



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

November 7, 2016

MEMORANDUM FOR: Commander William Mowitt, NOAA
Commanding Officer, NOAA Ship *Pisces*

FROM: Captain Scott M. Sirois, NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for PC-16-10
Gulf of Maine 2016 Cyst Cruise

Attached is the final Project Instruction for PC-16-10, Gulf of Maine 2016 Cyst Cruise, which is scheduled aboard NOAA Ship *Pisces* during the period of November 13– November 23 2016. Of the 11 DAS scheduled for this project, 11 days are funded by a Line Office Allocation. Due to delays, dates have been altered. 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.



Project Instructions

Date Submitted: October 19, 2016

Platform: NOAA Ship *Pisces*

Project Number: PC-16-10

Project Title: Gulf of Maine 2016 Cyst Cruise

Project Dates: November 13, 2016 to November 23, 2016

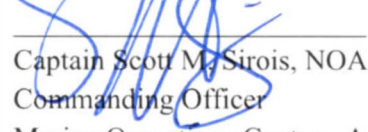
NOV 10 CHANGED TO
NOV 13 *BT*

Prepared by: MCTIGUE.TERESA.A.13658969
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Teresa McTigue, PhD
Chief Scientist
NOAA/NOS/NCCOS/CCMA

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Director
NOAA/NOS/NCCOS/CCMA

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Approved by:  Dated: 11/7/16
Captain Scott M. Sirois, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. Overview

A. Brief Summary and Project Period

Alexandrium fundyense, commonly referred to locally as the New England “red tide” organism, is a Harmful Algal Bloom (HAB) species that requires careful management of shellfish resources to prevent Paralytic Shellfish Poisoning (PSP) in New England and Canadian coastal waters. This algae species produces cysts that overwinter in the sediments of the Gulf of Maine. The abundance of these cysts in the sediment during the fall and winter is a strong predictor of the magnitude of HAB bloom events during the following year. During this cruise, sediment cores will be collected and samples preserved to allow for the enumeration of *A. fundyense* cysts across a broad area of the Gulf of Maine in support of an accurate prediction of the potential red tide conditions along the northern New England coasts in the spring and summer of 2016. Field collections will occur from November 10-23, 2016.

DATES SUBJECT TO CHANGE
(NOV 13 - NOV 23, 2016 OPS
MAN/KMJ)

B. Service Level Agreements

Of the 13 DAS scheduled for this project, 0 DAS are funded by the program and 13 DAS are funded by Line Office Allocation. This project is estimated to exhibit a High Operational Tempo.

