

Application for Consent to conduct
Marine Scientific Research

Date: 04.12.2014

1. General Information

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| 1.1 Cruise name and/or number |
| : Akademik loffe, cruise # 47 |

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

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| 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 |

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| 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

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| 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. |

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| 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 |

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| 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.

4. Methods and means to be used

4.1 Particulars of vessel:

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| Name: | Akademik Ioffe |
| Type/Class: | Passanger ship/KM ★L1 1 AUT2 |
| Nationality (Flag State): | Russia |

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| 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 mGz radio IW/SW, 300 W, 1.6- 25.8 mGz |
| Name of Master: | Leonid Sazonov |
| Number of Crew: | 41 |
| Number of Scientists on board: | 30 |

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| 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: | |

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| 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: | |

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

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):

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:

12.06.15 – 15.07.15

6.2 Indicate if multiple entries are expected:

Yes

7. Port Calls

7.1 Dates and Names of intended ports of call:

Gdansk (Poland) 8.06.15
Iqaluit (Canada) 22.07.15

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| 7.2 Any special logistical requirements at ports of call: |
| no |

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| 7.3 Name/Address/Telephone of shipping agent (if available): |
| no |

8. Participation of the representative of the coastal State

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

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| 8.2 Proposed dates and ports for embarkation/disembarkation: |
| Gdansk (Poland) 8.06.2015/Iqaluit (Canada) 22.07.15 |

9. Access to Data, Samples and Research Results

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| 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 |

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

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

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

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

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

10. Other permits Submitted

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| 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

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| 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