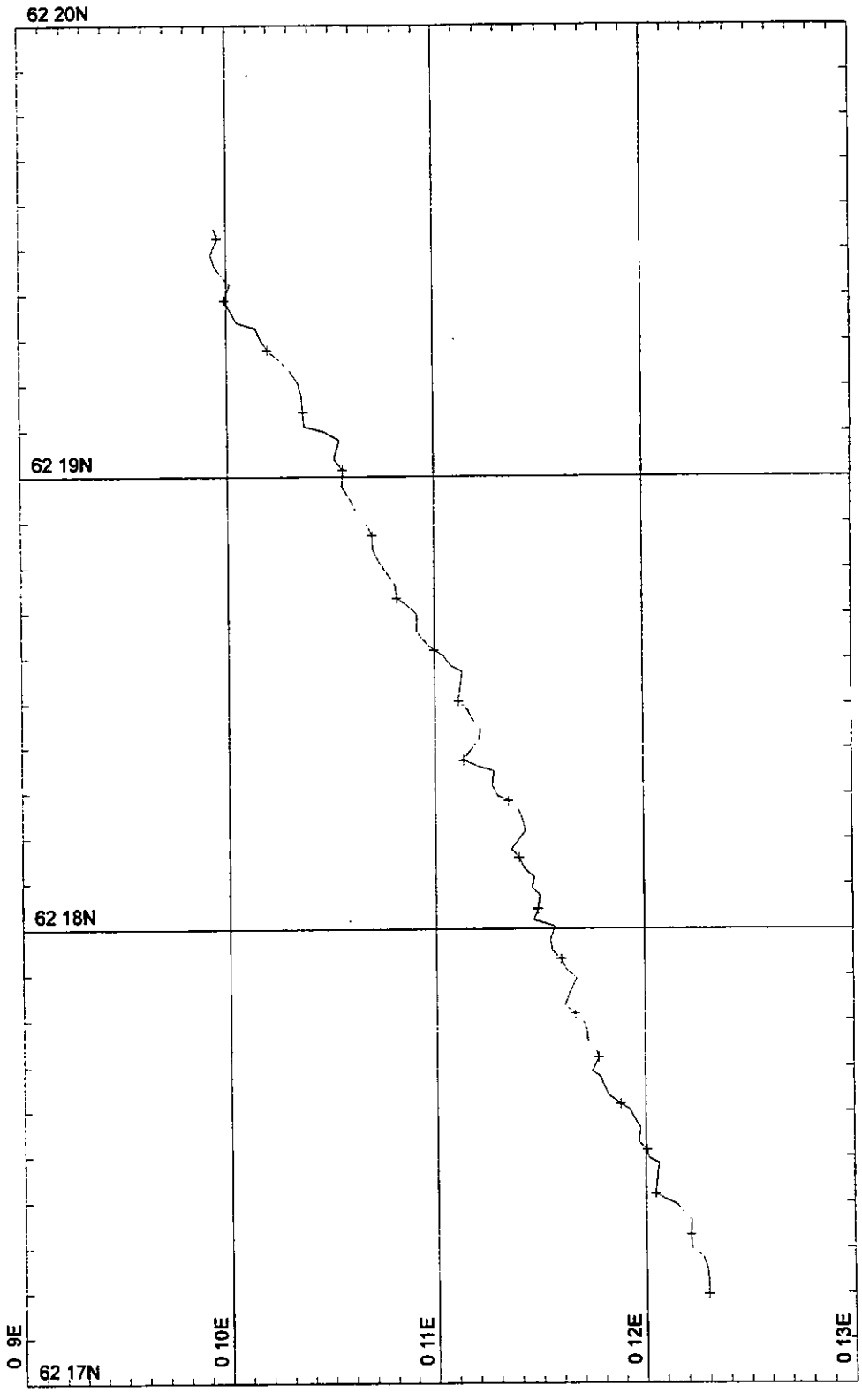


Chart 4. Epibenthic sledge track, station 54508#1 (Area 3B).

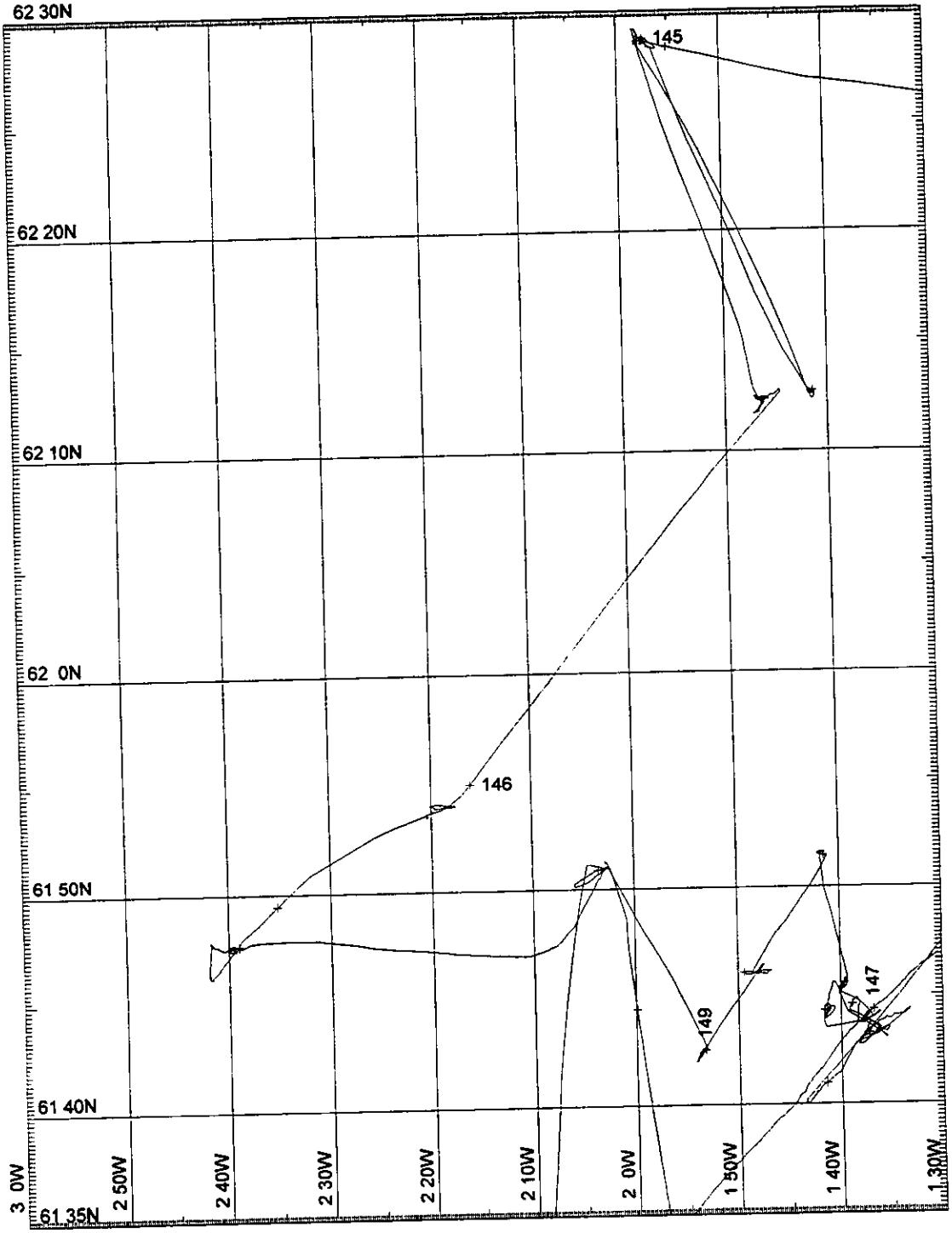


Chart 5. Ship's track through survey area 3A.

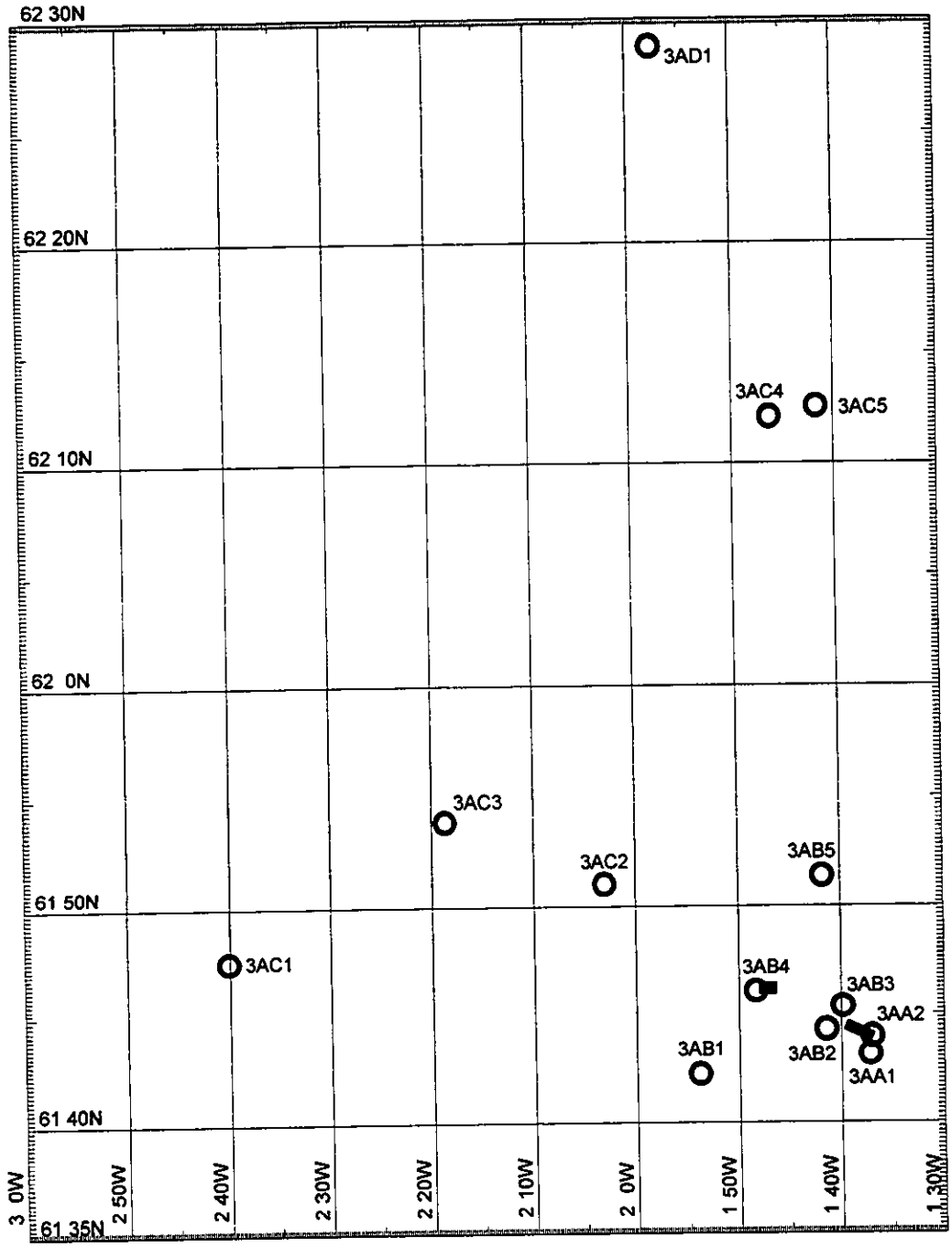


Chart 6. Survey operations in area 3A.

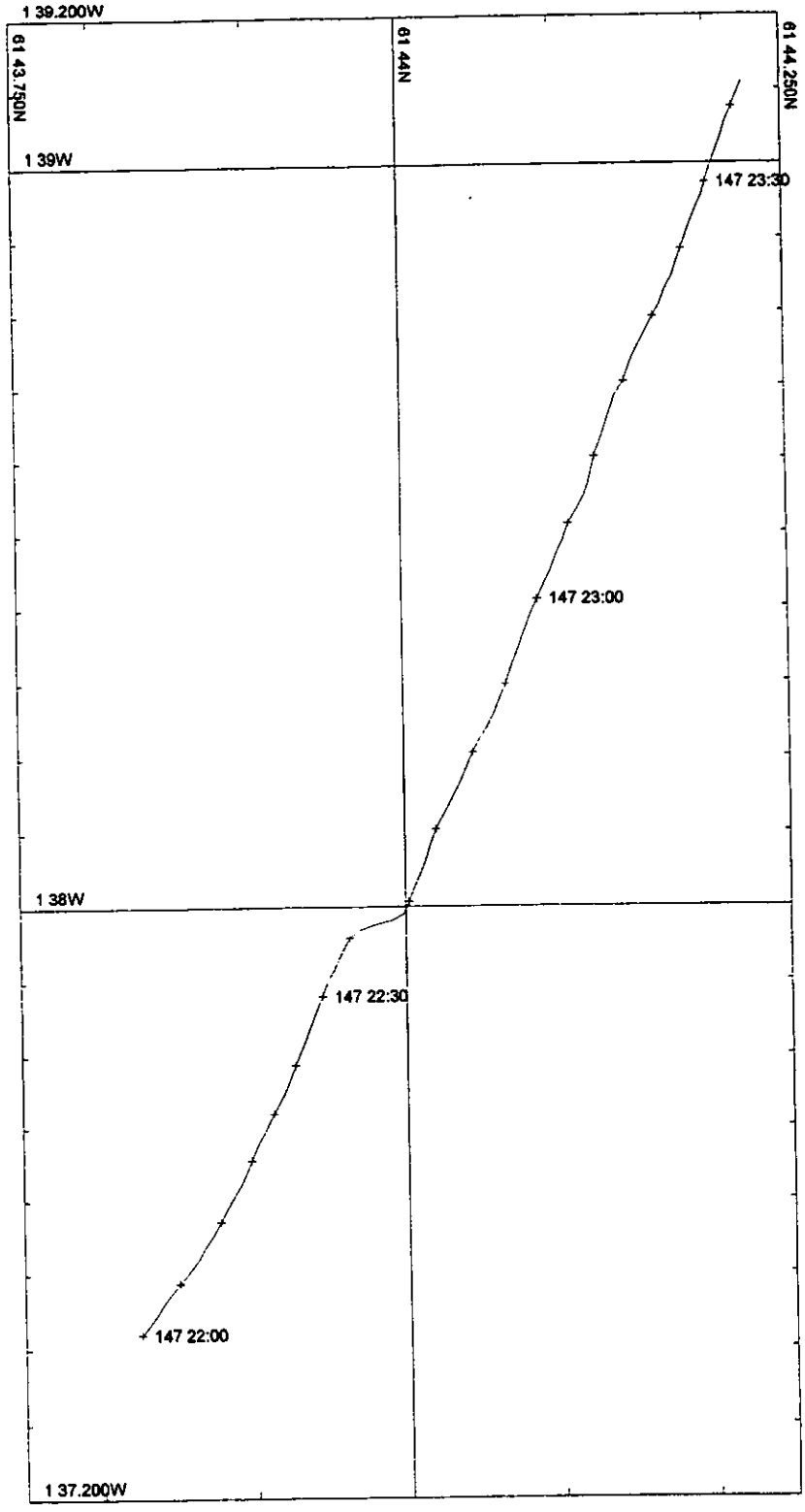


Chart 7. WASP track, station 54520#1 (Area 3A).

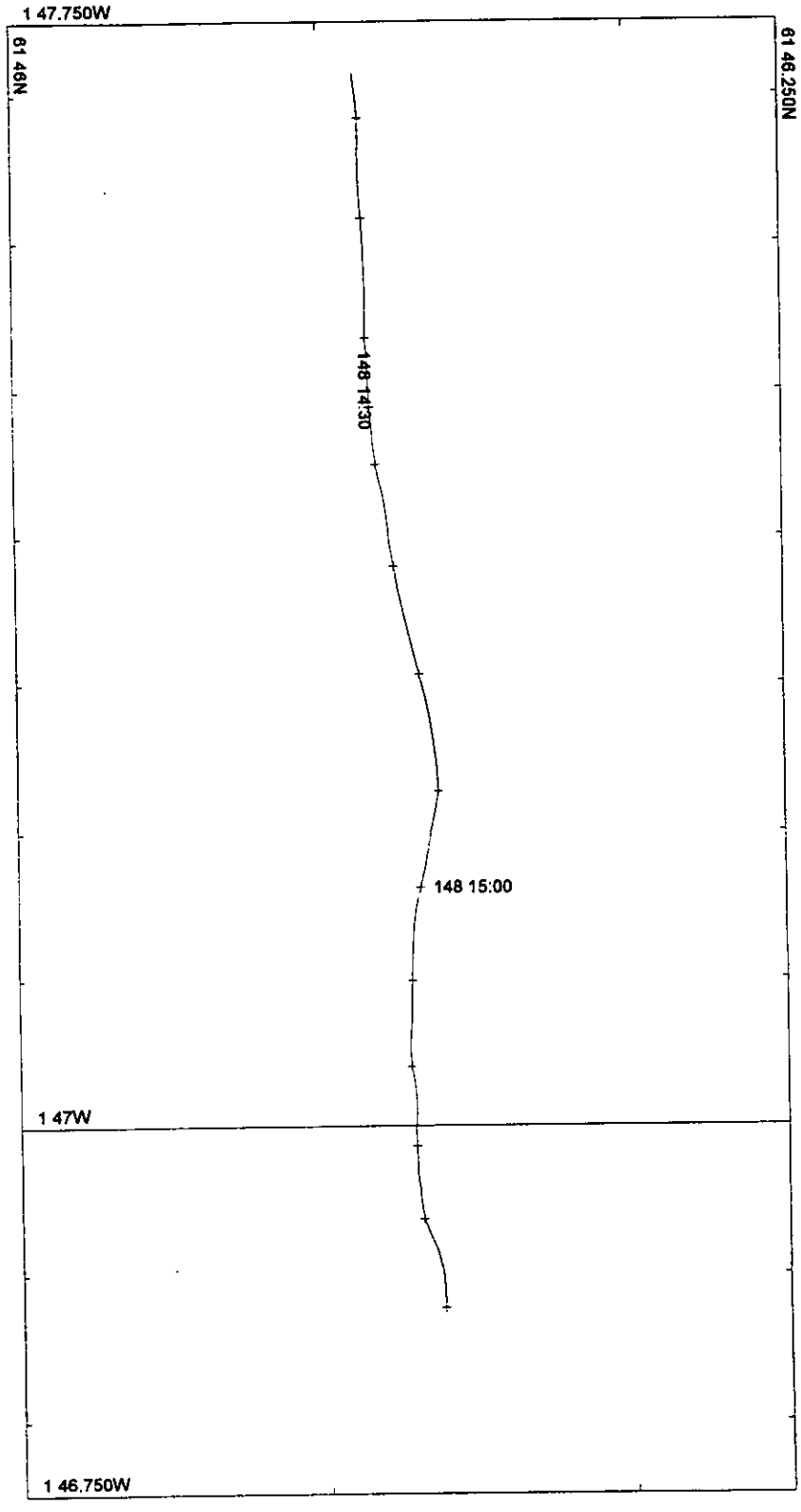


Chart 8. WASP track, station 54524#1 (Area 3A).

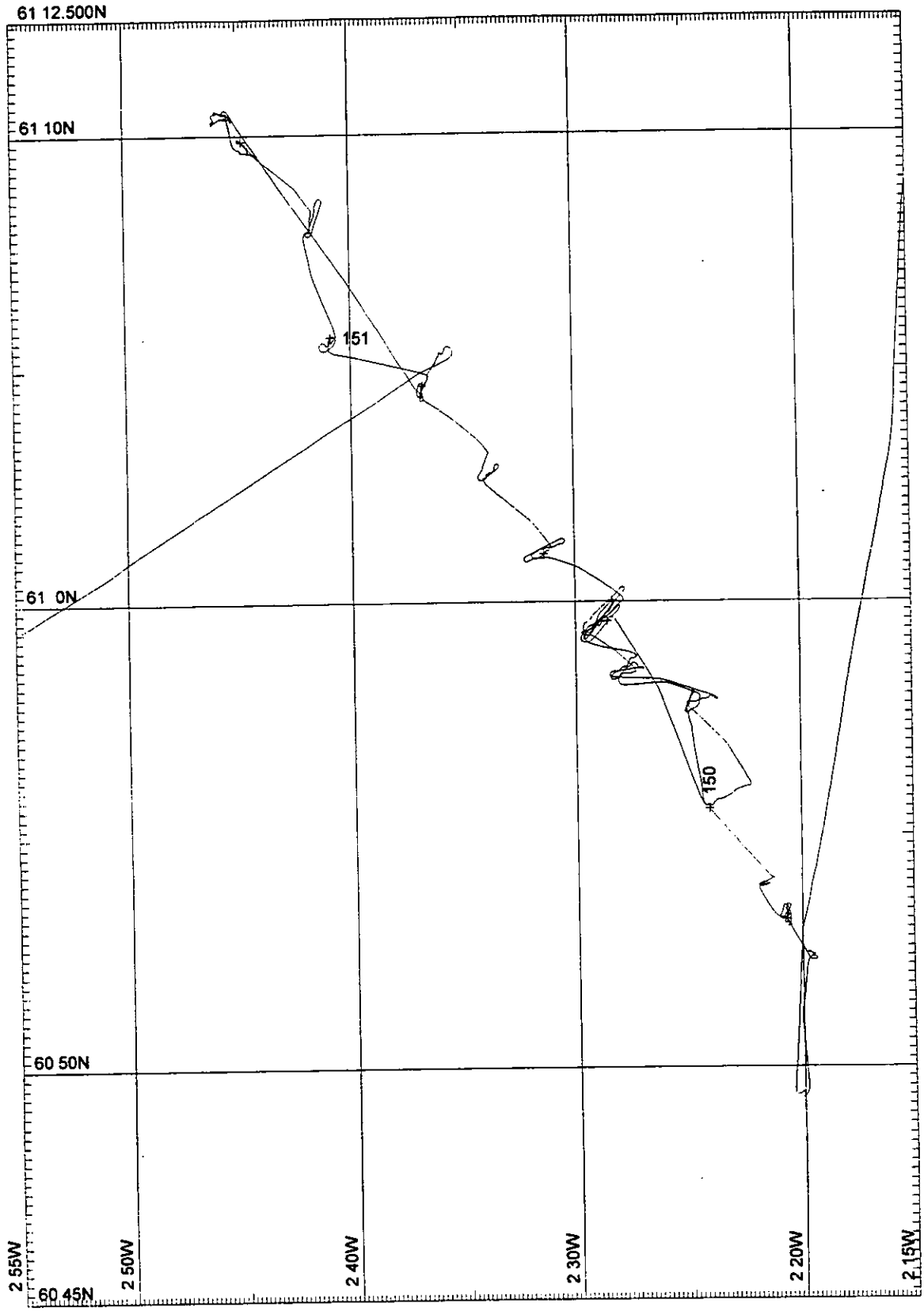


Chart 9. Ship's track through the area of the AMES '96 transect.

