

GEBCO Sheet G.02

(NE Atlantic off the British Isles)

BATHYMETRY OF THE NORTH-EAST ATLANTIC OFF THE BRITISH ISLES (compiled February 1997 and originally published as sheet 97.3 in the 1997 release of the GEBCO Digital Atlas.)

(Minor update note: The bathymetry between 47°N and 48°N in the regions 11.5-13°W and 0-7.5°W has been replaced by revised bathymetry from GEBCO sheet G.04)

Author: Sheet assembled by Peter M. Hunter, Southampton Oceanography Centre, U.K. from bathymetric charts compiled at the Institute of Oceanographic Sciences, Wormley, Surrey, U.K.

(Note: The Institute of Oceanographic Sciences laboratory at Wormley was relocated to the Southampton Oceanography Centre in 1995)

Sheet Limits: 47°N to 64°N; 37°W to 6°E

Scale: Contours compiled and digitised at a scale of 1:1 million but up to 1:250,000 in certain limited areas.

Horizontal Datum: WGS-84

Contour Units: Bathymetric depths in corrected metres

Contours present: 100m intervals throughout the area of the sheet down to a maximum contour depth of 5000m. Contours at 50m intervals on Rockall Bank.

Coastline Source: NIMA World Vector Shoreline at a scale of 1:1 million

Digitised by: NERC Experimental Cartography Unit, British Oceanographic Data Centre and the Southampton Oceanography Centre

BASE MAP FOR GEBCO SHEET 97.3 (G.02)

The base map for Sheet 97.3 was taken from source material used in the production of two charts of the Northeast Atlantic compiled by geoscientists at the Institute of Oceanographic Sciences, Wormley, Surrey and published by the UK Hydrographic Office, Taunton:

Admiralty Chart C6566: Bathymetry of the northeast Atlantic (Sheet 1) - 'Reykjanes Ridge and Rockall Plateau' by A.S. Laughton, D.G. Roberts & P.M. Hunter published in February 1982 and covering the area (47° to 64°N, 13° to 37°W). Hereafter referred to as IOS Sheet 1.

Admiralty Chart C6567: Bathymetry of the northeast Atlantic (Sheet 2) - 'Continental Margin around the British Isles' by D.G. Roberts, P.M. Hunter & A.S. Laughton published in February 1977 and covering the area (47° to 64°N, 6°E to 18°W). Hereafter referred to as IOS Sheet 2.

Both charts were published on Mercator projection at a scale of 1:2.4 million at 41°N. A discussion on the morphology of the area covered by the second sheet may be found in Roberts, D.G., Hunter, P.M. & Laughton, A.S. (1979) Deep Sea Research, 26A, p.417-428.

The contours for these charts were compiled by hand on 1:1 million scale compilation sheets using the GEBCO Collected Oceanic Soundings Sheets maintained by the UK Hydrographic Office and the Deutsches Hydrographisches Institut as the principal source of soundings. Additional sources included the GEBCO collection of the Service Hydrographique et Oceanographique de la Marine, France and soundings sheets compiled by the US Naval Oceanographic Office and the US Defense Mapping Agency. Soundings in plotted or computer-compatible form were also made available by:

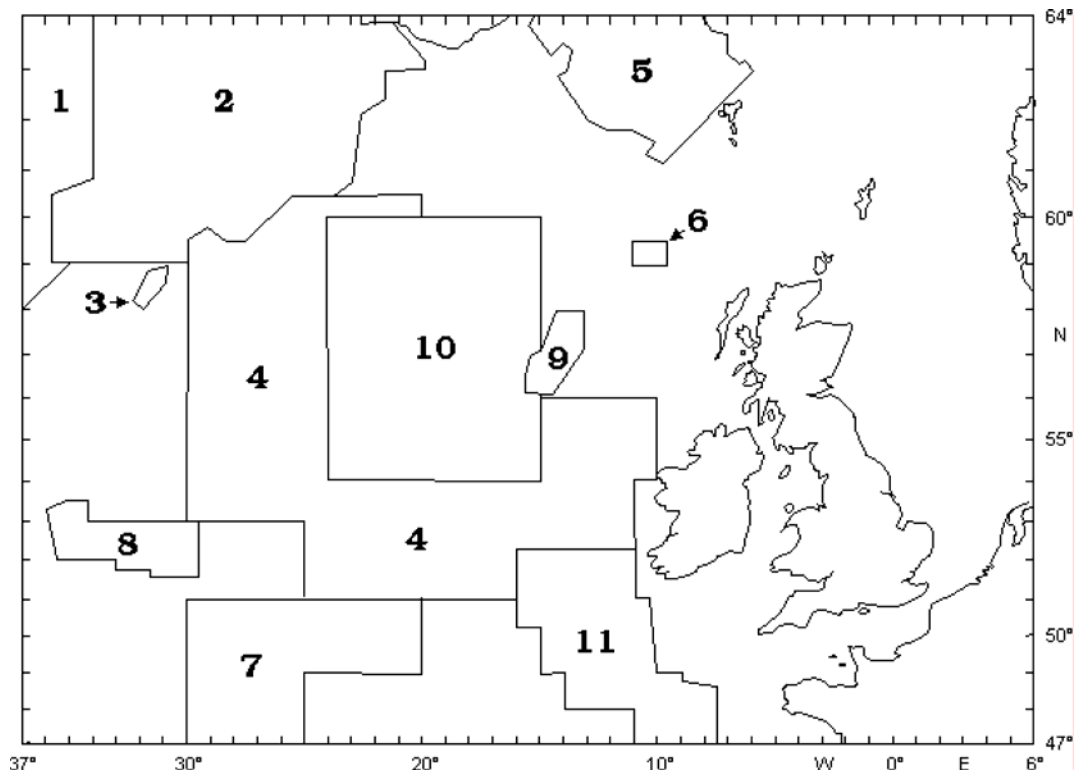
Institute of Oceanographic Sciences, UK
Bedford Institute of Oceanography, Canada
Department of Geodesy & Geophysics, Cambridge University, UK
Department of Geology, Durham University, UK
Lamont-Doherty Geological Observatory, USA
Shirshov Institute of Oceanology, Russia
Woods Hole Oceanographic Institution, USA

The contours were produced at 100m intervals with the soundings corrected according to Matthews' Tables. Interpolation of contours between sounding lines was based on a geological interpretation of the available data. The two published charts were prepared by automatic cartographic techniques developed by NERC's Experimental Cartography Unit. Prior to publication, the hand drawn contours on the 1:1 million compilation sheets were digitised and stored as labelled streams of coordinates. These were subsequently recovered by BODC and, after careful checking and editing, were used as the basis for constructing GEBCO Sheet 97.3. The trackline control was redigitised by BODC from raster scanned images of the 1:1 million compilation sheets - on the continental shelf, tracklines are only available in the vicinity of the shelf edge.

DETAILED SURVEYS INCORPORATED INTO GEBCO SHEET 97.3 (G.02)

GEBCO Sheet 97.3 includes bathymetry from eleven detailed survey/special study areas, the origins of which are described below. The digitised contours for areas 1 to 7 were already present in the data set produced for IOS Sheets 1 and 2 but without corresponding trackline control information. However, for areas 8 and 9, the contours were digitised from higher scale source material while the contours in areas 10 and 11 are based on updated bathymetry compiled subsequent to the publication of IOS Sheets 1 and 2.

Geographic coverage of GEBCO Sheet 97.3 and location of special survey areas



AREA 97.3-01 IRMINGER BASIN

Contours extracted from bathymetric chart produced by the US Naval Oceanographic Office and the Deutsches Hydrographisches Institut. Based primarily on echo-soundings from cruises of USNS Lynch in summer 1972 and autumn 1973 and earlier cruises of Meteor. The scale of the original chart is not documented and the trackline control information is missing.

Reference: Johnson, G.L., Sommerhoff, G. & Egloff, J. (1975) Structure and morphology of the west Reykjanes basin and the southeast Greenland continental margin. *Marine Geology*, 18(3), p.175-196.

