

NOTIFICATION OF PROPOSED RESEARCH CRUISE

PART A: GENERAL

1. *NAME OF RESEARCH SHIP* RV Pelagia *CRUISE NO.*
2. *DATES OF CRUISE* From: 22/07/2003 To: 21/08/2003
- 3a *OPERATING AUTHORITY* Royal Netherlands Institute for Sea Research (NIOZ)
Telephone: +31 (0) 222 369300
Facsimile: +31 (0) 222 319674
- 3b *OPERATING AGENT* Royal Netherlands Institute for Sea Research (NIOZ)
Telephone: +31 (0) 222 369300
Facsimile: +31 (0) 222 319674
4. *OWNER* Royal Netherlands Institute for Sea Research (NIOZ)
5. *PARTICULARS OF SHIP*
- | | |
|-------------------------|--|
| <i>NAME:</i> | Pelagia |
| <i>NATIONALITY:</i> | Dutch |
| <i>OVERALL LENGTH:</i> | 66.00 metres |
| <i>MAXIMUM DRAUGHT:</i> | 4.00 metres |
| <i>NET TONNAGE:</i> | 1553 NRT |
| <i>PROPULSION:</i> | 2 diesel electric Elliot White Gill
Bow Truster |
| <i>CALL SIGN:</i> | P G R Q |
6. *CREW*
- | | |
|------------------------|--------------------|
| <i>NAME OF MASTER:</i> | Ch. Leeuw/J. Ellen |
| <i>NO. OF CREW:</i> | 10 |
7. *SCIENTIFIC PERSONNEL*
- | | |
|---|--|
| <i>NAME AND ADDRESS OF SCIENTIST IN CHARGE:</i> | Dr. T.C.E. van Weering,
Royal Netherlands Institute for
Sea Research,
P.O. Box 59,
1790 AB Den Burg. |
| <i>TELEPHONE:</i> | +31 (0) 222 369300/369357 |
| <i>FAX:</i> | +31 (0) 222 319674 |
| <i>EMAIL:</i> | tjeerd@nioz.nl |
8. *GEOGRAPHICAL AREA IN WHICH SHIP WILL OPERATE*
(with reference to latitude and longitude)
- Faroe-Shetland Channel:
Box with corners 63deg N 2deg W, 62deg 30' N 0deg 30' W, 61deg 20' N 5deg W, 60deg 45' N 4deg W
- Rockall Bank:
Box with corners 56deg N 20deg W, 56deg N 14deg W, 55deg N 14deg W, 54deg N 18deg W, 54deg N 20deg W
- Porcupine Bank
Box with corners 53deg 30' N 15deg 30' W, 53deg 30' N 14deg 30' W, 52deg N 14deg 30' W, 52deg N 15deg 30' W

9. *BRIEF DESCRIPTION OF PURPOSE OF CRUISE*

The cruise consists of two parts. During part one, mud mounds and contourite deposits will be studied in the Faeroe-Shetland Channel. During the second part of the cruise, cold water corals and carbonate mounds on the Porcupine and Rockall Bank will be studied.

10. *DATES AND NAMES OF INTENDED PORTS OF CALL*

Galway, 21 August 2003 (end of cruise)

11. *ANY SPECIAL REQUIREMENTS AT PORTS OF CALL*

None

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PART B: DETAIL

1. *NAME OF RESEARCH SHIP* RV Pelagia *CRUISE NO.*
2. *DATES OF CRUISE* From: 22/07/2003 To: 21/08/2003
3. *PURPOSE OF RESEARCH AND GENERAL OPERATIONAL METHODS*

The purpose of the cruise is twofold. The first subject of study will be mud mounds (mud volcanoes?) in the northern Faeroe-Shetland Channel. These mounds have been studied briefly during a previous NIOZ cruise with the RV Pelagia and during cruises with British research vessels. Further study is necessary to reveal the true nature of these complexes at the seabed. If indeed the mounds reveal to be mud volcanoes, the mud expelled by these volcanoes could give important information related to the nature and age of deeper located sediments in the area. Contourite deposits in the Faeroe-Shetland Channel will be studied to gain a more detailed insight into the history of Norwegian Sea overflow water from the Norwegian Sea through the Faeroe-Shetland Channel to the south into the Rockall Trough. During this first part of the cruise, seismic equipment (small airguns, 24- and 6-channel recording), a penetrating echo-sounder, a CTD and seabed sampling equipment (box- and piston cores) will be used.

