Application for Consent to conduct
Marine Scientific Research

Date: 04.12.2015

1. General Information

1.1 Cruise name and/or number:
Akademik Ioffe, cruise # 51

1.2 Sponsoring Institution(s):	
Name:	Shirshov Institute of Oceanology
Address:	36 Nakhimovskii prospect, Moscow 117997
Name of Director:	Robert Nigmatulin

1.3 Scientist in charge of the Project:	
Name:	Alexey Sokov
Country:	Russia
Affiliation:	Shirshov Institute of Oceanology
Address:	36 Nakhimovskii prospect, Moscow 117997
Telephone:	+7 (499) 124 61 42
Fax:	+7 (499) 124 63 42
Email:	sokov@ocean.ru, sgladyshev@ocean.ru
Website (for CV and photo):	www.ocean.ru

1.4 Entity(ies)/Participant(s) from coastal State involved in the planning of the project:	
Name:	no
Affiliation:	
Address:	
Telephone:	
Fax:	
Email:	
Website (for CV and photo):	

2. Description of Project

2.1 Nature and objectives of the project:
Specific goals of the cruise are to provide the description of thermohaline ocean structure; to monitor the spatiotemporal changes of transatlantic meridional water and heat transport, to investigate and evaluate the exchange in the northern part of the Atlantic Ocean. Geological researches aim to study Holocene - Upper Pleistocene climate and to estimate atmosphere – ocean - lithosphere matter exchange.

2.2 If designated as part of a larger scale project, then provide the name of the project and the Organisation responsible for coordinating the project:
The cruise is part of the CLIVAR International Program

2.3 Relevant previous or future research projects:
International World Ocean Circulation Program

2.4 Previous publications relating to the project:
1. *Sarafanov A.* On the effect of the North Atlantic Oscillation on temperature and salinity

of the subpolar North Atlantic intermediate and deep waters // ICES J. Marine Science. – 2009. – Vol. 66. – № 7. – P. 1448–1454. – doi:10.1093/icesjms/ fsp094.

2. *Sarafanov A., Falina A., Lherminier P., Mercier H., Sokov A., Gourcuff C.* Assessing decadal changes in the Deep Western Boundary Current absolute transport southeast of Cape Farewell (Greenland) from hydrography and altimetry // J. Geophys. Res. – 2010a. – Vol. 115. – doi:10.1029/2009JC005811.

3. *Sarafanov A., Falina A., Mercier H., Lherminier P., Sokov A.* Recent changes in the Greenland–Scotland overflow-derived water transport inferred from hydrographic observations in the southern Irminger Sea // J. Geophys. Res. – 2009. – Vol. 36. – doi:10.1029/2009GL038385.

4. *Sarafanov A., Falina A., Mercier H., Sokov A., Lherminier P., Gourcuff C., Gladyshev S., F. Gaillard, Daniault N.* Mean full-depth summer circulation and transports at the northern periphery of the Atlantic Ocean in the 2000s // J. Geophys. Res. – 2012. – Vol. 117. – doi:10.1029/2011JC007572.

5. *Sarafanov A., Falina A., Sokov A., Demidov A.* Intense warming and salinification of intermediate waters of southern origin in the eastern subpolar North Atlantic in the 1990s to mid-2000s // J. Geophys. Res. – 2008. – Vol. 113. – doi:10.1029/ 2008JC004975.

6. *Sarafanov A., Falina A., Sokov A., Gladyshev S.* Observing deep-water changes in the northern North Atlantic // Proceedings of OceanObs'09: Sustained Ocean Observations and Information for Society, Annex, Venice, Italy. ESA Publication WPP-306. – 2010b. – doi:10.5270/OceanObs09.

7. *Sarafanov A., Mercier H., Falina A., Sokov A., Lherminier P.* Cessation and partial reversal of deep water freshening in the northern North Atlantic: observation-based estimates and attribution // Tellus. – 2010c. – Vol. 62A. – P. 80–90. – doi:10.1111/ j.1600-0870.2009.00418.x.

8. *Sarafanov A., Sokov A., Demidov A.* Water mass characteristics in the equatorial North Atlantic: a section nominally along 6.5°N, July 2000 // J. Geophys. Res. –2007a. – Vol. 112. – doi:10.1029/2007JC004222.

9. *Sarafanov A., Sokov A., Demidov A., Falina A.* Warming and salinification of intermediate and deep waters in the Irminger Sea and Iceland Basin in 1997–2006 // Geophys. Res. Lett. – 2007b. – Vol. 34. – doi:10.1029/2007GL031074.