DATES SUBJECT TO
CHANGE (11 DAS) OPS
MAN/KMJ

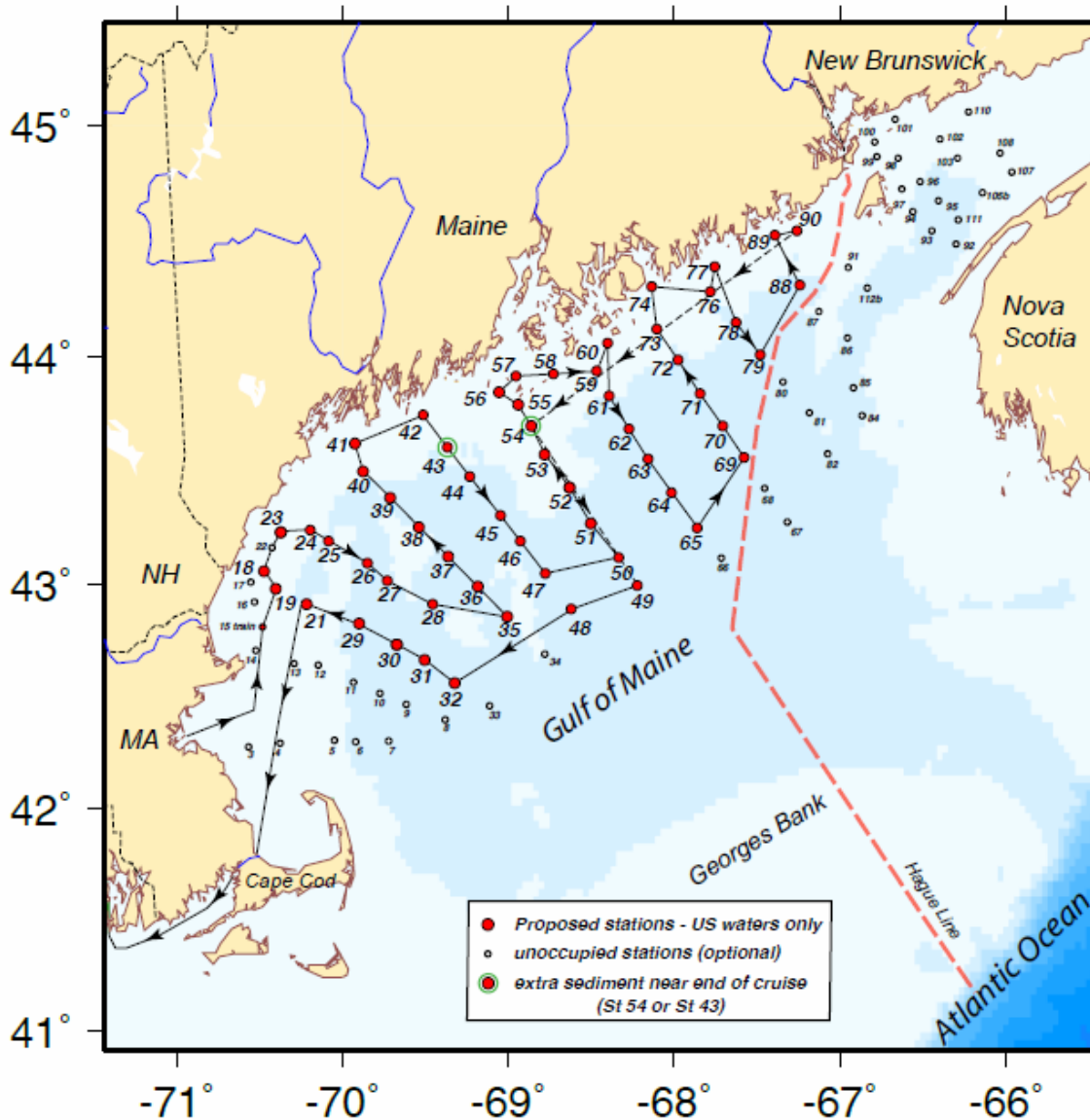
C. Operating Area (include optional map/figure showing op area)

Proposed Order	Station Name	Decimal Degrees		Degrees and Decimal Minutes				Comments
		Latitude	Longitude	Latitude (deg)	Latitude (min)	Longitude (deg)	Longitude (min)	
1	15_NOAA HB	42.818	70.480	42	49.050	70	28.806	training station
2	19_NOAA HB	42.985	70.403	42	59.094	70	24.156	
3	18_NOAA HB	43.065	70.472	43	3.917	70	28.323	
4	23_NOAA HB	43.233	70.370	43	13.980	70	22.200	
5	24_NOAA HB	43.244	70.195	43	14.610	70	11.710	
6	25_NOAA HB	43.198	70.083	43	11.860	70	4.990	
7	26_NOAA HB	43.099	69.848	43	5.960	69	50.870	
8	27_NOAA HB	43.020	69.728	43	1.200	69	43.680	
9	28_NOAA HB	42.917	69.457	42	55.020	69	27.390	
10	35_NOAA OE	42.861	69.005	42	51.630	69	0.270	
11	36_NOAA HB	42.991	69.179	42	59.470	69	10.760	
12	37_NOAA HB	43.127	69.364	43	7.600	69	21.820	
13	38_NOAA HB	43.258	69.542	43	15.462	69	32.508	
14	39_NOAA HB	43.385	69.713	43	23.100	69	42.760	
15	40_NOAA HB	43.502	69.876	43	30.140	69	52.570	
16	41_NOAA HB	43.622	69.927	43	37.320	69	55.600	
17	42_NOAA HB	43.748	69.509	43	44.900	69	30.550	
18	43_NOAA HB	43.611	69.369	43	36.630	69	22.120	
19	44_NOAA HB	43.480	69.228	43	28.790	69	13.670	

