

NOTIFICATION OF PROPOSED RESEARCH CRUISE**PART A: GENERAL**

1. Name of research ship **RV BELGICA** Cruise N° **2016/06**
2. Dates of cruise From **08 February** To **12 February 2016**
3. Operating Authority **Belgian Navy under contract for Belgian Ministry of Science Policy
Royal Belgian Institute for Natural Sciences (RBINS)
Operational Directorate Natural Environment, Measurement Services Ostend
3de en 23ste Linierregimentsplein, B-8400 Ostend
☎ + 32(0)59 70 01 31 • 📠: + 32(0)59 70 49 35 • ✉ mso@odnature.be
odnature.naturalsciences.be/belgica**
4. Owner **Belgian state represented by Minister for Science Policy**
5. Particulars of ship
- | | |
|-----------------|--|
| Name | Belgica |
| Nationality | Belgian |
| Overall length | 51 meters |
| Maximum draught | 4,5 meters |
| Nett tonnage | 232NRT |
| Propulsion | Diesel |
| Call Sign | ORGQ |
| Telephone | INMARSAT 00870 76 218 73 27 |
| Facsimile | INMARSAT 00870 32 052 18 12 |
| Email | belgica@mumm.ac.be |
6. Crew
- | | |
|----------------|--|
| Name of master | Lieutenant Commander (BeN) Bernard TABUREAU |
| N° of Crew | 15 |
7. Scientific Personnel
- Name and address of scientist in charge :
- Dr Tine MISSIAEN
Universiteit Gent
Faculty of Sciences, Department of Geology and Soil Science
Renard Centre of Marine Geology
Krijgslaan 281, S8
BE-9000 Ghent, Belgium
☎ +32-9-264 45 71 • 📠 +32-9-264 49 67 • ✉ tine.missiaen@ugent.be
www.sea-arch.be**
- N° of scientists : **15**
- (A nominall roll of all personnel other than nationals of the applicant (flag) state is required)*
8. Geographical area in which ship will operate (with reference in latitude and longitude)
- Belgian, Dutch and UK waters
See map and coordinates in Annex 1.**
9. Brief description of purpose of cruise
- SeArch - Archaeological heritage in the North Sea
Development of an efficient evaluation methodology and proposal for sustainable management in Belgium**
10. Port of Call. Dates. Reasons
- | | | |
|------------------|-------------------|---|
| Zeebrugge | 08/02/2016 | Departure homeport. Start of research cruise Belgica 2016/06 |
| Zeebrugge | 12/02/2016 | Arrival homeport. End of research cruise RV Belgica 2016/06 |
11. Any special logistic requirements at ports of call (other than water, fuel provisions, etc.) **N.A.**

NOTIFICATION OF PROPOSED RESEARCH CRUISE**PART B: DETAIL**

1. Name of research ship **RV BELGICA** Cruise N° **2016/06**

2. Dates of cruise From **08 February** To **12 February 2016**

3. Purpose of research and general methods. (If the research work is being taken on behalf of a research institution of a third state, it is the responsibility of that state to obtain prior permission; it is essential that written confirmation that this has been done is obtained and quoted in this application.

The underwater heritage in the Belgian part of the North Sea (and adjacent Dutch and UK areas) is up to now largely unknown, however it is seriously threatened by the increasing commercial activities at sea. The goal of the SEARCH project is to develop an efficient prospection methodology for accurate assessment of the submerged heritage. This should at length allow a sustainable management of the underwater heritage in the North Sea. At the same time the project aims to develop archaeological potential maps of the BCP. For this an optimal seismic coverage of the BPNS (and the directly adjacent Dutch and UK areas) is crucial. This means that existing low density areas in the seiswork network must be filled in.

4. Attach chart(s) 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. Attach table with list of positions (+ geographical references)

See Annex 1

See Annex 2: Table

5. Types of samples required, e.g. Geological / Water / Plankton / Fish / Radioactivity / Isotope

Geophysical

and methods by which samples will be obtained (including dredging/coring/drilling).

High-resolution single channel seismic reflection profiling

6. Details of moored equipment : **N.A.**

Dates Laying	Recovery	Description	Latitude	Longitude

7. Explosives **N.A.**

(a) Type and Trade Name	(b) Chemical content
(c) Dept of trade class and stowage	(d) Size
(e) Depth of detonation	(f) Frequency of detonation
(g) Dates of detonation	

8. Details and reference of

(a) Any relevant previous/future cruises

Previous cruises: RV Belgica cruises 2014/10 and 2015/08.(b) Any previous published research data relating to the proposed cruise
(attach separate sheet if necessary)

