

# APPLICATION FOR CONSENT TO CONDUCT MARINE SCIENTIFIC RESEARCH

## 1. General Information

1.1 Cruise name and/or number:	Line W 2014 - F2014-010
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1.2 Sponsoring institution(s):		
Name	Address	Name of Director
WHOI	Woods Hole, MA 02543	Dr. Susan Avery

1.3 Scientist in charge of the project:	
Name:	John Toole
Country:	US
Affiliation:	Woods Hole Oceanographic Institution
Address:	MS-21, 354 Clark Laboratory Woods Hole, Massachusetts 02543 US
Telephone:	508-289-2531
Email:	jtoole@whoi.edu

1.4 Entity(ies) /Participant(s) from coastal State involved in the planning of the project:	
Name:	See Section 6.2.
Country:	
Affiliation:	
Address:	
Telephone:	
Fax:	
Email:	
Website (for CV and photo):	

## 2. Description of Project

2.1 Nature and objectives of the project:
Re-occupy a hydrographic section that extends from the continental shelf southeast of Cape Cod across the continental slope and Gulf Stream towards Bermuda to sample temperature, salinity, dissolved oxygen, CFCs, SF6 and iodine-129 at selected sites as part of a U.S. National Science Foundation funded program to investigate the characteristics of interannual variations in the North Atlantic's Deep-Western Boundary Current and Gulf Stream.

2.2 Relevant previous or future research projects:
The proposed cruise is part of a repeated sampling program that was begun in spring 2004; present funding will complete the fieldwork phase of the study with this cruise in 2014. Previous cruises under the program that had sufficient time to extend the section into Bermuda territorial waters included the R/V Cape Hatteras cruise 124 September 2004; R/V Oceanus cruises 411, April 2005, and 472, Jul/Aug, 2011; R/V Endeavor cruises 440, October 2007, and 466, October 2009; R/V Atlantis cruise 17, Oct 2010, R/V Knorr cruise 204 in August 2012 and R/V Endeavor cruise 525 in May 2013.

2.3 Previous publications relating to the project:
All previously acquired data that have been calibrated and processed to final form are available on the web site <a href="http://www.whoi.edu/science/PO/linew/index.htm">www.whoi.edu/science/PO/linew/index.htm</a> and the OceanSites archive ( <a href="http://www.oceansites.org">www.oceansites.org</a> )

## 3. Geographical Areas

3.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude, including coordinates of cruise track/ way points):
The cruise will begin and end at the WHOI pier in Woods Hole, MA. No mid-cruise port call is planned. Sampling will be conducted along a line from Woods Hole southeast towards Bermuda with stations planned between 40 17.06 N 70 12.40 W and if time permits, as far south as 32 9.76 N 65 13.57 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.
Chart provided - see Section 10.1.

## 4. Methods and Means to be Used

4.1 Particulars of vessel:	
Name:	KNORR
Type/Class:	Ship

Nationality (Flag state):	United States
Identification Number (IMO/Lloyds No.):	
Owner:	Office of Naval Research
Operator:	Woods Hole Oceanographic Institution
Overall length (meters):	281.00
Maximum draught (meters):	16.70
Displacement/Gross tonnage:	2518.00
Propulsion:	Two Lips diesel-electric azimuthing stern thrusters, 1500 SHP each
Cruising:	11.00
Maximum speed:	13.00
Call sign:	KCEJ
INMARSAT number and method and capability of communication (including emergency frequencies):	500/2182 kHz
Name of master:	Kent Sheasley
Number of crew:	24
Number of scientists on board:	32

4.2 Other craft in the project, including its use:

none

4.3 Particulars of methods and scientific instruments:

Types of samples and measurements	Methods to be used	Instruments to be used
Temperature, salinity, dissolved oxygen, CFCs, SF6 and 129I samples will be collected; Ocean current data; Underway meteorological, surface ocean and depth measurements	Standard, full-depth CTD/rosette casts will be conducted with water samples collected at up to 22 levels; Underway sampling and in conjunction with the CTD casts; Ship mounted sensors And acoustic echosounding	Sea-Bird Electronics, Inc. CTD and rosette pylon w/ PVC sample bottles, Autosol salinometer, dissolved oxygen titration equipment, gas chromatograph; Ship-mounted and lowered acoustic Doppler current profilers; Wind speed and direction sensor, temperature/conductivity sensor, 12 kHz & 3.5 kHz, echosounder
High Frequency Acoustic Data	Hull mounted Seabeam	SeaBeam 3012-P1 multibeam swath mapping system

4.4 Indicate nature and quantity of substances to be released into the marine environment:

No

4.5 Indicate whether drilling will be carried out. If yes, please specify:

No

4.6 Indicate whether explosives will be used. If yes, please specify type and trade name, chemical content, depth of trade class and storage, size, depth of detonation, frequency of detonation, and position in latitude and longitude:

No

4.7 Indicate whether protected species be studied. If yes, please specify:

No

## 5. Installations and Equipment

Details of installations and equipment (including dates of laying, servicing, method and anticipated timeframe for recovery, locations and depth, and measurements):

No

## 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:

Project Start Date: May 01, 2014

Project End Date: May 12, 2014

6.2 Coastal State-specific details:

Coastal Area	Estimated Entry Date	Estimated Departure Date
Bermuda	May 02, 2014	May 11, 2014
Explanation of multiple entries: N/A		
Research will be performed: between 12-200 nm		
Extent to which Bermuda will be enabled to participate or to be represented in the research project: participation on the cruise by Bermuda scientists will be invited		
Name, affiliation and contact information for all participants from coastal state Bermuda:		

## 7. Port Calls

No port calls
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## 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:
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See Section 6.2.
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8.2 Proposed dates and ports for embarkation/disembarkation:
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See Section 6.2.
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## 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:
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No more than 60 days from the end date of the research as provided in Section 6.1.
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9.2 Anticipated dates of submission to the coastal State of the final report:
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No more than 2 years from the end date of the research as provided in Section 6.1.
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9.3 Proposed means for access by coastal State to data (including format) and samples:
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Data will be provided through official channels at no cost to the coastal State(s). Samples will be provided upon request.
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9.4 Proposed means to provide coastal State with assessment of data, samples and research results:
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Assessment of data, samples and research results will be provided at no cost to the coastal State(s).
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9.5 Proposed means to provide assistance in assessment or interpretation of data, samples and research results:
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Assistance in further assessment or interpretation will be provided upon request.
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9.6 Proposed means of making results internationally available:
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Results will be made available via public web site and by direct communication with investigators at the Bermuda Institute of Ocean Sciences
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## 10. List of Supporting Documentation

10.1 List of attachments, such as additional forms required by the coastal State, etc.:			
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Attachment Type	Description	Attachment	Submission Date
Proposed Cruise Track	planned station locations superimposed on a sea surface temperature map from a previous Line W cruise. Also shown marked with white stars are the locations of subsurface moorings that will be recovered during the cruise	7871718750_station_map_and_sst.pdf	Jan 14, 2014
Supplemental Material	CV of cruise chief scientist	8235312500_Toole_CV_Jan_2014.pdf	Jan 14, 2014