During the second part of the cruise, carbonate mounds and related cold water corals on the Porcupine and Rockall Bank will be studied. During the past 3 years, carbonate mounds and cold water corals have been the subject of several European Union supported research projects (ACES, GEOMOUND, ECOMOUND). Data of the proposed (which forms part of the Moundforce project which is part of the ESF financed EUROMARGIN program) will be compared with data of the E.U. projects and used to establish the forcing conditions of carbonate mound formation and to test the hypothesis of a possible linkage between (hydrocarbon related) cold seeps and the development of carbonate mounds, cold water benthic communities and authigenic carbonate formation. The Moundforce project is further directed towards a definition of the geological, geochemical and oceanographical conditions and processes forcing the development of carbonate mounds and establishing the benthic ecology and environmental conditions of carbonate mound and cold water coral reef formation in contrasting areas of the NE Atlantic Ocean and Mediterranean Sea.

A third objective is to establish the factors governing lithification and stabilisation of carbonate mounds and to use these as modern analogues of fossil carbonate build ups. Data will be collected using seismic equipment (small airguns, 24- and 6-channel recording), a penetrating echo-sounder, seabed sampling equipment (box- and piston cores), a CTD and a free falling lander measuring various variables near the seabed.

4. *ATTACH CHART*
(showing (on an appropriate scale) the geographical area of the intended work, positions of intended stations, tracks of survey lines, positions of moored/seabed equipment, areas to be fished)

See map

5. a) *TYPES OF SAMPLES REQUIRED*
(e.g. Geological/Water/Plankton/Fish/Radionuclide)
 - Seabed samples
 - Acoustic profiles
 - Water column properties (temperature, salinity, light transmission)
 - Near seabed water column properties (temperature, salinity, suspended matter, sediment trap)
 - Seabed images

b) METHODS OF OBTAINING SAMPLES

(e.g. dredging/coring/drilling/fishing, etc.)

(When using fishing gear, indicate fish stocks being worked, quantity of each species required, quantity of fish to be retained on board)

Seabed samples:	box corer piston corer
Acoustic profiles:	hull mounted penetrating echo-sounder seismics (6- and 24-channel recording, small airguns)
Water column properties:	CTD
Near seabed watercolumn properties:	free falling BOBO benthic lander
Seabed images:	camera in BOBO lander photo- and video-camera mounted in frame hopping over the seabed

6. *DETAILS OF MOORED EQUIPMENT*

A NIOZ-designed and built BOBO lander Mark 2 will be deployed during the cruise for recording the temporal variability of bottom water hydrodynamic conditions along with the variations in bottom water temperature, salinity, turbidity and sediment flux. The modular lander BOBO is a free-falling tripod lander with an array of industrially available and/or specifically designed or adapted instruments, designed for long (up to one year) in-situ measurements in the lowermost 3 metres of the benthic boundary layer, in water depths down to 5000 m. A downward-looking 1200 kHz RDI Instruments ADCP is mounted at 2 m above the seabed for high-resolution profiling (5 cm vertical intervals) of near-bed current speed and direction and acoustical backscatter in the lower 2 m of the water column. A Seabird SBE-16 CTD is mounted at about 3 m above the seabed to obtain simultaneous records of temporal variability of salinity and temperature with an interval setting of 5 minutes. In addition, two Seapoint OBS sensors are mounted at respectively 1 and 3 m above the seabed for the detection of particles in suspension. A Technicap PPS 4/3 sediment trap is built into the frame to record particle fluxes at pre-set time intervals. The lander is fitted with two downward-facing photo-cameras.

7. EXPLOSIVES

No explosives

8. *DETAIL & REFERENCE OF*

a) ANY RELEVANT PREVIOUS/FUTURE CRUISES

Faroe-Shetland Channel:

Cruise STRAT01, R.V. Pelagia, 09-18 July, 2001

Rockall and Porcupine Bank:

Cruise ENAM98, R.V. Pelagia, 05 - 16 October 1998

Cruise ENAM99, R.V. Pelagia, 20 July - 20 August 1999

Cruise M2000, R.V. Pelagia, 24 July - 11 August 2000

Cruise M2001, R.V. Pelagia, 25 June - 09 July 2001

Cruise M2002k R.V. Pelagia, 21 June - 14 July 2002

b) ANY PREVIOUSLY PUBLISHED DATA RELATING TO THE PROPOSED CRUISE

T.C.E. van Weering and Shipboard Scientific Party, 1998. A Survey of SE Rockall Trough and Porcupine Bank margin. R.V. Pelagia cruise 64PE124. Unpublished NIOZ cruise report.

T.C.E. van Weering and Shipboard Scientific Party, 1999. A survey of carbonate mud mounds of the Porcupine Bight and S. Rockall Trough margins. R.V. Pelagia cruise 64PE143. Unpublished NIOZ cruise report.

H. de Haas, A. Grehan, M. White and Shipboard Scientific Crew, 2000. Cold water corals in the Porcupine Bight and along the Porcupine and Rockall Bank margins. R.V. Pelagia cruise 64PE165. Unpublished NIOZ cruise report.