AREA 97.3-02 REYKJANES RIDGE (NORTH)

Contours interpolated from unpublished bathymetric chart compiled by G.L. Johnson of the US Naval Oceanographic Office in the late 1960s. Original chart was on Mercator projection scaled at 2 inches per degree longitude (approx. 1:1 million) with a contour interval of 100m (uncorrected). The chart was recontoured at intervals of 100m(corrected) with the contours and trackline control then being transcribed onto the 1:1 million compilation sheets maintained at the Institute of Oceanographic Sciences, Wormley, UK. Later digitised for inclusion in GEBCO Sheet 97.3.

AREA 97.3-03 REYKJANES RIDGE CREST SURVEY

RRS Discovery cruise 84, 1977, unpublished survey by the Institute of Oceanographic Sciences, Wormley, UK. The area was fully surveyed by side scan sonar using the long range (30km) double sided sonar of GLORIA Mk II and a hull mounted medium range (2.5km) sonar. Transects of the ridge were made at intervals of 14km. Narrow beam echo-soundings were taken on all tracks. The tracklines and 100m (corrected) interval contours were transcribed from the survey sheets onto 1:1 million compilation sheets. Later digitised for inclusion in GEBCO Sheet 97.3.

Reference: Laughton, A.S., Searle, R.C. & Roberts, D.G. (1979) The Reykjanes Ridge crest and the transition between its rifted and non-rifted regions. *Tectonophysics*, 55, p.173-177

AREA 97.3-04 OCEAN BASINS AROUND ROCKALL PLATEAU

Contours interpolated from unpublished fair drawn bathymetric chart on Mercator projection scaled at 2 inches per degree longitude (approx. 1:1 million) and with a contour interval of 100 fathoms (uncorrected). Chart produced by the US Naval Oceanographic Office based on a comprehensive echo-sounding survey in the late 1960s consisting of a series of east-west tracks spaced less than 10km apart throughout the area. Recontoured at intervals of 100m (corrected) onto 1:1 million scale compilation sheets maintained at the Institute of Oceanographic Sciences, Wormley, UK and later digitised for inclusion in GEBCO Sheet 97.3. The tracklines were not included on the original chart - the sounding data east of 20°W were later published on CD-ROM by the US National Geophysical Data Center, Boulder and the relevant tracklines have been extracted from the CD-ROM for inclusion in GEBCO Sheet 97.3.

References: Johnson, G.L., Vogt, P.R. & Schneider, E.D. (1971) Morphology of the Northeastern Atlantic and Labrador Sea. *Deutsche Hydrographische Zeitschrift*, 24(2), p.49-73

Johnson, G.L. & Schneider, E.D. (1969) Depositional ridges in the North Atlantic. *Earth & Planetary Science Letters*, 6(6), p.416-422

AREA 97.3-05 ICELAND - FAROE RISE

Extracted from 'Faroes - Iceland Ridge Topographic Map (Ed. K. Vollbrecht)' produced in 1973 by the Deutsches Hydrographisches Institut at a scale of 1:500,000 on Mercator projection. Based on a detailed survey. Contoured at intervals of 100m (corrected) but sometimes at intervals of 20m and occasionally at 10m intervals. The 100m interval contours and trackline control were transcribed onto 1:1 million compilation sheets maintained at the Institute of Oceanographic Sciences, Wormley, UK. Later digitised for inclusion in GEBCO Sheet 97.3.

Reference: Fleischer, U., Holzkamm, F., Vollbrecht, K. & Voppel, D. (1974) Die Struktur des Island-Faroeer-Rückens aus geophysikalischen Messungen. *Deutsche Hydrographische Zeitschrift*, 27(2), p.97-113

AREA 97.3-06 ROSEMARY BANK

Based on unpublished survey of Rosemary Bank by HMS Hecate in 1967 (UK Hydrographic Office) consisting of east-west tracks at a spacing of 4.6km but with a spacing of 2.3km over the Bank and 1.2km over the crest of the Bank. Survey sheet was compiled on Mercator projection at a scale of 1:200,000 with soundings plotted out in fathoms (uncorrected). Sheet was contoured at intervals of 100m (corrected) and transcribed onto 1:1 million compilation sheets maintained at the Institute of Oceanographic Sciences, Wormley, UK. Tracklines digitised from original survey sheet.

