



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
Marine Operations Center
439 W. York Street
Norfolk, VA 23510-1114

MEMORANDUM FOR: Commander G. Mark Miller, NOAA
Commanding Officer, NOAA Ship *Henry B. Bigelow*

FROM:

 vt/NOAA
Captain Anne K. Lynch, NOAA

Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT:

Project Instruction for HB-14-05
Autumn Bottom Trawl

Attached is the final Project Instruction for HB-14-05, Autumn Bottom Trawl, which is scheduled aboard NOAA Ship *Henry B. Bigelow* during the period of September 2 to November 14, 2014. Of the 65 DAS scheduled for this project, 65 days are funded by an OMAO allocation. This project is estimated to exhibit a High Operational Tempo. Acknowledge receipt of these instructions via e-mail to OpsMgr.MOA@noaa.gov at Marine Operations Center-Atlantic.

Attachment

cc:

MOA1





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026

Draft Project Instruction

D Date Submitted: 25 August 2014
Platform: NOAA Ship *Henry B. Bigelow*
Project Number: HB 14-05
Project Title: Autumn Bottom Trawl Survey
Project Dates: 02 September – 14 November, 2014

Approved by: Russell W. Brian Date: 8-26-2014
William A. Karp, Ph.D.
Science and Research Director
Northeast Fisheries Science Center

Approved by: Anne K. Lynch Date: 05 SEP 2014
for Captain Anne K. Lynch, NOAA
Commanding Officer
Marine Operations Center – Atlantic

I. Overview

A. HB 14-05 Autumn Multispecies Bottom Trawl Survey, 2 September – 14 November 2014

B. Days at Sea (DAS):
Of the 65 DAS scheduled for this project, 65 DAS are funded by an OMAO allocation.

C. Area of Operation:
The continental shelf from north of Cape Lookout, NC, including Georges Bank and the Gulf of Maine, to the Nova Scotia Shelf (including stations in Canada's Exclusive Economic Zone). Stations will be occupied in waters with depths ranging between 15 and 500 meters.

D. Objectives:
The objectives are to: 1) determine the autumn distribution and relative abundance of fish and invertebrate species found on the continental shelf, including variable amounts of additional biological information obtained through intensive sampling effort to be determined by the field party chief with strategic guidance programmatically predetermined 2) opportunistically test trawl gear, methods, or survey related equipment that may benefit the trawl survey in the future 3) collect oceanographic data including CTD casts and bongo tows at selected stations, 4) collect acoustic data along cruise tracks, as well as test and conduct preliminary survey operations with acoustic systems including the EK-60 and ME-70 .

E. Participating Institutions:
National Marine Fisheries Service, Northeast Fisheries Science Center

F. Science Party:

Part I: 2 – 19 September

<u>Name</u>	<u>Title</u>	<u>Organization</u>
TO BE DETERMINED	Chief Scientist	NMFS, NEFSC, Woods Hole, MA

Part II: 22 September – 3 October

<u>Name</u>	<u>Title</u>	<u>Organization</u>
TO BE DETERMINED	Chief Scientist	NMFS, NEFSC, Woods Hole, MA

Part III: 7 – 24 October

<u>Name</u>	<u>Title</u>	<u>Organization</u>
TO BE DETERMINED	Chief Scientist	NMFS, NEFSC, Woods Hole, MA

Part IV: 28 October – 14 November

<u>Name</u>	<u>Title</u>	<u>Organization</u>
TO BE DETERMINED	Chief Scientist	NMFS, NEFSC, Woods Hole, MA

¹The remainder of the list of scientific personnel will be provided in leg-specific Addendums.

G. Administrative:

1. Points of Contact

Email Contact: The following should be included as recipients of the daily e-mail message:

nmfs.nec.survey.branch@noaa.gov	{Ecosystem Surveys Branch}
Wendy.Gabriel@noaa.gov	{FEMAD Division Chief}
Fred.Serchuk@noaa.gov	{Senior Scientist}
Bill.Karp@noaa.gov	{NEFSC Science and Research Director}
Russel.Brown@noaa.gov	{NEFSC Deputy Science and Research Director}
Jack.Moakley@noaa.gov	{OMI Chief}
Nathan.Keith@noaa.gov	{NEFSC Vessel Coordinator}
Jon.Hare@noaa.gov	{Oceanography Branch Chief}
Tamara.Holzwarth-Davis@noaa.gov	{Oceanography Branch}
Paul.Rago@noaa.gov	{Population Dynamics Branch Chief}
Richard.McBride@noaa.gov	{Population Biology Branch Chief}
CO.Henry.Bigelow@noaa.gov	{Commanding Officer – <i>Henry B. Bigelow</i> }
Michael.S.Abbott@noaa.gov	{NEFSC Port Captain}

2. Diplomatic Clearances:

This project involves Marine Scientific Research in waters under the jurisdiction of Canada. Consent will be received from Canada prior to sailing.

3. Licenses and Permits:

Canada's Foreign Fishing Vessel License was provided with a diplomatic note.

II. Operations

The Chief Scientist is responsible for ensuring the scientific staff are trained in planned operations and are knowledgeable of project objectives and priorities. The Commanding Officer is responsible for ensuring all operations conform to the ship's accepted practices and procedures.