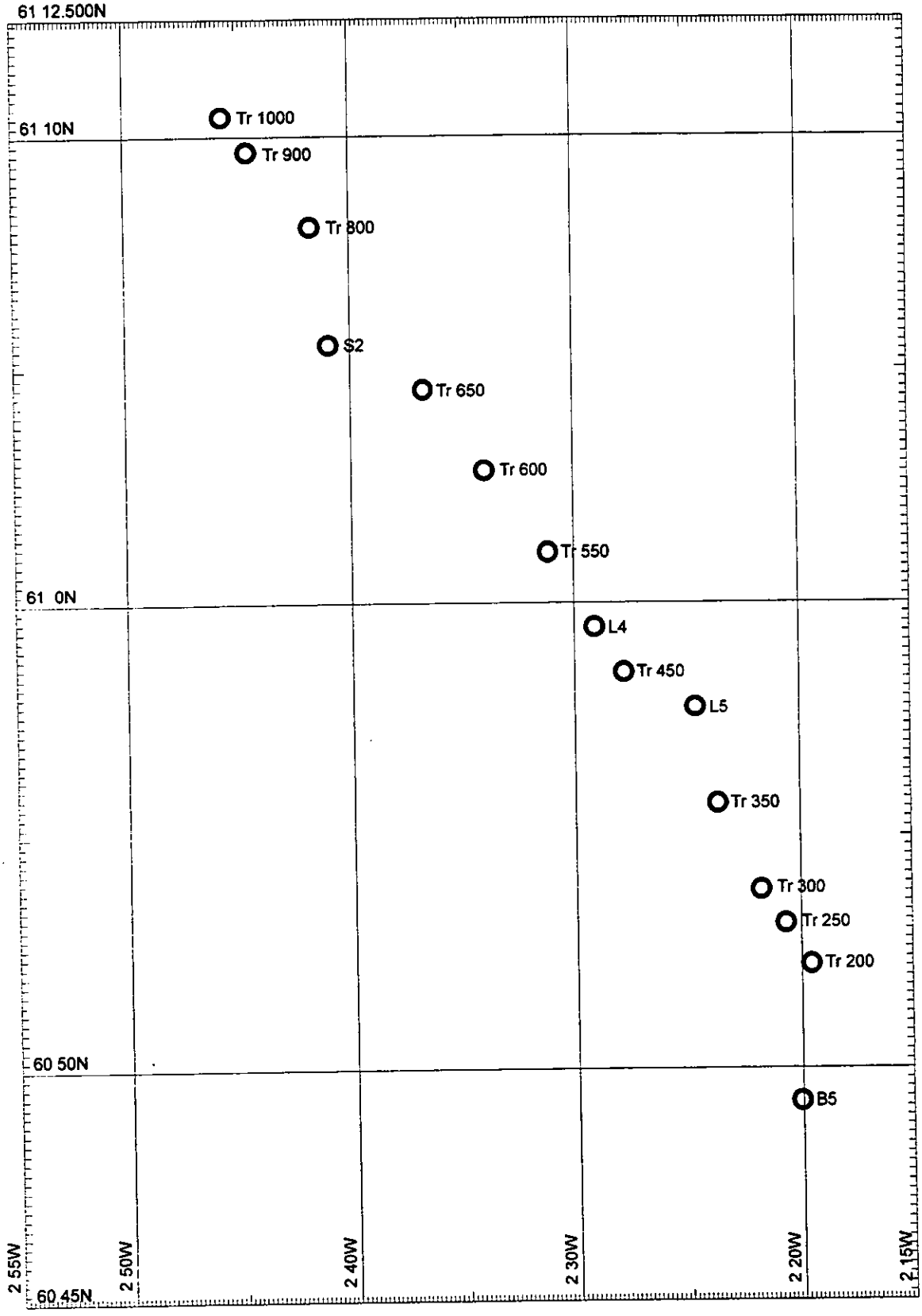


Chart 10. Survey operations on the AMES '96 transect.

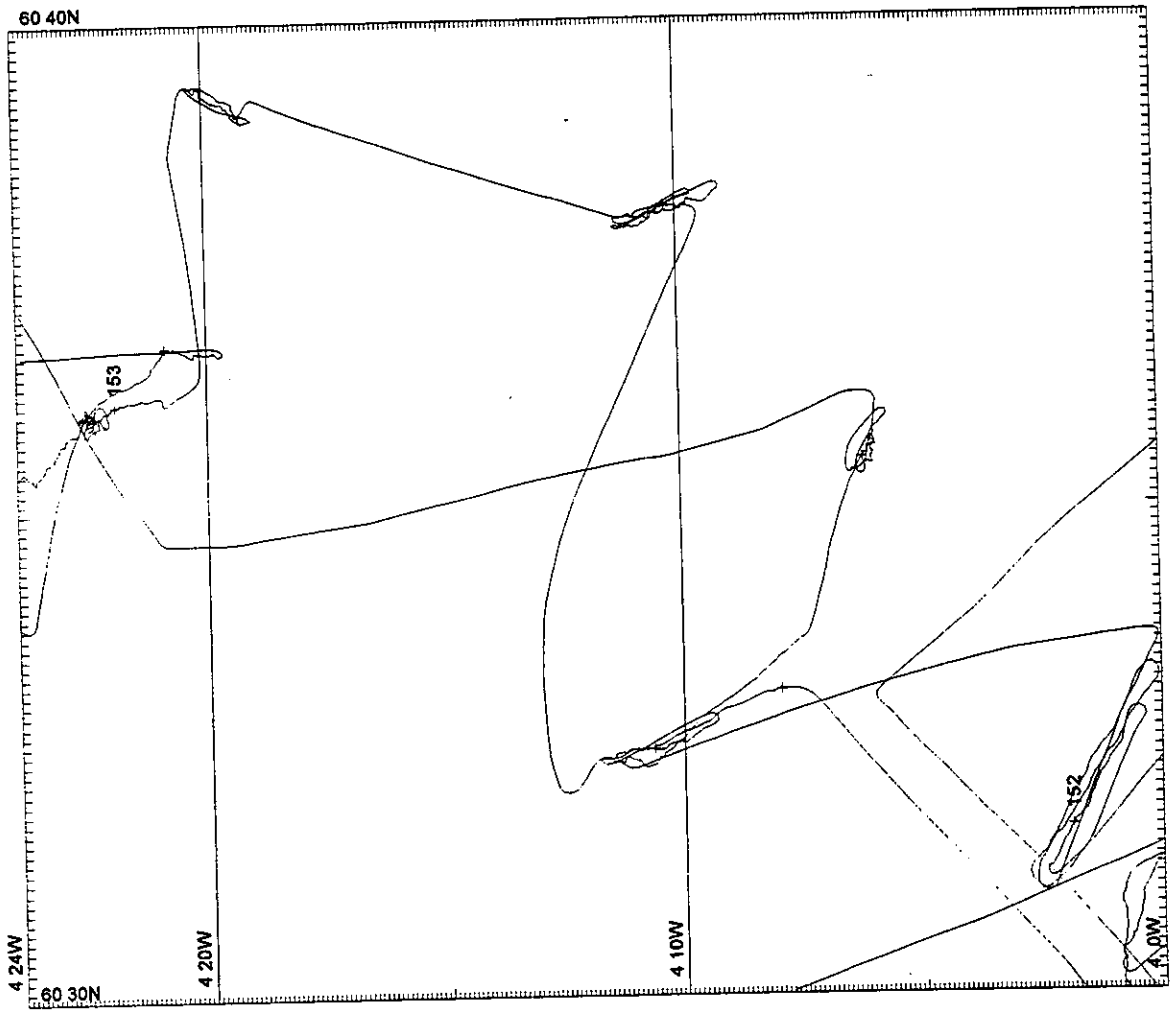


Chart 11. Ship's track through survey area 2.

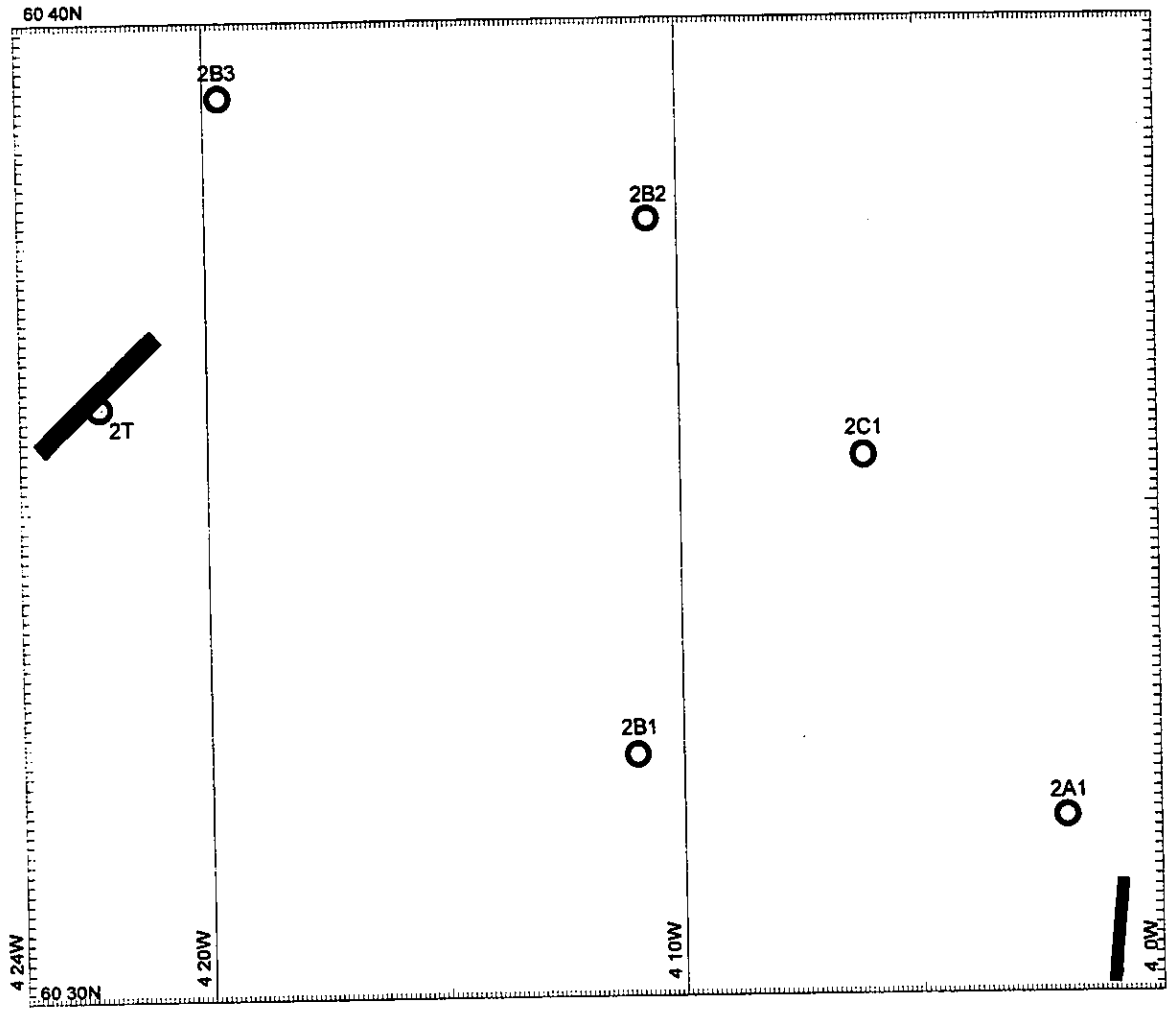


Chart 12. Survey operations in area 2.

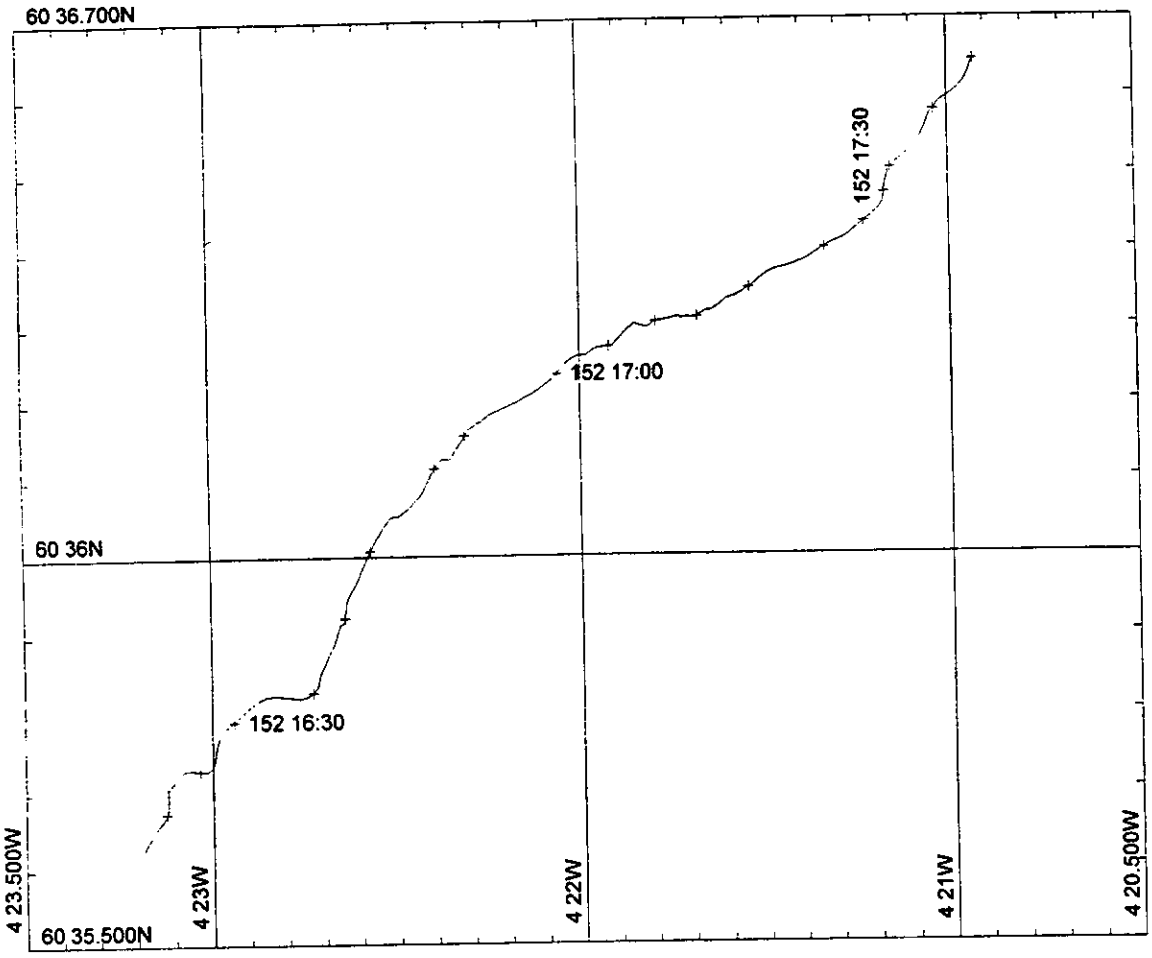


Chart 13. WASP track, station 54551#1 (Area 2).

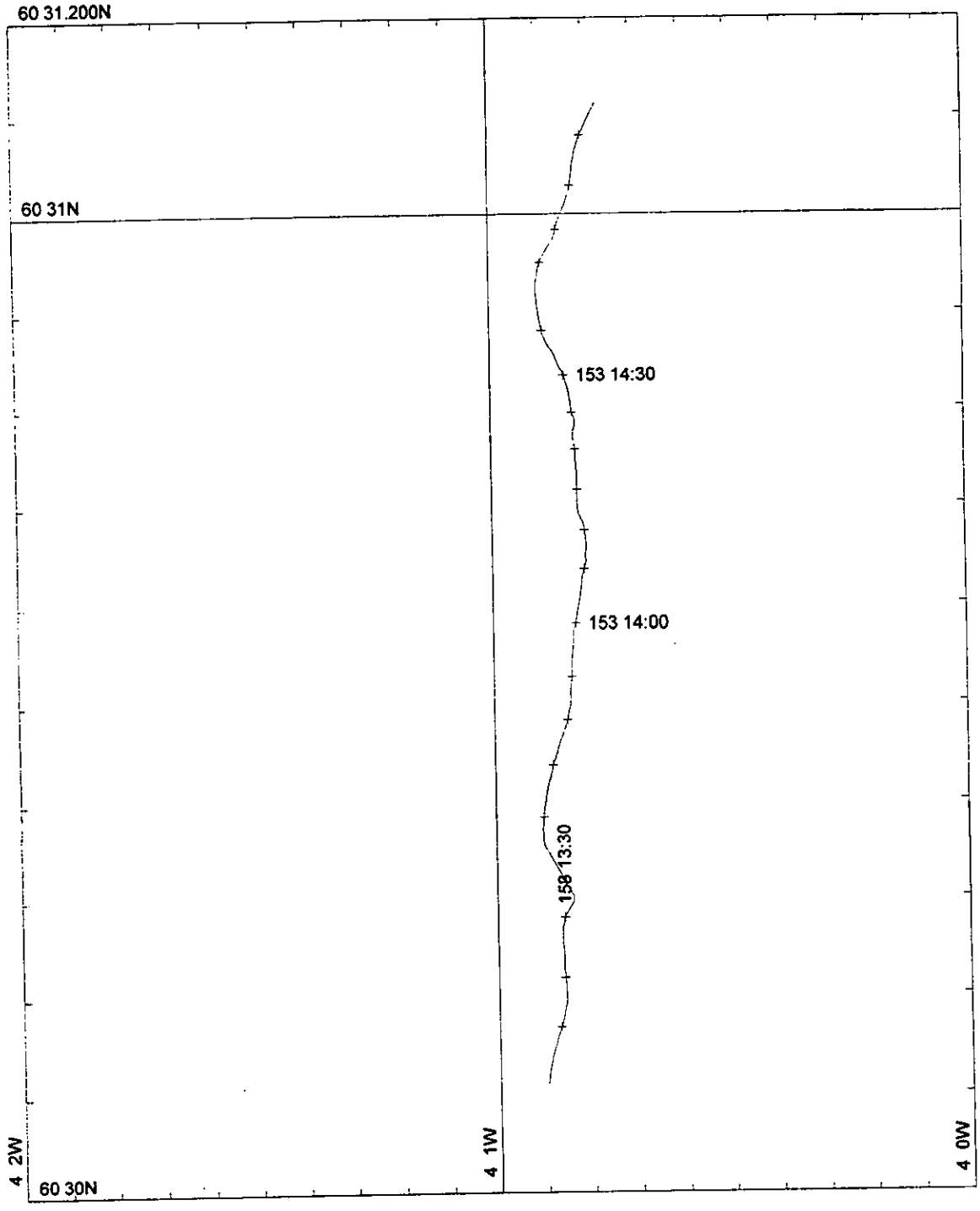


Chart 14. WASP track, station 54556#1 (Area 2).

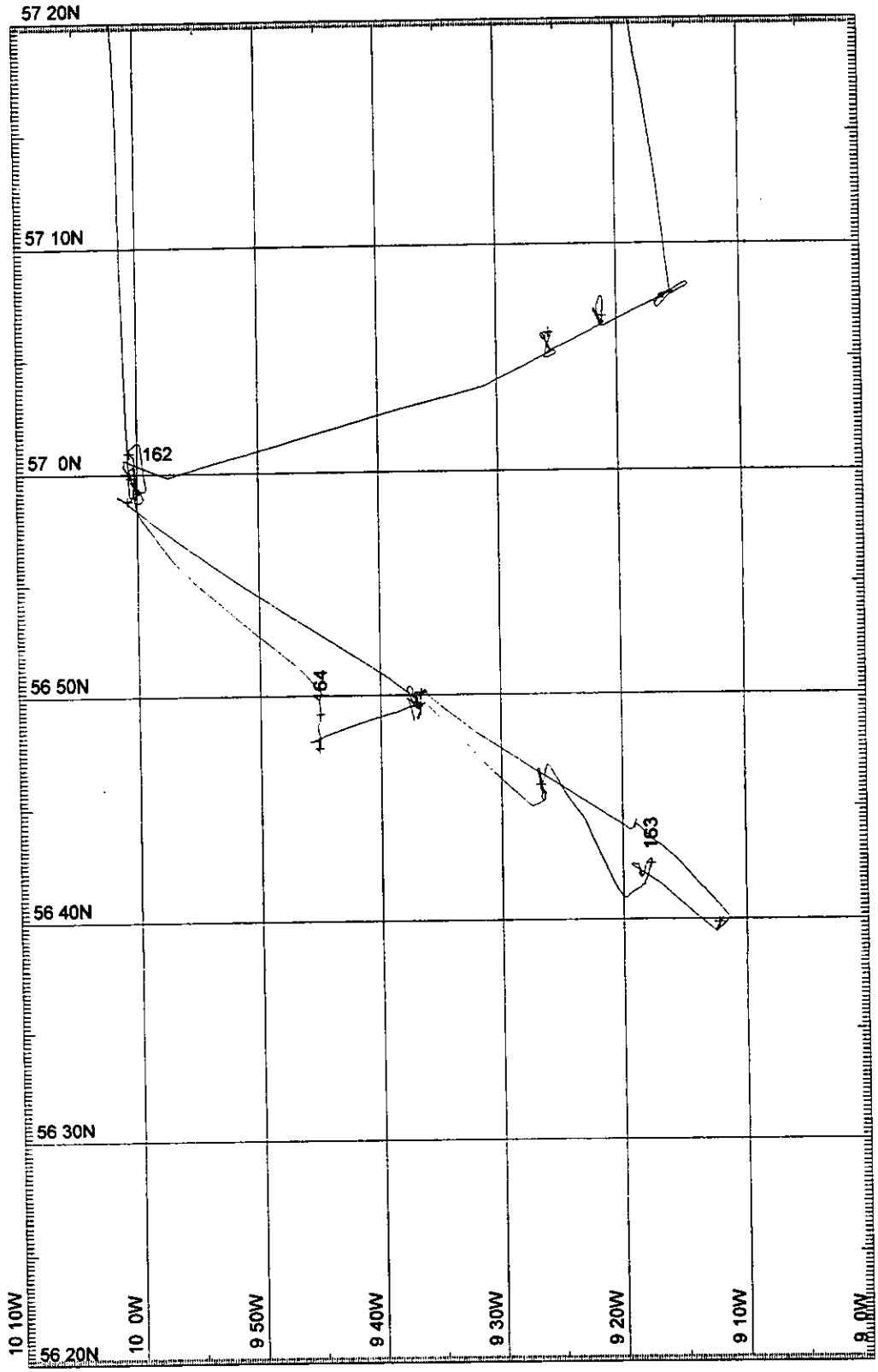


Chart 15. Ship's track through survey area 0.