20	45_NOAA HB	43.308	69.042	43	18.500	69	2.500
21	46_NOAA HB	43.195	68.925	43	11.680	68	55.490
22	47_NOAA HB	43.055	68.773	43	3.270	68	46.350
23	50_NOAA HB	43.122	68.332	43	7.300	68	19.900
24	51_NOAA HB	43.277	68.496	43	16.590	68	29.730
25	52_NOAA HB	43.433	68.629	43	25.990	68	37.760
26	53_NOAA HB	43.578	68.781	43	34.650	68	46.850
27	54_NOAA HB	43.703	68.859	43	42.160	68	51.560
28	55_NOAA HB	43.795	68.941	43	47.685	68	56.443
29	56_NOAA HB	43.847	69.056	43	50.840	69	3.342
30	57_NOAA HB	43.920	68.951	43	55.214	68	57.077
31	58alt_NOAA HB	43.931	68.724	43	55.872	68	43.415
32	59_NOAA HB	43.943	68.469	43	56.600	68	28.110
33	60_NOAA HB	44.063	68.397	44	3.781	68	23.846
34	61_NOAA HB	43.832	68.390	43	49.910	68	23.390
35	62_NOAA HB	43.688	68.269	43	41.270	68	16.130
36	63_NOAA HB	43.557	68.155	43	33.420	68	9.300
37	64_NOAA HB	43.412	68.020	43	24.710	68	1.170
38	65_NOAA HB	43.256	67.861	43	15.344	67	51.685
39	69_NOAA HB	43.564	67.581	43	33.840	67	34.860
40	70_NOAA HB	43.702	67.707	43	42.120	67	42.420
41	71_NOAA HB	43.843	67.841	43	50.570	67	50.440
42	72_NOAA HB	43.988	67.974	43	59.280	67	58.450
43	73_NOAA HB	44.123	68.105	44	7.400	68	6.310
44	74_NOAA HB	44.308	68.135	44	18.470	68	8.100
45	76_NOAA HB	44.286	67.781	44	17.180	67	46.880
46	77_NOAA HB	44.391	67.756	44	23.440	67	45.350
47	78_NOAA HB	44.154	67.627	44	9.210	67	37.630
48	79_NOAA HB	44.016	67.480	44	0.940	67	28.790
49	88_NOAA HB	44.317	67.235	44	19.000	67	14.120
50	89_NOAA HB	44.529	67.389	44	31.740	67	23.320
51	90_NOAA HB	44.548	67.260	44	32.860	67	15.570
52	49_NOAA HB	43.021	68.226	43	1.260	68	13.560
53	48_NOAA HB	42.897	68.606	42	53.820	68	36.360
54	32_NOAA HB	42.565	69.323	42	33.910	69	19.380
55	31_NOAA HB	42.672	69.507	42	40.332	69	30.420
56	30_NOAA HB	42.754	69.724	42	45.230	69	43.460
57	29_NOAA HB	42.830	69.966	42	49.788	69	57.976
58	21_NOAA HB	42.930	70.221	42	55.819	70	13.241

NOAA cyst cruise Pisces PC-16-10
stations & proposed cruise track
Nov 10-23, 2016

DATES SUBJECT TO
 CHANGE (NOV 13 -
 NOV 23, 2016 OPS
 MAN/KMJ)



D. Summary of Objectives

The objective of this project is to collect sediment cores from 41 stations (a training station and 40 research stations throughout the US waters of the Gulf of Maine). The cores will be subsampled, processed, and preserved on board to allow for the later counting of *Alexandrium fundyense* cysts to support the forecasting of HAB events in the spring and summer of 2017 along the coastline of the Gulf of Maine.