AREA 97.3-07 MID-ATLANTIC RIDGE (47° to 51°N)

Interpolated from unpublished fair drawn bathymetric chart on Mercator projection scaled at 1.25 inches per degree longitude (approx. 1:2 million) and with a contour interval of 100 fathoms (uncorrected). Chart produced by the US Naval Oceanographic Office based on a comprehensive echo-sounding survey in the late 1960s consisting of a series of east-west tracks spaced less than 10km apart throughout the area. The chart was recontoured at intervals of 100m (corrected) and transcribed onto 1:1 million compilation sheets maintained at the Institute of Oceanographic Sciences, Wormley, UK. The tracklines were not available on the original chart.

Reference: Johnson, G.L. & Vogt, P.R. (1973) Mid-Atlantic Ridge from 47° to 51° North. Geological Society of America Bulletin, 84, p.3443-3462

AREA 97.3-08 ACTIVE PART OF CHARLIE-GIBBS FRACTURE ZONE

Digitised from unpublished 1:250,000 scale bathymetric chart compiled by the Institute of Oceanographic Sciences, Wormley, UK in 1978. Bathymetric interpretation relies heavily on a side-scan sonar survey (RRS Discovery Cruise 84: June-July 1977) using the long range (30km) double sided sonar of GLORIA Mk II and a hull mounted medium range (2.5km) sonar. The sonar coverage was not completely overlapping. Chart compiled at a contour interval of 100m (corrected) using RRS Discovery cruise 84 echo-soundings in conjunction with soundings from HMS Hecate (UK Admiralty), USNS Gibbs (US Naval Research Laboratory, Washington), NO Jean-Charcot (Centre Oceanologique de Bretagne, Brest) and RV Cirolana (Fisheries Laboratory, Lowestoft). Ship tracks were adjusted within the limits of the navigation systems used (Loran C and transit satellites) to bring soundings in line with the physiographic features seen on the GLORIA records.

Reference: Searle, R.C. (1981) The active part of Charlie-Gibbs Fracture Zone: a study using sonar and other geophysical techniques. Journal of Geophysical Research, 86, p.243-262

AREA 97.3-09 ROCKALL BANK

Interpolated from Admiralty Chart C6091 published by UK Hydrographic Department, Taunton at a scale of 1:250,000 with depths contoured at 5 fathom (corrected) intervals. Based on detailed survey, carried out by HMS Hecla in 1969, consisting of regular east-west bathymetric transects of the Bank with a spacing of 2.75km, but with 1.4km line spacing in areas of rough bottom topography with depths less than 100 fathoms and a 0.7km line spacing in the immediate vicinity of Rockall Islet. Navigated by Loran-C with estimated fix accuracy of +/-200m. For inclusion in GEBCO Sheet 97.3, the published

chart was recontoured at intervals of 50m (corrected) and then digitised at a scale of 1:500,000. The tracklines were digitised from a 1:1 million scale chart in the reference below.

Reference: Roberts, D.G. & Jones, M.T. (1978) A bathymetric, magnetic, and gravity survey of the Rockall Bank by HMS Hecla 1969, Admiralty Marine Science Publication No. 19, Hydrographic Department, Taunton

AREA 97.3-10 ROCKALL PLATEAU

Contours were digitised directly from an unpublished bathymetric chart compiled in 1996 by P.M. Hunter of the Southampton Oceanography Centre, UK. The chart was compiled on Mercator projection at a scale of 1:1 million with contours drawn at intervals of 100m (corrected). Based primarily on single beam soundings available on the GEODAS (Version 3) CD-ROM published in June 1995 by the US National Geophysical Data Center, Boulder (IHO Data Centre for Digital Bathymetry). Contours were drawn to be consistent with the morphology of the region - in sparsely sounded areas, the compilation was supplemented with contours taken from IOS Sheet 1 which was assumed to be based on older (and less accurate) data. Contours between 54° and 56°N rely heavily on the 10km spaced east-west tracks surveyed by the US Naval Oceanographic Office in the late 1960s - east of 20°W these data were available on the GEODAS CD-ROM; only a precontoured chart without trackline control was available from this survey west of 20°W. Digital tracklines were taken directly from the GEODAS CD-ROM and supplemented by the tracklines previously digitised from IOS Sheet 1.