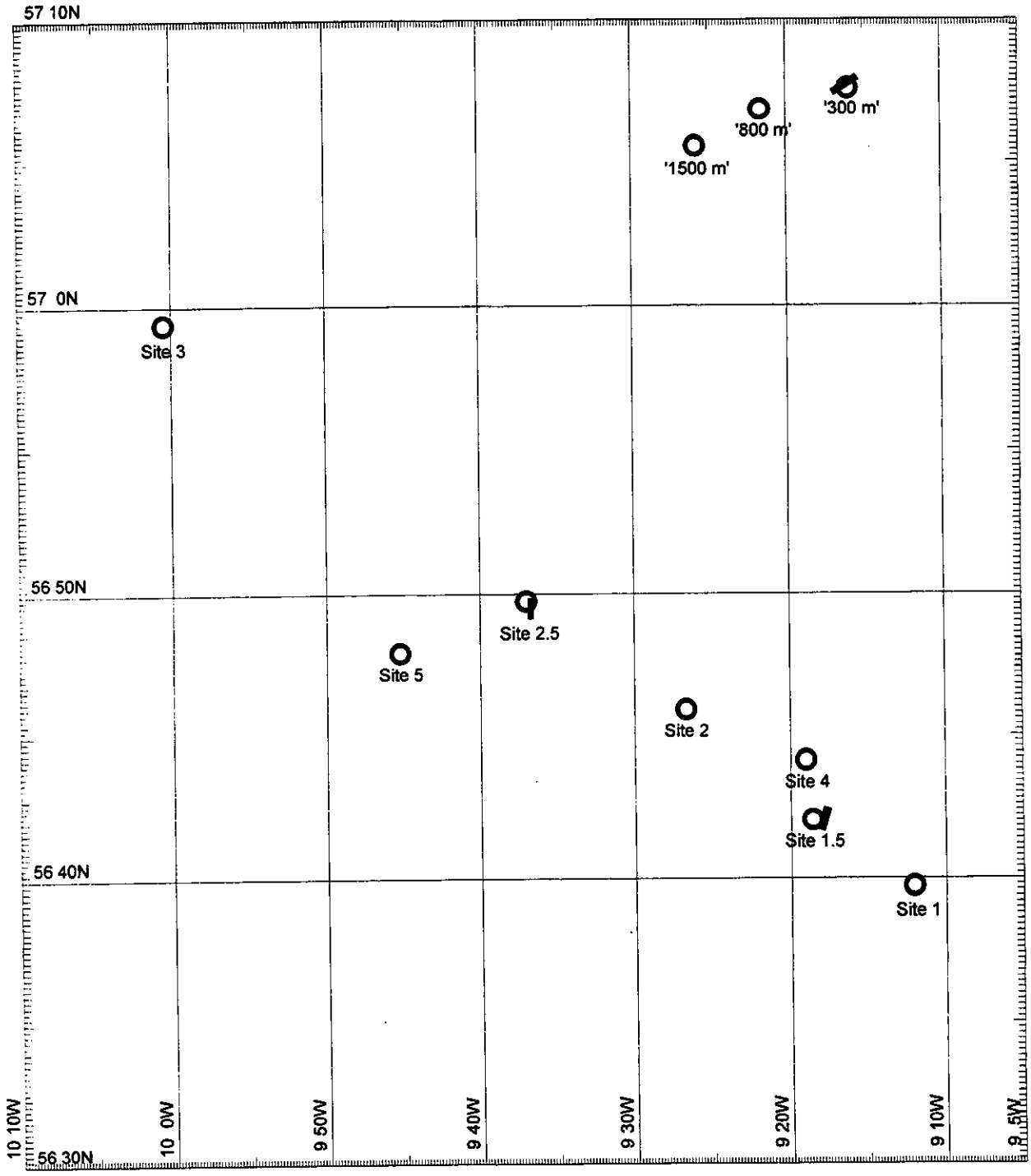


Chart 16. Survey operations in area 0.

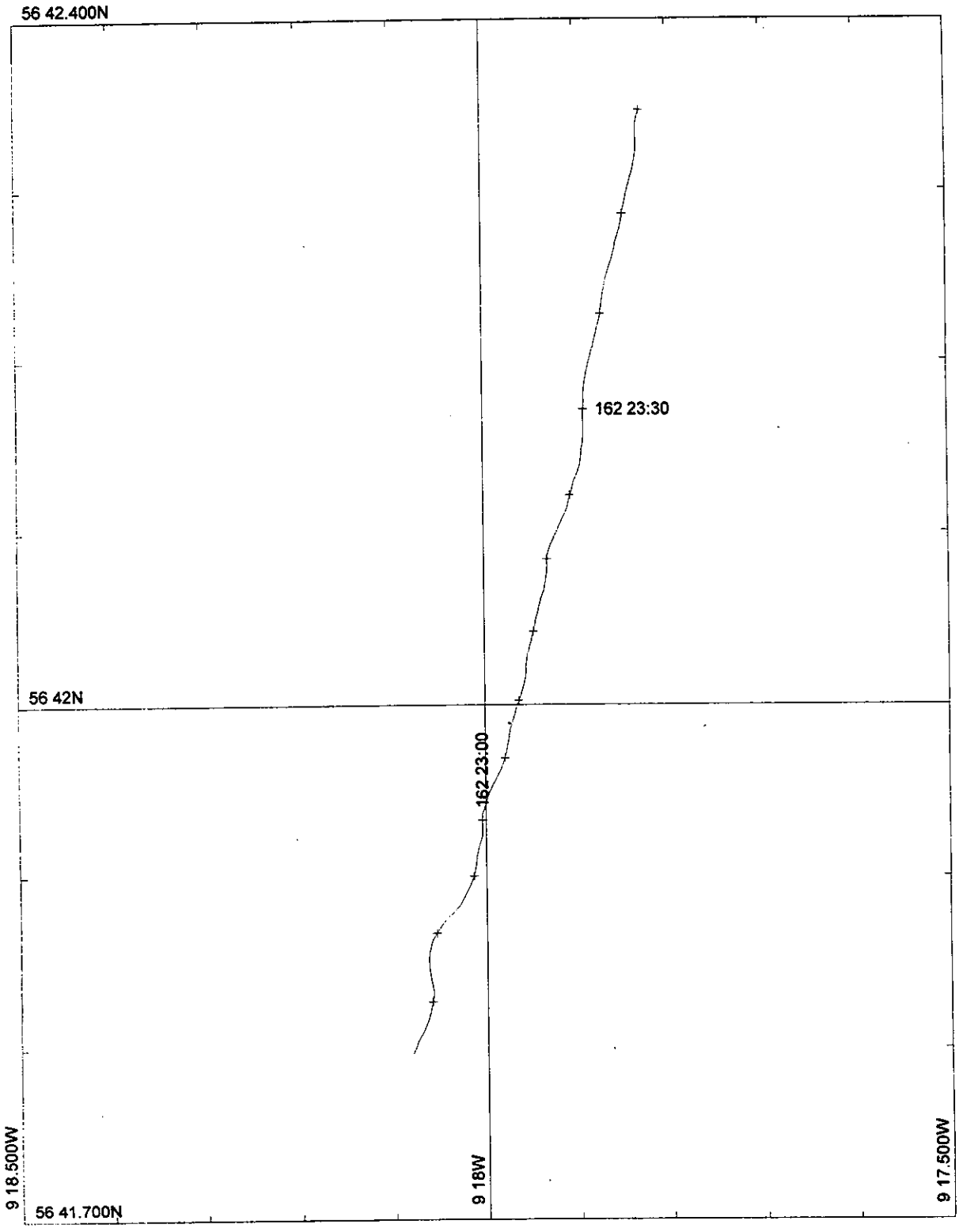


Chart 17. WASP track, station 54581#1 (Area 0).

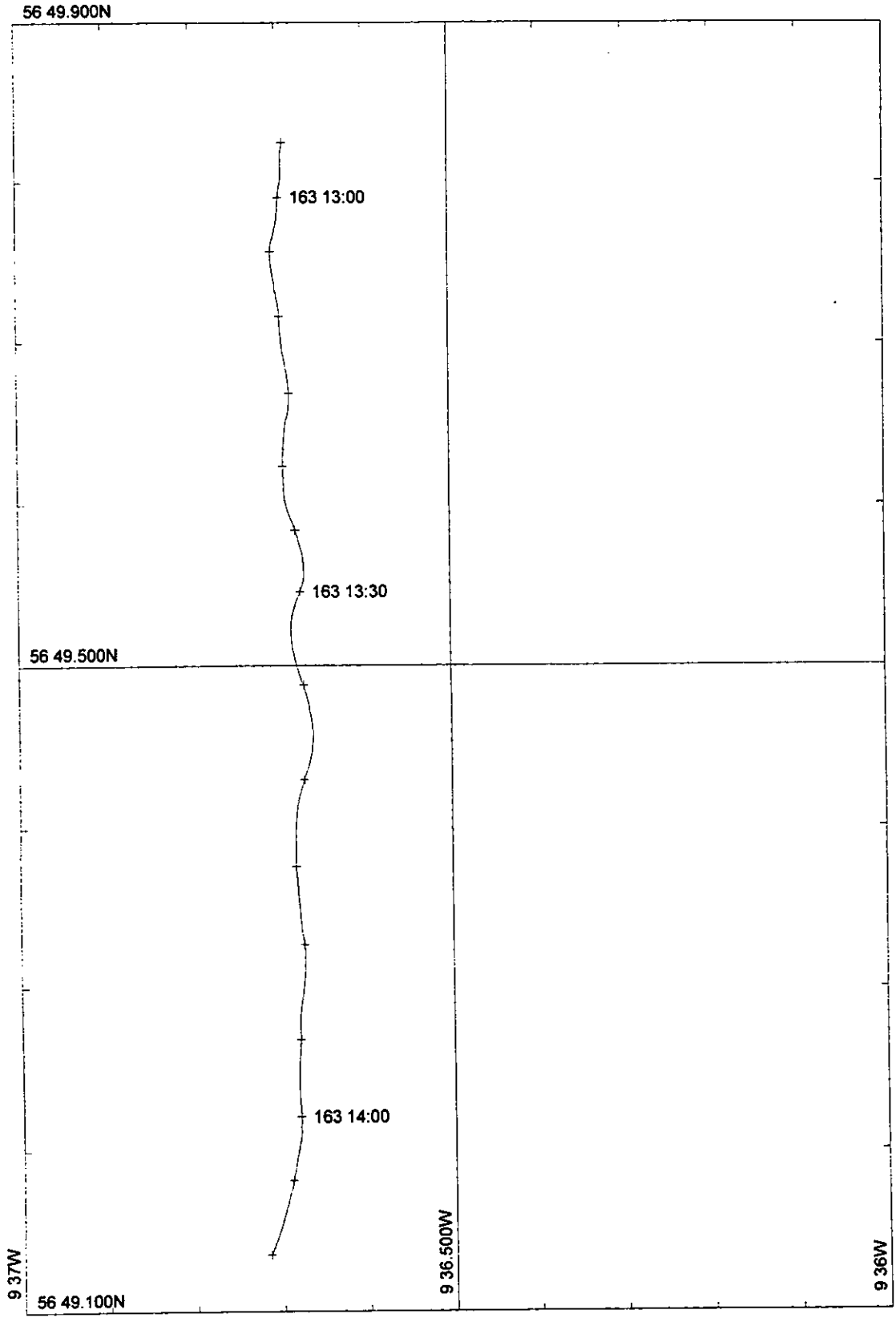


Chart 18. WASP track, station 54584#1 (Area 0).

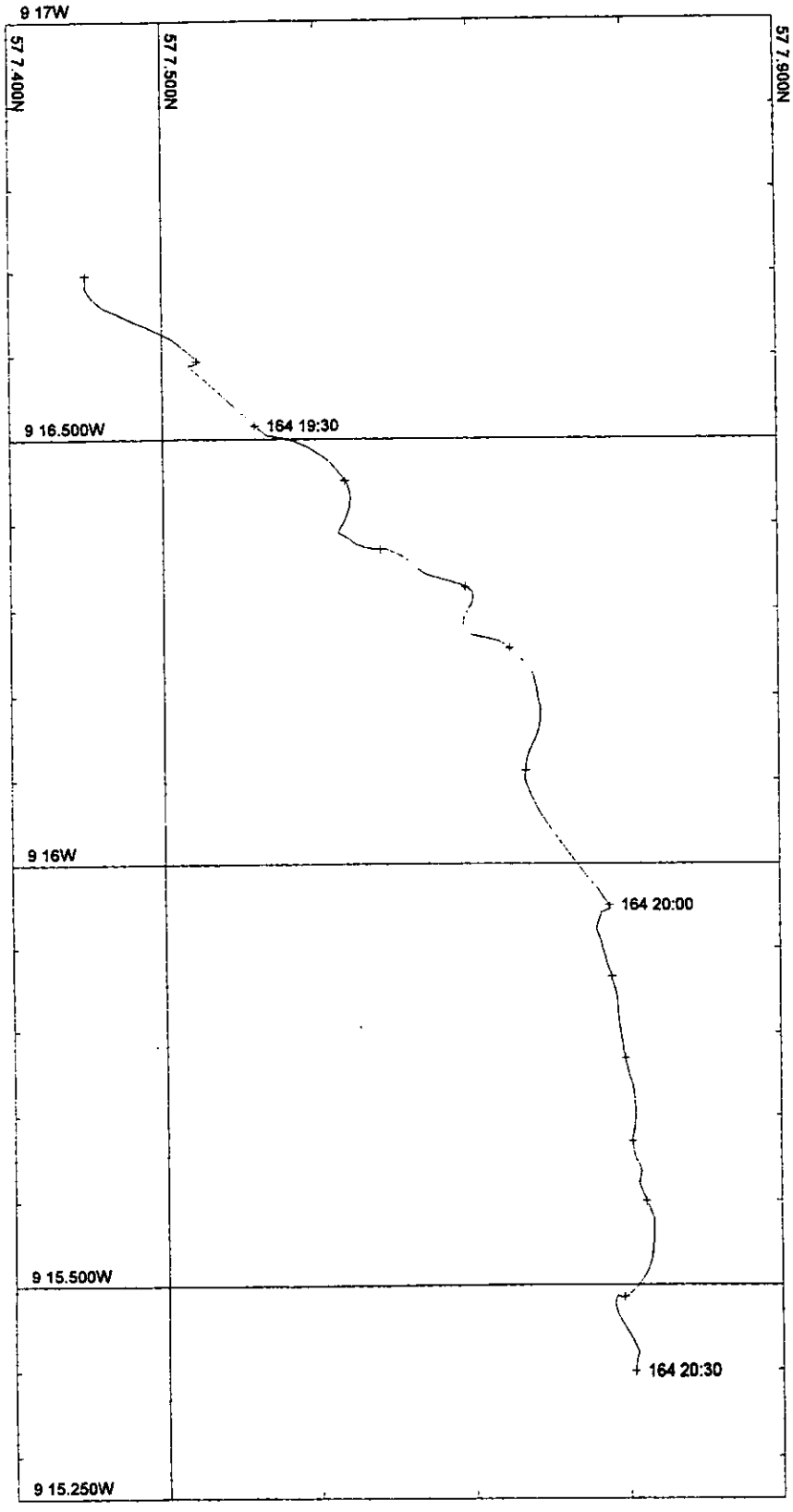


Chart 19. WASP track, station 54589#1 (Area 0).

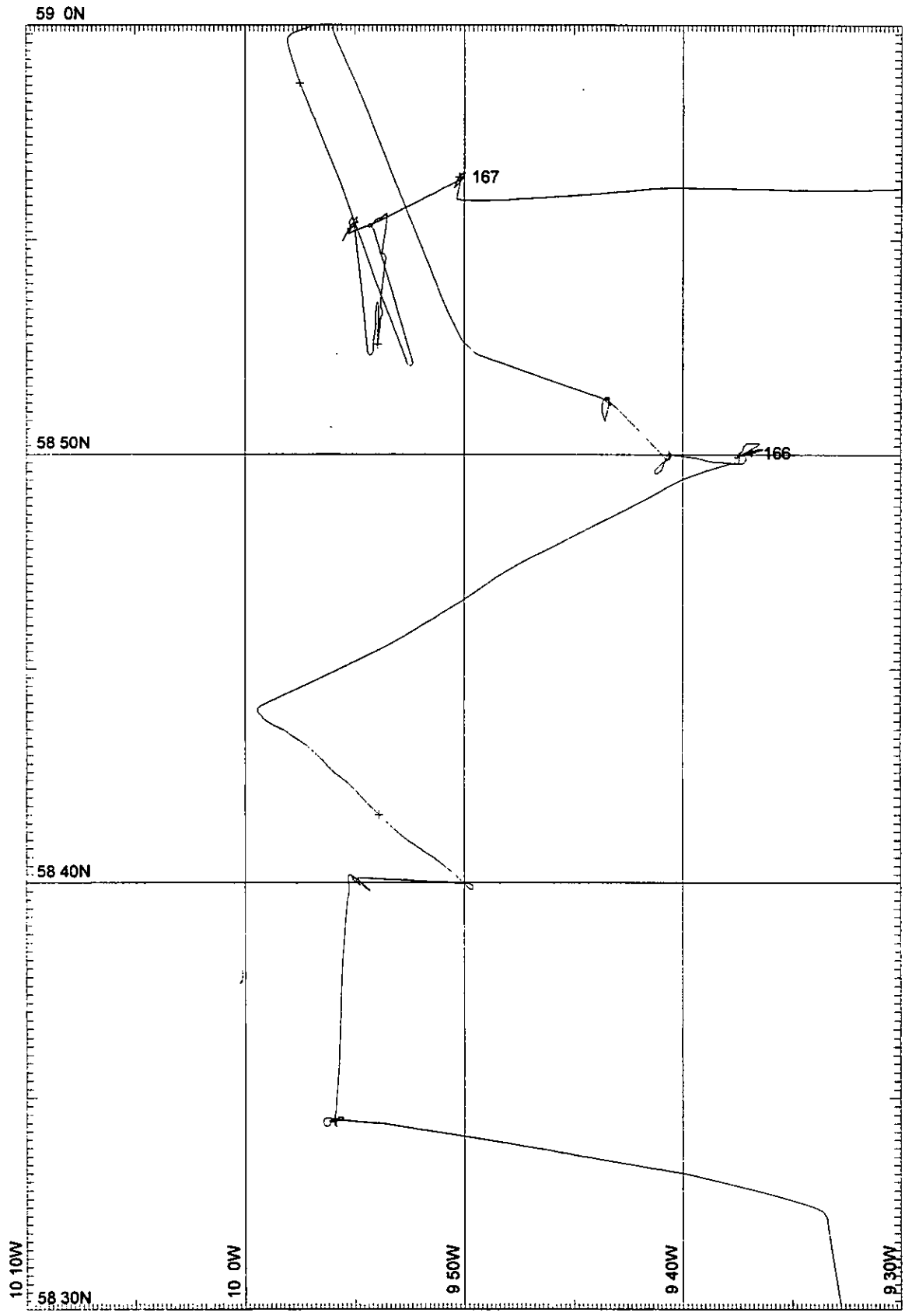


Chart 20. Ship's track through area 1A.

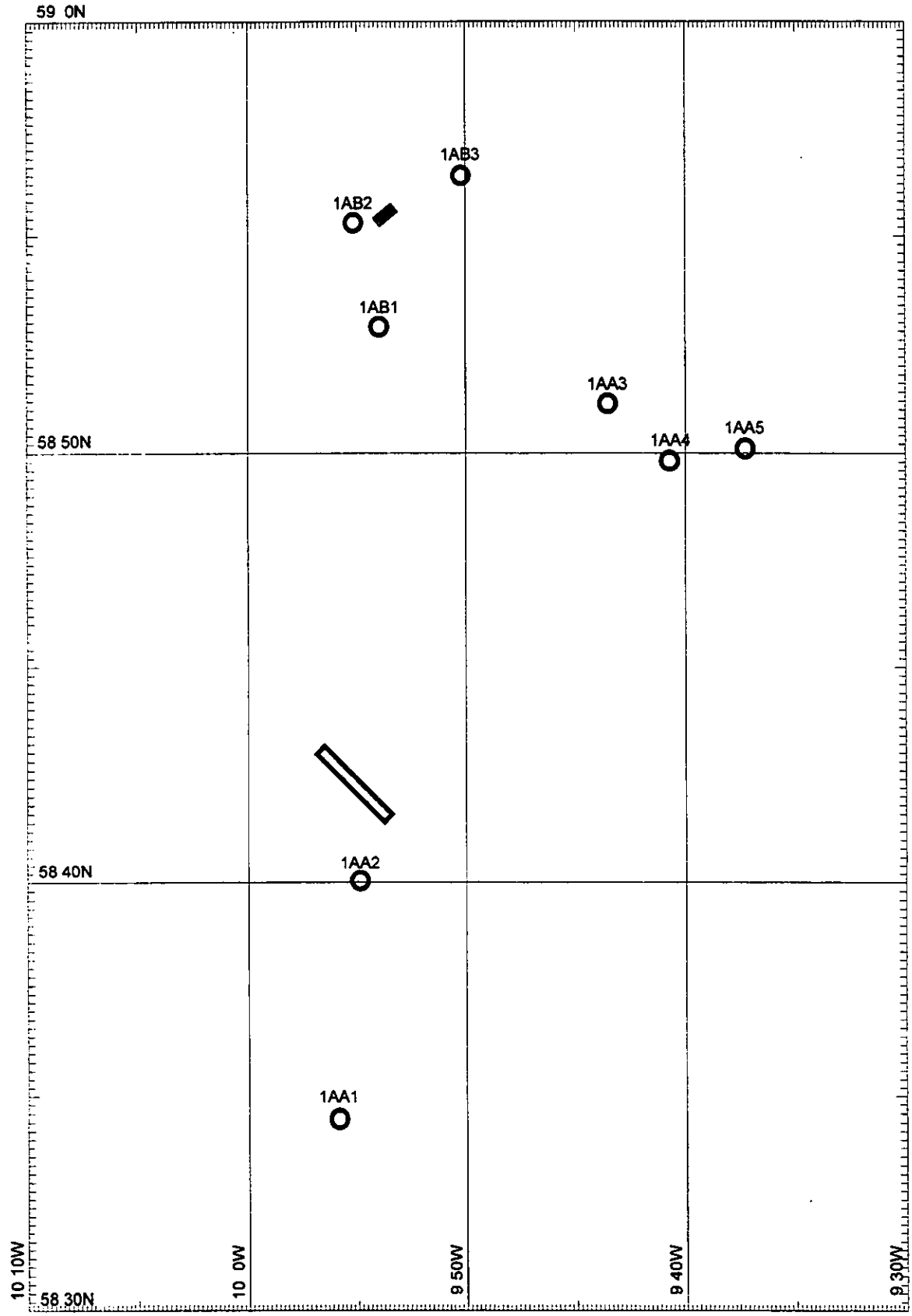


Chart 21. Survey operations in area 1A.

