

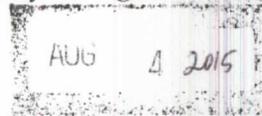


UNITED STATES DEPARTMENT OF COMMERCE

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:  Captain Anne K. Lynch, NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic



SUBJECT: Project Instruction for HB-15-05
Benthic Habitat Assessment

Attached is the final Project Instruction for HB-15-05, Benthic Habitat Assessment, which is scheduled aboard NOAA Ship *Henry B. Bigelow* during the period of August 11 to August 21, 2015. Of the 11 DAS scheduled for this project, 11 days are funded by Line Office Allocation. This project is estimated to exhibit a Medium Operational Tempo. Acknowledge receipt of these instructions via e-mail to OpsMgr.MOA@noaa.gov at Marine Operations Center-Atlantic.

Attachment

cc:
Nathan Keith





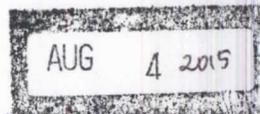
UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026

Final Project Instructions

Date Submitted: 26 July 2015
Platform: NOAA Ship *Henry B. Bigelow*
Project Number: HB-15-05
Project Title: NEFSC Benthic Habitat Assessment of the Northeast Outer Continental Shelf Ecosystems.
Project Dates: August 11- 21, 2015

Approved by: Russell W. Brown Date: 7-26-2015
for

William A. Karp, Ph.D.
Science and Research Director
Northeast Fisheries Science Center



Approved by: Anne Lynch Date: 8/3/2015
CAPT/NOAA

Captain Anne Lynch, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. Overview

A. Brief Summary and Project Period

The National Marine Fisheries Service (NMFS) Northeast Fisheries Science Center (NEFSC) will conduct benthic sampling operations off of the coasts of Delaware, Virginia, and North Carolina to support its regional Benthic Habitat Assessment (NEFSC BHA) project. For the NEFSC BHA project we will 1) characterize offshore benthic habitats that fall within Bureau of Ocean Energy Management (BOEM) designated New Jersey Wind Energy Areas (NJ WEA) and 2) develop benthic habitat maps, models, and other data products that can be used to improve NEFSC's analytical and decision-making capabilities with respect to a) offshore energy siting and monitoring, b) improved essential fish habitat definition, and c) data in support of alternative fisheries management strategies (e.g. area management) in the mid-Atlantic. Specific to this cruise, we will collect benthic infaunal and epifaunal samples in order to characterize important biological features of benthic and demersal habitats within the Delaware and North Carolina-Kitty Hawk Wind Energy Areas (DE, and NC-KH WEAs), and possibly also to re-sample the Virginia Wind Energy Area (VA WEA). Time permitting, a few lines of multibeam sonar coverage are also planned for the DE WEA using *Bigelow's* ME70 system.

B. Days at Sea (DAS)

Of the 11 DAS scheduled for this project, 0 DAS are funded by an OMAO allocation, 11 DAS are funded by a Line Office Allocation, 0 DAS are Program Funded, and 0 DAS are Other Agency funded. This project is estimated to exhibit a Medium Operational Tempo.

C. Operating Area

Our areas of operation are located roughly in the range of 10 to 40 nm from Delaware, Virginia, and North Carolina (Fig. 1). These areas span depths of 20 to 30 meters. Within the DE WEA, we are targeting an area of ~11 nm² for multibeam bottom mapping (Fig. 2). This area has been selected in order to characterize a range of potentially important benthic habitats in that zone.

D. Summary of Objectives

The operational objectives are to collect: (1) perform sampling for benthic infauna (grabs) and epifauna (2 m beam trawl) at each benthic station in at least two areas (DE and NC-KH WEAs) and possibly a third (VA WEA), (2) capture water column hydrographic profiles with vertical CTD casts at least every third station, (3) perform multibeam high-resolution mapping of an area of particular interest in the middle of the DE WEA, and (4) capture multi frequency split beam acoustic data (EK60) in all operating areas for use in water column analysis for fish.

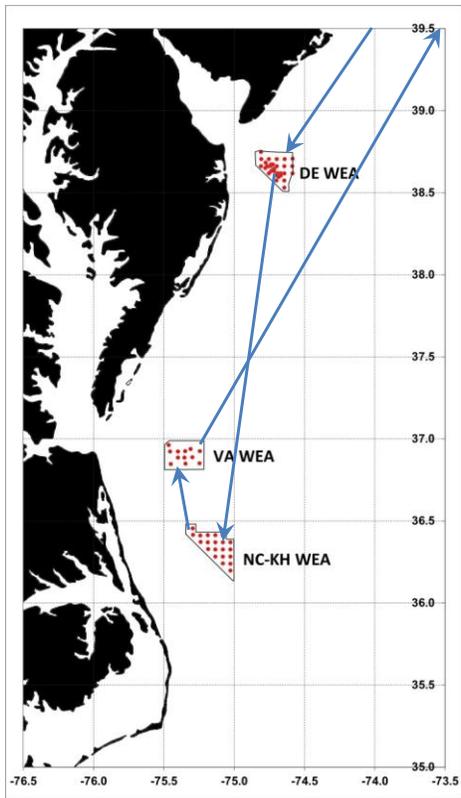


Fig. 1. Delaware, Virginia, and North Carolina – Kitty Hawk Wind Energy Areas (DE WEA, VA WEA, and NC-KH WEA) with proposed benthic sampling sites (red dots). Blue arrows represent transits between WEAs.