E. Participating Institutions

NOAA National Centers for Coastal Ocean Science, Woods Hole Oceanographic Institution

F. Personnel/Science Party: name, title, gender, affiliation, and nationality

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
McTigue, Teresa	Chief Scientist	11/08/2016	11/23/2016	F	NOAA	US
Keafer, Bruce	Scientist	11/10/2016	11/23/2016	M	WHOI	US
Alex, Christine	Scientist	11/11/2016	11/23/2016	F	NOAA	US
Cannonier, Shareena	Scientist	11/10/2016	11/23/2016	M	Florida A&M Univ	US
Correia, Liann	Scientist	11/10/2016	11/23/2016	F	WHOI	US
Irwin, Leslie	Scientist	11/08/2016	11/23/2016	F	NOAA (contractor)	US
Kibler, Steven	Scientist	11/08/2016	11/23/2016	M	NOAA	US
Kidwell, David	Scientist	11/11/2016	11/23/2016	M	WHOI	US
Li, Yizhen	Scientist	11/11/2016	11/23/2016	M	NOAA (contractor)	China
Meredith, Andrew	Scientist	11/10/2016	11/23/2016	M	NOAA (contractor)	US
Neison, Todd	Scientist	11/11/2016	11/23/2016	M	NOAA	US
Wickham, John	Scientist	11/11/2016	11/23/2016	M	NOAA	US

G. Administrative

1. Points of Contacts:

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Bruce Keafer
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 Woods Hole Oceanographic Institution
 Woods Hole, MA 02543
 Phone: 508-289-2509
 Email: bkeafer@whoi.edu

2. Diplomatic Clearances

This project involves Marine Scientific Research in waters under the jurisdiction of only the United States. Diplomatic clearance is not required.

3. Licenses and Permits

This project involves only the collection of sediment and water samples in US waters. No permits are required. We will take precautions to discard all extra sediment overboard in the area in which it was collected as not to risk spreading cysts to new areas.

II. Operations

A. Project Itinerary

November 8, 2016: In port at the US Coast Guard Base Boston. Three NOAA scientists and two WHOI staff arrive at the Pisces in the afternoon (time depending on the ship's arrival) to bring aboard equipment and materials for the Congressional event to be held the next day. A forklift and crane will be needed to bring a Craib corer aboard. The three NOAA staff people spend the night aboard the ship.

November 9: In port. An event will be held for Congressional staffers from approximately 11am to 1pm. Please refer to the event agenda and supporting materials for more information. Members of the science team will participate in this event and will have a Craib corer and a limited amount of other cruise related gear on board to show the visitors. The three NOAA science crew members including the chief scientist will spend the night aboard the ship.

November 10, 2016: In port. Travel from WHOI (2 scientists) with all gear in rental truck will all remaining gear not brought aboard previously, including a Craib corer and lab equipment. Truck will arrive at RI dock by late morning. Following direction and help from chief boatswain and ship's crew, loading will commence using forklift and winch/crane. Rental truck will return to Woods Hole, MA same day after initial organization of equipment and set-up onboard. Science crew traveling via airplane will arrive during the early evening. Laboratory work stations will be set up and science crew will work with deck staff on attaching the primary Craib corer to the winch system.

November 11: The remaining science crew will arrive via van around noon. After the new arrivals move their gear on to the ship, all science crew will work in the labs reviewing and drilling on lab procedures. Finish lab set up or revise arrangement of stations based on the day's experiences. Leave the dock at a time set by the ship's officers, either the evening of Nov 11 or the morning of Nov 12.

November 12-23: Collect three sediment cores just north of Cape Cod Bay as training for crew and new science members either during the late afternoon or early evening, depending on the transit time. Sample at about 40 locations along nine transects in the Gulf of Maine. The training site and sampling locations are identified both in the table and map in Section 1.C. Samples will be collected moving from south to north unless weather dictates otherwise. The order in which the stations are visited can be modified in case of weather. The proposed track attempts to place the ship in the nearshore waters during the daylight hours to avoid lobster pots along the coast. At one sampling site, either 43 or 54 depending on time of day and sea conditions, additional cores of sediment will be collected for use in laboratory studies.

November 23: If weather conditions or equipment problems slow progress, stations will be dropped as necessary to complete the highest priority stations so that the ship will return to the dock in Davisville, RI, no later than November 23. If weather conditions are good throughout the cruise and no delays are encountered, the ship may return to the dock earlier than November 23.