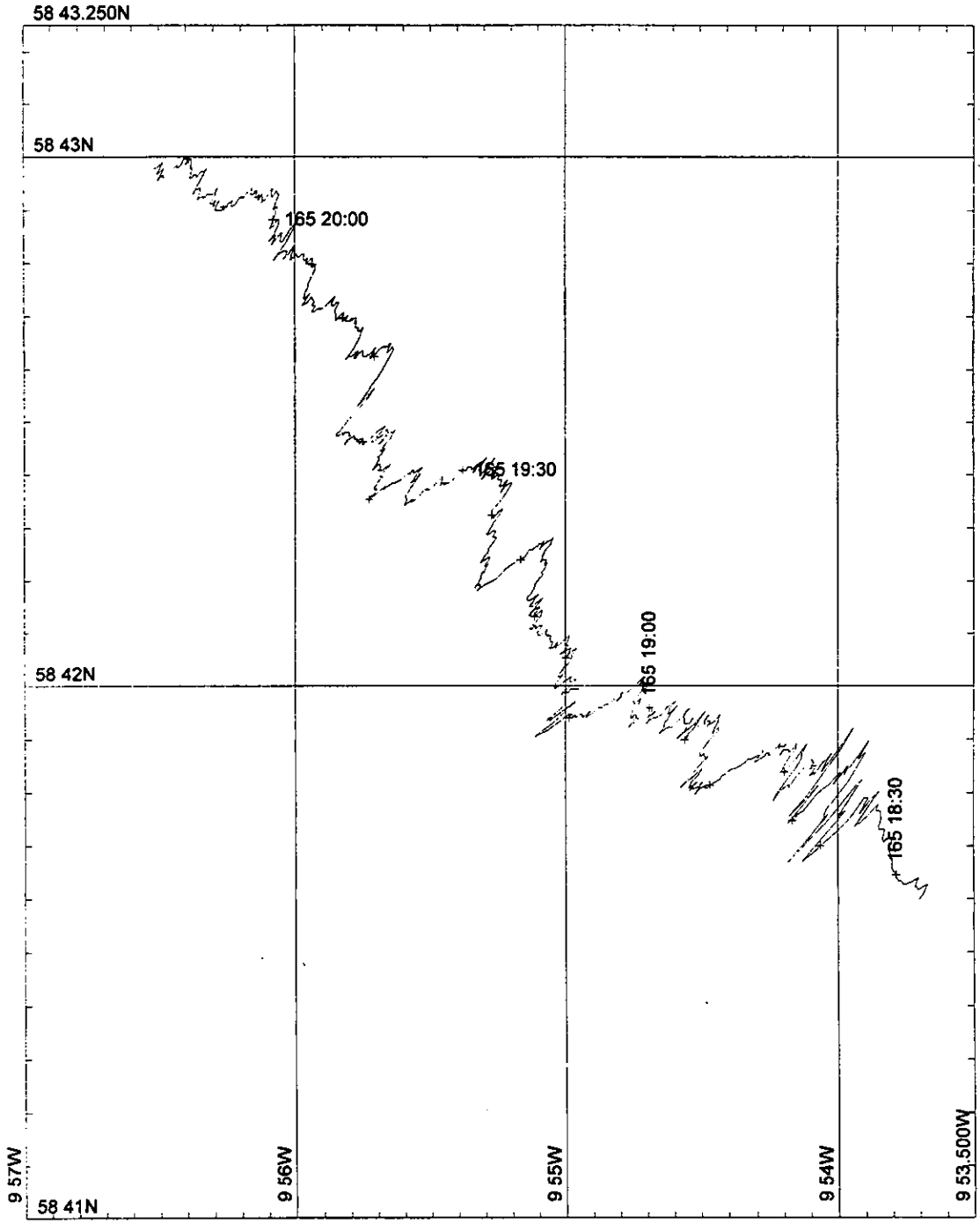


Chart 22. Epibenthic sledge track, station 54593#1 (Area 1A).

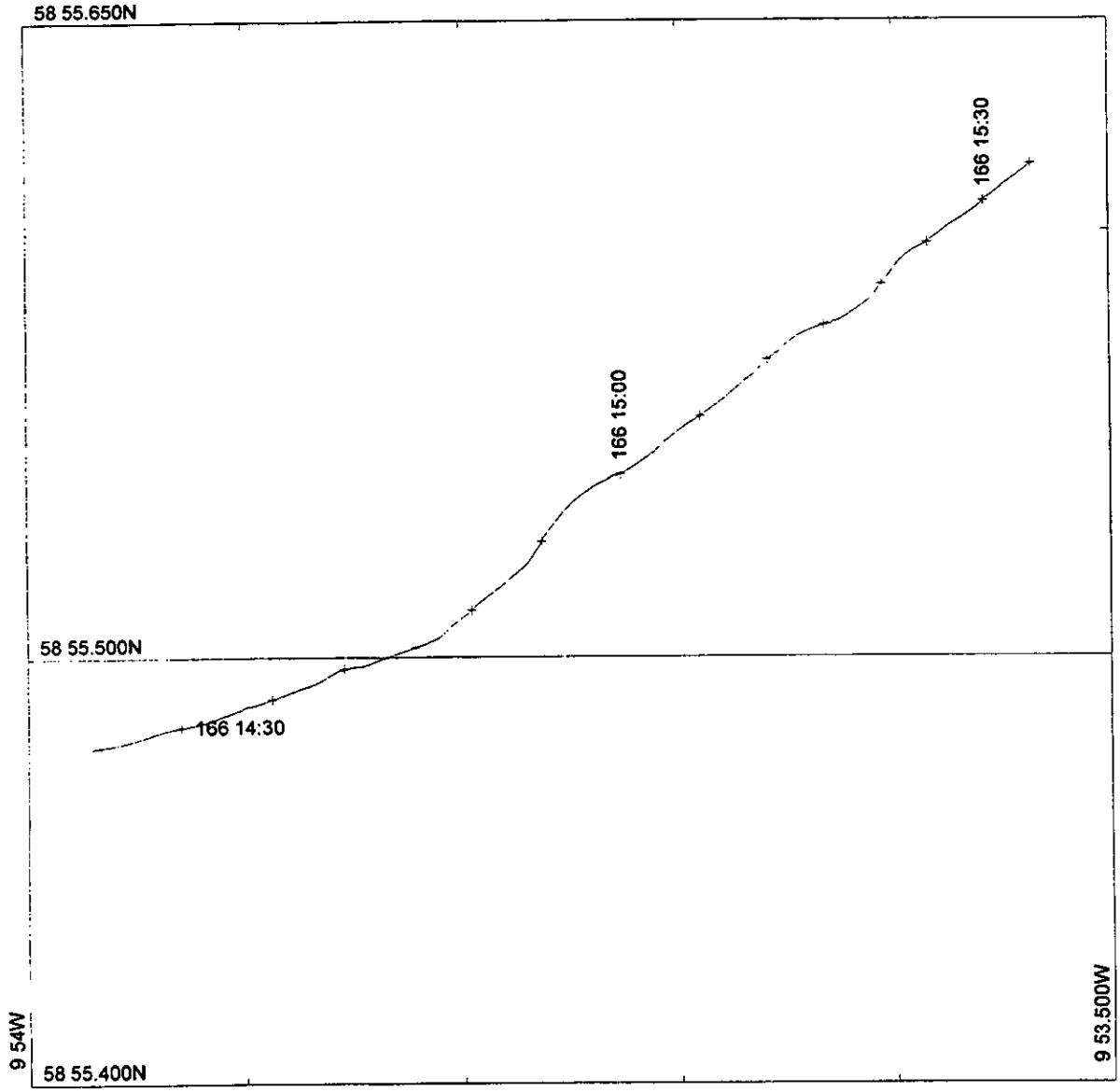


Chart 23. WASP track, station 54597#1 (Area 1A).

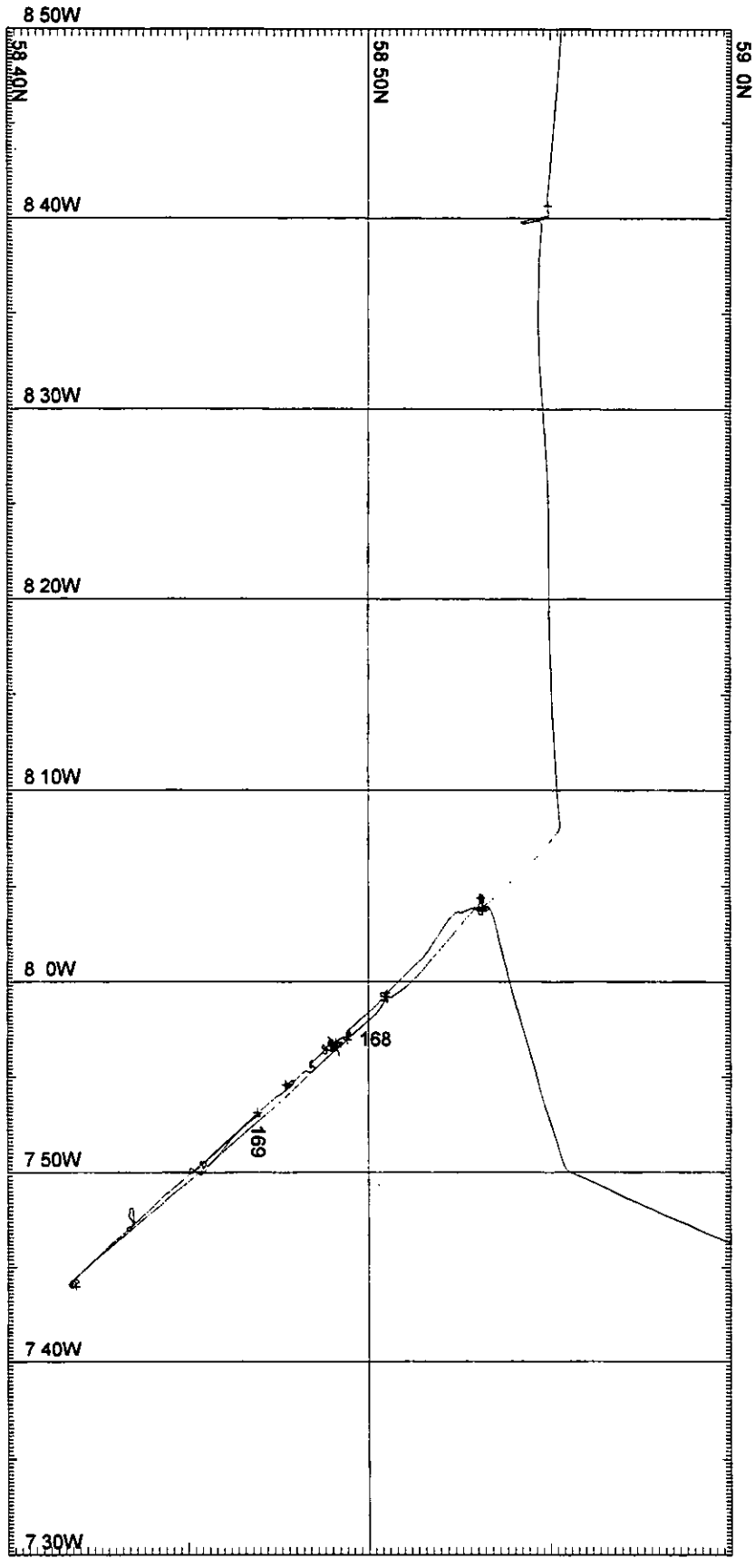


Chart 24. Ship's track through survey area 1BC.

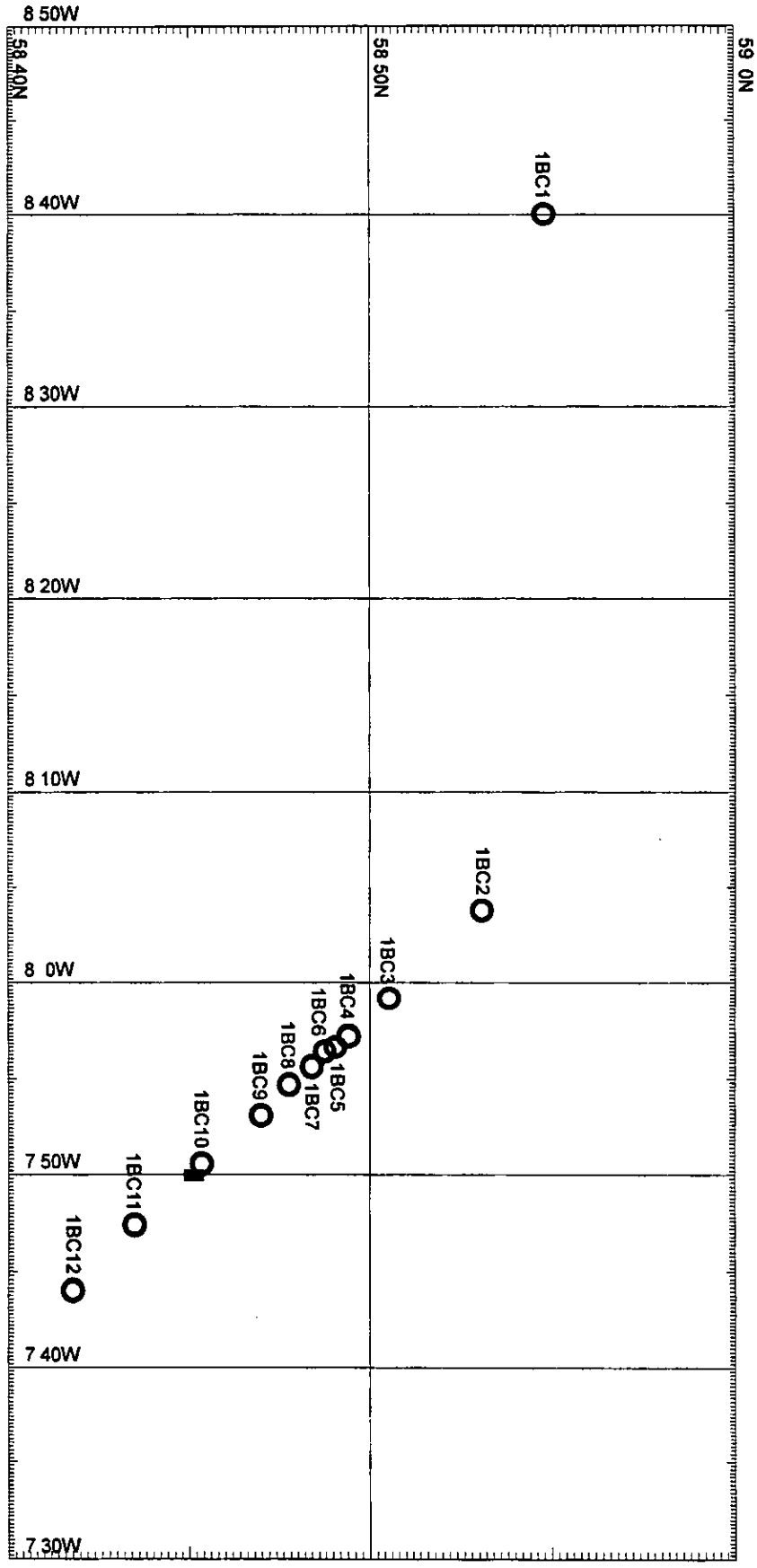


Chart 25. Survey operations in area 1BC.

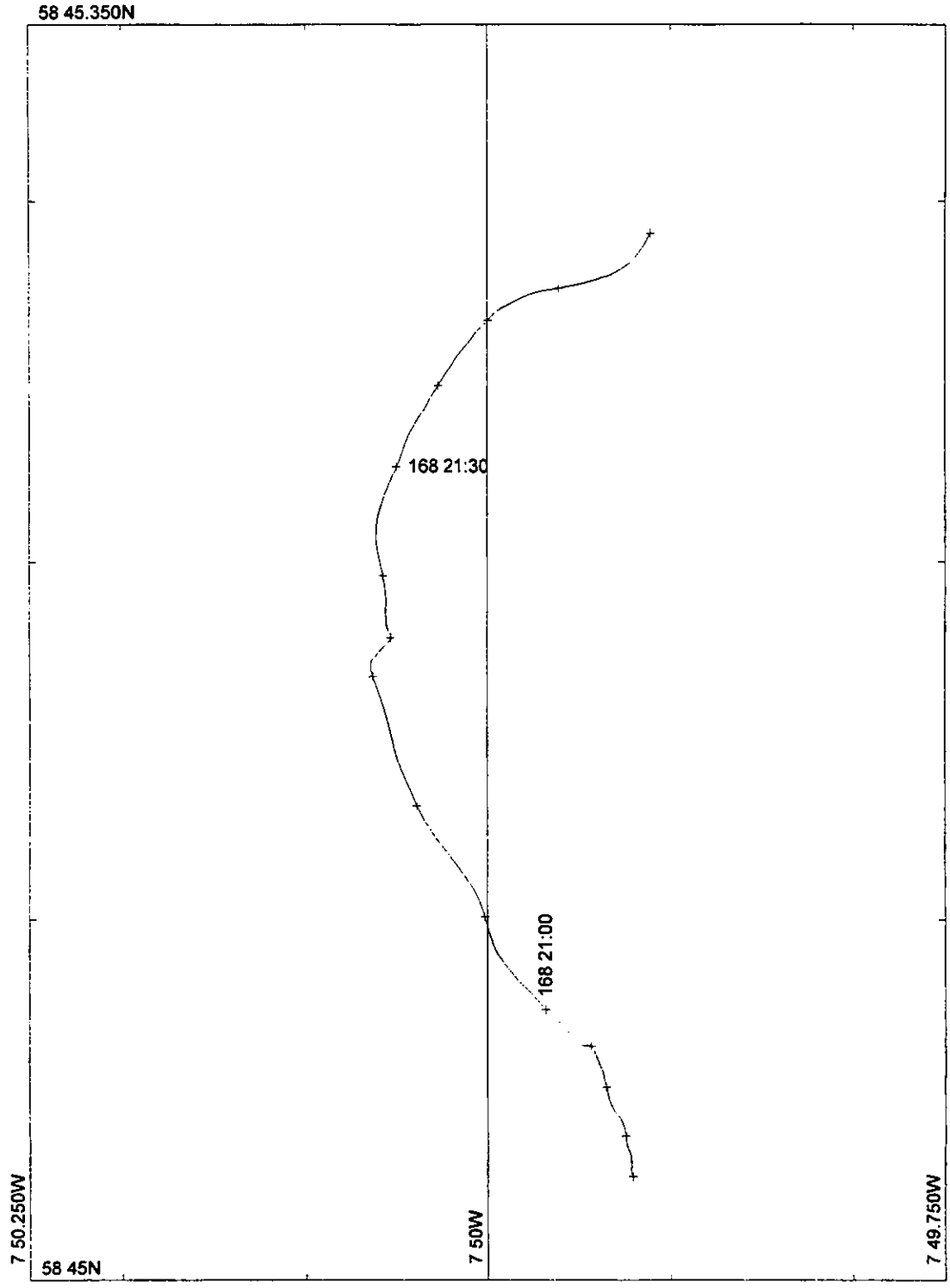


Chart 26. WASP track, station 54610#1 (Area 1BC).

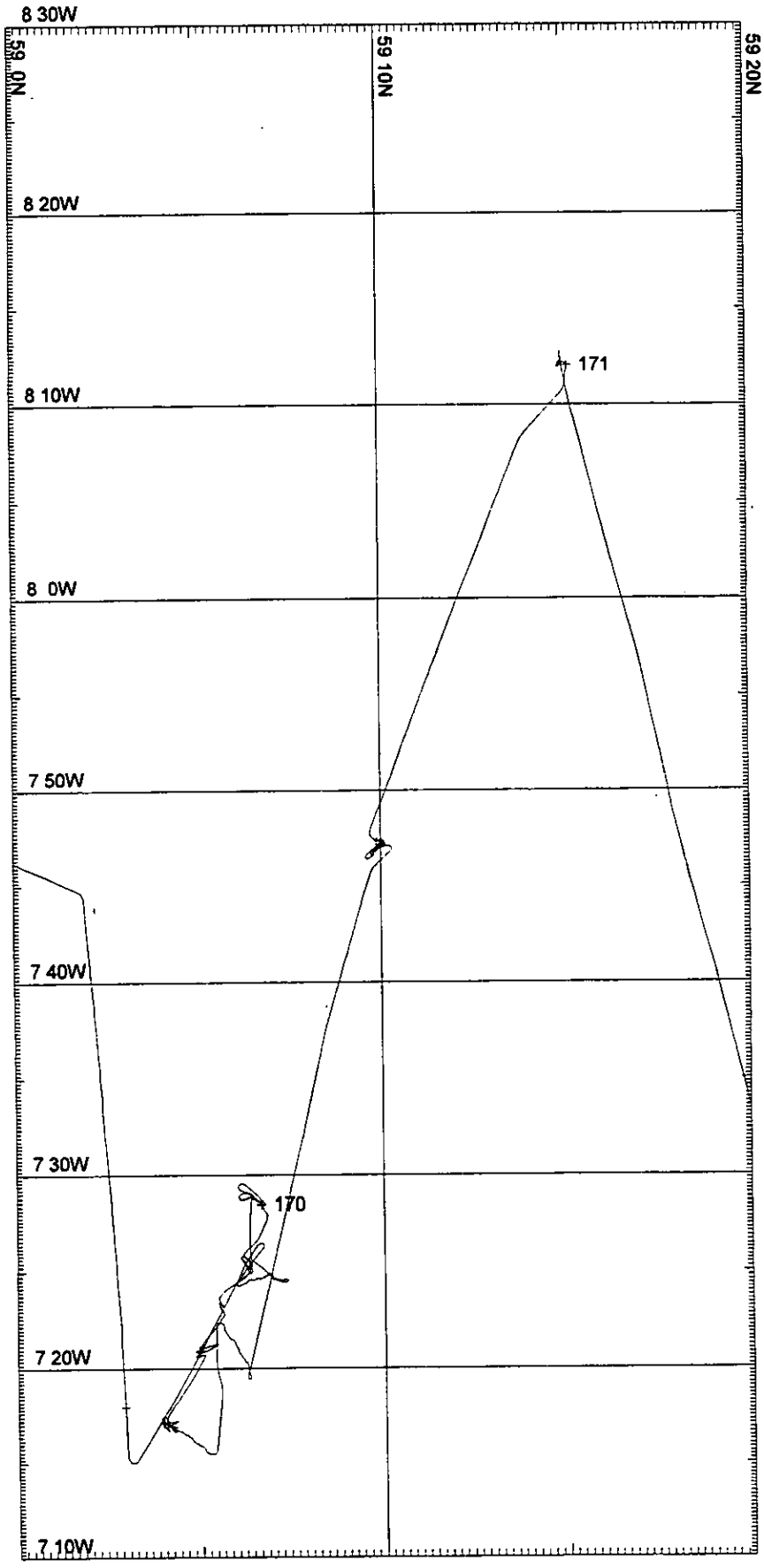


Chart 27. Ship's track through survey area 1BB.

