

**NATURAL ENVIRONMENT RESEARCH COUNCIL**

APPLICATION FOR CONSENT TO CONDUCT MARINE SCIENTIFIC  
RESEARCH IN AREAS UNDER NATIONAL JURISDICTION OF ICELAND  
(name of coastal State)

Date: 18.09.07

**1. General information**

**1.1 Cruise name and/or number:** RRS DISCOVERY 328

**1.2 Sponsoring institution:**

Name: Natural Environment Research Council  
Address: Polaris House, North Star Avenue, Swindon SN2 1EU,  
UK.  
Name of director: Professor Alan Thorpe

**1.3 Scientist in charge of the project:**

Name: Ms Jane Read  
Address: National Oceanography Centre Southampton,  
Empress Dock, Southampton, SO14 3ZH, UK  
Telephone: +44 23 80 596433  
Telex:                      Telefax:

**1.4 Scientist(s) from ICELAND informed of the planning of the  
project**

(name of coastal state)

Name(s):  
Address:

**1.5 Submitting officer:**

Name: AR Louch, NERC NMF SS, National  
Oceanography Centre, European Way, Empress Dock,  
Southampton, SO14 3ZH  
Telephone: 02380 596800  
Telex: 47121                      Telefax: 02380 635130

**2. Description of project (Attach additional pages as necessary)**

To occupy a hydrographic section from Scotland via Rockall to Iceland to maintain a time series started in 1975, "the Extended Ellett Line"

**2.1 Nature of objectives of the project:**

To observe changes in the warm, saline inflow to the Nordic Seas and the cold dense outflow returning to the North Atlantic.

**2.2 Relevant previous or future research cruises:**

Discovery cruises 321 (2007) and 312 (2006), Charles Darwin (2005), Poseidon 314 (2004)

**2.3 Previously published research data relating to the project:**

Data are banked with the British Oceanographic Data Centre (www.bodc.ac.uk). See attached list for publications and references

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### 3. Methods and means to be used

#### 3.1 Particulars of vessel

**Name:** RRS Discovery  
**Nationality:** British  
**Owner:** NERC  
**Operator:** NMF SS  
**Overall Length:** 90.25 metres  
**Maximum draught:** 5.3 metres  
**Net tonnage:** 902 **Gross tonnage:** 3008  
**Propulsion:** Diesel Electric  
**Cruising Speed:** 11 knots **Maximum speed:** N/A  
**Call sign:** GLNE  
**Method of capability of communication (including telex, frequencies):**  
**Inmarsat Voice:** 323388210 **Fax:** 23388212 **Telex:** 323388314  
**Name of Master:** TBA  
**Number of Crew:** 22  
**Number of Scientists on board:** 28

3.2 Aircraft or other craft to be used in the project: None

#### 3.3 Particulars of methods and scientific instruments

Types of samples and data	Methods to be used	Instruments to be used
Water column properties	Lowered, profiling CTD	SBE CTDO, fluorometer, transmissometer, water bottle rosette, lowered ADCP
Underway sampling	Wind speed, direction, air pressure, humidity, irradiance. Sea surface temperature, salinity, fluorescence, turbidity. Water currents. Water depth Towed sampling fish	Meteorological instruments, irradiometers.  Thermosalinograph, fluorometer, transmissometer Vessel mounted ADCP Echosounder For clean water samples
Mooring maintenance at 60° 15' N, 8° 55' W	Water current measurements	Bottom mounted ADCP
Recovery of 4 moorings near 60°N 20°W see below	Water velocities and sediment fluxes	Sediment traps and current meters.

#### 3.4 Indicate whether harmful substances will be used:

Limited quantities of acids, caustic and toxic chemicals for the routine determination of nutrient and dissolved oxygen concentrations and phytoplankton sampling. Limited quantities of radioisotopes for primary productivity and bacteria measurements. Limited quantities of carrier gases, helium and 1% isobutene in argon. All used within the working

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areas aboard the ship. All waste products to be disposed of on return to UK.

3.5 Indicate whether drilling will be carried out: No

3.6 Indicate whether explosives will be used: No

**4. Installations and equipment**

Details of installations and equipment (dates of laying, servicing, recovery; exact locations and depth):

Four moorings to be recovered in the Iceland basin at  
60° 0' N 20° 49.5' W,  
59° 30' N 20° 0' W,  
59° 39' N 18° 47' W,  
58° 52' N 20° 24' W  
(deployed by Allen et al (2007) on Discovery cruise 321a)

One bottom mounted ADCP to be serviced on the Wyville Thomson Ridge at 60° 15' N 8° 55' W.  
(deployed by Sherwin et al (2007) on Discovery cruise 321b)

**5. Geographical areas**

5.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude):

