

## NOTIFICATION OF PROPOSED RESEARCH CRUISE

**PART A: GENERAL**

1. NAME OF SHIP: **F.S. "ALKOR"** Cruise No. **ALKOR 290**
2. DATES OF CRUISE: 10. Oct.- 02. Nov. 2006 FROM: Kiel (Germany TO: Kiel (Germany)
3. OPERATING AUTHORITY: Leibniz-Institut für Meereswissenschaften, IFM-GEOMAR  
 Düsternbrooker Weg 20  
 24105 KIEL, Germany  
 Phone: +49-431-600(0)  
 Fax +49-431-600-1515, e-mail: [ifm-geomar@ifm-geomar.de](mailto:ifm-geomar@ifm-geomar.de)
4. OWNER: (if different from para 3)
5. PARTICULARS OF SHIP:
- |   |                  |
|---|------------------|
| <u>NAME</u>   | <b>ALKOR</b>     |
| <u>Nationality</u>  | German           |
| <u>OVERALL LENGTH</u>   | 55,20 m          |
| <u>MAXIMAL DRAUGHT</u>  | 3,95 m           |
| <u>NETTONAGE</u>  | 1000             |
| <u>PROPULSION</u>   | Diesel Electric  |
| <u>CALL SIGN</u>  | DBND             |
| <u>IMO</u>  | 8905880          |
| <u>MMSI</u>   | 211216570        |
| <u>PHONE INMARSAT</u>   | +870 3218 429 10 |
| <u>FAX INMARSAT</u>   | +870 3218 429 11 |
| <u>REGISTERED PORT &amp; NUMBER</u><br>(if registered fishing vessel) | Kiel, Germany    |
6. CREW: NAME OF MASTER: Jan Peter Lass  
NUMBER OF CREW: 11
7. SCIENTIFIC PERSONNEL:  
NAME & ADDRESS OF SCIENTIST IN CHARGE  
 Dr. Olaf Pfannkuche, Leibniz-Institut für Meereswissenschaften, IFM-GEOMAR  
 Wischhofstr. 1-3, 24148 Kiel, Germany  
TEL./TELEFAX No. +49-431-600- 2113 / 2116, Fax: 49-431-600- 2911  
e-mail: [opfannkuche@ifm-geomar.de](mailto:opfannkuche@ifm-geomar.de)  
NUMBER OF SCIENTISTS: 12
8. GEOGRAPHICAL AREA IN WHICH SHIP WILL OPERATE (with reference in latitude and longitude):  
**North Sea:** Northern-limit 58° 20'N, Eastern-limit: UK/Norway EEZ, Southern-limit: 57° 30' N, Western-limit: 01° 00'E (see attached map).
9. BRIEF DESCRIPTION OF PURPOSE OF CRUISE:  
 This cruise and the scientific work is part of the collaborative project COMET (Controls on methane fluxes and their climatic relevance in marine gas hydrate-bearing environments) sponsored by the German Ministry of Education and Research and lead by IFM-GEOMAR. In the framework of this cruise the question is addressed how the methane turnover is regulated in shallow gassy sediments in comparison to gas hydrate bearing sediments at continental margins. We will monitor the water column and seafloor in the vicinity of active pockmarks, active gas flares and gassy sediments with hydro-acoustic methods, a manned submersible and TV-cameras mounted to a towed frame, respectively. Surface sediment samples will be taken with video guided corers and grabs in the vicinity of gas seeps. Water samples will be obtained from Rosette water sampler profiles from gas plumes. Gas flux is quantified hydro acoustically with a lander system, sediment water interface fluxes of methane and oxidants are studied with benthic chambers (lander deployed).. Landers are only deployed for the duration of our working activities in the area. All sea floor investigation are operated under video control (sediment coring, lander deployments)  
 Work permissions is requested for one locality the EEZ of the UK (limits se above) at the so called "Gas Blow Out" site all other stations of this cruise are located in the in the Norwegian EEZ.
10. DATES AND NAMES OF INTENDED PORTS OF CALL: **none**

11. ANY SPECIAL REQUIREMENTS AT PORTS OF CALL: none

Diplo form UK

## NOTIFICATION OF PROPOSED RESEARCH CRUISE

### PART B: GENERAL

1. NAME OF RESEARCH SHIP FS ALKOR

2. DATES OF CRUISE 10. Oct.-02. Nov. 2006 FROM Kiel (Germany) TO Kiel (Germany)

#### 3. a) PURPOSE OF RESEARCH

Cruise ALKOR 290 studies active pockmarks and gassy sediments in the North Sea. Many organisms in these areas are very similar to the chemosynthetic communities generally found at methane and fluid seeps at gas hydrate bearing sediments, which are compared by this survey. These environments represent hot spots of methane oxidation, and are optimal study areas for the study of the significance of marine methane emissions for the global climate. Gas deposits in surface sediments are a dynamic reservoir in the marine carbon cycle and a periodically large and focused source of methane. Most of the methane released from deeper sediments is oxidized to CO<sub>2</sub> in the upper sediment layers and in the benthic boundary layer of the ocean. The pathways of methane oxidation have been only partly identified and quantified, and the regulation of methane turnover in marine sediments is not fully understood. Hence, the main aim of this study is the investigation of methane oxidation at the sediment-water interface of the ocean, using modern in situ techniques. The Gas Blow Out which was already investigated by us in previous years offers the unique opportunity to study a permanent large methane emission which reaches the surface of the sea in contrast to gas flares emitted from pockmarks. The latter do generally not reach the surface water.