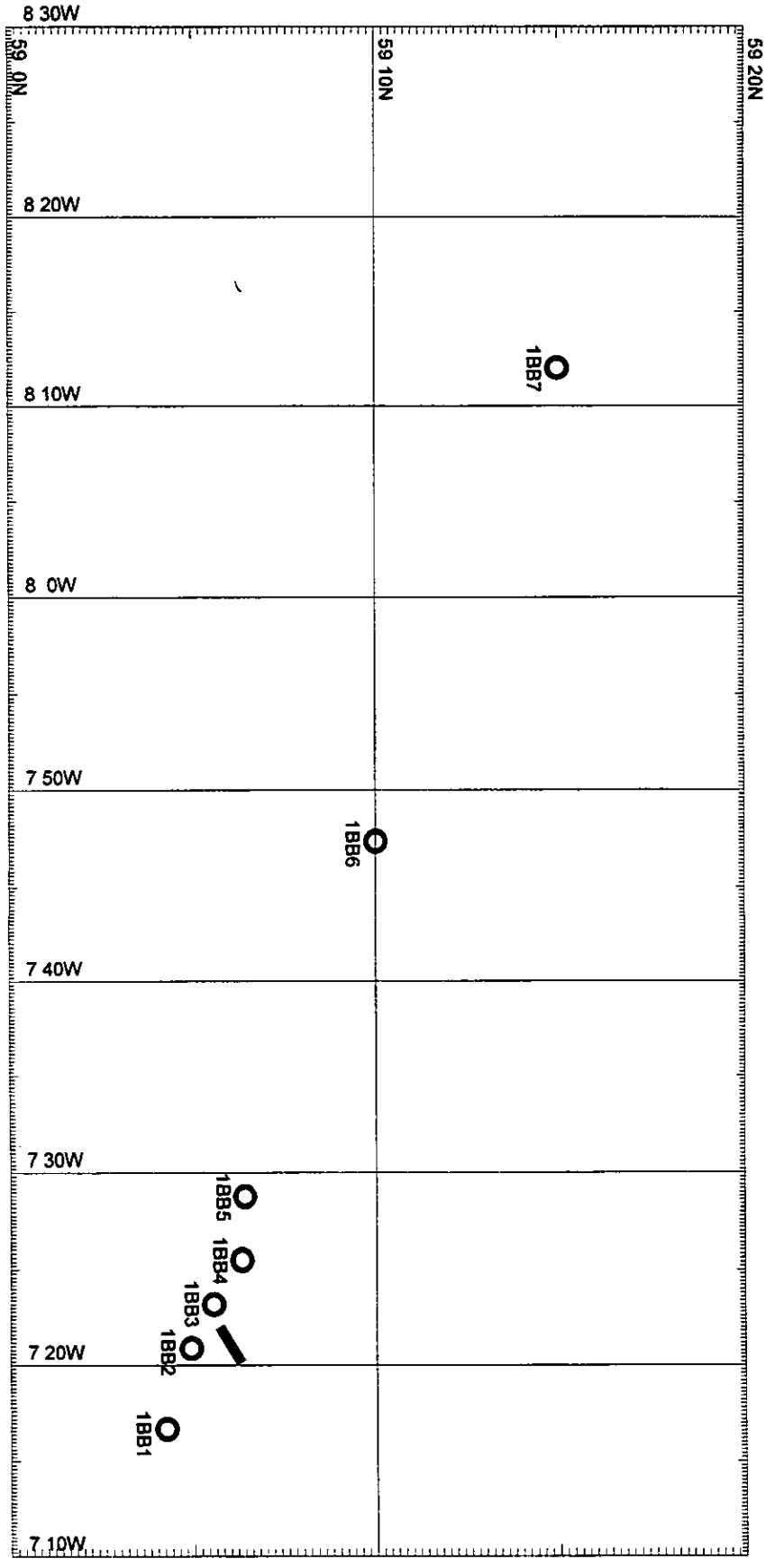


Chart 28. Survey operations in area 1BB.

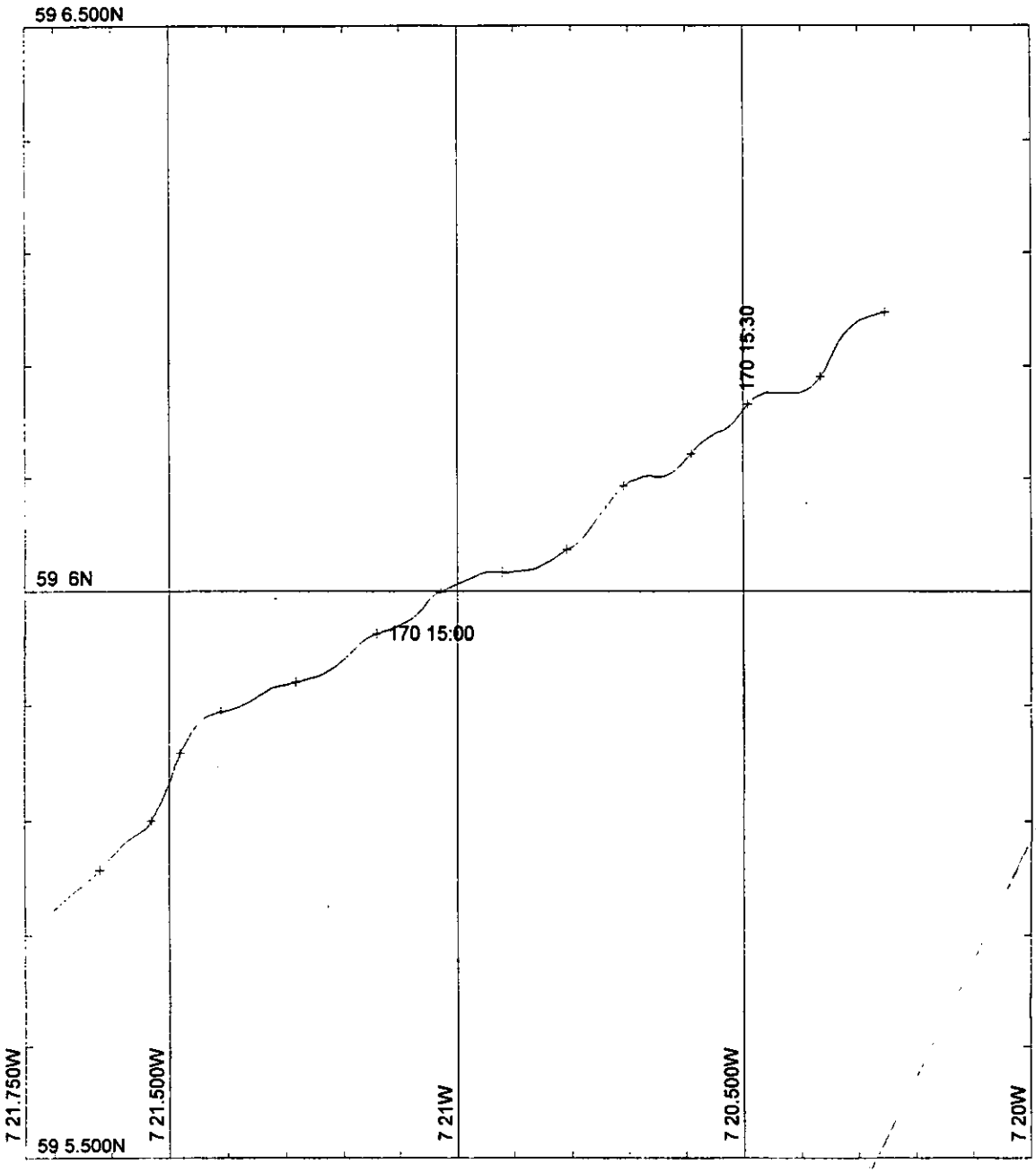


Chart 29. WASP track, station 54623#1, (Area 1BB).

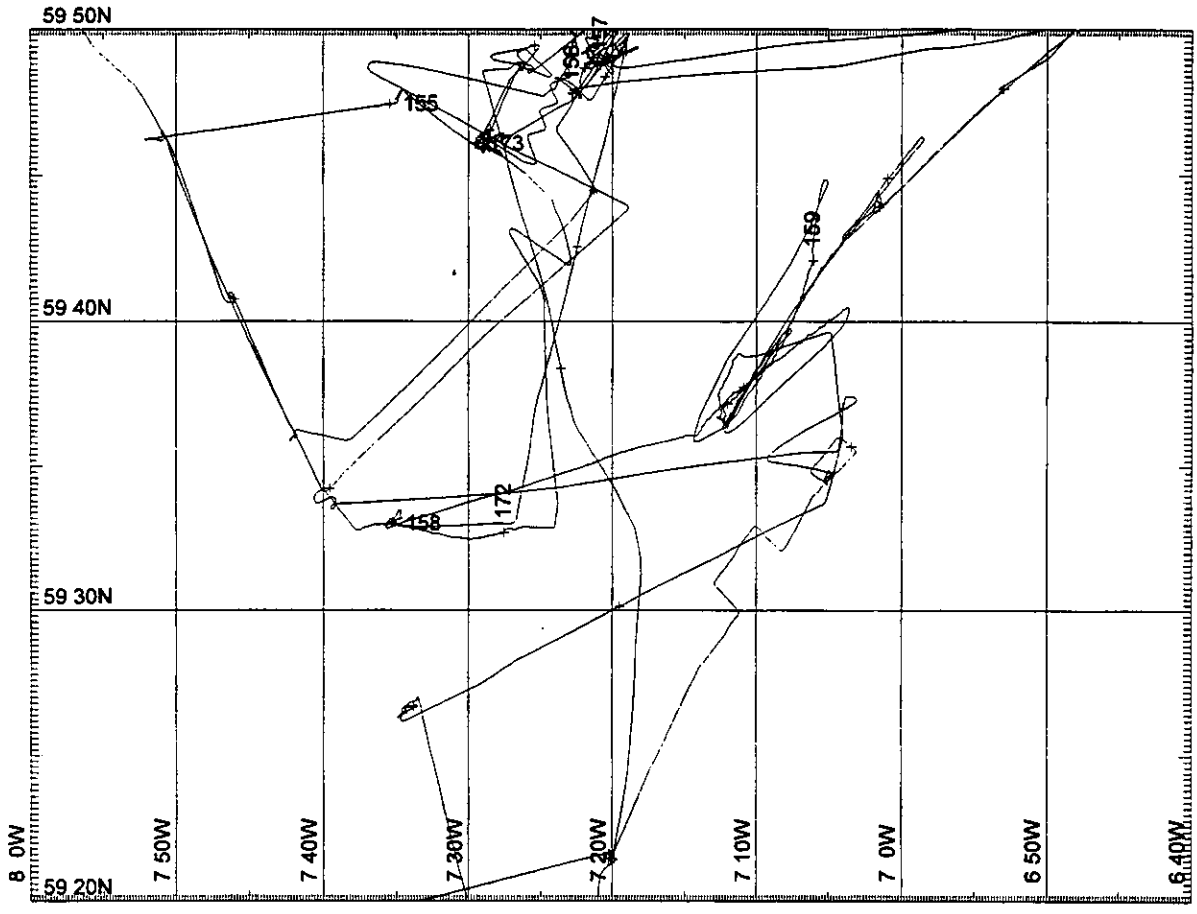


Chart 30. Ship's track through survey area 1BA.

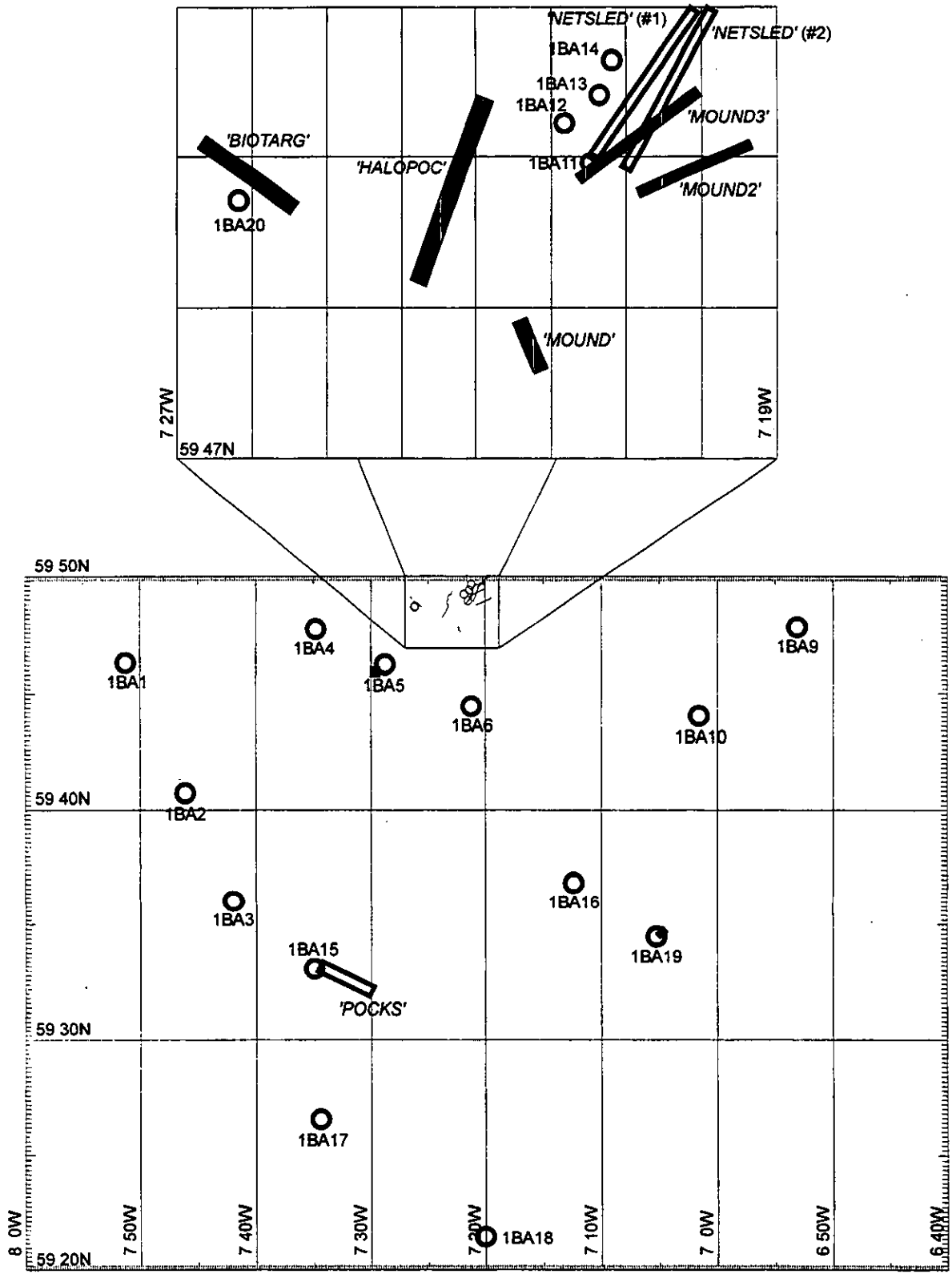


Chart 31. Survey operations in area 1BA.

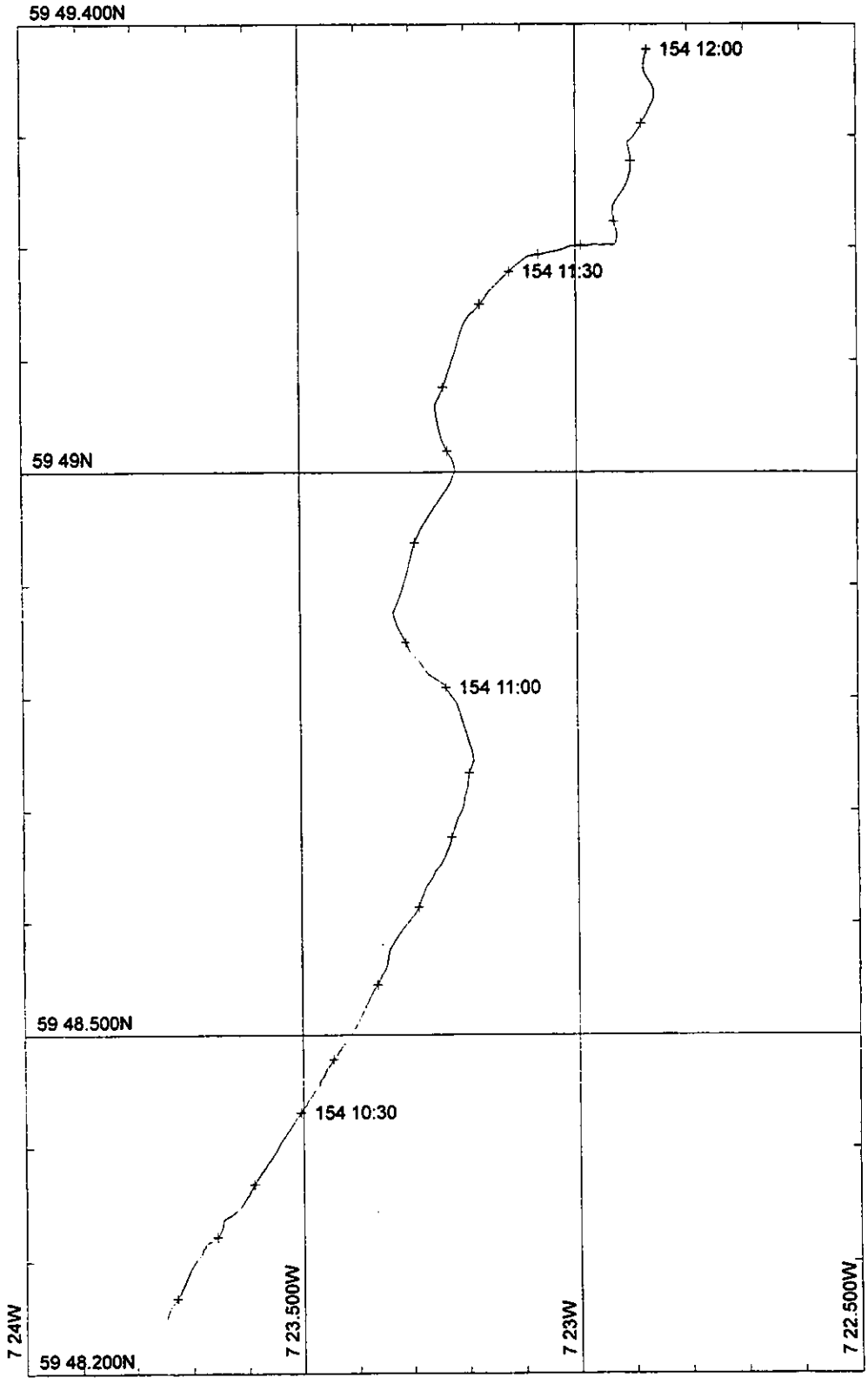


Chart 32. WASP track, station 54557#1 (*'HALOPOC'*, Area 1BA).

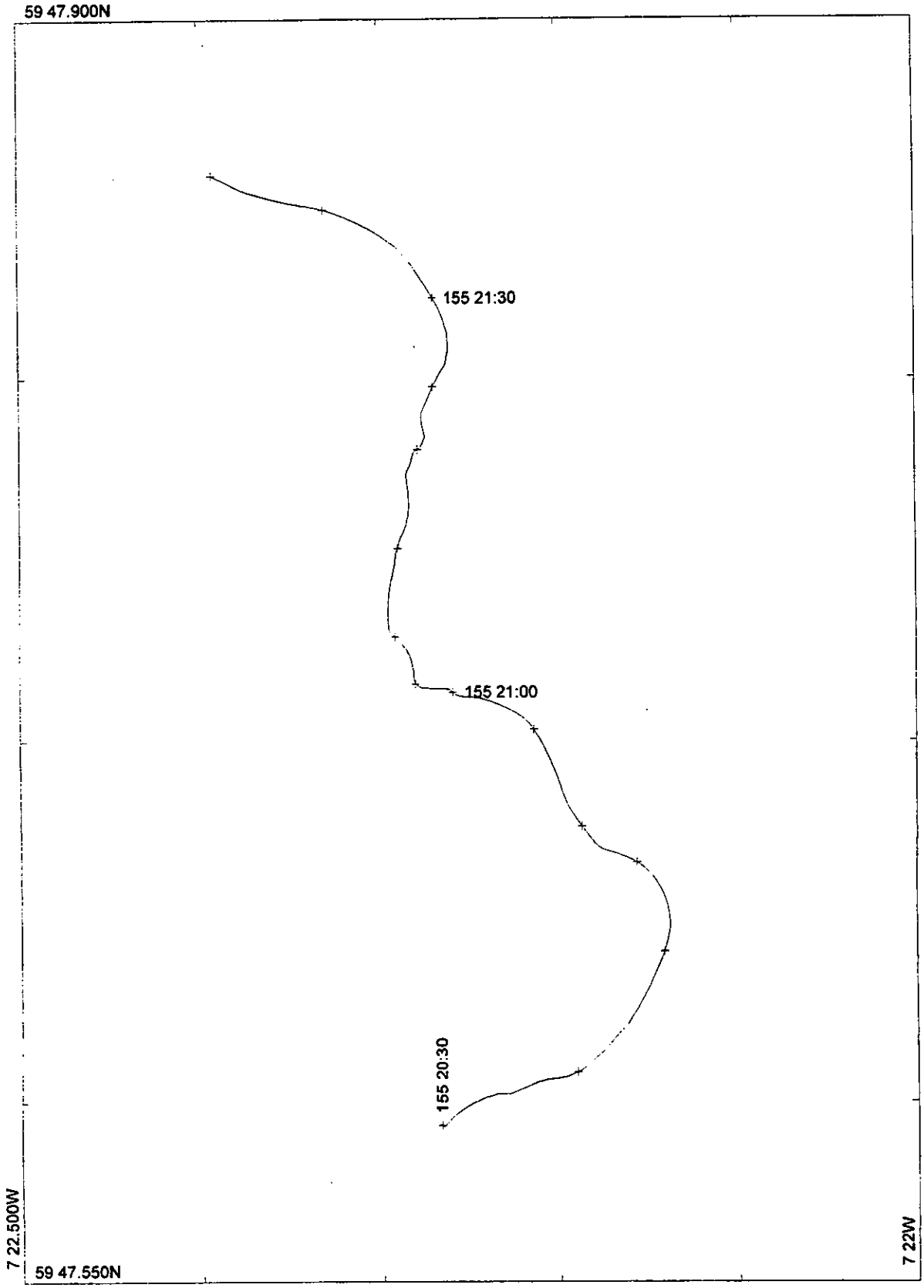


Chart 33. WASP track, station 54565#1 (*'MOUND'*, Area 1BA).

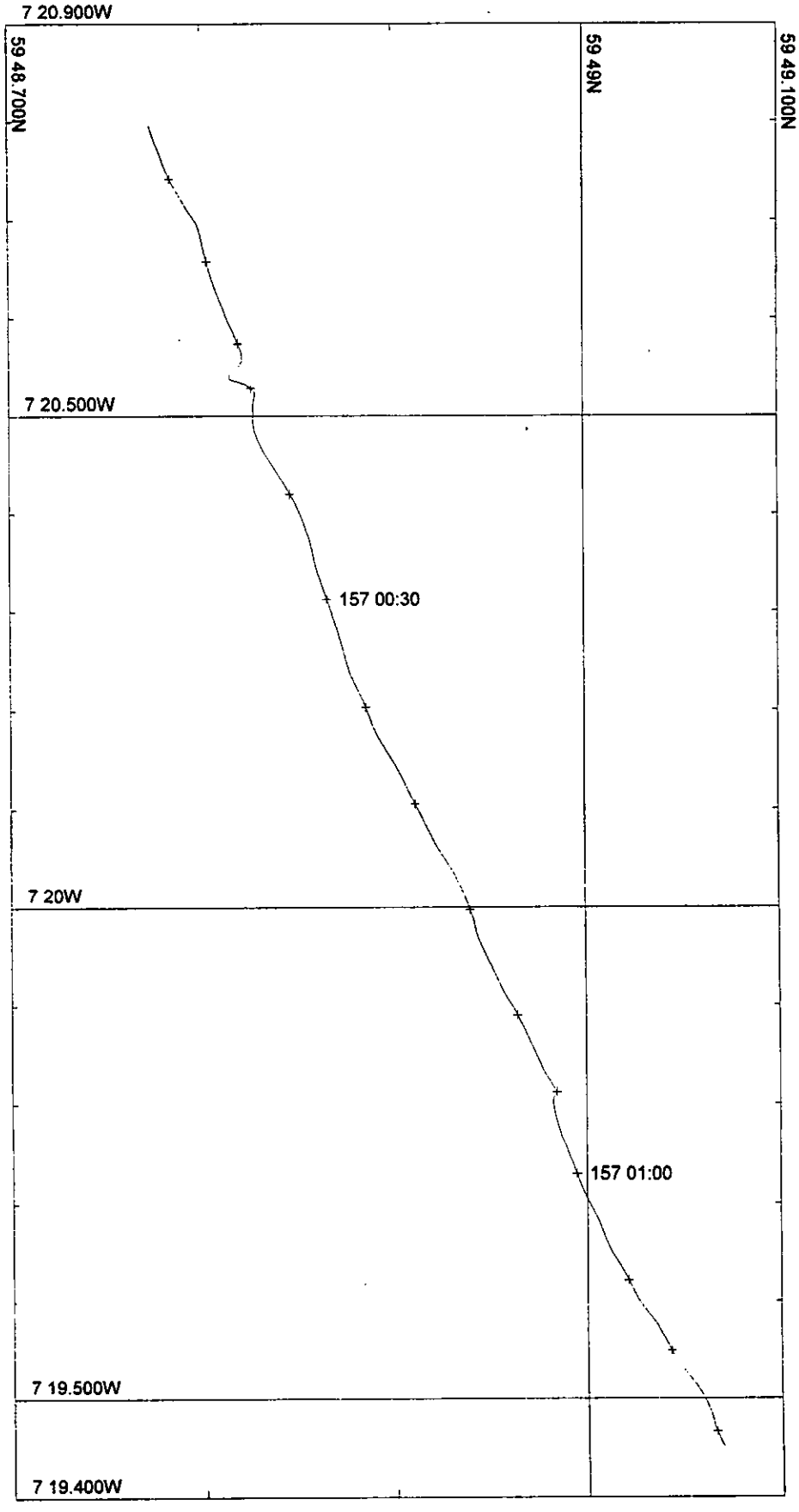


Chart 34. WASP track, station 54569#1 (*'MOUND2'*, Area 1BA).