- De Clercq, M., Chademenos, V., Van Lancker, V., Missiaen, T. 2015. A high-resolution DEM for the Top-Palaeogene surface of the Belgian Continental Shelf. Submitted to Journal of Maps.
- O. Zurita Hurtado, Missiaen, T., De Clercq, M. et al. 2014. Comparative Seismic Source Study for Buried Palaeolandscapes Investigations in the Southern North Sea. Near Surface Geophysics Conference, 2014, pp1-5.
- Missiaen, T. Efficiency of marine acoustic techniques for the archaeological prospection of intertidal areas: results from a test study on the Belgian coast. Acoustics in underwater Science, Rio de Janeiro, July 2015.
- Missiaen, T., Sakellariou, D. & Flemming, N., 2014. Survey strategies and techniques in underwater geoarchaeological research: an overview. Submitted to Elsevier Coastal Research Library (conference special volume).
- Missiaen, T., Pieters, M., Van Haelst, S., Maes, F., Hoogendoorn, B., De Maeyer, Ph. & Mees, J., 2014. The SeArch Project: development of an efficient assessment methodology and approach towards a sustainable management policy and legal framework in Belgium. Submitted to Elsevier Coastal Research Library (conference special volume).
- Mathys, M., Baeteman, C. & De Batist, M., (submitted). The Quaternary evolution of the Belgian Continental Shelf in the Southern Bight of the North Sea: a state of the art. In: Chiocci, F.L. & Chivas, A. (Eds.) Continental Shelves of the World. Geological Society Special Publication.
- Missiaen, T. 2010. The potential of seismic techniques in marine archaeological research. *Relicta - Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen*, 6, 219-236.
- Missiaen, T. , Demerre, I. and Verrijken, V. (in press). Integrated assessment of the buried wreck site of the Dutch East Indiaman 't Vliegende Hart. *Relicta - Archeologie, Monumenten- en Landschaps-onderzoek in Vlaanderen*.
- Van Dijk, T., Lindenbergh, R. and Egberts, P. 2008. Separating bathymetric data representing multi-scale rhythmic bedforms: A geostatistical and spectral method compared. *J. of Geophysical Research*, 113, F04017, doi:10.1029/2007JF000950.
- Vos, P. and Gerrets, D. 2004. Archaeology, a major tool in the reconstruction of the coastal evolution of Westergo (The Northern Netherlands). *Quaternary International*, 133-134, 61-75.
- Vos P. and de Lange, G. 2010. Geolandschappelijk onderzoek: de vorming van het landschap voor en tijdens de terpbewoning en het ontstaan van de Lauwerszee. In: J.A.W. Nicolay (red.), *Terpbewoning in oostelijk Friesland. Twee terpopgravingen in het voormalige kweldergebied van Oostergo*. Groningen (Groningen Archaeological Studies).
- Walree, P. van, Tegowski, J., Laban, C. and Simons, D. 2005. Acoustic seafloor discrimination with echo shape parameters: A comparison with the ground truth. *Continental Shelf Research*, 25, 2273-2293.

9. Names and addresses of scientist of the coastal state in whose waters the proposed cruise takes place with whom previous contact has been made.

United Kingdom: Dr. Justin Dix, University of Southampton (J.K.Dix@soton.ac.uk)**The Netherlands: Dr. Sytze van Heteren, TNO ([syitze.vanheteren@tno.nl](mailto:sytze.vanheteren@tno.nl))**

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, cfr. part A § 10

(c) When research data from intended cruise is likely to be made available to the coastal state and if so by what means. (If the final report is likely to be delayed beyond 12 months, interim progress reports are required.