Key Changes and Points of Emphasis:

- 1. The vessel's Simrad EK60 and Rapp Hydema auto-trawl system require calibration prior to the survey. These calibration efforts are estimated to take approximately 3-4 days of vessel time prior to the beginning of the survey. ESB personnel plan to participate and assist with these calibrations.**
- 2. The ESB has planned for a technical representative from Scanmar to participate during the echo sounder and auto-trawl calibration time frame to evaluate and assist with the vessel's acoustic net mensuration equipment. The technical representative will be a Foreign National and the ESB will handle the FN clearance prior to his arrival on board. Evaluation of the Scanmar net mensuration equipment will occur simultaneously with the auto-trawl calibration bottom trawling activities.**
- 3. Five days of autumn bottom trawl survey vessel time have been designated to complete a flatfish catchability study on Georges Bank. This study will take place when the Bigelow arrives on Georges Bank during the normal survey operations.**

The Bigelow will break from normal survey operations to complete the study before resuming bottom trawl survey operations and completing the survey. Two vessels (one commercial trawler and one UNOLS) will be participating in the study and it is critical that the vessels work contemporaneously on Georges Bank to ensure the success of the study. The other vessels involved will have sufficient flexibility to arrive on site when the Bigelow is available, but this will require coordination between the vessels through the Chief Scientist and shore-based ESB personnel. During this effort the Bigelow will perform assigned tows using the standard bottom trawl survey sampling gear and protocols, while the chartered vessel will perform tows using a 4-seam net with a cookie sweep. The third vessel will conduct HABCAM transects and use optical methods to estimate flatfish abundance in the study area. The study will focus on yellowtail flounder and winter flounder, but the project will broadly address flatfish abundance estimates. Results will be used to calibrate a previous flatfish pilot survey designed to improve sampling density and precision of flatfish biomass estimates on Georges Bank.

A. Planned Itinerary: The cruise will be divided into four parts:

25 – 29 August: Load scientific equipment and supplies.

Part I: Calibrations

02 – 05 Sept: Depart Newport Naval Station to conduct vessel systems calibrations; return to Newport Naval Station.

Part I, continued: Mid-Atlantic to Cape Lookout Sector, 05 – 19 September

05 Sept: Embark remaining scientific personnel and depart Newport Naval Station, Newport, RI.

05 – 19 Sept: Begin the autumn bottom trawl survey.

19 Sept: Arrive Newport Naval Station, offload scientific collections and disembark scientific personnel.

Part II: Mid-Atlantic - Southern New England Sector, 22 September – 03 October

22 Sept: On-load scientific gear, embark scientific personnel and Newport Naval Station.

22 Sept – 03 Oct: Continue the autumn bottom trawl survey.

03 Oct: Arrive Newport Naval Station, offload scientific collections and disembark scientific personnel.

Part III: Southern New England - Georges Bank Sector, 07 – 24 October

- 07 Oct: On-load scientific gear, embark scientific personnel and depart Newport Naval Station.
- 07 – 24 Oct: Continue the autumn bottom trawl survey.
Complete flatfish catchability study.
- 24 Oct: Arrive Boston Coast Guard Station, disembark scientific personnel.

Part IV: Georges Bank - Gulf of Maine Sector, 28 October – 14 November

- 28 Oct: Embark scientific personnel and depart Boston Coast Guard Station.
- 28 Oct – 14 Nov: Continue and complete the autumn bottom trawl survey.
- 14 Nov: Arrive Newport Naval Station, Newport, RI, offload gear, scientific collections and disembark scientific personnel.

B. Staging and Destaging:

ESB personnel will coordinate directly with the vessel command and deck department regarding specific staging and destaging activities. These efforts will require the use of the vessel's cranes to on-load and offload equipment.

C. Operations:

Survey operations will be conducted 24 hours. A standard 20-minute tow will be made at the approximately 375 randomly pre-selected stations indicated on cruise charts which will be provided to the Commanding Officer prior to departure. It is requested that the vessel's Navigation Officer plot and examine stations, and identify any stations that are problematic for the vessel in terms of depth, obstructions or other issues in advance of the cruise. Specific sampling problems and requirements may necessitate the planning of additional stations during the actual operation of the cruise (e.g., special deep-water stations). Figure 1 shows the general area of operations. All survey tows will adhere to the NEFSC Bottom Trawl Survey Protocols for the NOAA Ship *Henry B. Bigelow*. Sampling will be conducted using the NEFSC standardized, 3 bridle, 4 seam, bottom survey trawl, equipped with a rockhopper sweep. The trawl will be fished using 2.2 m² Poly-Ice oval trawl doors and 36.6 meter (20 fathom) bridles. In addition, net monitoring equipment will be used to monitor and validate trawl performance at all stations.

Vessel Sensor and Logging Requirements: *Henry B. Bigelow's* SCS system is a PC-based server, which continuously collects and distributes scientific data from various navigational, oceanographic, meteorological, and sampling sensors throughout the cruise. Date and time for data collections from computers, instrumentation, and log sheet recordings will be synchronized using the vessel's GPS master clock. The NEFSC is responsible for setting up FSCS hardware and software, and the NEFSC and *Henry B. Bigelow's* ET are responsible for ensuring data collection.

The ship's Scientific Computer System (SCS) will be required for logging data on a routine basis and data requirements will be coordinated with the Commanding Officer and Electronics Technician at the beginning of the cruise. **Any changes to the settings in the SCS system during the cruise should be immediately communicated to the Chief Scientist. Bridge officers will be requested to execute a new "Trawl Event" using FSCS 2.0 Operation Event Logger to capture SCS data streams during trawling operations. FSCS 2.0 will be set up and utilized to process catches from all tows. Documentation and support will be provided for each survey leg.** Collection of ship sensor data via trawl events is a critical requirement to support this work. It is requested that the time server/time date be imbedded into the SCS files. Global Positioning System (DGPS or P-code GPS) provides data on vessel towing speed and direction to be recorded at a frequency of 1.0 Hz. A list of the requested SCS sensors is provided in Table 1. It is requested that the sensors be operational, calibrated and that logging capabilities be enabled.