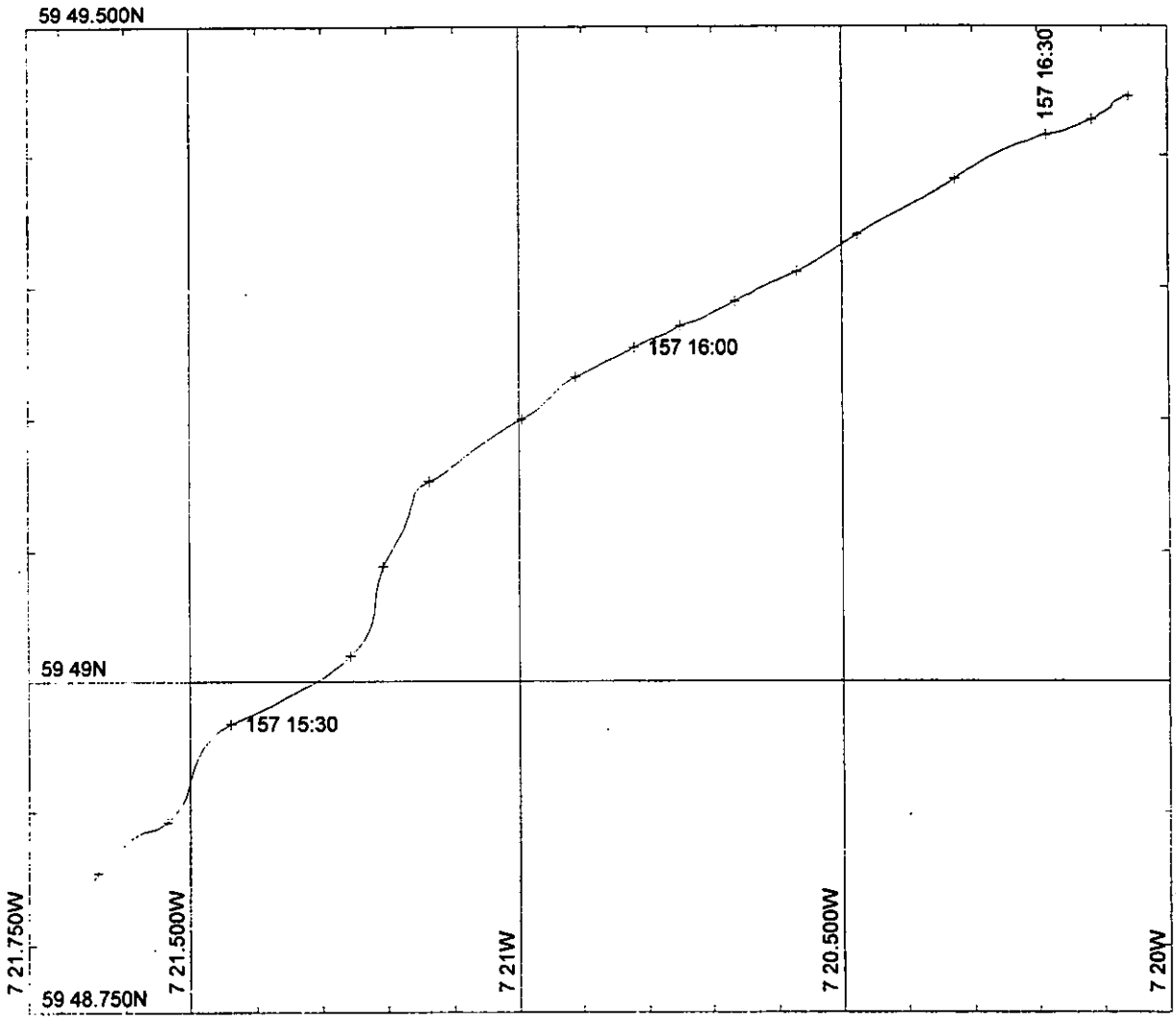


Chart 35. WASP track, station 54574#1 (*'MOUND3'*, Area 1BA).

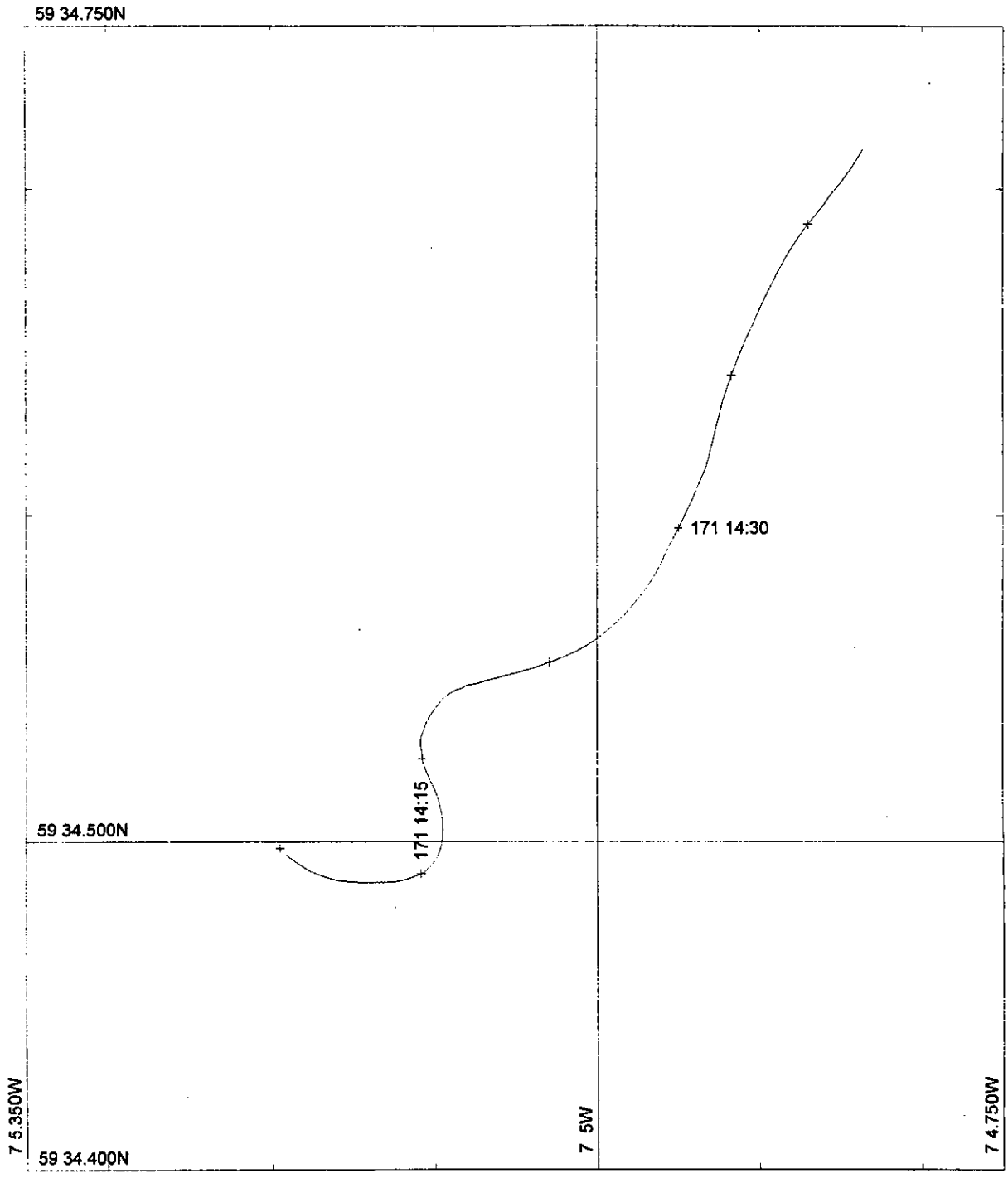


Chart 36. WASP track, station 54627#2 (Site 1BA19, Area 1BA).

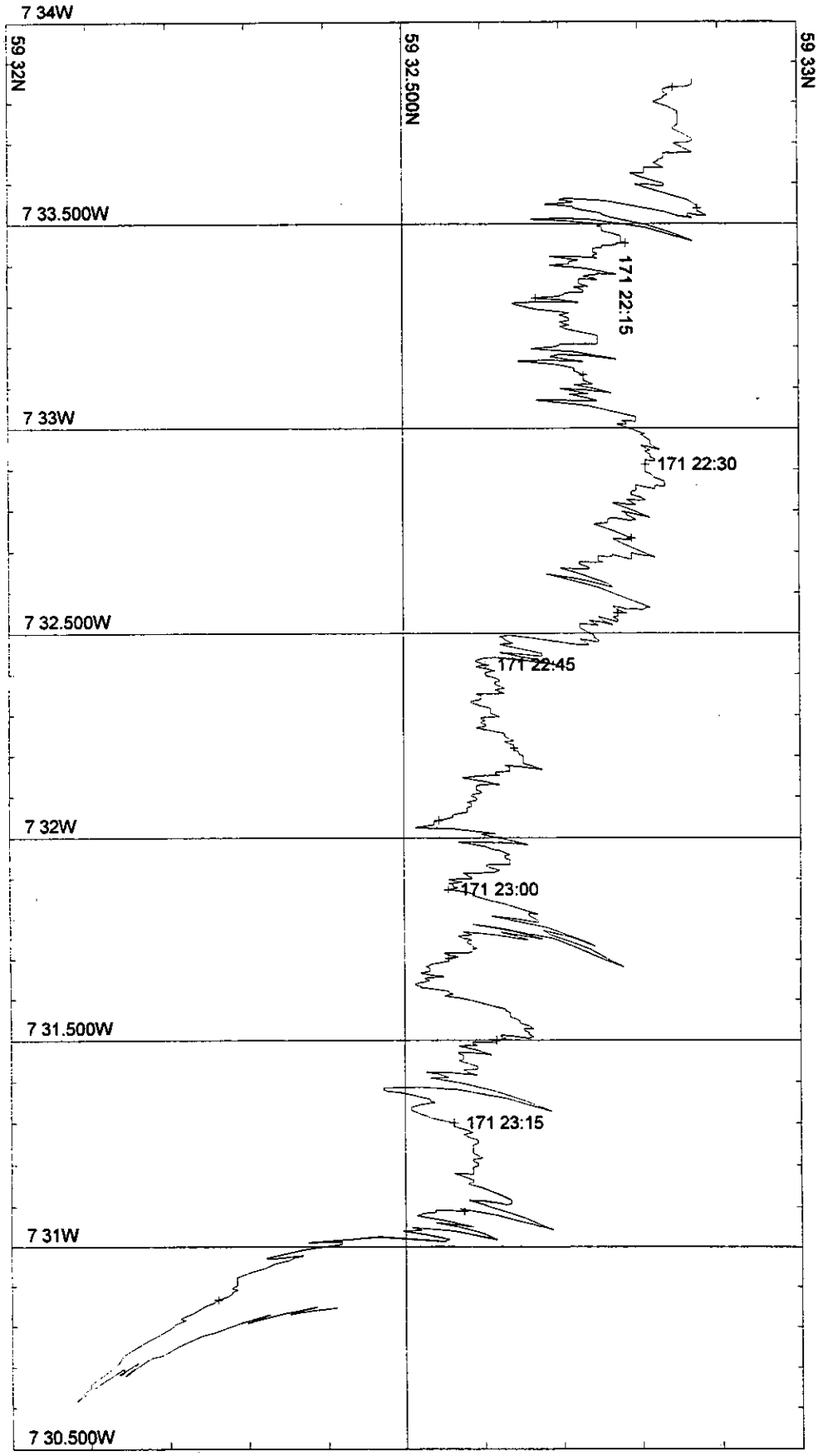


Chart 37. Epibenthic sledge track, station 54628#1 (*'POCKS'*, Area 1BA).

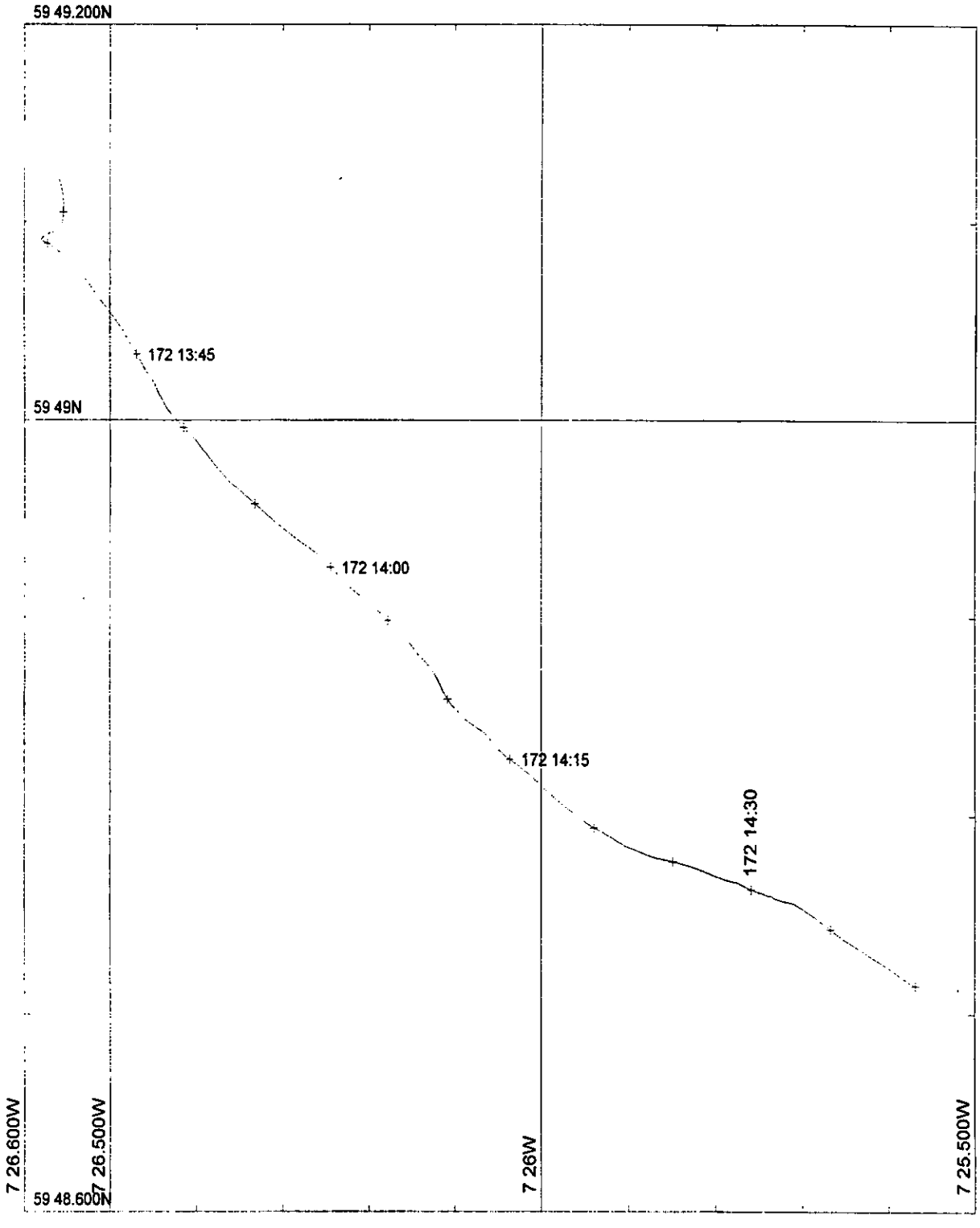


Chart 38. WASP track, station 54630#1 (*'BIOTARG'*, Area 1BA).

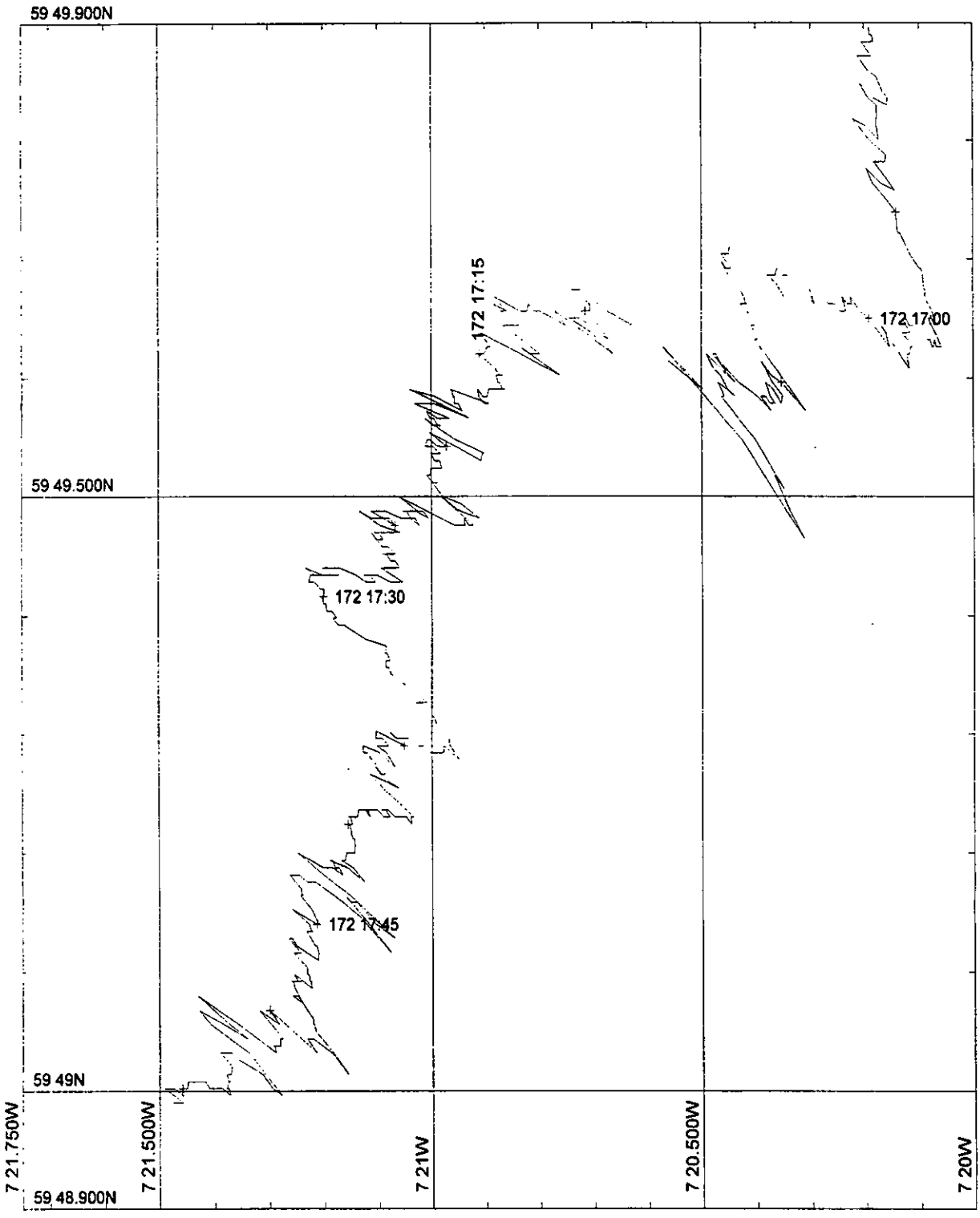


Chart 39. Epibenthic sledge track, station 54631#1 (*'NETSLED'*, Area 1BA).

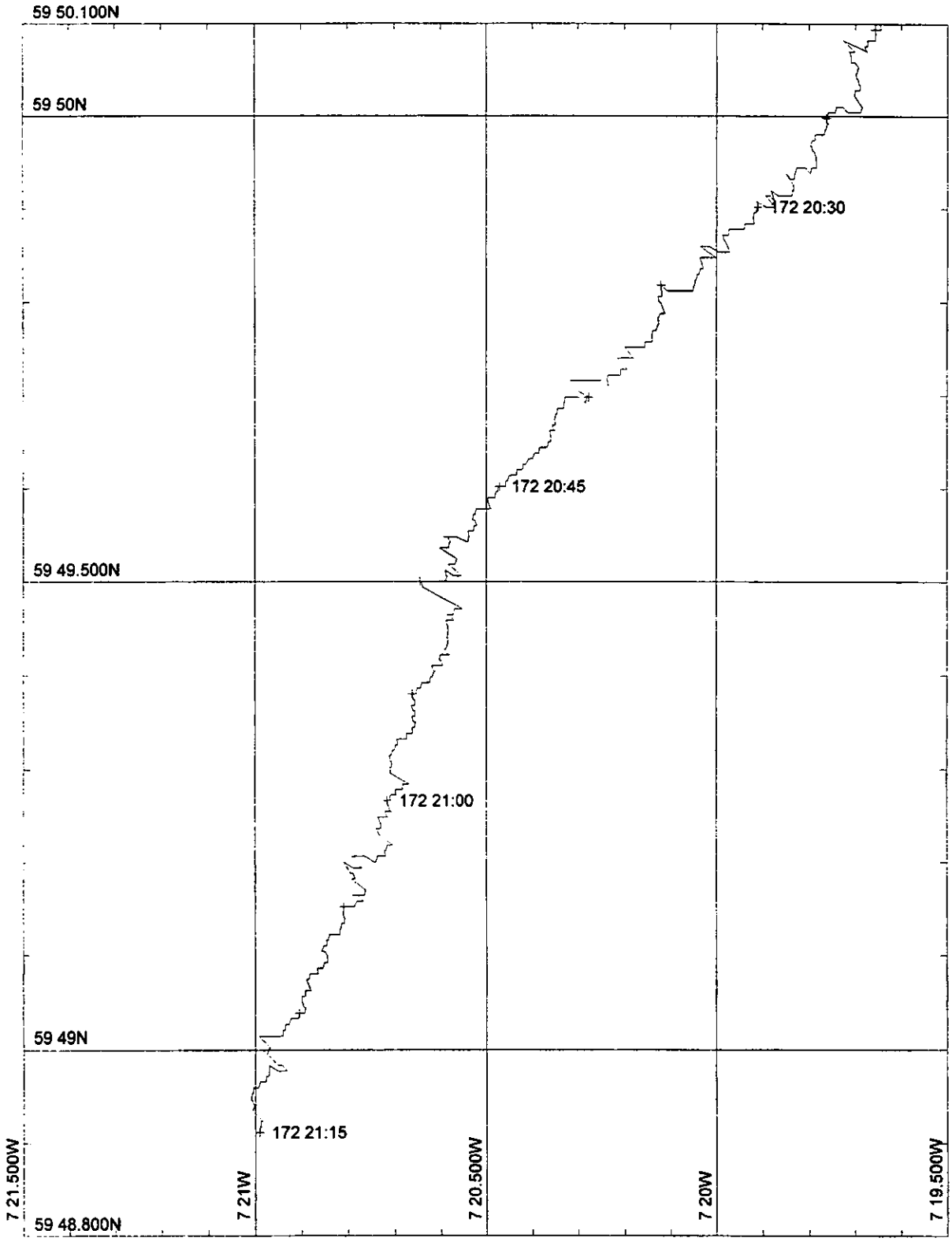


Chart 40. Epibenthic sledge track, station 54631#2 (*'NETSLED'*, Area 1BA).

