



AMBASÁID NA HÉIREANN

AMBASSADE D'IRLANDE

EMBASSY OF IRELAND

**APPLICATION FOR THE CONSENT TO CONDUCT MARINE SCIENTIFIC  
RESEARCH IN AREAS UNDER NATIONAL JURISDICTION OF ICELAND**

Date: 26/02/08

**1. General information****1.1 Cruise name and/or number: CE0806****1.2 Sponsoring institution:**

**Name:** Marine Institute  
**Address:** Rinville  
Oranmore  
Co. Galway  
Ireland

**Name of Chief Executive: Dr. Peter Heffernan****1.3 Scientist in charge of the project:**

**Name:** Dr. Stephen Jones  
**Address:** Department of Geology  
Trinity College Dublin  
Dublin 2

**Telephone:** +353-1-8961235  
**Telefax:** +353-1-6711199

**1.4 Scientist(s) from ICELAND involved in the planning of the project****Name(s):** Dr Bryndis Brandsdottir

**Address:** Institute of Earth Sciences,  
Náttúrufræðahús,  
Askja, herbergi 327  
Sturlugata 7,  
IS-101 Reykjavík

**Sími/phone:** 525 4774**1.5 Submitting officer:**

**Name and address:** Bernadette Ní Chonghaile  
Marine Institute  
Rinville  
Oranmore  
Co. Galway

**Country:** Ireland**Telephone:** 00 353 91 387200**Telefax:** 00 353 91 387201



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

### 2.1 Nature of objectives of the project:

V-Shaped Ridges (VSRs) developed in oceanic crust north and south of Iceland are the world's best window into time-dependent mantle convection processes. It is generally agreed that VSRs result from melting anomalies that propagate outward from Iceland, but the cause of the melting anomalies and the mantle flow pattern that carries them are debated. The proposed survey will provide a unique set of detailed geochemical data that will help to address the question of whether the VSR melting anomalies can be explained entirely by thermal variations within the plume head, or whether chemical heterogeneity also required.

The cruise aims to obtain samples of mid-ocean ridge basalt by dredging at selected sites along the crest of the western arm of VSR-2 and its intersection with the Reykjanes Ridge. New swath bathymetry data will be collected in the vicinity of each proposed site in order to target dredging.

### 2.2 Relevant previous or future research cruises:

1993, Cruise CD80 (*R.R.S. Charles Darwin*), Iceland hotspot-ridge interaction study, Chief Investigator Dr Bramley Murton, Southampton.

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

Murton B.J., Taylor R.N., Thirlwall M.F., Geochemical interaction between the Iceland Plume and the Reykjanes Ridge: a geochemical perspective. *Journal of Petrology*, 43(11), 1987–2012, 2002.

This paper describes a comprehensive suite of geochemical analyses for samples recovered from 186 sites between 63 N and 57.5 N on the Reykjanes Ridge collected on cruise CD80. The transect characterises geochemistry across the younger flank, the crest and the older flank of VSR-1 as far as the trough between VSRs 1 & 2.

The proposed cruise will obtain additional samples along the Reykjanes Ridge between 57.7 N and 55 N. This transect will characterise the geochemistry across the younger flank, crest and older flank of VSR-2 (see figure below). We will then obtain samples along the crest of VSR-2, working north from its intersection with the Reykjanes Ridge at about 57 N. The northern end of the transect will depend on weather conditions but it will not be further north than 62.5 N, 27 W.

All new geochemical and bathymetric data will be submitted for publication in high-ranking academic journal(s) within four years of the survey. The data will be made available online at the time of publication. Access to data before publication will be through the leading partners (Jones, TCD and Murton, NOC).



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### 3. Methods and means to be used

#### 3.1 Particulars of vessel

**Name:** Celtic Explorer  
**Nationality:** Irish  
**Owner:** Marine Institute  
**Overall length:** 65.5m  
**Maximum draught:** 5.7m  
**Net tonnage:** 727  
**Propulsion:** 2 x 1530 KW, 1000Rpm, 1 x 1020 KW, 1000 Rpm  
**Cruising speed:** 10 Kts  
**Call sign:** EIGB  
**Method and capability of communication –**  
**Name of master:** Ciaran Flannagan/ Phillip Baugh  
**Number of crew:** 12  
**Number of scientists on board:** 19 max

#### 3.2 Aircraft or other craft to be used in the project: N/A

#### 3.3 Particulars of methods and scientific instruments

Types of samples and data	Methods to be used	Instruments to be used
High resolution bathymetry.	Swath echosounder.	RESON 8160.
Mid ocean ridge basalt surface samples.	Dredging.	Standard dredges.