Net Mensuration Integration Software: **ESB will utilize Scanmar net mensuration sensors and hydrophones as the primary net mensuration system that is logged to SCS.** It is still requested that the Simrad PI 32 net mensuration systems be enabled within the SCS system aboard *Henry B. Bigelow*, as well. We request that all net mensuration data to be logged by SCS at a frequency of 1.0 Hz. Also, where possible, tows with *Henry B. Bigelow's* Simrad ITI sensors may be requested to test the accuracy of the ITI trawl positioning system and its interface with the Olex software.

Trawl Winches and Towing Warps: *Henry B. Bigelow's* tension based auto-trawl system will be used during all survey trawling operations. National bottom trawl survey standards require redundant measurement of tension during all survey bottom trawling operations. The Ecosystems Surveys Branch requests the vessel calibrate the auto-trawl system prior to each bottom trawl survey cruise season according to the document "Rapp Hydema Auto-Trawl Winch System and Block Load Cell Calibration Procedure" prepared by vessel crew, ESB staff and Rapp Hydema technicians. Both the winch calculated tensions, based on system pressures, and turning block load cells should be calibrated simultaneously to ensure each measuring device is calibrated to an equal magnitude. ESB requires that ship power be available during calibrations so that the system can be operated in "AUTOTRAWL MODE". ESB also requires that the settings of all programmable winch parameters be reported to the ESB after each calibration procedure. Per the current national protocol for trawl surveys, physical markings need not be inserted into the warps if an auto-trawl system is employed. However, the protocols do require redundant measurement of warp length. *Henry B. Bigelow's* trawl warp measuring systems are required to be operational during all NEFSC bottom trawl survey operations.

Gear repair/inventory: A list of the survey sampling gear put aboard will be presented to the Chief Bosun along with detailed sampling gear plans prior to sailing. All sampling gear provided to the vessel shall be in standard condition and configuration as certified by the detailed ESB survey gear inspection process. Sampling gear will be maintained and repaired by the vessel's deck crew, as practical, during the course of the survey. If repairs are not able to be performed, the gear should be labeled detailing the specific damage. The Chief Bosun and Lead Fisherman are requested to follow trawl tagging procedures previously developed jointly with warehouse staff involving Green, White and Red waterproof tags. All bottom trawls delivered to the vessel

should have Green tags indicating that gear has been certified by ESB staff. Bottom trawls that are used but not damaged (deemed to be in acceptable condition by the Chief Bosun at the time of bundling) should be tagged with a white tag indicating the last date of use. Bottom trawls that are used and are known to have damage or other issues should be tagged with a Red tag with a description of the damage or issues with sufficient detail to allow gear specialists to make a reasonable estimate of repair time and required materials without unbundling the gear.

Prior to the end of each cruise leg, the Chief Bosun should communicate all gear related supply needs to the NEFSC gear loft and arrange the offload of damaged gear and delivery of new gear supplies for the following leg. All gear supply related communications should be communicated to the NEFSC warehouse staff Robert Alexander, Richard Raynes and TK Arbusto:

Robert.Alexander@noaa.gov, Richard.Raynes@noaa.gov, Tk.Arbusto@noaa.gov.

EK60 Data Acquisition: The Simrad EK60 echo sounder, (18-, 38-, 70-, 120-, and 200-kHz with split-beam transducers mounted on the retractable center-board) will acquire data continuously throughout the survey. The EK60 will be interfaced to the SCS to record bottom depth and vessel log values. The EK60 will be interfaced to the POSMV motion sensor. When operational, the EK60 will be synchronized with the Simrad ES60 bridge sounder, Simrad ME70 multibeam, and the ship's ADCP. The EK60 is not synchronized with the other sounders and Doppler speed log on the vessel. To minimize acoustic and electrical interference, whenever possible we request deactivating other sounders on the vessel. The survey technicians will be responsible for EK60 data acquisition and storage.

Fisheries Scientific Computer System (FSCS): Catches will be sorted to species. The catch of each species will then be weighed and a length frequency obtained. In addition to these basic catch data, biological samples and data will be collected for age and growth, feeding ecology and special studies. Both station and biological data will be recorded using the Fisheries Scientific Computer System (FSCS) 2.0. Whole fish and parts of fish will be collected, and either preserved or frozen. Standard bottom trawl procedures will be used to collect these samples throughout the survey.

Concurrent with the bottom trawl survey operations there will be additional sampling:

1. At selected stations, bongo plankton net tows will be made using the standard NEFSC protocol.

New:

Leg I of the fall bottom trawl survey will act as a pilot for additional oceanographic data collection. Trawl survey stations designated as bongo stations will have a 20 cm bongo sampler equipped with 335 micron mesh nets attached above the 61 cm bongo frames so that four samples will be collected simultaneously. Dan Vendettuoli, from the Fisheries Oceanography Branch, will process the samples on his watch, preserving them in 95% ethanol, and then changing the ethanol after at least 24 hours from their initial preservation. If time allows, it is requested that the Survey Technicians on the vessel collect these 20 cm bongo samples when Dan is not on watch to complete coverage during the entire first leg.