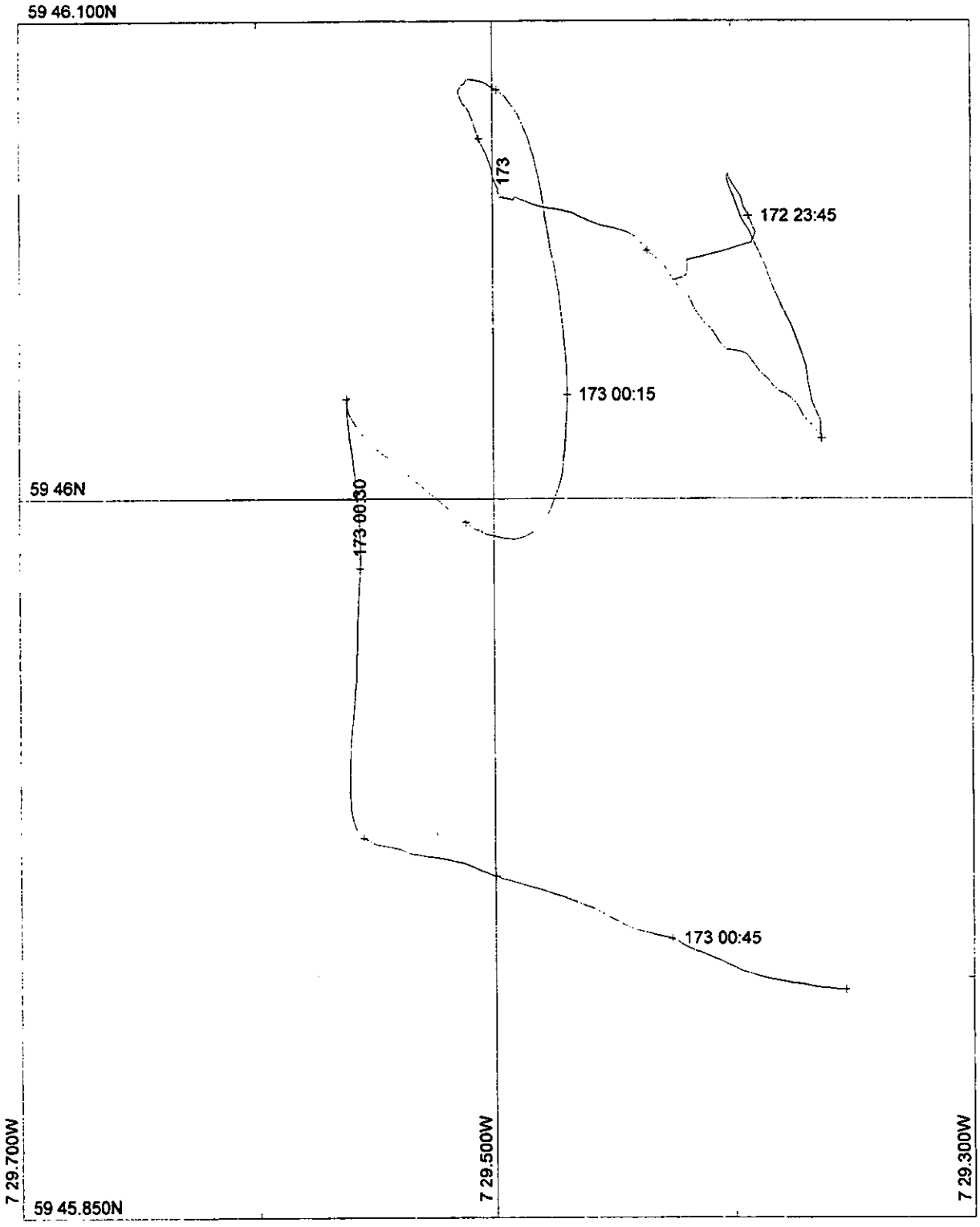


Chart 41. WASP track, station 54632#1 (Site 1BA5, Area 1BA).

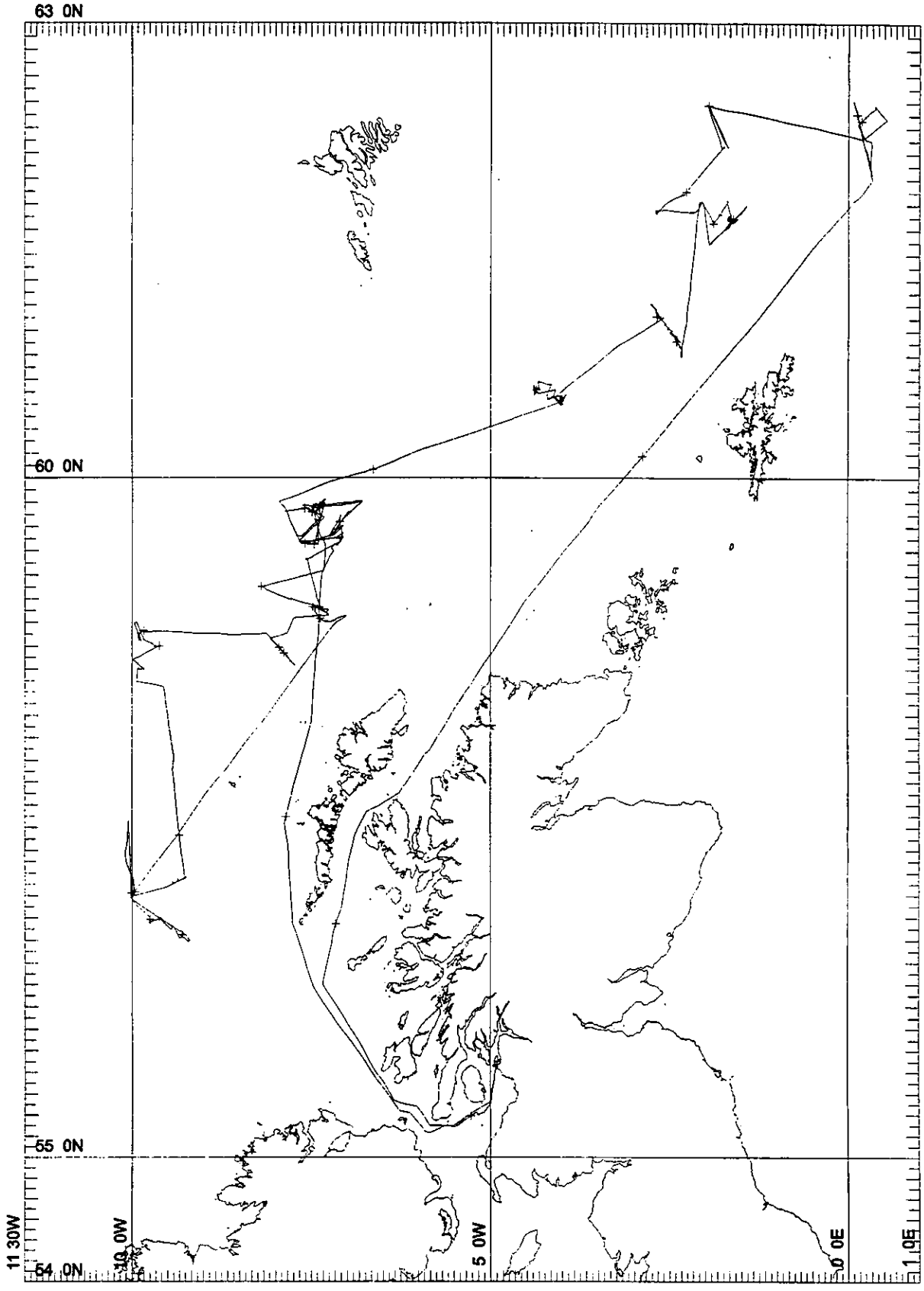


Chart 42. RRS *Charles Darwin* cruise 112C, 19 May - 24 June 1998, Fairlie - Fairlie.

13. APPENDIX 1.

A summary of geological observations and measurements made during the course of the survey was prepared by David Long and Richard Holmes (British Geological Survey, Edinburgh). That summary is presented below in three sections:

a) Seabed sediments (pages 163-165)

b) Quaternary sediments (pages 166-169)

c) Geotechnical measurements (pages 170-171)

Abbreviations used in the presentation of the summary are as follow:

STN	Survey station number
SITE	Survey site name
CORE_(m)	Total depth of core
SS_	Observations on seabed sediments
SS_COL	Colour (Munsell colour chart)
SS_THICK	Thickness (m) (superficial sediment to colour change / all near-surface sediments)
SS_GRAIN	Range of grain size (against comparison standard)
SS_FOLK	Folk classification
SS_SORT	Sorting (against comparison standard)
SS_FORAM	Foraminifera content (subjective assessment)
SS_CARB	Carbonate content (against comparison standard)
QS_	Observations on quaternary sediments
QS_OXID	Depth (m) to base of any oxidation band
QS_BIOT	Depth (m) to base of bioturbation
QS_COLOUR	Colour (Munsell colour chart)
QS_HARD	Hardness
QS_TYPE	Sediment type
QS_DIST	Sediment disturbance
COMMENT	Comment
TEST DEPTH (m)	Depth (m) of geotechnical test
COMP. STRENGTH (kPa)	Compressive strength (kPa, hand-held penetrometer)
SHEAR STRENGTH (kPa)	Shear strength (kPa, hand-held shear vane)

STN	SITE	CORE_(m)	SS_COL	SS_THICK	SS_GRAIN	SS_FOLK	SS_SORT	SS_FORAM	SS_CARB
54502#1	3BA1000	0.37m	Dark greyish brown	0.03	very fine to very coarse	Sandy mud	well sorted	abundant	90%
54503#1	3BA800	0.35m	Light olive brown	0.04	fine to very fine	Sandy (gravelly) mud	well sorted	abundant	15%
54504#2	3BA650	0.33m	Olive	.05	very fine to very coarse	slightly gravelly muddy sand	very poorly	rare	7%
54505#1	3BA500	0.02m	dark greyish brown	unknown	very fine to very coarse	muddy gravelly Sand	very poorly	common	10%
54505#2	3BA500	0.32m	dark greyish brown	0.05m	medium	muddy gravelly Sand	poorly	common	5%
54506#1	3BA450	0.34m	olive brown	0.09m	medium to fine	gravelly Sand	moderately well	abundant	25%
54507#2	3BA350	0.37m	dark greyish brown becoming olive brown with depth	0.12	fine to coarse	gravelly Sand	moderately well	abundant	40%
54509#1	3BB900	0.38m	light olive brown	0.05	silty to fine	muddy sand	well sorted	abundant	15%
54510#1	3BC800	0.37m	light olive brown	0.04	silty to fine	muddy sand	well sorted	abundant	15%
54510#3	3BC800	2.83m	dark greyish brown becoming olive with depth	0.07	fine to medium becoming silty with depth	muddy sand	well sorted	abundant	30%
54511#1	3BA800	2.33m	greyish brown	0.02	silt to fine	muddy sand	well sorted	common	15%
54512#2	3AD1	0.27	olive brown	0.05	very fine	sM	well sorted	common	3%
54513#1	3AC5	0.26	yellowish brown	0.09m	fine to medium	sM	well sorted	abundant	10-15%
54514#1	3AD1	2.64m	olive brown	0.05m	fine to very fine	mS	well sorted	abundant	8%
54515#1	3AC4	0.25m	olive brown	0.02m	medium to very fine	mS	well sorted	abundant	15%
54516#1	3AC3	0.27m	olive brown	0.03m	silt to fine	sM	poorly sorted	common	3%
54517#1	3AC1	0.28m	light olive brown	0.04m	silt to fine	sM	poorly sorted	abundant	20%
54518#3	3AA1	0.37m	olive brown	0.11m	coarse to very fine	mGS	poorly sorted	common	5%
54519#1	3AB2	0.37m	dark greyish brown	0.04m	fine to very fine	mS	very well sorted	abundant	30%
54521#1	3AA2	0.34	greyish brown	0.02	very fine to fine	mS	well sorted	abundant	15%
54522#1	3AB3	0.15m	olive brown	0.05	very fine	mS	well sorted	abundant	20%
54522#2	3AB3	0.41m	olive grey	0.11	very fine to fine	mS			
54523#1	3AB5	0.39m	light olive brown	0.07	very fine	mS/sM	poorly sorted	abundant	15%
54524#2	3AB4	0.36m	olive brown	0.38+	very fine to fine	mS	moderately sorted	abundant	30%
54525#1	3AB1	0.34m	olive brown	0.33?	fine to very fine	mS	well sorted	abundant	40%
54526#1	3AC2	0.35	greyish brown	0.15	very fine to fine	sM	very poorly sorted	abundant	15%
54538#2	TR500	0.40							
54540#1	TR600		greyish Brown		fine to very fine	mgS	poorly sorted	20%	60%
54541#2	TR650	0.41	olive brown	0.17	fine	(g)mS	moderately well sorted	40%	50%
54542#2	S2	0.35	olive grey	0.24	very fine to fine	mS	well sorted	abundant	30%
54543#2	TR800	0.35	olive	0.20	very fine to fine	mS	very well sorted	abundant	15%
54544#2	TR900	0.34	dark greyish brown	0.22	fine	mS	very well sorted	abundant	10%
54545#2	TR1000	0.34	greyish brown	0.34+	very fine to fine	mS	very well sorted	abundant	10%
54546#1	TR650	2.09	olive brown	0.10	fine to very fine	mS	well sorted	abundant	25%
54548#3	2A1	0.32m	olive	0.05m	gravel in very fine to medium sand	gravelly sand	moderate sand	20%	30%
54549#1	2B1	0.38m	olive	0.13m	gravel in very fine to fine	gravelly sand	well sorted	15%	15%
54550#1	2C1	0.37m	olive	0.12m	gravel in fine to medium sand	gravelly sand	moderately sorted sand	15%	15%
54552#2	T2	0.40m	olive brown gravelly sand	0.12m	gravel in very fine to very coarse sand		very poor	8%	10%
54552#3	2T	2.65m	olive	0.08m	very fine to medium sand	sand	well sorted	7%	8%
54553#1	2B3	0.29m	olive	0.05-0.12m	gravel in very fine to fine sand		very well sorted	5%	5%

STN	SITE	CORE_(m)	SS_COL	SS_THICK	SS_GRAIN	SS_FOLK	SS_SORT	SS_FORAM	SS_CARB
54554#2	2B2	0.26m	dark greyish brown	0.10-0.13m	gravel in very fine to very coarse sand	gravelly sand	very poorly sorted	5%	5%
54555#1	2B1	2.35m	olive	0.03m	gravel in fine to coarse sand	muddy gravelly sand	poor	5%	5%
54558#1	1BA5	0.01	olive	Not observed	very fine	sand	very well	50%	50%
54558#2	1BA5	0.37	olive brown	olive brown to 0.03m, olive grey to 0.37m	fine	sand grading at 0.19m to muddy sand	very well	70%	75%
54559#2	1BA4	0.34	olive	olive brown to 0.02m, grey to 0.08m	fine to medium	sand	very well	40%	41%
54560#2	1BA1	0.33	greyish brown	greyish brown to 0.03m, olive grey to 0.08m	fine to medium	sand	very well	85%	85%
54561#2	1BA2	0.35	greyish brown	greyish brown to 0.03m, olive grey to 0.09m	fine to very fine	sand	very well	abundant	abundant
54562#1	1BA3	0.32	greyish brown	greyish brown to 0.03m, grey to 0.10m	silty to fine	muddy sand	well	abundant	abundant
54563#1	1BA6	0.06	olive brown	olive brown to 0.02m, olive to>0.05m	fine to very fine	sand	well	abundant	abundant
54563#3	1BA6	0.23	missing	olive brown to 0.02m, olive to>0.29	fine to very fine	sand	well	abundant	abundant
54564#1	1BA7	0.10	olive brown	olive brown to 0.03m, olive grey to>0.10	fine to very fine	sand	well	abundant	abundant
54565#2	Mound	0.20	olive	not observed	fine	sand	well	50%	50%
54565#3	Mound	0.20	olive	surface layer not observed, olive to >0.20m	fine to very fine	sand	very well	50%	51%
54566#2	1BA10	0.18	greyish brown	greyish brown to 0.03m, olive grey to >0.18m	fine to very fine	sand	well	abundant	15%
54567#1	1BA9	0.15	olive brown	olive brown to 0.05m, olive grey to >0.15m	fine to very fine	sand	very well	abundant	70%
54567#2	1BA9	0.39	greyish brown	greyish brown to 0.04m, dark greyish brown to 0.06m, greyish brown to 0.10m, olive grey to approx 0.23	fine to very fine	sand	very well	abundant	70%
54568#1	1BA8	0.34	olive	olive to 0.04m, olive grey to 0.13m	fine to medium	sandy gravel	poor	abundant	25%
54568#2	1BA8	0.10	olive	olive brown to 0.02m on mud	fine to coarse	sandy gravel	poor	common	15%
54569#4	mid-mound	0.01	olive brown	Not known	very fine to fine	sand	very well	abundant	15%
54570#1	1BA11	0.38	greyish brown	greyish brown to 0.05m, grey to 0.06m	very fine to fine	sand	well	abundant	40%
54571#1	1BA12	0.39	olive brown	olive brown to 0.04m, dark greyish brown to 0.10m, olive grey to 0.21m	fine to very fine	sand	very well	abundant	15%
54572#1	1BA13	0.41	olive brown	olive brown to 0.03m, olive to 0.12m, olive grey to 0.26m.	fine to very fine	sand	well	abundant	20%
54573#1	1BA14	0.36	olive brown	olive brown to 0.02m, olive to 0.09m, olive grey to >0.24m	fine	sand	very well	abundant	35%
54575#1	1BA15	0.40	olive brown	olive brown to 0.03m, olive to 0.07m	silty to very fine	muddy sand	well	abundant	5%
54576#1	1BA16	0.22	greyish brown	greyish brown to 0.04m, grey to 0.18m	silt to very fine	muddy sand	moderate	abundant	10%
54577#1	1BA17	0.13	greyish brown	greyish brown to 0.04m, olive grey to >0.13m	silt to sand	sandy silt	very well	abundant	25%
54577#4	1BA17	0.38	greyish brown	greyish brown to 0.04m, olive grey to less than 0.10m	silt to sand	sandy silt	very well	abundant	25%
54578#2	site 3	0.20	pale brown	pale brown to 0.03, light brownish grey to 0.05m	very silty	M		common	7%
54579#1	site 2.5	0.30	light yellowish brown	light yellowish brown to 0.02, light olive brown to 0.07	very silty mud	M		rare	3%
54580#2	site 2.0	0.30	greyish brown	0.05	mud	M		rare	3%
54581#2	site 1.5	0.38	olive	0.04	silty very fine sand	sM	moderate	abundant	20%
54583#1	site 4.0	0.31	olive	olive mud to 0.02, light olive brown mud to 0.05m		M		common	7%
54585#1	site 5	0.25	greyish brown	0.05	mud	M		rare	3%
54585#3	site 5	1.16	brown	0.02	mud	M		common	5%

STN	SITE	CORE_(m)	SS_COL	SS_THICK	SS_GRAIN	SS_FOLK	SS_SORT	SS_FORAM	SS_CARB
54586#1	site 3	0.26	brownish grey	0.05	mud	M		rare	3%
54587#2	site 1500m	0.25	greyish brown	0.04	sandy mud	SM		rare	3%
54588#1	site 800m	0.17	olive	olive muddy sandy gravel to 0.06, on grey mud to 0.14m, on olive grey muddy gravelly sand to 0.17m	muddy sandy gravel	MSG	very poor	rare	5%
54588#2	site 800m	0.36	dark greyish brown	0.02	muddy sand	MS	poor	rare	5%
54590#1	site 300m	0.35	olive brown	0.09	gravelly sand	GS	poor	common	40% in sand fraction
54591#2	Site 1AA1	0.23	pale brown	0.07?	<=very fine sand	Mud		rare	?5%
54592#1	Site 1AA2	0.27	light brownish grey	>0.27	<=fine sand	Mud		rare	10%
54594#1	Site 1AA5	1.78	light olive brown	0.43?	silty	Mud	uniform?	rare	?
54594#3	Site 1AA5	0.39	light brownish grey	?0.30	silty	Mud		common ~3%	7%
54595#2	Site 1AA4	0.34	light brownish grey	?	silty	Mud		abundant	?
54598#2	Site 1AA3	0.41	light brownish grey	?0.31	silty	sandy Mud		abundant	?20% sand fraction
54598#2	Site 1AB1	0.43	greyish brown	0.05	silty	Mud		rare	?
54599#2	Site 1AB2	0.33	greyish brown	0.03	very fine to fine	muddy sand	well sorted	common	40%
54600#1	Site 1AB3	0.35	greyish brown	0.04	silt to gravel	gmS	very poorly sorted	rare	3%
54601#1	1BC1	0.36	greyish brown	0.23	silt to medium sand	sm		abundant	15%
54602#1	1BC2	0.16	light olive brown	0.13	fine to very fine	sand	well	abundant	60%
54602#5	1BC2	0.30	dark greyish brown	0.12	very fine to fine	sand	well	abundant	50%
54603#1	1BC3	0.34	olive brown	0.14	very fine to fine	sand	very well	abundant	70%
54604#1	1BC4	0.34	olive	0.08	fine to medium	slightly gravelly	very well	abundant	25%
54605#2	1BC5	0.42	olive	0.05	silt to gravel	sandy gravel	very poor	abundant	7%
54606#1	1BC6	0.40	olive	0.03	very fine to gravel	sandy gravel	very poor	abundant	25%
54606#1	1BC7	0.35	greyish brown	0.21	very fine to very coarse	gravelly muddy sand	very poor	rare	5%
54609#2	1BC8	0.38	olive brown	0.1	fine	sand, gravelly sand to 0.11m	moderately	abundant	20%
54611#1	1BC9	0.38	olive brown	0.09	very fine to gravel	slightly gravelly sand	poorly	common	10%
54612#1	1BC10	0.37	olive	0.15	fine to medium	slighly gravelly sand	well	abundant	10%
54613#1	1BC11	0.40	olive	0.19	fine to very coarse	sand	well	common	25%
54614#4	1BC12	0.22	light yellowish brown	>0.22	very fine to pebble	gravelly sand	poorly	common	10%
54618#1	1BB5	0.51	olive	0.15	very fine to cobble	gravelly sand	poorly	rare	15%
54619#2	1BB4	0.37	olive	0.12	fine to small gravel	slightly gravelly sand	very poorly	common	30%
54620#1	1BB3	0.39	olive	0.1	fine to very coarse	slighlty gravelly sand	very poorly	abundant	30%
54621#1	1BB2					gravel			
54622#3	1BB1	0.05	olive	>0.05	medium to coarse	sand	moderately well sorted	abundant	50%
54624#3	1BB6	0.16	greyish brown	greyish brown to 0.06,olive grey to 0.16	silt to very fine	muddy sand	very well	abundant	40%
54625#1	1BB7	0.21	light brownish grey	0.02	clay to coarse silt	mud	well	common	not assessed from individual grains, possibly >20%
54627#1	1BA19	0.26	not sampled (to 0.10m to biology)	thickness muddy sands at least 0.26	silt to very fine	muddy sand	very well	abundant	30%+
54627#3	1BA19	0.24	greyish brown to 0.06,olive grey to 0.19		silt to very fine	muddy sand	very well	abundant	30%
54629#4	1BA5	0.16	greyish brown	0.12	very fine to fine	sand	very well	abundant	50%
54633#1	1BA20	0.35	olive	olive to 0.05,olive grey to 0.11	very fine to fine	sand	very well	abundant	25%
54634#2	1BA18	0.17	greyish brown	0.03/ >0.17	very fine to fine	sand	very well	abundant	30%
54634#3	1BA18	0.38	n/a	0.18	very fine to fine	sand	very well	abundant	25%