B. Staging and Destaging

Two scientists from WHOI will bring all the equipment to the ship on November 10 for loading. They will be joined by five of the NOAA science crew, including the Chief Scientist. Ship's crew is needed for forklift and winch/crane ops. The scientists will remain onboard for the afternoon to organize the lab equipment into their various work stations including bringing chemicals onboard for the sample processing, so a working hood is required. Sample processing equipment will be set up. A chemical hood will be set-up for safe use of formalin and methanol at sea with spill kits provided (see below). One primary Craib corer will be secured at the side sampling station. The other corer can be secured to the aft deck or other location identified by the ship's officers or staff and used only when needed if the primary unit fails. The remaining project staff will meet the ship early afternoon on November 11.

Upon the return to port, all samples and equipment will be removed from the ship. All laboratory space used will be thoroughly cleaned. If the ship arrives early back to dock early in the day, all equipment will be off loaded and the science staff will leave that day. If for some reason the ship returns to the dock late in the day, the science staff may request to spend the night and leave early the next morning.

C. Operations to be Conducted

Approximately 41 sites will be sampled over a period of 8 days, the first of which will be used to train crewmembers and assure consistency of techniques across each of the three watch teams. At each station, a Craib corer will be deployed and a relatively undisturbed surface sediment core collected with a penetration depth of about 6-10 cm deep. The core will be extruded onboard and sectioned into two layers; the top 0-1 cm and the underlying 1-3 cm layers. After two 5cc replicates for cyst counting are collected from both sediment layers, an additional subsample from the remaining sediment samples will be processed and stored @ -80C for later analysis using a qPCR method for cyst enumeration. Sediment below 3 cm deep in the core will be discarded. The sediment samples will be processed onboard using standard cyst techniques, including protocols for dilution of the raw sediment, sonifying and sieving the sample to yield a 20-100 µm particulate fraction that is initially preserved in 2% formalin and exchanged onboard into 100% methanol for long term storage until counting can begin.

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. No diving will occur on this cruise.

E. Applicable Restrictions

Severe weather may prohibit the safe use of the Craib corer. In that case, the sampling will be called off until conditions improve. Weather days have been built into the schedule to accommodate such potential delays. If weather delays are substantial, the number of sites sampled can be reduced. If severe weather persists, the highest priority

stations are those that were sampled during the NOAA cyst cruise in 2013 which are shown as large red circles on the station map above. Among the highest priority stations, preference for sampling in case of severe weather will be given to stations located in areas with historically abundant cyst counts.

F. Protected Resources

The transit route of this cruise crosses the Cape Cod Bay – Gulf of Maine Critical Habitat Area of the North Atlantic right whale (*Eubalaena glacialis*). While the seasonal management areas for this species during the month of November are located in the waters of the mid-Atlantic and southeastern US, sightings of this species in Cape Cod and the Gulf of Maine have been recorded. During this cruise, we will follow the best management practices laid out in Deputy Under Secretary for Operations VADM Michael S. Devany’s August 2014 regarding compliance with NOAA’s environmental statutes. These include maintaining watch for protected species and attempting to remain parallel to the course of any large whales sighted. Distances of at least 91.44 m (100 yds.) will be maintained from large whales and 45.72 (50 yds.) or greater from any small marine mammals or turtles when possible. North Atlantic right whales, if seen, will be given a distance of at least 460 m. All activities will follow the Compliance Guide for Right Whale Ship Strike Reduction Rule (50 CFR 224.105)

III. Equipment

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

Wet or chemical labs: Fume Hood, 2 sinks with tap water, chemical locker for formalin and methanol storage, flowing seawater in the Wet Lab, and benches for processing sediment. Ship will supply 1 controlled environment room (maintaining temperature between 2-4°C and 1 freezer to store cyst count samples and a -80 C freezer for processed qPCR samples.

Dry lab: GPS serial cable (NMEA 0183) for science provided Nav computer used to track ship, revise station plan, etc. Science will need access to Ship’s data (latitude, longitude, water depth, wind direction, and wind speed).