Once the first leg is completed the addition of the extra sampling request will be assessed in regards to the primary mission of the sea technicians and their current work load. If it is determine that the extra sampling does not deter from the normal sea tech operations, is requested that the Survey Technicians continue 20 cm bongo sampling on subsequent legs **as they are best able to fit it in with their other duties.** These samples will greatly improve our ability to identify and enumerate the eggs and larval and juvenile forms of hakes, butterfish, summer flounder and bluefish using genetic analysis, since these samples are preserved in ethanol.

2. Physical oceanographic parameters will be continually monitored through CTD casts, and the ship's flow-through thermosalinograph and fluorometer instruments. Weather observations, surface salinity samples and bottom salinity samples will be collected at selected stations.

New:

Ten Dissolved Inorganic Carbon (DIC) samples will be collected from the flow-through seawater system on the first leg and on each of the subsequent legs of the Fall Trawl Survey. These samples should be collected at the end of a rosette cast, when the ship has been stationary for a few minutes, to provide a sample which is most representative of that site. These samples will provide a valuable back up to the electronic data being logged from the PCO₂ system, not just for calibration but to help refine and develop algorithms used for the analyses. Dan Vendettuoli will collect these samples on the first leg, but the survey technicians are requested to continue this sampling on subsequent legs.

3. There will be a continuation of the collection of specific samples requested by other programs as well as academic and scientific organizations.
4. Throughout the cruise, particularly during transit to and from operations areas and between bottom trawl stations, a hydroacoustic survey using the ship's Simrad EK60 system (concurrent use of 18, 38, 120 and 200 kHz frequencies) will be conducted. Transducer calibrations may be required.

CTD Support CTD operators will be trained and certified by the NEFSC Oceanography Branch. CTD operator training requires two hours and must be completed prior to the beginning of the cruise unless a trainer is included in the scientific complement. In the event that CTD difficulties are encountered during the cruise, shore based support is available. Requests for support should be forwarded NEFSC.CTDHelp@noaa.gov which is monitored daily. Once contact has been established via email, to assure continuous support, the CTD help address above should be copied on *all* email communications.

D. Dive Plan

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program (<http://www.ndc.noaa.gov/dr.html>) and require the approval of the ship's Commanding Officer.

Dives are not planned for this project.

E. Applicable Restrictions Conditions which preclude normal operations: (List restrictions such as poor weather conditions, equipment failure, safety concerns, unforeseen circumstances, as well as mitigation strategies that might be used).

Refer to the Northeast Fisheries Science Center Bottom Trawl Survey Protocols for the NOAA Ship *Henry B. Bigelow*

III. Equipment

A. Equipment and Capabilities provided by the ship (itemized)

B. Equipment and Capabilities provided by the scientists (itemized)

Equipment and Supply List: The following sampling and scientific equipment will be placed aboard *Henry B. Bigelow* prior to departure:

ITEM	QUANTITY	FURNISHED BY
1. NEFSC 4 seam, 3 bridle trawls	4	NMFS, NEFSC, Woods Hole, MA
2. 2.2 m ² PolyIce oval trawl doors	2 pairs	" " " " "
3. Trawl wires	1 set	<i>Henry B. Bigelow</i>
4. Mending twine	Ample	NMFS, NEFSC, Woods Hole, MA
5. Spare trawl and liner sections	Ample	" " " " "
6. Chain backstraps and idlers	4	" " " " "
7. Age and growth supplies (various)	ample	" " " " "
8. Feeding ecology supplies (various)	ample	" " " " "
9. Special sampling supplies (various)	ample	" " " " "
10. Plastic fish baskets, 2 bushel	24	" " " " "
11. Plastic 5 gal buckets	24	" " " " "
12. Marel electronic scales & backups	4	<i>Henry B. Bigelow</i>
13. CTDs	3	NMFS, NEFSC, Woods Hole, MA
14. Electronic Fish measuring boards	4	<i>Henry B. Bigelow</i>
15. Polyethylene specimen bags	1,000	NMFS, NEFSC, Woods Hole, MA
16. Gloves, rubberized fish	ample	" " " " "
17. Specimen jars	ample	" " " " "
18. Clerical supplies (various)	ample	" " " " "
19. Reference books (various)	ample	" " " " "
20. 60 centimeter bongo net gear	2	" " " " "
21. Salinity bottles	ample	" " " " "
22. Computer	1	" " " " "
23. FSCS system components (Electronic measuring boards, barcode readers, label printers, touch screen monitors, computers & backups, etc)	ample	" " " " "
24. Simrad EK60 Scientific Sounder	1	<i>Henry B. Bigelow</i> (12, 38 & 120 kHz)
25. Simrad PI-32 Deck Unit	2	NMFS, NEFSC, Woods Hole, MA
26. Simrad PI-32 Spread Sensors	3 pair	" " " " "
27. Simrad PI-32 Height Sensors	2	" " " " "
28. Simrad PI-32 Depth Sensors	3	" " " " "

29. Simrad PI-32 Catch Sensors	0	"	"	"	"	"
30. Scanmar Distance Master Sensors	6	"	"	"	"	"
31. Scanmar Distance Remote Sensors	6	"	"	"	"	"
32. Scanmar Depth Sensors	3	"	"	"	"	"
33. Scanmar Trawl Sounders	3	"	"	"	"	"
34. Scanmar Height Sensors	1	"	"	"	"	"
35. Scanmar Trawl Speed Sensors	2	"	"	"	"	"
36. Scanmar Trawleye	1	"	"	"	"	"
37. Scanmar SS4 Door Sensor	2	"	"	"	"	"
38. 90% Ethyl alcohol (ethanol)	3 gal	"	"	"	"	"
39. Ethanol handling and spill cleanup supplies	ample	"	"	"	"	"