3. Geographical Areas

3.1 Indicate geographical areas in which the project is to be conducted (with reference in Latitude and longitude in decimal degrees, including coordinates of cruise/track/way points/sampling stations). Please provide coordinates in a separate excel spreadsheet.
Two hydrographic sections between Shetland Islands and Iceland from 60.417° N, 01.917°W to 64.407° N, 14.047°W Hydrographic section from 59.5° N 04.6° W to 59.95° N, 43.00° W

3.2 Attach chart(s) at an appropriate scale (1 page, high-resolution) showing the geographical Areas of the intended work and, as far as practicable, the location and depth of sampling Stations, the tracks of survey lines, and the locations of installations and equipment.
Annex 1

4. Methods and means to be used

4.1 Particulars of vessel:	
Name:	Akademik Ioffe
Type/Class:	Passanger ship/KM ★L1 1 AUT2
Nationality (Flag State):	Russia
Identification Number (IMO/Lloyds No.):	8507731
Owner:	Shirsov Institute of Oceanology

Operator:	Shirsov Institute of Oceanology
Overall length (meters):	117.1
Maximum draught:	5.9
Displacement/Gross Tonnage:	6600/6450
Propulsion:	PIELSTIK 6 ChN 40/46, 2 x 2576 kW
Cruising & maximum speed:	9 & 12
Call sign:	UAUN
INMARSAT number and method and capability of communication (including emergency frequencies):	INMARSAT-C: TLX – 427310287 INMARSAT – F77: TLF – 763477113, 763477121, FAX – 763477114 GMDSS system, region A3 "SEA" «Brig», 1.5 kW, frequency rng 1.6 – 25.8 мGz radio IW/SW, 300 W, 1.6- 25.8 mGz
Name of Master:	Genadii Poskonyi
Number of Crew:	41
Number of Scientists on board:	30

4.2 Particulars of Aircraft:	
Name:	no
Make/Model:	
Nationality (flag State):	
Website for diagram & Specifications:	
Owner:	
Operator:	
Overall Length (meters):	
Propulsion:	
Cruising & Maximum speed:	
Registration No.:	
Call Sign:	
Method and capability of communication (including emergency frequencies):	
Name of Pilot:	
Number of crew:	
Number of scientists on board:	
Details of sensor packages:	
Other relevant information:	

4.3 Particulars of Autonomous Underwater Vehicle (AUV):	
Name:	no
Manufacturer and make/model:	
Nationality (Flag State):	
Website for diagram & Specifications:	
Owner:	
Operator:	
Overall length (meters):	
Displacement/Gross tonnage:	
Cruising & Maximum speed:	
Range/Endurance:	
Method and capability of communication (including emergency frequencies):	
Details of sensor packages:	
Other relevant information:	

4.4 other craft in the project, including its use:
no
4.5 Particulars of methods, full description of scientific instruments to be used (for fishing gear specify type and dimension) and location

Types of samples and Measurements:	Methods to be used:	Instruments to be used:	To be carried out within 12nm (yes or no):
pressure, temperature, conductivity, dissolved oxygen, turbidity	Deep casts from the surface to the bottom from the drifting ship	SBE 911 plus CTD	no
Oxygen, silicates, phosphates	Titration and standard photometric methods at the sea laboratory on the ship	SBE 32 rosette system 24 bottles-5L	no
U,V components of velocity	Deep casts from the surface to the bottom from the drifting ship	300 kHz Workhorse Monitor (Sentinel) ADCP	no
Surface temperature and conductivity	Underway and on stations at 5 m depth	Thermosalinograph SBE21	no
U,V components of velocity	Underway and on stations in upper 1000 m layer	TRDI OS 38 kHz ship mounted current profiler	no
Surface sediments	From the drifting ship, coordinates pointed out as geological research in excel spreadsheet	Van Veen bottom grab 2500 cm^2	no
Upper layer (Holocene-Upper Pleistocene) sediments	From the drifting ship, coordinates pointed out as geological research in excel spreadsheet	Gravity Corer, 1 x D127 mm x 8 m	no
Vertical matter flux	Subsurface mooring deployment, coordinates pointed out as geological research in excel spreadsheet	Sediment trap "Lotos 3", aperture D=0.8 m, Number of sample bottles =12, 250 ml, Weight 36 kg, H = 1.7 m	no
U,V components of velocity	Subsurface mooring deployment, coordinates pointed out as geological research in excel spreadsheet	DVS TRDI ADCP	no

4.6 Indicate nature and quantity of substances to be released into the marine environment:
no

4.7 Indicate whether drilling will be carried out. If yes, please specify:
no

4.8 Indicate whether explosives will be used. If yes, please specify type and trade name, Chemical content, depth of trade class and stowage, size, depth of detonation, frequency of Detonation, and position in latitude and longitude:
no

5. Installations and Equipment

Details of installations and equipment (including dates of laying, servicing, method and Anticipated timeframe for recover, as far as possible exact locations and depth, and Measurements):