#### b) GENERAL OPERATIONAL METHODS (including full description of any fishing gear trawl type, mesh size etc)

The water column and seafloor in the vicinity of the gas plume will be monitored with multi beam echosounding, a manned submersible and TV-cameras mounted to a towed frame. Surficial sediment samples will be taken with corers and grabs in the vicinity of the gas flare. Water samples will be obtained from Rosette water sampler profiles. Different bottom landers will be deployed (only during our stay at the site) to: quantify methane plumes, sediment water fluxes of methane and oxidants and BBL physical properties. No fishing gear will be used.

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:

The area of research activities is limited by the following: Northern-limit 58° 20' N, Eastern-limit: UK/Norway EEZ, Southern-limit: 57° 30' N, Western-limit: 01° 00' E (see attached map).

5. a) TYPES OF SAMPLES REQUIRED (e.g. geological/water/plankton/fish/radionuclide):

water  
shallow sediments and precipitates (carbonates)  
benthic organisms (invertebrates, no fish)

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)

CTD/ Rosette water sampler (water, dissolved gases)  
Multiple corer (30cm sediment cores)  
Gravity corer (maximum 5m sediment cores)  
van Veen grab, Box grab (5- 50cm sediment cores, carbonates)  
Lander integrated benthic chambers (30cm sediment cores: sampling sediment, water, dissolved gases)  
Manned submersible

6. DETAILS OF MOORING EQUIPMENT: no moorings

#### DATES

<u>Laying</u>	<u>Recovery</u>	<u>Description</u>	<u>Depth</u>	<u>Latitude</u>	<u>Longitude</u>
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7. ANY HAZARDOUS MATERIAL (Chemicals, explosives, gases, radioactive, etc): **none**  
(use separate sheet if necessary)

- (a) TYPE and TRADE NAME
- (b) CHEMICAL CONTENT (& FORMULA)
- (c) IMO IMDG CODE Reference and Un No.
- (d) QUANTITY & METHODS of STOWAGE ON BOARD
- (e) IF EXPLOSIVES give date(s) of detonation
  - Method of detonation
  - Position of detonation
  - Frequency of detonation
  - Depth of detonation
  - Size of explosive charge in Kg

8. DETAIL & REFERENCE OF:

(a) ANY RELEVANT PREVIOUS / FUTURE CRUISES:

A survey of the site has been undertaken by the applicant with RV ALKOR in June 2005

(b) ANY PREVIOUSLY PUBLISHED RESEARCH DATA RELATIG TO THE PROPOSED CRUISE:

Pfannkuche, O..and Cruise participants (2006) Methane cycle at shallow gaseous sediments in the central North Sea. Cruise rep. Alkor 259 (10-22. 06. 2005). Report Leibniz-Institute for Marine Sciences Kiel, Germany.

9. NAMES AND ADDRESS OF SCIENTIST WITH WHOM PREVIOUS CONTACT HAS BEEN MADE:

**none**

10. STATE

- (a) WHETHER VISITS TO THE SHIP IN PORT BY SCIENTISTS OF THE WILL BE ACCEPTABLE  
YES/NO: **yes**
- (b) PARTICIPATION OF AN OBSERVER FROM THE COASTAL STATE FOR ANY PART OF THE CRUISE TOGETHER WITH THE DATES AND PORTS FOR EMBARKATION / DISEMBARKATION : **yes**,  
10.06.2005 Kiel/22.06.2005 Kiel
- (c) WHEN RESEARCH DATA FROM THE INTENDED CRUISE IS LIKELY TO BE MADE AVAILABLE TO THE COASTAL STATE:  
  
2006:Cruise Summary Report  
from 2007: cruise report, scientific literature  
images on request

PART C: SCIENTIFIC EQUIPMENT

COASTAL STATE: UK

PORT CALL: none

DATES: 10. Oct. - 02. Nov. 2006

## 11. COMPLETE THE FOLLOWING TABLE

- separate page for each coastal state (indicate 'YES' or 'NO')

LIST SCIENTIFIC WORK BY FUNCTION, eg: MAGNETOMETRY GRAVITY OLIVING SEISMICS BATHYMETRY SEABED SAMPLING ECHO SOUNDING WATER SAMPLING U/W T.V. MOORED INSTRUMENTS TOWED INSTRUMENTS	WATER COLUMN INCLUDING SEDIMENT SAMPLING OF THE SEABED	FISHERY RESEARCH WITHIN FISHING LIMITS	RESEARCH CONCERNING THE NATURAL RESOURCES OF THE CONTINENTAL SHELF OR ITS PHYSICAL CHARACTERISTICS	DISTANCE FROM COAST		
				WITHIN 4 NM	BETWEEN 4 -12 NM	Between 12-200 nm
Single beam echosounding (12kHz)	No	No	Yes	No	No	Yes
Multibeam echosounding 180kHz	No	No	Yes	No	No	Yes
Manned submersible	Yes	No	Yes	No	No	Yes
TV-Observation System (bottom photography)	No	No	Yes	No	No	Yes
CTD/Rosette water sampler	Yes	No	Yes	No	No	Yes
Pumping system	Yes	No	Yes	No	No	Yes
Multiple corer	Yes	No	Yes	No	No	Yes
van Veen grab	Yes	No	Yes	No	No	Yes
Box grab	Yes	No	Yes	No	No	Yes
Gravity corer	No	No	Yes	No	No	Yes
GasQuant-Lander (multi beam, methane sensors)	Yes	No	Yes	No	No	Yes
FLUFO-Lander (gas /fluid flow)	Yes	No	Yes	No	No	Yes
BIGO-Lander (biogeochemical sediment fluxes)	No	No	Yes	No	No	Yes

i.n. 

Dated: 15. June 2006

(On behalf of the Principal Scientist)

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