55°N - 66°N, 25°W - 5°W

5.2 Attach chart (s) at an appropriate scale showing the geographical areas of the intended work and, as far as practicable, the positions of intended stations, the tracks of survey lines, and the locations of installations and equipment

see attached chart

**6. Dates**

6.1 Expected dates of first entry into and final departure from research area of the research vessel:

Expected first entry: 8 April 2008

Expected final departure: 24 April 2008

6.2 Indicate if multiple entry is expected: No

**7. Port calls**

7.1 Dates and names of intended ports of call in ICELAND  
(name of coastal State)

Disembark Reykjavik 25<sup>th</sup> April 2008

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- 7.2 Any special logistical requirements at ports of call: No**
- 7.3 Name/Address/Telephone of shipping agent (if available)**

**ICELAND**

Nesskip H.F  
Nesskip's House  
Austurstrond 1  
172 Seltjarnarnes  
REYKJAVIK PC101  
Iceland

Tel: 00 354 5639900  
Fax: 00 354 5639919

Email: operations@nesskip.is

**8. Participation**

- 8.1 Extent to which Iceland will be enabled to participate or to be represented in the research project:**

One berth for an observer from each coastal state is offered in accordance with UNCLOS Art 249 (1a).

- 8.2 Proposed dates and ports for embarkation/disembarkation:**

Embark Clyde: 6<sup>th</sup> April 2008  
Disembark Reykjavik 25 April 2008

**9. Access to data, samples and research results**

- 9.1 Expected dates of submission to ICELAND of preliminary (name of coastal State) reports which should include the expected dates of submission of the final results:**

Six months after completion of Cruise

- 9.2 Proposed means for access by ICELAND to data and samples: (name of coastal State)**

Online database c/o BODC, and CD

- 9.3 Proposed means to provide ICELAND with assessment of (name of coastal State) data, samples and research results or provide assistance in their assessment or interpretation:**

Reports / CD/ meetings

- 9.4 Proposed means of making research results internationally available:**

International peer reviewed journals

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10. COMPLETE THE FOLLOWING TABLE - SEPARATE PAGE FOR EACH COASTAL STATE:

COASTAL STATE: ICELAND

PORT CALL: Reykjavik

DATES: 25<sup>th</sup> April 2008

**SCIENTIFIC EQUIPMENT**

**INDICATE "YES" OR "NO"**

List Scientific Work by Function e.g.: Magnetometry Gravity, Diving, Seismic, Bathymetry, Seabed Sampling, Trawling, Echo Sounding, Water Sampling U/W T.V.: Moored and Towed instrument	Water Column Incl. Sediment Sampling on the Seabed	Fisheries Research within Fishing Limits	Research Concerning the Natural Resources of the Continental Shelf or its Physical Characteristics	Distance from Coast Between	
				Within 12 NM	12 - 200 NM
CTD & water sampling, underway water sampling, water current profiling and echo sounding,	Yes, water column only	No	No	Yes	Yes
Moored current meters and sediment traps	Yes	No	No	No	Yes

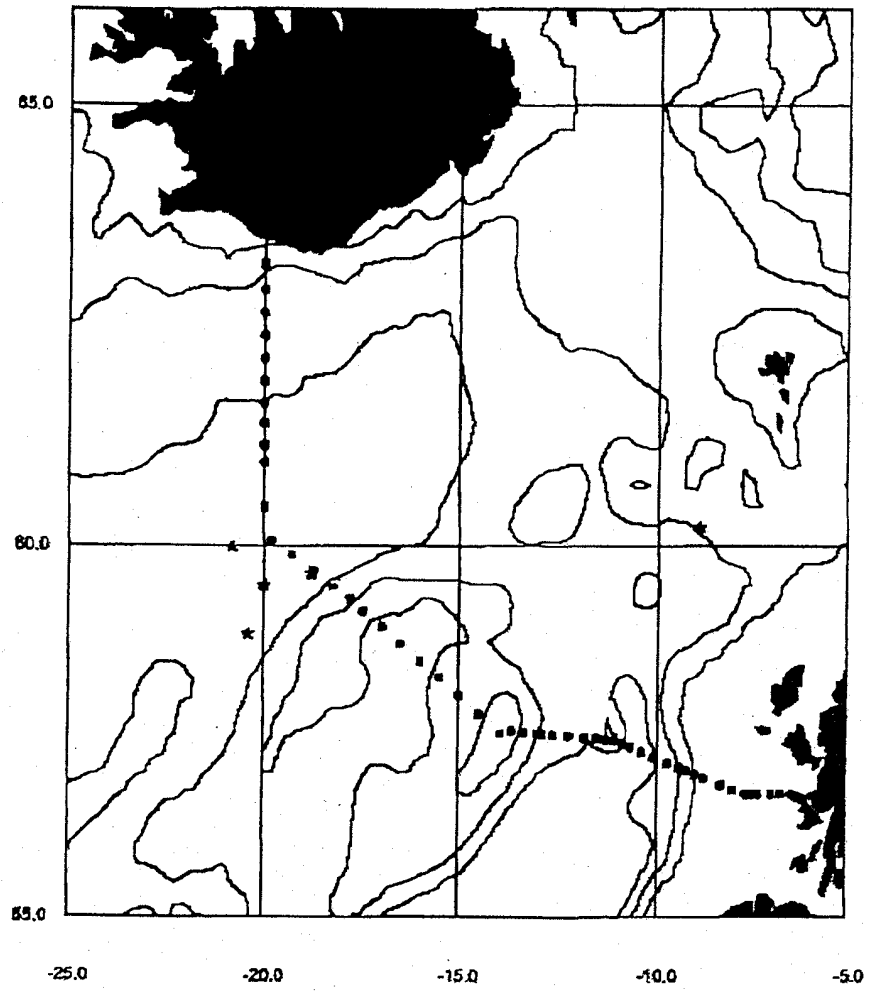
.....(On behalf of the Principal Scientist)