~~Two~~ Three conventional subsurface mooring deployments, **buoyancy** - plastic trawl float, spherical shape, 17.6 kg buoyancy, 800 m working depth, 12 pcs. per one mooring, **line** - polypropylene 16-ply braided cord 14mm in diameter with two sediment traps "Lotos 3" and two DVS TRDI ADCP each (see attached Figure). 61°04.0 N, 03°51.7 W installation on June 7-12, 2016 for one year until June 2017, depth 1120 m, no interim servicing 59°30.0 N, 07°20.0 W installation on June 12-20, 2016 for one year until June 2017 depth 1060 m, no interim servicing 59°30.0 N, 18°00.0 W installation on June 12-20, 2016 for one year until June 2017 depth 2210 m, no interim servicing

6. Dates

6.1 Expected dates of first entry into and final departure from the research area by the research vessel and/or other platforms:
7.06.16 – 30.06.16
6.2 Indicate if multiple entries are expected:
Yes

7. Port Calls

7.1 Dates and Names of intended ports of call:
Gdansk (Poland) 26.04 -3.06.16 Halifax (Canada) 13-15.07.16
7.2 Any special logistical requirements at ports of call:
no

7.3 Name/Address/Telephone of shipping agent (if available):
STARBOARD SHIPPING Gdansk (Poland) Andrzej Rogowski +48 668 319 007 Jarosław Korolczuk + 48 604 204 249 Maciej Gierzyński +48 694 475 151

8. Participation of the representative of the coastal State

8.1 Modalities of the participation of the representative of the coastal State in the research Project:
yes

8.2 Proposed dates and ports for embarkation/disembarkation:
Gdansk (Poland) 3.06.2016/Halifax (Canada) 13.07.16

9. Access to Data, Samples and Research Results

9.1 Expected dates of submission to coastal State of preliminary report, which should include The expected dates of submission of the data and research results:
within 1 year after completing the cruise

9.2 Anticipated dates of submission to the coastal State of the final report:
within 1 year after completing the cruise

9.3 Proposed means for access by coastal State to data (including format) and samples:
by e-mail

9.4 Proposed means to provide coastal State with assessment of data, samples and Research results:
by e-mail

9.5 Proposed means to provide assistance in assessment or interpretation of data, samples And research results:
by e-mail

9.6 Proposed means of making results internationally available:
Publication in the International Peer-Reviewed Journals

10. Other permits Submitted

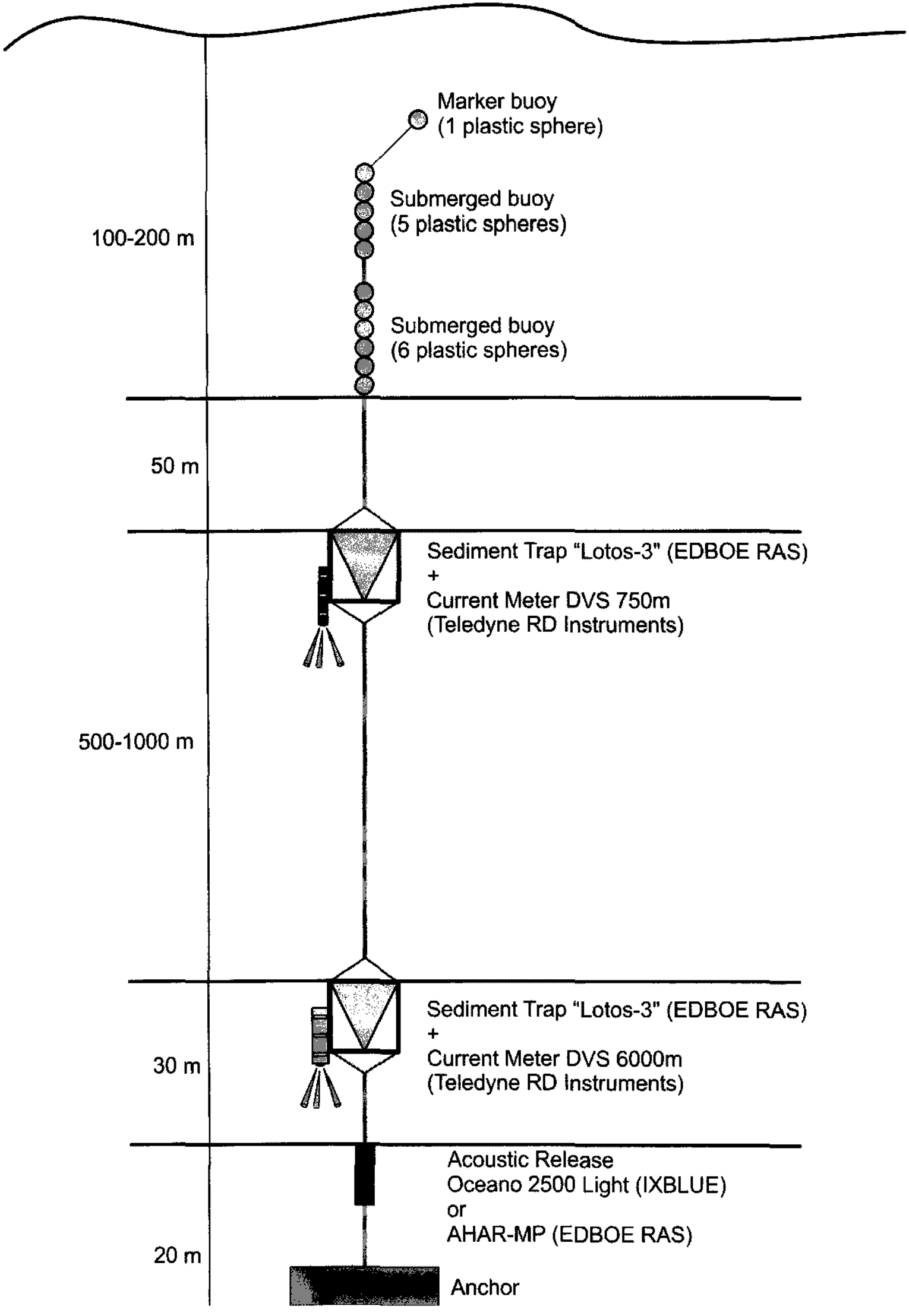
10.1 Indicate other types of coastal state permits anticipated for this research (received or Pending):
Greenland, Faroe Islands, Iceland