IV. Hazardous Materials

A. Policy and Compliance

The Chief Scientist is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it). By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and quantity, MSDS, appropriate spill cleanup materials (neutralizing agents, buffers, or absorbents) in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and chemical safety and spill response procedures. . Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per OMAO procedure, the scientific party will include with their project instructions and provide to the CO of the respective ship 30 days before departure:

- List of chemicals by name with anticipated quantity
- List of spill response materials, including neutralizing agents, buffers, and absorbents
- Chemical safety and spill response procedures, such as excerpts of the program's Chemical Hygiene Plan or SOPs relevant for shipboard laboratories
- For bulk quantities of chemicals in excess of 50 gallons total or in containers larger than 10 gallons each, notify ship's Operations Officer regarding quantity, packaging and chemical to verify safe stowage is available as soon as chemical quantities are known.

Upon embarkation and prior to loading hazardous materials aboard the vessel, the scientific party will provide to the CO or their designee:

- An inventory list showing actual amount of hazardous material brought aboard
- An MSDS for each material
- Confirmation that neutralizing agents and spill equipment were brought aboard sufficient to contain and cleanup all of the hazardous material brought aboard by the program
- Confirmation that chemical safety and spill response procedures were brought aboard

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory showing that all chemicals were removed from the vessel. The CO's designee will maintain a log to track scientific party hazardous materials. MSDS will be made available to the ship's complement, in compliance with Hazard Communication Laws.

Scientific parties are expected to manage and respond to spills of scientific hazardous materials. Overboard discharge of hazardous materials is not permitted aboard NOAA ships.

B. Inventory

The following chemicals will be placed aboard *Henry B. Bigelow* prior to departure:

<u>ITEM</u>	<u>QUANTITY</u>	<u>FURNISHED BY</u>
10% Formalin	8 gal	NMFS, NEFSC, Food Web (not on board)
10% Formalin	10 gal	NMFS, NEFSC, Special Samples (not on board)
Formaldehyde	30 liters	NMFS, NEFSC, Narragansett Lab (presently on board)
Ethanol 95%	40 liters	NMFS, NEFSC, Narragansett Lab (presently on board)
Ethanol 95%	7.2 liters	NMFS, NEFSC, Special Samples (not on board)
Mercuric chloride	50ml	NMFS, NEFSC, Narragansett Lab (not yet on board)

C. Chemical safety and spill response procedures (example)

A: ACID

- Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas.
- Ventilate closed spaces before entering them.
- Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.
- **Large Spills:** Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.
- **Small Spills:** Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
- Never return spills in original containers for re-use.
- Neutralize spill area and washings with soda ash or lime. Collect in a non-combustible container for prompt disposal.
- J. T. Baker NEUTRASORB® acid neutralizers are recommended for spills of this product.

M: Mercury

- Spills: Pick up and place in a suitable container for reclamation or disposal in a method that does not generate dust. Sprinkle area with sulfur or calcium polysulfide to suppress mercury. Use Mercury Spill Kit if need be.

F: Formalin/Formaldehyde

- Ventilate area of leak or spill. Remove all sources of ignition.
- Wear appropriate personal protective equipment.

- Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible.
- Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container.
- Do not use combustible materials, such as saw dust.

D. Radioactive Materials

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary Projects

No Supplementary Projects are planned.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

VI. Disposition of Data and Reports

Disposition of data gathered aboard NOAA ships will conform to NAO 216-101 *Ocean Data Acquisitions* and NAO 212-15 *Management of Environmental Data and Information*. To guide the implementation of these NAOs, NOAA's Environmental Data Management Committee (EDMC) provides the *NOAA Data Documentation Procedural Directive* (data documentation) and *NOAA Data Management Planning Procedural Directive* (preparation of Data Management Plans). OMAO is developing procedures and allocating resources to manage OMAO data and Programs are encouraged to do the same for their Project data.

Data Management: Trawl catches will be processed on shipboard as specified in the Operational Plans. All station and biological data will be electronically recorded. At the completion of the cruise, all data will be electronically transmitted to the NEFSC data management system based in Woods Hole, MA. Samples and data collected for specific individuals, agencies or organizations will be processed by same. Plankton samples will be processed through the NEFSC laboratory in Narragansett, RI. Data from the CTD will be processed at the NEFSC Woods Hole Laboratory.

Protected Resources:

North Atlantic right whale protection: The vessel is requested to adhere to right whale protection regulations. Information on Seasonal Management Area (SMA) and Dynamic Management Area (DMA) regulations and information for protecting right whales from collisions with vessels are provided through the NOAA Protected Resources website (<http://www.nmfs.noaa.gov/pr/shipstrike/>), Right Whale Sighting Advisory System (SAS) website (<http://www.nefsc.noaa.gov/psb/surveys/>), the U.S. Coast Guard's "Notices To Mariners" and NOAA weather radio.

Mariners are urged to use caution and proceed at safe speeds in areas where right whales occur. U.S. Law (50 CFR 224.105) prohibits operating vessels 65 feet (19.8 meters) or greater in excess of 10 knots in Seasonal Management Areas (SMAs) along the U.S. east coast. Mariners are also requested to route around voluntary speed restriction zones, Dynamic Management Areas (DMAs) or transit through them at 10 knots or less. Approaching within 500 yards of right whales is prohibited, unless the Chief Scientist is in possession of an ESA/MMPA permit allowing such approaches.