H. de Stigter, H. de Haas and Shipboard Scientific Crew, 2001. Cold water corals along the SE and SW Rockall Trough margins. R.V. Pelagia cruise 64PE182, leg 1. Unpublished NIOZ cruise report.

H. de Haas, V. Huvenne, A. Wheeler, V. Unnithan and Shipboard Scientific Crew, 2002. A TOBI side scan sonar survey of cold water coral carbonate mounds in the Rockall Trough and Porcupine Seabight. R.V. Pelagia cruise 64PE197. Unpublished NIOZ cruise report.

D. Long, R. Hout, H. Hafliðason, A.G. Stevenson, J.D. Ritchie, H. Johnson, H. de Haas, T. van Weering, J. Mienert, 2003. Mud mound/?diapiric features in the Faroe-Shetland Channel. Poster EGS-AGU-EUG Joint Assembly, abstract no. EAE03-A-11201, Nice, 2003.

T.C.E. van Weering, H. de Haas, H.C. de Stigter, H. Lykke-Andersen, I. Kouvaev, in press. Structure and development of giant carbonate mounds at the SW and SE Rockall Trough margins, NE Atlantic Ocean. *Marine Geology*, 2003.

T.C.E. van Weering, H. de Haas, A.M. Akhmetzhanov, N.H. Kenyon, 2003. Giant carbonate mounds along the Porcupine and SW Rockall Trough Margins. In: Mienert, J., Weaver, P. (Eds.). *European margin sediment dynamics, side-scan sonar and seismic images*. Springer: 211-216.

N.H. Kenyon, A.M. Akhmetzhanov, A.J., Wheeler, T.C.E., van Weering, H. de Haas, M.K. Ivanov, 2003. Giant carbonate mud mounds in the southern Rockall Trough. *Mar. Geol.*, 195: 5-30.

9. *NAMES AND ADDRESSES OF SCIENTISTS OF THE COASTAL STATE(S) IN WHOSE WATERS THE PROPOSED CRUISE TAKES PLACE WITH WHOM PREVIOUS CONTACT HAS BEEN MADE*

Dr. D. Long	British Geological Survey, Murchison House, West Mains Road, Edinburgh, EH9 3LA, Scotland, UK
Dr. D. Evans	British Geological Survey, Murchison House, West Mains Road, Edinburgh, EH9 3LA, Scotland, UK
D. D. Masson	Southampton Oceanography Centre, European Way, Southampton, SO14 3ZH, UK
Prof. Dr. P. Shannon	Department of Geology, University College Dublin, Belfield, Dublin 4, Ireland.
Dr. A.J. Wheeler	Department of Geology & Environment Research Institute, University College Cork, Cork, Ireland.

10. STATE

a) WHETHER VISITS TO THE SHIP IN PORT BY SCIENTISTS OF THE COASTAL STATE CONCERNED WILL BE ACCEPTABLE

Yes

b) WHETHER IT WILL BE ACCEPTABLE TO CARRY ON BOARD AN OBSERVER FROM THE COASTAL STATE FOR ANY PART OF THE CRUISE AND DATES AND PORTS OF EMBARKATION/DISEMBARKATION

Yes

c) WHEN RESEARCH DATA FROM THE INTENDED CRUISE IS LIKELY TO BE MADE AVAILABLE TO THE COASTAL STATE AND BY WHAT MEANS

The initial data will be made available through a shipboard scientific report. Final results will be assembled in (a) scientific publication(s) in (a) peer reviewed journal(s).

PART C: SCIENTIFIC EQUIPMENT

COASTAL STATE: United Kingdom
PORT CALL:
DATES:

11. COMPLETE THE FOLLOWING TABLE - SEPARATE PAGE FOR EACH COASTAL STATE
(indicate "Yes" or "No")

MARINE SCIENTIFIC EQUIPMENT USED	WATER DEPTH (m)	FISHERIES RESEARCH	DISTANCE OF RESEARCH TO COAST IN NAUTICAL MILES <3	DISTANCE FROM COAST		
				3-12	12-50	50-200
Bottom sampling	500-2000	No				Yes
Seabed imaging	500-2000	No				Yes
Acoustic profiling	500-2000	No				Yes
Water column characterisation	500-2000	No				Yes

List of intended sampling stations during Pelagia cruise

Exact locations of stations will depend on the results of the acoustic survey.

(On behalf of the Principal Scientist)

Dated

N.B. IF ANY DETAILS ARE MATERIALLY CHANGED REGARDING DATES/AREA OF OPERATION AFTER THIS FORM HAS BEEN SUBMITTED, THE COASTAL STATE AUTHORITIES MUST BE NOTIFIED IMMEDIATELY.