11. List of Supporting Documentation

11.1 List of attachments, such as additional forms required by the coastal State, etc.:
Chart of stations, excel spreadsheet with station coordinates

Signature:

Contact information of the focal point:
Name: Sergey Gladyshev
Country: Russia
Affiliation: Shirshov Institute of Oceanology
Address: 36 Nakhimovskii prospect, Moscow 117997
Telephone: +7 (495) 719 02 55
Fax: +7 (499) 124 63 42
Email: sgladyshev@ocean.ru


Marker buoy
(1 plastic sphere)
Submerged buoy
(5 plastic spheres)
100-200 m
Submerged buoy
(6 plastic spheres)
50 m
Sediment Trap "Lotos-3" (EDBOE RAS)
+
Current Meter DVS 750m
(Teledyne RD Instruments)
500-1000 m
Sediment Trap "Lotos-3" (EDBOE RAS)
+
Current Meter DVS 6000m
(Teledyne RD Instruments)
30 m
Acoustic Release
Oceano 2500 Light (IXBLUE)
or
AHAR-MP (EDBOE RAS)
20 m
Anchor

Latitude	Longitude
60°25 N	01°55 W
60°31 N	02°16 W
60°38 N	02°36 W
60°45 N	02°55 W
60°52 N	03°18 W
60°59 N	03°38 W
61°04 N	03°52 W
61°08 N	04°04 W
61°12 N	04°18 W.
61°12 N	04°18 W.
61°08 N	04°04 W
61°04 N	03°52 W
60°59 N	03°38 W
60°52 N	03°18 W
60°45 N	02°55 W
60°38 N	02°36 W
60°31 N	02°16 W
60°25 N	01°55 W
59°30 N	04°36 W
59°30 N	05°15 W
59°30 N	06°00 W
59°30 N	06°40 W
59°30 N	07°20 W
59°30 N	08°00 W
59°30 N	08°40 W
59°30 N	09°20 W
59°30 N	10°00 W
59°30 N	10°40 W
59°30 N	11°20 W
59°30 N	12°00 W
59°30 N	12°40 W
59°30 N	13°20 W
59°30 N	14°00 W
59°30 N	14°40 W
59°30 N	15°20 W
59°30 N	16°00 W
59°30 N	16°40 W
59°30 N	17°20 W
59°30 N	18°00 W

Geological Stations		
61°4.0 N	03°51.7 W	Mooring deployment, Van Veen bottom grab, gravity corer
59°30.0 N	03°50.0 W	Van Veen bottom grab
59°30.0 N	06°00.0 W	Van Veen bottom grab
59°30.0 N	07°20.0 W	Mooring deployment, Van Veen bottom grab, gravity corer
59°30.0 N	09°20.0 W	Van Veen bottom grab
59°30.0 N	11°20.0 W	Van Veen bottom grab

59°30.0 N	13°20.0 W	Van Veen bottom grab
59°30.0 N	15°20.0 W	Van Veen bottom grab
59°30.0 N	18°00.0 W	Mooring deployment, Van Veen bottom grab, gravity corer

The chart of stations located in the UK exclusive economical zone carried out by RV Akademik Ioffe in June 2016