STN	SITE	QS_OXID	QS_BIOT	QS_COL	QS_HARD	QS_TYPE	QS_DIST	COMMENT
54502#1	3BA1000	0.03	null	Olive grey	Very soft	mud	None	Reports of hydrogen sulphide smell when sieving
54503#1	3BA800	0.04	sulphides	Greyish Brown	Very soft	mud	None	Friable chalk-like granules common 0.04-0.13m
54504#2	3BA850	0.10		greyish brown	very soft	slightly sandy gravelly mud	None	
54505#1	3BA500							seabed too stony for Megacorer, very poor recovery
54505#2	3BA500	0.05		very dark greyish brown	very soft	mud		
54506#1	3BA450	0.09		very dark greyish brown	very soft	mud		
54507#2	3BA350	0.12		very dark greyish brown	very soft	mud	none	
54509#1	3BB900	0.05		olive grey	very soft	mud		
54510#1	3BC800	0.04	sulphides	greyish brown	very soft	very silty mud and mud	null	
54510#3	3BC800	0.02	open burrows (2mm diam) to 1.5m depth	olive grey becoming dark greyish brown with depth	very soft	mud		
54511#1	3BA800	0.02	burrows filled with sulphides: common thin-walled bivalves may be in situ	light olive grey	very soft		null	
54512#2	3AD1	>0.27m		dark greyish brown	very soft to soft	sM		
54513#1	3AC5	0.13m		grey	very soft	M		
54514#1	3AD1	0.23m		olive grey	very soft	M		
54515#1	3AC4	0.13m		olive grey	very soft	sM	none	
54516#1	3AC3	0.22m		yellowish to greyish brown		sM	none	
54517#1	3AC1	0.25m		brownish grey down to dark greyish brown		sM	none	
54518#3	3AA1	0.11m		olive grey	very soft	sM		
54519#1	3AB2	0.04m		olive grey		mS		possibly a contouritic sand
54521#1	3AA2	0.10	0.10	grey	very soft	M	clasts at 0.18 and possibly 0.26m	
54522#1	3AB3	0.05		olive grey		mS		seabed sand may extend the full length of core
54522#2	3AB3			dark olive grey	very soft	sM		Top 10cm of core not examined. Same sample site as +61-02/153
54523#1	3AB5	0.07		olive grey	very soft	M		
54524#2	3AB4	0.07		dark olive grey	very soft	mS		
54525#1	3AB1	0.08		olive grey	very soft	mS		
54526#1	3AC2	0.15		grey	very soft	M		
54538#2	TR500						seabed disturbed by trawling?	
54540#1	TR600							Only seabed sample described for Steve Dewey (SOC)
54541#2	TR650	0.06	0.24	olive grey	very soft	M		
54542#2	S2	0.04		dark grey	very soft	M		
54543#2	TR800	0.03	0.29	olive grey	very soft	M	pluck and rollover structures ?suggest downslope instability	
54544#2	TR900	0.05	0.29	dark greyish brown	very soft	M		
54545#2	TR1000	0.14		olive grey		S		
54546#1	TR650	0.09		dark olive grey	very soft	M		abundant dropstones in mud
54548#3	2A1	0.05m	Null	grey	very soft	slightly gravelly mud	Possibly by core cutter depressing gravel in surface sediments	
54549#1	2B1	0.05m	Null	olive grey	very soft	slightly gravelly mud		Sand from 00 to 0.13m more poorly sorted down. Deposition possibly continuous through 0.05m.
54550#1	2C1	0.08m (gravel lag at 0.0	Null	dark grey	very soft	mud	colour banding at slope	gravel lag at 0.05m within slightly gravelly sand

STN	SITE	QS_OXID	QS_BIOT	QS_COL	QS_HARD	QS_TYPE	QS_DIST	COMMENT
54552#2	T2	0.12m	Null, but very poor sorting may be indication of bioturbation to 0.12m	dark greyish brown	very soft	muddy sand on slightly gravelly mud	Null	
54552#3	2T	0.08m	Null	olive grey	very soft	slightly gravelly mud		Quaternary characterised by gravel lag at 1.35m; turbidites and other sand layers at 2.35m and below.
54553#1	2B3	0.11m	0.2m	brown to olive grey	very soft	burrowed mud on muddy sand on burrowed slightly gravelly mud		Boundary between top sands and underlying mud is very uneven, possibly due to bioturbation. Zoophycos as burrows in clay.
54554#2	2B2	0.10 to 0.12m	0.2m	very dark greyish brown		slightly gravelly mud	disturbed by bioturbation	Boundary between top sands and underlying mud uneven, presumed bioturbation from burrows allows sand into mud.
54555#1	2B1	Null	0.03m+	olive grey with other subtle sub-horizontal colour changes	very soft	mud	colour banding possibly indicates mud debrites	
54558#1	1BA5	Not observed	Not observed	Null	Null	Null	Null	Descriptions from washed out sample
54558#2	1BA5	0.03	Not observed	olive grey	Null	sand	Null	Uncertain whether total sand interval extends into pre-Holocene
54559#2	1BA4	0.02	0.23	greyish brown	very soft	mud	filled burrows	Heavily bioturbated clay by large-diameter sipunculid worms. Site approx 2km due west of supposed TOBI pockmark field, and high mid-water reflectivity from marine snow.
54560#2	1BA1	0.03	0.22	olive grey	very soft	mud	filled burrows	Heavily bioturbated by large-diameter sipunculid worms
54561#2	1BA2	0.03	0.17	olive grey	very soft	sandy mud	filled burrows	
54562#1	1BA3	0.03	0.17	olive grey	very soft	mud	filled burrows	
54563#1	1BA6	0.02						
54563#3	1BA6	<0.10						Top 10cm to biology
54564#1	1BA7	0.03						
54565#2	Mound	0.04	Not observed	No mud sampled				Descriptions are from a disturbed washed out box core emptied onto deck. Sample on supposed mound.
54565#3	Mound	Not observed	Not observed	No mud sampled				Descriptions are from a disturbed washed out box core emptied onto deck. Sample on supposed mound.
54566#2	1BA10	0.03	0.15				unfilled vertical burrow	Vertical burrows allowed air to freely ascend through sediment column set up in vertical core liner.
54567#1	1BA9	0.05	not observed					
54567#2	1BA9	0.10	at base of sands and extends into clay to at least 33cm depth	olive grey	very soft	M	filled burrows	
54568#1	1BA8	0.04	not observed		very soft	M	surface stones disrupted in sampling disturb sand unit	
54568#2	1BA8	0.02	not observed	dark olive grey	soft	(g)sM		moisture content ring not used
54569#4	mid-mound	not observed	not observed					Mid-mound: site where echosounder indicates very rough microtopography, and wide-angle seabed topography (WASP) abundant coral patches, some dead, and mound ringed apparently by xenophyophores.
54570#1	1BA11	0.05	>0.36	dark grey	very soft	M	filled burrows	
54571#1	1BA12	0.04	?>0.39	olive grey	very soft	sM	filled burrows	
54572#1	1BA13	0.03	?>0.41	olive grey	very soft	mS/sM	filled burrows	
54573#1	1BA14	0.02	not observed	olive grey	very soft	mS/sM		
54575#1	1BA15	0.03	0.22	olive grey	very soft	M	filled burrows	
54576#1	1BA16	0.04	>0.22	olive grey	soft	sM	filled burrows, to 15mm diameter, unfilled burrows with live worms 2mm diameter 50mm length.	Live worm pale pinkish grey,like insipid earth worm. Other burrows more than 20mm diameter, inhabitants unknown.
54577#1	1BA17	0.04	not observed	olive grey	not applicable	sM	not observed	

STN	SITE	QS_OXID	QS_BIOT	QS_COL	QS_HARD	QS_TYPE	QS_DIST	COMMENT
54577#4	1BA17	0.04	0.22	olive grey	very soft	M	filled burrows	
54578#2	site 3	0.04		light olive grey	very soft	Mud	open burrows	
54579#1	site 2.5	0.07?	0.25	light brownish grey	very soft	Mud	burrows some open	
54580#2	site 2.0	0.05	0.20	olive grey	very soft	Mud	burrows some open	
54581#2	site 1.5	0.04	0.38 (TD)	grey	very soft	Mud with thin sand at 0.08m	open burrows to 0.08m, likely filled bioturbation to 0.38m	45mm Buccinid gastropod at 0.1m in other core;possible turbidite sand 0.08-0.1m; WASP:low energy:abundant open burrows at seabed, seabed fluff stable, mid-water snow,trawl marks;boxcore with 4 open burrows in 0.1 sq m.
54583#1	site 4.0	0.05	0.31 (TD)	grey	very soft	Mud	open burrows to 0.15m, likely filled bioturbation to 0.31m (TD)	Core taken as possible test site for Holocene climate change to compare GRIP ice core.
54585#1	site 5		0.23	olive grey	very soft	Mud	open burrows to 0.23	
54585#3	site 5	0.02	1.16 Zoophycos	olive grey	soft to firm	Mud	filled burrows to TD 1.16; catcher inverted on retrieval, at least 0.80m core lost (corer over-penetrated)	The angle burrows dip away from horizontal switches in packets down the core
54586#1	site 3	0.05	0.15 Echiuran burrow	grey	very soft	Mud	open vertical Echiuran 20mm diameter burrow from seabed to 0.15m, then horizontal	subsample in core tube sealed with wax complete; complete Echiuran worm dug out of boxcorer.
54587#2	site 1500m	0.04	0.20	olive grey	soft	Mud	open 10mm diameter burrows at 0.2m	
54588#1	site 800m	0.17 (see comment)	if bioturbation anthropogenic then 0.17m	dark and olive greys, and greyish brown	very soft to firm	Mud	possible anthropogenic trawl has ploughed seabed to 0.17m	Seabed possibly turned over. See +57 -10/212 for undisturbed sample from this site.
54588#2	site 800m	0.02	not observed	very dark grey	soft	Mud	0.02-0.36 mud fractured, possibly trawled, but no evidence of overturned seabed sediments	origin of fractured muds uncertain
54590#1	site 300m	0.09	0.15	very dark greyish brown	very soft to soft	Mud	filled burrows to 0.15m below seabed	gravel from other cores up to 100mm diameter
54591#2	Site 1AA1	0.07	0.20	olive grey	very soft to soft	sandy Mud	burrowing	
54592#1	Site 1AA2	0.06	0.22	olive grey	very soft	Mud	burrowing	Replicate megacore station 54592#2 slightly firmer - shear strength 11.4kPa compressive strength 10.5kPa
54594#1	Site 1AA5	0.04	open burrows to 0.50m filled burrows >1.78m	grey to olive grey	very soft to soft	Mud	burrowing	Highest strength at level of most frequent zoophycus burrows
54594#3	Site 1AA5	0.06	open and filled burrows to 0.36m	light olive grey	very soft	Mud	burrowing	
54595#2	Site 1AA4	0.06	>0.34	olive grey	very soft	Mud	burrowing	
54596#2	Site 1AA3	0.05	?0.31	olive grey	very soft	sandy Mud	burrowing	
54598#2	Site 1AB1	0.10	0.40	olive grey	very soft becoming soft	Mud/sandy Mud	burrowing	
54599#2	Site 1AB2	0.10	>0.33 (open to 0.11)	olive grey	very soft	sandy mud	burrowing	
54600#1	Site 1AB3	0.04	>0.35	olive grey	very soft	mud	burrowing	
54601#1	1BC1	0.14	>0.36	dark greyish brown	very soft	mud	filled burrows	
54602#1	1BC2	0.04	not observed					base gravels prevented penetration into any underlying muds
54602#5	1BC2	0.06	not observed	dark olive grey	very soft	mud		
54603#1	1BC3	0.05	filled burrows to 0.30	dark olive grey	very soft	mud	burrows	
54604#1	1BC4	0.03	open burrows to 0.31	olive grey	very soft	mud	burrows	Boxcore showed that seabed comprises 3cm waves over gravelly sand:possibly correlative with contouritic lineations on TOBI facies
54605#2	1BC5	0.07	?>0.42	dark grey	very soft	mud	burrows	
54606#1	1BC6	0.07	0.17	grey	very soft	mud	burrows	

STN	SITE	QS_OXID	QS_BIOT	QS_COL	QS_HARD	QS_TYPE	QS_DIST	COMMENT
54608#1	1BC7	0.15		dark olive grey	very soft	mud		
54609#2	1BC8	0.11	0.19	dark greyish brown	very soft	mud	burrows	
54611#1	1BC9	0.09	?0.35	dark olive grey	very soft	mud	burrows	
54612#1	1BC10	0.02	0.32	olive grey	very soft	mud	burrows	
54613#1	1BC11	0.10	?0.35	olive	very soft	mud	?burrows	
54614#4	1BC12	0.02						
54618#1	1BB5	no obvious oxidation	single burrow at 0.38	dark olive grey	very soft	mud		
54619#2	1BB4	0.10	0.32	olive grey	very soft	mud	burrows	
54620#1	1BB3	0.10	filled burrows to >0.39	dark olive grey	very soft	mud	burrows/ ?iceberg ploughing	
54621#1	1BB2							Just large cobbles collected
54622#3	1BB1							
54624#3	1BB6	0.06	not observed	sand only	not applicable	muddy sand	not observed	
54625#1	1BB7	0.07	total depth 0.21	olive grey	very soft	very silty mud	intensive bioturbation : open hole 7% porosity to 0.07m;mottling (filled burrows?) and open hole burrows, approx 1% porosity below 0.07m	
54627#1	1BA19	not observed	not observed	olive grey	not applicable	muddy sand	not observed	
54627#3	1BA19	0.06	0.24+ (to TD)	olive grey	very soft	sandy mud	bioturbation	
54629#4	1BA5	0.02		olive grey	n/a	slightly gravelly sand		
54633#1	1BA20	0.05	0.33	dark olive grey	very soft	mud	open and sand-filled burrows	Moisture content likely to be suspect because impossible to avoid partly-filled burrow
54634#2	1BA18	0.03	n/a	n/a				
54634#3	1BA18	n/a	>0.38	olive grey	very soft	mud	burrows	

STN	SITE	TEST DEPTH (m)	COMP. STRENGTH (kPa)	SHEAR STRENGTH (kPa)
54502#1	3BA1000	0.05	8.50	8.20
		0.12	9.00	7.00
54503#1	3BA800	0.08	8.50	8.80
		0.28	8.70	7.00
54505#2	3BA500	0.27	10.20	8.80
54506#1	3BA450	0.29	14.90	12.90
54507#1	3BB900	0.25	6.30	7.00
54507#2	3BA350	0.31	6.00	5.60
54510#1	3BC800	0.19	5.70	5.90
54510#3	3BC800	0.26	7.30	7.30
		0.69	8.00	8.60
		1.10	10.30	10.10
		1.59	9.50	9.60
		1.95	9.00	8.70
		2.34	9.80	9.00
		2.70	13.30	13.70
54511#1	3BA800	0.20	5.50	6.10
		0.69	7.30	7.50
		1.15	8.50	8.50
		1.54	8.30	8.60
		2.10	8.00	8.40
54512#2	3AD1	0.21	20.50	19.00
54513#1	3AC5	0.10	6.00	4.20
		0.16	9.00	8.00
		0.19	8.50	9.80
54514#1	3AD1	0.28	4.00	5.60
		0.32	11.00	10.40
		0.56	4.30	5.00
		0.85	9.80	12.00
		0.96		13.00
		1.17	5.30	5.80
		1.57	6.80	6.60
		1.70		16.00
		1.80	7.00	5.50
		2.13	7.80	7.60
		2.50	5.50	4.20
54515#1	3AC4	0.22	11.50	11.40
54516#1	3AC3	0.08	3.50	4.00
		0.23	11.50	10.20
54517#1	3AC1	0.09	5.40	4.80
		0.23	16.50	10.20
54518#3	3AA1	0.33	4.00	4.40
54521#1	3AA2	0.25	Null	6.20
54522#2	3AB3	0.18	7.50	6.60
		0.22	6.80	4.10
		0.26	7.00	3.70
		0.31	5.50	4.40
54524#2	3AB4	0.30	6.50	5.60
54525#1	3AB1	0.30	5.50	7.60
54526#1	3AC2	0.10	3.80	4.40
		0.15	8.80	8.00
		0.24	7.30	6.40
54538#2	TR500	0.28		11.60
		0.35		13.40
54541#2	TR650	0.36	9.80	10.40
54544#2	TR900	0.32		
54546#1	TR650	0.46	9.30	10.60
		0.88	9.50	10.60
		1.15	6.30	8.10
		1.51	5.50	7.10
		1.95	6.80	7.20

STN	SITE	TEST DEPTH (m)	COMP. STRENGTH (kPa)	SHEAR STRENGTH (kPa)
54567#2	1BA9	0.32		16.00
		0.34	15.30	15.00
54568#1	1BA8	0.31	6.50	8.70
54568#2	1BA8	0.10	45.00	32.00
54571#1	1BA12	0.34	15.00	12.90
54572#1	1BA13	0.36	9.50	9.20
54575#1	1BA15	0.34	11.30	13.20
54576#1	1BA16	0.20	60.80	32.00
54577#4	1BA17	0.33	10.30	11.20
54578#2	site 3	0.13	8.50	10.40
54579#1	site 2.5	0.26	14.50	12.10
54580#2	site 2.0	0.25	12.30	13.10
54581#2	site 1.5	0.08	12.50	11.50
		0.13	12.50	10.70
		0.19	13.50	12.40
		0.24	17.00	13.50
		0.30	14.00	13.10
54583#1	site 4.0	0.10	9.00	9.40
		0.20	14.50	14.90
		0.28	14.00	14.90
54585#1	site 5	0.20	18.50	16.60
54585#3	site 5	0.14	15.50	18.50
		0.27	45.50	43.00
		0.43	51.30	42.50
		0.61	43.80	33.50
		0.71	30.50	34.50
		0.93	28.50	29.00
		1.13	26.50	28.50
54587#2	site 1500m	0.20	20.50	22.50
54590#1	site 300m	0.28	21.50	21.00
54591#2	Site 1AA1	0.20	19.00	25.00
54592#1	Site 1AA2	0.25	9.00	9.00
54594#1	Site 1AA5	0.13	5.00	5.20
		0.21	7.80	8.70
		0.31	8.30	8.60
		0.34	10.20	9.00
		0.52	33.00	32.00
		0.60	34.50	33.00
		0.70	34.50	25.00
		0.90	22.50	15.60
		1.20	10.70	11.90
		1.40	8.30	9.00
		1.60	5.50	5.30
54594#3	Site 1AA5	0.17	6.00	5.60
		0.19	8.30	7.00
		0.24	10.50	8.20
		0.28	10.50	11.60
		0.33	11.00	11.40
54595#2	Site 1AA4	0.14		3.80
		0.25		4.70
54598#2	Site 1AB1	0.23	8.00	10.00
		0.41	15.00	19.00
54599#2	Site 1AB2	0.17		10.40
		0.26	14.00	13.60
		0.31		18.00
54600#1	Site 1AB3	0.16	8.80	7.60
		0.32	8.80	8.40
54601#1	1BC1	0.12	12.00	8.60
		0.16	15.00	11.80
		0.22	13.50	12.00
		0.27	10.00	10.00
		0.31	17.50	15.60
54602#5	1BC2	0.27	10.50	10.80
54603#1	1BC3	0.29	6.50	7.20

STN	SITE	TEST DEPTH (m)	COMP. STRENGTH (kPa)	SHEAR STRENGTH (kPa)
54548#2	2A1	0.15	Null	4.80
		0.19	8.00	6.40
		0.23	7.50	7.20
		0.26	7.50	7.20
54548#1	2B1	0.25	8.00	7.40
54550#1	2C1	0.32	6.50	7.30
54552#2	T2	0.32	6.50	10.50
54552#3	2T	0.14	7.50	6.30
		0.42	6.50	4.70
		0.76	8.50	8.00
		1.15	7.50	7.40
		1.45	8.30	9.00
		1.75	11.00	10.60
		2.12	8.50	8.80
		2.45	10.00	9.20
54553#1	2B3	0.24	7.00	7.70
54555#1	2B1	0.20	7.00	8.20
		0.40	7.00	9.00
		0.82	6.50	8.40
		1.10	9.00	9.40
		1.39	9.00	11.40
		1.69	9.00	9.80
		2.00	7.50	9.20
		2.29	9.00	11.40
54559#2	1BA4	0.27	6.00	8.20
54560#2	1BA1	0.24	9.30	9.20
54561#2	1BA2	0.19	12.00	12.00
		0.28	12.00	12.50
54562#1	1BA3	0.24	16.70	14.60
54604#1	1BC4	0.20	5.00	4.80
		0.26	5.50	6.00
54605#2	1BC5	0.14	7.50	7.20
		0.22	8.50	7.00
		0.29	8.80	8.80
		0.37	8.60	8.00
54606#1	1BC6	0.27	7.50	7.70
54608#1	1BC7	0.30	7.00	8.80
54609#2	1BC8	0.34	6.50	6.70
54611#1	1BC9	0.17	7.00	5.80
		0.24	7.30	7.40
		0.34		6.60
54620#1	1BB3	0.22	16.00	12.00
54625#1	1BB7	0.10	13.50	10.80
		0.18	17.00	15.60
54633#1	1BA20	0.12	15.00	10.00
		0.18	10.00	9.00
		0.24	10.00	9.00
		0.28	7.00	6.40
		0.32	5.00	6.80
54634#3	1BA18	0.23	17.00	15.30
		0.33	12.80	13.10
56418#1	1BB5	0.23	4.30	4.20
		0.34	4.80	4.30
		0.48	4.50	4.40