Deck: winch/cable for Corer deployment (CTD winch and cable is OK). Wash down seawater for deck ops. NOAA ship crew will be responsible for over the side deployment and recovery. Science crew will be responsible for prepping Corer for each deployment and removal of all cores upon recovery.

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

Science will provide:

-Two Craib Corers (1 primary and 1 back-up);

-Core cutting station at sink #1- Ring stand and clamps to hold Craib Cores with all supplies for that task.

-Sediment processing at sink #2- Sonifier, centrifuge, sieves and all other supplies to process sediments

-Distilled water will be provided in 5 gal containers (6) since the ship does not have that capability

-1 under-the-counter- refrigerator will be placed in the wet lab for extra sample storage.

-Plywood boards (1/2") were cut to fit on stainless benches for 2013 cyst cruise allowing equipment to be tied down easily.

-All sample tubes and chemicals for processing sediments.

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 the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and a chemical hygiene plan. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per FEC 07, the scientific party will include with their project instructions and provide to the CO of the respective ship 60 to 90 days before departure:

- A list of hazardous materials by name and anticipated quantity
- Include a chemical spill plan the addresses all of the chemicals the program is bringing aboard. This shall include:
 - Procedures on how the spilled chemicals will be contained and cleaned up.
 - A complete inventory (including volumes/amounts) of the chemical spill supplies and equipment brought aboard by the program. This must be sufficient to clean and neutralize all of the chemicals brought aboard by the program.
 - A list of the trained personnel that will be accompanying the project and the training they've completed.

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.

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory of hazardous material indicating all materials have been used or 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 scientific chemicals is not permitted during projects aboard NOAA ships.

B. Inventory

Common Name of Material	Qty	Notes	Trained Individual	Spill control
Formaldehyde solution (37%)	4 x 500ml	Alkalinity, Stored in ship chem locker	Bruce Keafer	F
Methanol (100%)	3 x 4L	Flammable, Stored in ship chem locker	Bruce Keafer	M

C. Spill Control Plan

M: Methanol or Methyl Alcohol

- All use of methanol will be contained in the fume hood located in the Wet lab
- Cold methanol will be dispensed from a 4L glass jug using a 30ml repipette set to dispense 10ml each stroke. The glass jug is protected in a plastic bucket that is iced down and secured in the hood area.
- Wear appropriate personal protective equipment during use (gloves and safety glasses)
- In case of small spills, wipe up with a paper towel and discard into a "dry" waste Ziploc container for later disposal on shore (WHOI). If medium spill, use absorbent "blanket" to contain the spill (located in the spill kit).
- In case of large spills, contain spill within hood area if possible; ventilate area of leak or spill. Remove all sources of ignition.
- 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.

F: Formalin/Formaldehyde

- All use of formalin will be contained in the fume hood located in the chemistry lab or preservation alcove.
- It will be dispensed from a 500ml glass bottle using a 10ml repipette set to dispense 0.75ml each stroke. The glass bottle is protected in a PVC case and secured in the hood area.
- Wear appropriate personal protective equipment during use (gloves and safety glasses)
- In case of small spills in the hood (ml), the spill will be neutralized with Spill-X-FP, wiped up with a paper towel and discarded into a dry waste Ziploc container for later disposal on shore (WHOI).
- In case of large spills, ventilate area of leak or spill. Remove all sources of ignition.
- 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.

Inventory of Spill Kit supplies

Product Name	Amount	Chemicals it is useful against	Amount it can clean up
Spill-X-FP polymerizer	4 x 1.85lbs	Formalin	4 x 500ml formalin (37%)
3"x4" socks	3	Universal for liquid spills	Unknown
17" x 19" pads	12	Universal for liquid spills	Unknown
3" x 10' socks	2	Universal for liquid spills	Unknown
Pair of goggles	1	Universal for liquid spills	Unknown
Nitrile gloves	3	Universal for liquid spills	Unknown
Disposable bags and ties	10	Universal for liquid spills	Unknown
Stardust superabsorbent	8 oz	Universal for liquid spills	Unknown
Spill-X-S Solvent Adsorbent	19 lb container	Universal for solvents	3 gallons ~ 12 liters