Whale sightings: Sightings of right whales, or dead or entangled whales of any species, are extremely valuable and reports are urgently requested. Please report all right whale sightings north of the Virginia-North Carolina border to 978-585-8473; right whale sightings south of that border should be reported to 904-237-4220. Right whale sightings in any location may be reported to the U.S. Coast Guard via VHF channel 16. Protocols for reporting sightings are described in the Guide to Reporting Whale Sightings placard. The placard is available online (http://www.nefsc.noaa.gov/read/protsp/mainpage/surveys/documents/Guide_to_Reporting_Whale_Sightings.pdf) and laminated copies will be provided by the Protected Species Branch upon request. It is requested that this placard be kept on the bridge for quick reference and to facilitate rapid reporting (via satellite phone if necessary). Opportunistic sightings of other marine mammal species that are live and well may be reported using the Platforms of Opportunity (POP) forms and protocols

Endangered Species Act and Marine Mammal Protection Act reporting requirements: This reporting is required and is in addition to the reports in the above two sections. If the ship has an interaction with a sturgeon, whale, dolphin, porpoise, marine turtle, or seal (e.g., collision with a whale or bycatch of a sea turtle), the NMFS Northeast Regional Office must be notified within 24 hours of the interaction. If an interaction with any of those species occurs or if the vessel's company notices an animal that is entangled, injured, in distress, or dead, they should contact the Northeast Regional Office's 24-hour hotline at 866-755-6622 to report the incident and receive further instructions.

Marine turtle bycatch: All marine turtles taken incidental to fishing activities must 1) be handled and resuscitated according to established procedures, 2) be clearly photographed (multiple views if possible, including at least one photograph of the head scutes), 3) be identified to the species level, 4) have width and length (carapace notch to notch, and notch to tip) measured in centimeters, 5) have supporting data recorded including GPS or Loran coordinates recorded describing the location of the interaction; time of interaction; date of interaction; condition of the animal upon retrieval (alive uninjured, alive injured, fresh dead, decomposed, comatose or unresponsive); the condition of the animal upon return to the water; GPS or Loran coordinates of the location at which it was released; and a description of the care or handling provided. Live animals shall then be returned to the sea. Dead animals shall, if feasible, be frozen and returned to the Woods Hole Laboratory.

Marine mammal bycatch: All marine mammals taken incidental to fishing activities must 1) be clearly photographed (multiple views if possible, including at least one photograph of the head, 2) be identified to the species level, 3) have body length (snout to tail (seals), beak to

the notch in the fluke/tail (whales, dolphins and porpoises)), measured in centimeters, 4) have supporting data recorded including GPS or Loran coordinates recorded describing the location of the interaction; time of interaction; date of interaction; condition of the animal upon retrieval (alive uninjured, alive injured, fresh dead, decomposed, comatose or unresponsive). Live animals shall then be returned to the sea. Dead animals shall, if feasible, be frozen and returned to the Woods Hole Laboratory.

Stellwagen Bank: Any artifacts brought aboard the vessel due to fishing in the Stellwagen Bank National Marine Sanctuary must be immediately returned, as near as possible, to the location of interception. An artifact is defined as anything of man-made origin with the exception of modern fishing gear. Stations located within Stellwagen Bank will be identified prior to the cruise and reported to the chief scientist.

VII. Meetings, Vessel Familiarization, and Project Evaluations

- A. **Pre-Project Meeting:** The Chief Scientist and Commanding Officer will conduct a meeting of pertinent members of the scientific party and ship's crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship's Operations Officer usually is delegated to assist the Chief Scientist in arranging this meeting.
- B. **Vessel Familiarization Meeting:** The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project's start and is normally presented by the ship's Operations Officer.
- C. **Post-Project Meeting:** The Commanding Officer is responsible for conducting a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and short comings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.

Upon completion of each cruise leg, a post-cruise meeting will be held (unless prior alternate arrangements are made) and attended by the ship's officers, the Chief Scientist, members of the scientific party, the Vessel Coordinator and the Port Captain to review the cruise. Concerns regarding safety, efficiency, and suggestions for improvements for future cruises should be discussed. Minutes of the post-cruise meeting will be distributed to all participants via email and to the CO.MOC.Atlantic@noaa.gov and ChiefOps.MOA@noaa.gov. The Port Captain, if

attending, is responsible for the recording and distributing the minutes. In his/her absence, the Operations Officer shall be responsible for the minutes.

D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. The form is available at <http://www.oma.noaa.gov/fleeteval.html> and provides a "Submit" button at the end of the form. Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared with the ships, specific concerns and praises are followed up on while not divulging the identity of the evaluator.

VIII. Miscellaneous

A. Watches

Vessel operations will be conducted 24 hours per day. The scientific watch schedule will be determined and submitted as part of the Addendum one week prior to sailing.

Scientific personnel will stand 12 hour watches.

B. Meals and Berthing

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the project.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 17, 2000

which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

C. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website <http://www.corporateservices.noaa.gov/noaaforms/eforms/nf57-10-01.pdf>.

All NHSQs submitted after March 1, 2014 must be accompanied by [NOAA Form \(NF\) 57-10-02](#) - Tuberculosis Screening Document in compliance with [OMAO Policy 1008](#) (Tuberculosis Protection Program).

The completed forms should be sent to the Regional Director of Health Services at the applicable Marine Operations Center. The NHSQ and Tuberculosis Screening Document should reach the Health Services Office no later than 4 weeks prior to the start of the project to allow time for the participant to obtain and submit additional information should health services require it, before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of either form. Ensure to fully complete each form and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

The participant can mail, fax, or email the forms to the contact information below. Participants should take precautions to protect their Personally Identifiable Information (PII) and medical information and ensure all correspondence adheres to DOC guidance (http://ocio.os.doc.gov/ITPolicyandPrograms/IT_Privacy/PROD01_008240).