AREA 97.3-11 CONTINENTAL MARGIN - SOUTHWEST APPROACHES TO THE BRITISH ISLES

Source: Unpublished series of bathymetric charts compiled by P.M. Hunter in collaboration with colleagues at the Institute of Oceanographic Sciences (IOS), Wormley and the Centre Oceanologique de Bretagne (COB), Brest. Compiled on Mercator projection at a scale of 1:250,000 (at 38°N) with contours at intervals of 100m (corrected). The charts were compiled over the period 1984 to 1993 and the primary data source was the extensive coverage of Seabeam multibeam echo-sounder data (16 adjacent narrow beams within a swathe width below track of approximately two-thirds of the water depth) collected on NO Jean-Charcot and GLORIA Mark II scanning sonar image data (maximum scanning range of 30km either side of ship's track) from RRS Discovery. Contours and tracklines were digitised directly from these charts for incorporation into GEBCO Sheet 97.3. The area comprises four major sub-areas:

SUB-AREA A: Porcupine Seabight and Porcupine Bank (North of 49°30'N)

Compiled by P.M. Hunter (IOS) and N.H. Kenyon (IOS) in 1984 using:

- a) original echo-sounding chart records from all IOS cruises crossing the region since 1966. In addition to depths, the positions of breaks of slope, canyon axes, ridge crests and other features were extracted from the records.
- b) NC Marcel Bayard survey for the CANTAT II telephone cable (M.T. Jones (IOS))

- c) Seabeam data covering the Goban Spur, the outer edge of the Porcupine Bank and the Gollum Channel system in the Seabight; collected during the Norestlante 1 cruise of NO Jean-Charcot in 1983 (J.C. Sibuet (COB))
- d) GLORIA records from RRS Discovery cruise 83 covering the channel system in the Seabight, northern edge of Goban Spur and southern edge of Porcupine Bank
- e) East-west sounding tracks at spacing of 10km taken by USNS Sgt. Curtis F. Shoup north of 51°N (US Naval Oceanographic Office)

SUB-AREA B: Goban Spur (48°-49°30'N; 11°-14°W)

Compiled by P.M. Hunter (IOS) and J.C. Sibuet (COB) in 1983. Based on Seabeam coverage over about two thirds of the area by NO Jean-Charcot and complemented by GLORIA images parallel to the shelf break. Conventional single beam soundings were used to fill in gaps in Seabeam coverage.

Reference: Sibuet, J.C. et al. (1984) Morphology and basement structures of the Goban Spur continental margin and the role of the Pyrenean Orogeny. Initial Reports of the Deep Sea Drilling Project, Volume LXXX, p.1153-1165. Washington (US Government Printing Office)

SUB-AREA C: (47°-49°N; 9°-11°W)

Compiled by P.M. Hunter (IOS) in 1993. Based on conventional echo-soundings supported by almost complete GLORIA imagery over the shelf break north of 48°N. Good Seabeam coverage in the east and a few Seabeam tracks elsewhere - supplied by L. Pastouret (COB) and J.C. Sibuet (COB).

Reference: Pastouret, L., Beuzart, P. & Monti, S. (1982) Presentation de cartes bathymetriques de la marge continentale armoricaine et celte, golfe de Gascogne. Bulletin de la Societe Geologique de France, 24, p.407-411

SUB-AREA D: Meriadzek Terrace (47°-48°N; 7°30'-9°20'W)

Based on a detailed GLORIA survey carried out by RV Farnella in September 1984 complemented by conventional single beam echosoundings. Seabeam data were available over the canyon areas - supplied by L. Pastouret (COB) and J.C. Sibuet (COB).

Reference: Kenyon, N.H. & Hunter, P.M. (1985) A long-range side-scan sonar survey of the Meriadzek Terrace, Bay of Biscay. Institute of Oceanographic Sciences Report No. 20, 17pp.