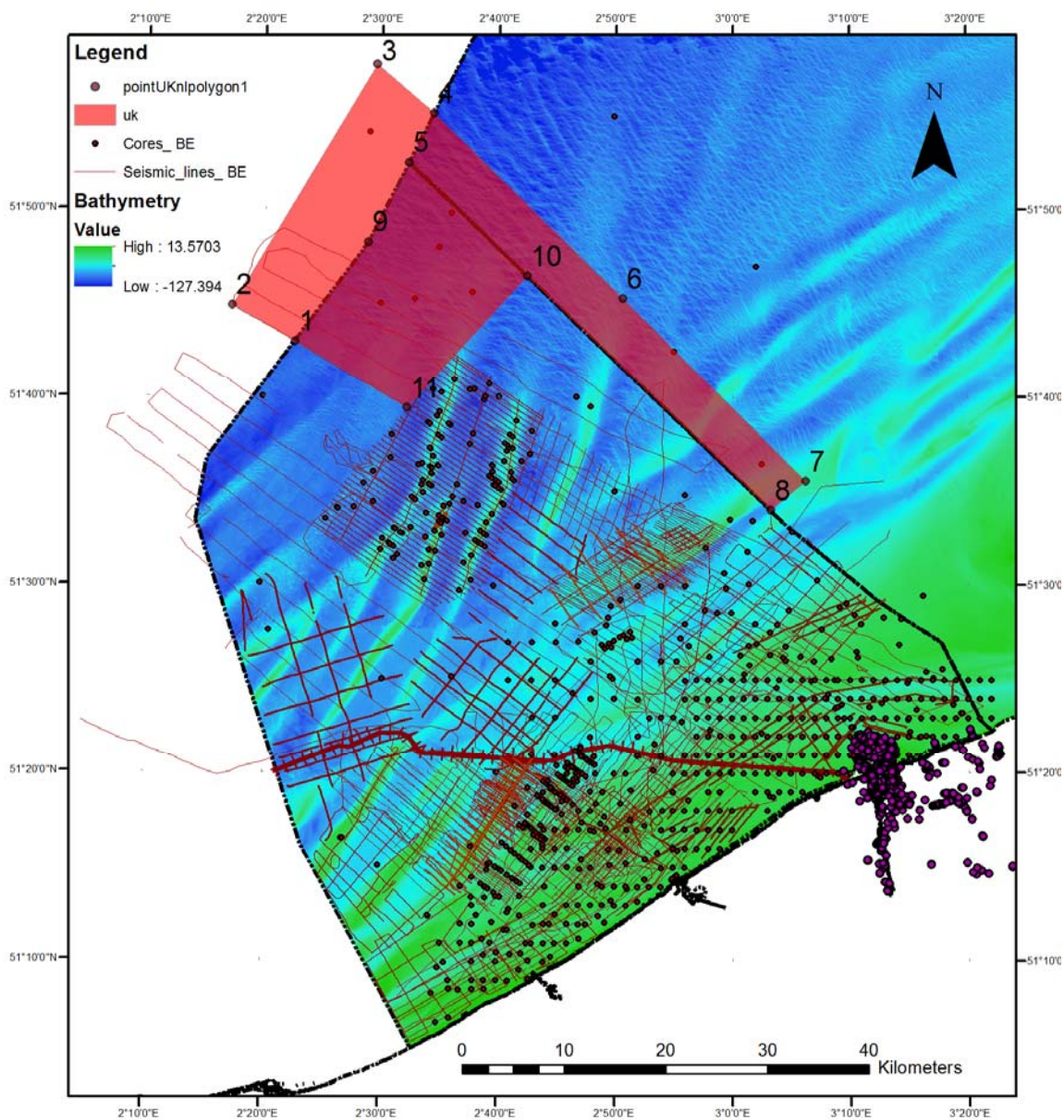
Cruise report within 1 month by request to the chief scientist

Part C: SCIENTIFIC EQUIPMENTCOASTAL STATE :**The NETHERLANDS***(Indicate "YES" or "NO")*

LIST SCIENTIFIC WORK BY FUNCTION	WATER COLUMN INCLUDING SEDIMENT SAMPLING OF THE SEABED	FISHERIES RESEARCH WITHIN FISHING LIMITS	RESEARCH CONCERNING THE NATURAL RESOURCES OF THE CONTINENTAL SHELF OR ITS PHYSICAL CHARACTERISTICS	DISTANCE FROM COAST		
				WITHIN 12 NMS	BETWEEN 12-200 NMS	CONTINENTAL SHELF WORK ONLY BEYOND 200 NM BUT WITHIN THE CONTINENTAL MARGIN
EG. MAGNETOMETRY : GRAVITY DIVING : SEISMICS: BATHYMETRY SEABED SAMPLING TRAWLING ECHO SOUNDING : WATER SAMPLING U/W T.V. : MOORED INSTRUMENTS: TOWED INSTRUMENTS:						
High-resolution seismic profiling	YES	NO	NO		YES	

Part C: SCIENTIFIC EQUIPMENT**COASTAL STATE : UNITED KINGDOM***(Indicate "YES" or "NO")*

LIST SCIENTIFIC WORK BY FUNCTION	WATER COLUMN INCLUDING SEDIMENT SAMPLING OF THE SEABED	FISHERIES RESEARCH WITHIN FISHING LIMITS	RESEARCH CONCERNING THE NATURAL RESOURCES OF THE CONTINENTAL SHELF OR ITS PHYSICAL CHARACTERISTICS	DISTANCE FROM COAST		
				WITHIN 12 NMS	BETWEEN 12-200 NMS	CONTINENTAL SHELF WORK ONLY BEYOND 200 NM BUT WITHIN THE CONTINENTAL MARGIN
EG. MAGNETOMETRY : GRAVITY DIVING : SEISMICS: BATHYMETRY SEABED SAMPLING TRAWLING ECHO SOUNDING : WATER SAMPLING U/W T.V. : MOORED INSTRUMENTS: TOWED INSTRUMENTS:						
High-resolution seismic profiling	YES	NO	NO		YES	

Annex 1:**RV Belgica campaign 2016/06: chart**

ANNEX 2**RV Belgica 2016/06: List of positions**

Id	X	Y
1	2° 22' 35.736" E	51° 42' 57.692" N
2	2° 17' 11.877" E	51° 44' 53.408" N
3	2° 29' 27.724" E	51° 57' 43.206" N
4	2° 34' 22.297" E	51° 55' 7.993" N
5	2° 32' 16.699" E	51° 52' 31.001" N
6	2° 50' 38.042" E	51° 45' 18.268" N
7	3° 6' 12.310" E	51° 35' 32.673" N
8	3° 3' 13.535" E	51° 34' 0.254" N
9	2° 28' 50.302" E	51° 48' 16.523" N
10	2° 42' 25.610" E	51° 46' 29.348" N
11	2° 32' 10.582" E	51° 39' 25.523" N