D. Radioactive Isotopes

The Chief Scientist is responsible for complying with OMAO 0701-10 Radioactive Material aboard NOAA Ships. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary ("Piggyback") Projects

- 1) An Imaging Flow Cytobot will sample autonomously from the flowing seawater in the dry lab. This instrument takes microscopic pictures of single cells lined up in a small flow stream. This is the same device that will be deployed on the cruise immediately preceding this cruise. Additional water samples will be collected from the flow if *Pseudonitzschia* sp, a toxic diatom, is observed by the IFCB.
- 2) Microscopic “live” counts of the phytoplankton will be performed at each of the cyst stations to ID potential toxic algae present in the Gulf of Maine.
- 3) If there are not significant weather delays to operations, additional sediment for use in lab studies at NOAA and WHOI may be collected at stations 43 or 54, depending on time of day and local weather conditions. We anticipate that effort will require 4 hours of additional wire time to collect those replicate cores using the Craib Corer.
- 4) As described in the main methodology section (II.C), sediment (about 2.5cc) from each the two layers will be saved for storage and later qPCR analysis targeting the *Alexandrium fundyense* cysts. Estimates of the cyst concentration from the sediment sample will use a molecular-based method modified from Erdner et al (Deep-Sea Research II: 57: (2010) 279-287). This collection will require separate onboard processing of sediment samples and storage at -80C, so the -80C freezer onboard OE will be needed for short-term storage of these samples. Removal of the samples from the ship will require either dry ice and/or liquid nitrogen for transport back to the lab until analyzed.
- 5) An NCCOS communications specialist will be part of the science team. She will develop news items for publication on the NCCOS and potentially NOS websites. Entries should be vetted through the ship’s XO prior to publishing. Additionally, photos and video of sample collection and processing will be taken for use in future outreach activities.

B. NOAA Fleet Ancillary Projects

None.

VI. Disposition of Data and Reports

A. Data Responsibilities

B. Pre and Post Project Meeting

Prior to departure, the Chief Scientist will conduct a meeting of the scientific party to train them in sample collection and inform them of project objectives. Some vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship’s Operations Officer.

VII. Meetings, Vessel Familiarization, and Project Evaluations

A. Shipboard Meetings

Daily Operations Briefing meetings will be held at 1430 in the lounge for the science party and OPS Officer to review the current day, and define operations, associated requirements, and staffing needs for the following day. A Plan of the Day (POD) will be posted each evening for the next day in specified locations throughout the ship. A safety brief and

overview of POD will occur on the Bridge each morning at 0830. Daily Situation Reports (SITREPS) will be posted as well and shared daily through e-mail.

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.

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.

Post-Project Meeting: The Commanding Officer is responsible for conducted 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.

B. Ship Operation 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. 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 survey.

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 7, 1999 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. 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/noaforms/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

Please make sure the medicalexplorer@noaa.gov email address is cc'd on all medical correspondence.

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

The emergency contact form can be found at the following link:

https://docs.google.com/forms/d/1pcoSgPluUVxaY64CM1hJ7511iIYirTk48G-lv37Am_k/viewform

C. Shipboard Safety

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. Steel-toed shoes are required to participate in any work dealing with suspended loads, including CTD deployments and recovery. The ship does not provide steel-toed boots. Hard hats are also 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.

D. 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 vessel 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.

E. IT Security

Any computer that will be hooked into the ship's network must comply with the *NMAO 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 these 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.

F. Foreign National Guests Access to OMAO Facilities and Platforms

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 (FRNS) 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 NMFS Deemed Exports point of contact to assist with the process.

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 FRNS granting approval for the foreign national guest's visit. 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 Regional Security Officer.
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 NMAO approval 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 FRNS 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 Regional Security Officer.

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, 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

Appendices

1. Map of sampling stations
File name: NOAA_Pisces_cyststationmap_2016
2. Station/Waypoint List
File name: NOAA cyst cruise coordinates 2016