The only secure email process approved by NOAA is [Accellion Secure File Transfer](#) which requires the sender to setup an account. [Accellion's Web Users Guide](#) is a valuable aid in using this service, however to reduce cost the DOC contract doesn't provide for automatically issuing full functioning accounts. To receive access to a "Send Tab", after your Accellion account has been established send an email from the associated email account to accellionAlerts@doc.gov requesting access to the "Send Tab" function. They will notify you via email usually within 1 business day of your approval. The "Send Tab" function will be accessible for 30 days.

Contact information:

Regional Director of Health Services
Marine Operations Center – Atlantic
439 W. York Street
Norfolk, VA 23510
Telephone 757-441-6320
Fax 757-441-3760
E-mail MOA.Health.Services@noaa.gov

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

D. Shipboard Safety

Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. At the discretion of the ship CO, safety shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship's Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire.

E. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via e-mail and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required and it must be arranged at least 30 days in advance.

F. IT Security

Any computer that will be hooked into the ship's network must comply with the *OMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

- (1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

Completion of the above requirements prior to boarding the ship is required.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

G. Foreign National Guests Access to OMAO Facilities and Platforms

Foreign National access to the NOAA ship or Federal Facilities is not required for this project. (Replaces all below under VIII. F)

OR

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow's March 16, 2006 memo (<http://deemedexports.noaa.gov>). National

Marine Fisheries Service personnel will use the Foreign National Registration System (FNRS) to submit requests for access to NOAA facilities and ships. The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their designated Line Office Deemed Export point of contact to assist with the process.

Foreign National access must be sought not only for access to the ship involved in the project but also for any Federal Facility access (NOAA Marine Operations Centers, NOAA port offices, USCG Bases) that foreign nationals might have to traverse to gain access to and from the ship. The following are basic requirements.

Full compliance with NAO 207-12 is required.

Responsibilities of the Chief Scientist:

1. Provide the Commanding Officer with the e-mail generated by the Servicing Security Office granting approval for the foreign national guest's visit. (For NMFS-sponsored guests, this e-mail will be transmitted by FNRS.) This e-mail will identify the guest's DSN and will serve as evidence that the requirements of NAO 207-12 have been complied with.
2. Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
3. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.
4. Export Control - Ensure that approved controls are in place for any technologies that are subject to Export Administration Regulations (EAR).

The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written approval from the Director of the Office of Marine and Aviation Operations and compliance with export and sanction regulations.
3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Chief Scientist or the DSN of the FNRS or Servicing Security Office e-mail granting approval for the foreign national guest's visit.
5. Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.
6. Export Control - 8 weeks in advance of the project, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the

Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program controlled technology. The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.

Responsibilities of the Foreign National Sponsor:

1. Export Control - The foreign national's sponsor is responsible for obtaining any required export licenses and complying with any conditions of those licenses prior to the foreign national being provided access to the controlled technology onboard regardless of the technology's ownership.
2. The DSN of the foreign national shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified individual must be a U.S. citizen and a NOAA or DOC employee. According to DOC/OSY, this requirement cannot be altered.
3. Ensure completion and submission of Appendix C (Certification of Conditions and Responsibilities for a Foreign National