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## Relevant references

- Allen, J.T., Stinchcombe, M.C., et al., 2007. RRS Discovery cruise 312, 11-31 Oct 2006. The Extended Ellett Line 2006. National Oceanography Centre Southampton, Cruise Report No. 15, 146pp.
- Sherwin, T., Allen, J., Bicknell, J., Corbel, G., Embling, C., Evans, J., Ezzi, I., Fones, G., Lamont, P., Mendes, S., Mountfield, D., Nielsdottir, M., Provost, P., Singhruck, P., Stinchcombe, M., 2005. RRS Charles Darwin cruise CD176, Birkenhead to Falmouth via Rockall, Iceland and Oban, 6 October to 28 October 2005. Scottish Marine Biological Association, SAMS Internal Report No. 248, 55p
- Hatun, H., Sando, A.B., Drange, H., Hansen, B., Valdimarsson, H. 2005. Influence of the Atlantic subpolar gyre on the thermohaline circulation. *Science*, 309, 1841-1844.
- Sherwin, T.J., Turrell, W.R., 2005. Mixing and advection of a cold water cascade over the Wyville Thomson Ridge. *Deep-Sea Research I*, 52(8), 1392-1413.
- Read, J.F., 2005. RV Poseidon cruise 314 11 Jul - 23 Jul 2004 The 'Extended Ellett Line' Scotland - Rockall - Iceland time series. Southampton Oceanography Centre, Cruise Report No 58, 68pp
- Pollard, R.T., Read, J.F., Holliday, N.P., Leach, H., 2004. Water masses and circulation pathways through the Iceland Basin during Vivaldi 1996. *Journal of Geophysical Research C (Oceans)*, 109(C4), art.no. -C04004 (DOI: 10.1029/2003JC002067).
- Holliday, N.P., 2003. Air-sea interaction and circulation changes in the north-east Atlantic. *Journal of Geophysical Research (Oceans)*, 108(C8), 3259. (DOI: 10.1029/2002JC001344).
- Holliday, N.P., 2003. Extremes of temperature and salinity during the 1990s in the northern Rockall Trough; results from the Ellett line. ICES Marine Science Symposia series, 219, 95-101.
- Allen, J.T., 2001. RRS Discovery cruise 253 4 May - 20 Jun 2001. Faeroes, Iceland, Scotland Hydrographic and Environmental Survey (FISHES). Southampton Oceanography Centre, Cruise Report No 37, 206pp.
- Bacon, S. 1998. RRS Discovery cruise 230, 07 Aug-17 Sep 1997. Two hydrographic sections across the boundaries of the subpolar gyre: FOUREX. Cruise Report 16, Southampton Oceanography Centre.
- Holliday, N.P., Pollard, R.T., Read, J.F., Leach, H. 2000. Water mass properties and fluxes in the Rockall Trough, 1975-1998. *Deep-Sea Research I* 47, 1303-1332.
- Holliday, N.P., Griffiths, C.R., 2000. RRS Discovery Cruise 245, 27 Jan - 20 Feb 2000: A hydrographic section from Scotland to Iceland. Southampton Oceanography Centre, Cruise Report 29, 80pp.
- Holliday, N.P., 2003. Air-Sea Interaction and Circulation Changes in the North-East Atlantic. *Journal of Geophysical Research*. 108(C8) 3259, doi:10.1029/2002JC001344.
- Read, J.F., 2001. CONVEX-91: water masses and circulation of the Northeast Atlantic subpolar gyre. *Progress in Oceanography* 48, 461-510.
- Smythe-Wright, D., Bryden, H. 1999. RRS Discovery Cruise 233, 23 Apr - 1 Jun 1998: CHAOS. Cruise Report 24, Southampton Oceanography Centre.

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Discovery cruise 328 proposed station work. Dots are CTD stations, Stars are moorings.