### 4. Geographical areas

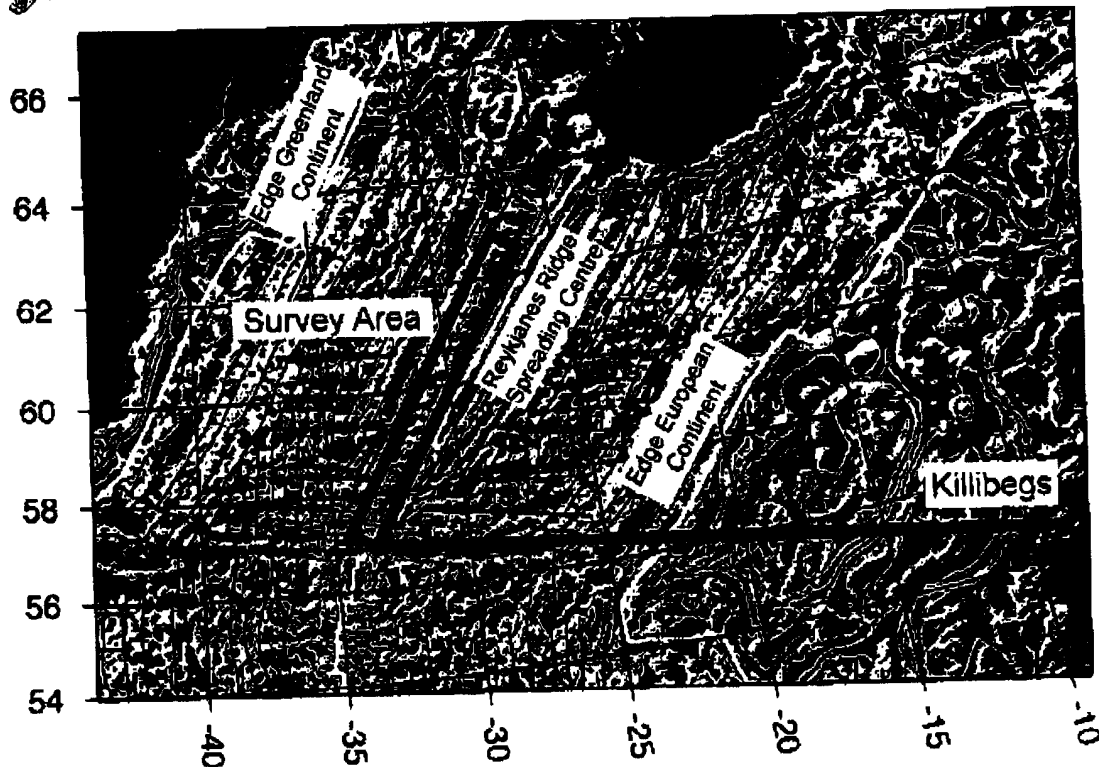
#### 4.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude):

Corridor between approximately 57 N, 33 W and approximately 62.5 N, 27 W (see figure below).  
 The survey will begin at the southern end and we hope to reach at least as far north as 60 N.  
 The northern end of the corridor will be surveyed if time / weather allows.

#### 4.2 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.



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### 5. Dates

The cruise will take place between 21<sup>st</sup> April – 15<sup>th</sup> May 2008.

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

First entry to the Survey Area is expected on 25<sup>th</sup> April.  
Final departure from the Survey Area is expected on 11<sup>th</sup> May.

#### 5.2 Indicate if multiple entry is expected:

Multiple entry not anticipated.

### 6. Port calls

#### 6.1 Dates and names of intended ports of calls in ICELAND:

No intended port calls.

#### 6.2 Any special logistical at ports of call:

Not applicable.

#### 6.3 Names/ Address / Telephone of shipping agent (if available)

Not applicable.



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**7. Participation**

**7.1 Extent to which ICELAND will be able to participate to be represented in research project:**

Contact has been established with Dr Bryndis Brandsdottir at the Institute of Earth Sciences. We have extended invitation for Icelandic scientists with relevant experience to apply to join the cruise as scientific observers. As yet, no-one has taken up this offer.

**7.2 Proposed dates and ports for embarkation / disembarkation:**

Embarkation Killibegs (Ireland) 21<sup>st</sup> April 2008.  
Disembarkation Killibegs (Ireland) 15<sup>th</sup> May 2008.