VIII. Appendices (all that apply)

1. Figures, maps, tables, images, etc.

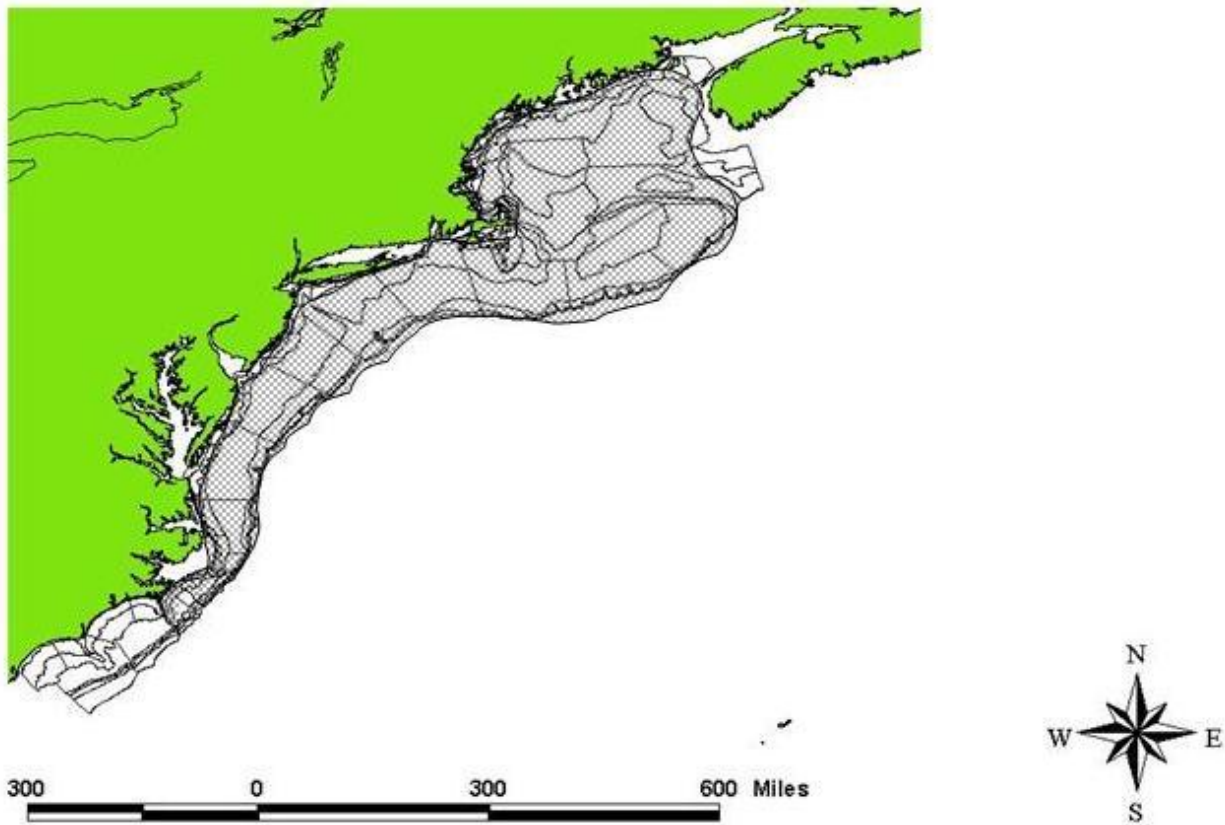


Figure 1. General planned area of operations for *Henry B. Bigelow*, Cruise 14-04 (Parts I-IV), Autumn Bottom Trawl Survey, during 2 September – 14 November 2014.

Table 1. Scientific Computer Sensors, and logging rates of those sensors, required during *Henry B. Bigelow* cruise 14-04, Autumn Bottom Trawl Survey, scheduled to be conducted during 2 September – 14 November 2014. Additional sensors may be requested.

Sensor Name	Units	Log Rate (secs)
ADCP-Depth	(Meters)	1
ADCP-F/A-GroundSpeed	(Knots)	1
ADCP-F/A-WaterSpeed	(Knots)	1
ADCP-P/S-GroundSpeed	(Knots)	1
ADCP-P/S-WaterSpeed	(Knots)	1

Sensor Name	Units	Log Rate (secs)
PASHR-Hdg-Qual	(Value)	1
PASHR-Hdg-True	(Degrees)	1
PASHR-Heave	(Centimeters)	1
PASHR-Pitch	(Degrees)	1
PASHR-Pitch-Qual	(Value)	1

Air-Temp	(Deg C)	1
Baro-Press	(Millibars)	1
CenterBoardPos-Value	(Position)	1
Date	(Date)	1
Doppler-Depth	(Meters)	1
Doppler-KeelOffset	(Meters)	1
Doppler-P/S-BottomSpeed	(Knots)	1
Doppler-P/S-WaterSpeed	(Knots)	1
EK60-18kHz-Depth	(Meters)	1
EK60-38kHz-Depth	(Meters)	1
ES60-200hz-Depth	(Meters)	1
ES60-50hz-Depth	(Meters)	1
GYRO	(Degrees)	1
ITI-BearingToTarget	(Degrees)	1
ITI-Depth	(Meters)	1
ITI-DoorSpread	(Meters)	1
ITI-HdRopeBottomDist	(Meters)	1
ITI-HdRopeFtRopeDist	(Meters)	1
ITI-HorizRange	(Meters)	1
ITI-RangeToTarget	(Meters)	1
ITI-SlantRange	(Meters)	1
ITI-Time	(Time)	1
ITI-TrawlDepth	(Meters)	1
ITI-TrawlWaterTemp	(Deg C)	1
ME70-Depth	(Meters)	1
Mid-SeaTemp-C	(Deg C)	1
MX420-COG	(Degrees)	1
MX420-Lat	(DEGMIN)	1
MX420-Lon	(DEGMIN)	1
MX420-SOG	(Knots)	1
MX420-Time	(Time)	1

PASHR-Roll	(Degrees)	1
PASHR-Roll-Qual	(Value)	1
PASHR-Time	(Time)	1
PI32-Depth1000-VAL	(Meters)	1
PI32-DEPTH300-VAL	(Meters)	1
PI32-DS-VAL	(Meters)	1
PI32-HR-VAL	(Meters)	1
PI32-WS-VAL	(Meters)	1
PORTTrawlWinchLineOut	(Meters)	1
PORTTrawlWinchLinespeed	(Meters/sec)	1
PORTTrawlWinchTension	(Kilos)	1
POSMV-COG	(Degrees)	1
POSMV-Elevation	(Value)	1
POSMV-hdops	(Value)	1
POSMV-Heading	(Degrees)	1
POSMV-Lat	(DEGMIN)	1
POSMV-Lon	(DEGMIN)	1
POSMV-Quality	(Value)	1
POSMV-Sats	(Value)	1
POSMV-SOG	(Knots)	1
POSMV-Time	(Time)	1
SAMOS-AirTemp-Value	(Degrees C)	1
SAMOS-TRUE-WIND-DIR-Value	(Degrees)	1
SAMOS-TRUE-WIND-Spd-Value	(Knots)	1
SCANMAR-DEPTH-VAL	(Meters)	1
SCANMAR-DOOR-SPREAD	(Meters)	1
SCANMAR-Height	(Meters)	1
SCANMAR-WING-SPREAD	(Meters)	1
SCANMAR-TRAWLSOUNDER	(Meters)	1
SCANMAR-TRAWLEYE	(Meters)	1
Shaft-RPM-Value	(Value)	1
STBDTrawlWinchLineOut	(Meters)	1
YOUNG-TWIND-Speed	(Knots)	1