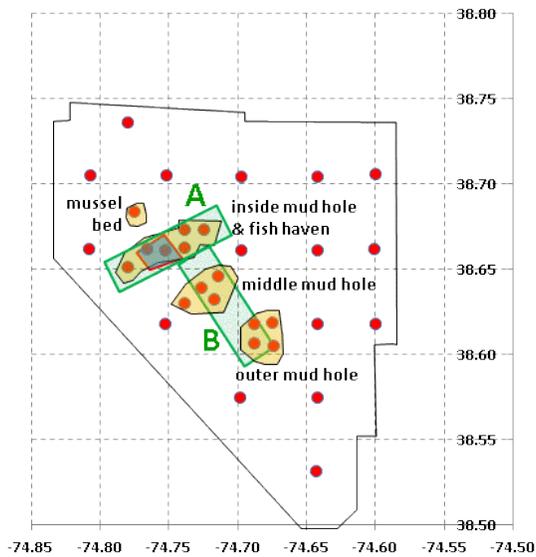


Fig. 2. Delaware Wind Energy Area (DE WEA) contour map showing benthic sampling stations (red dots), known areas of contrasting habitat (yellow, blue) and the priority mapping area (green). Green rectangles (A & B) are multibeam mapping areas.

E. Participating Institutions

NMFS- Northeast Fisheries Science Center
 Bureau of Ocean Energy Management (U.S Dept. of Interior: BOEM)

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

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Guida, Vincent	Chief Scientist	08/11/2015	8/21/2015	M	NEFSC	US
McHenry, Jennifer	Data Collection Specialist	08/11/2015	8/21/2015	F	NEFSC	US
Rosendale, John	Data Collection Specialist	08/11/2015	8/21/2015	M	NEFSC	US
Welch, Heather	Data Collection Specialist	08/11/2015	8/21/2015	F	NEFSC	US
Timmons, DeMond	Data Collection Specialist	08/11/2015	8/21/2015	M	NEFSC	US
Habeck, Ehren	Data Collection Specialist	08/11/2015	8/21/2015	M	NEFSC	US
Baskin, Liza	Data Collection Specialist	08/11/2015	8/21/2015	F	Marine Academy of Science & Tech	US
Gilruth, Jordan	Data Collection Specialist	08/11/2015	8/21/2015	M	NEFSC	US

G. Administrative

1. Points of Contacts:

Chief Scientist – Vincent Guida, Ph.D.
 office: 732-872-3020; email: Vincent.guida@noaa.gov

Ops. Officer- MOC, Atlantic
 office: 757-441-6238: opsmgr.moa@noaa.gov

CO.Henry.Bigelow@noaa.gov {Commanding Officer – *Henry B. Bigelow*}

Michael.S.Abbott@noaa.gov {NEFSC Port Captain}

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}

Ops.Henry.Bigelow@noaa.gov {Operations Officer – *Henry B. Bigelow*}

2. Diplomatic Clearances

None Required.

3. Licenses and Permits

None Required. NEPA compliance still in process and currently no Incidental Take Permits necessary.

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.

A. Project Itinerary:

11 August 2015: Depart from Woods Hole, MA and commence cruise operations upon arrival in DE WEA.

20 August 2015: Complete cruise operations, and steam for Newport, RI to arrive on 21 August.

B. Staging and Destaging:

10 August: Begin cruise staging in Woods Hole, MA. Embark scientific personnel Monday and complete CTD, grab sampling, trawl and trawl processing work station setup

11 August: Complete cruise staging, load, and setup remaining scientific equipment and embark scientific personnel (if needed).

21 August: Dock in Newport, RI, disembark scientific personnel, and off-load scientific equipment and data.

C. Operations to be Conducted:

Operations Summary: Scientific operations (24 hour ops) will commence upon arrival in the first operating area, tentatively the DE WEA. Between the three WEAs (DE, WC-KH, VA) there are 64 sites altogether with alphanumeric designations: D1-D31, N1-N21, and V1-V12 (Tables 1 & 2). The VA sites constitute are a lower priority than the DE and NC sites and will only be visited if time permits, since they have been sampled on a previous cruise (GU14-02). At each of these sites two types of benthic sampling will be performed: benthic infauna (grab sample) and benthic epifauna (2 m beam trawl). Vertical CTD casts will be made at every third station.

Multiple frequency split beam sonar (EK60) will be collected continuously during the passages through the WEAs for the purpose of fish detection in the water column. Multibeam sonar (ME70) will also be operated continuously within WEAs for purposes of mapping of bottom topography and collection of backscatter data. In addition, intensive multibeam sonar mapping of bottom topography and backscatter distribution will be undertaken in two areas within the DE WEA (Blocks A and B in Fig. 2), as these are known areas of differing habitat types. Fig. 3 provides an approximate schedule for major cruise operations.

The bridge crew on watch should be creating electronic records in the ship's SCS of all sampling events, including grabs and trawls and start-stop times for multibeam mapping operations. Station waypoints for both grabs and trawls are provided in Tables 1 and 2 below.

Table 1. Positions for benthic sampling stations in the DE (D1-D31) WEA.

Site	Dec Lat	Dec Lon	N Lat (ddmm.mmm)	W Lon (ddmm.mmm)
D1	38.7361	-74.7792	3844.164	7446.754
D2	38.7045	-74.8068	3842.268	7448.407
D3	38.7044	-74.7516	3842.262	7445.095
D4	38.7042	-74.6964	3842.254	7441.783
D5	38.7041	-74.6412	3842.245	7438.471
D6	38.7057	-74.5990	3842.340	7435.940
D7	38.6616	-74.6005	3839.694	7436.029
D8	38.6608	-74.6414	3839.649	7438.484
D9	38.6610	-74.6966	3839.659	7441.794
D10	38.6728	-74.7238	3840.369	7443.428
D11	38.6726	-74.7383	3840.356	7444.295
D12	38.6622	-74.7383	3839.734	7444.298
D13	38.6611	-74.7517	3839.667	7445.104
D14	38.6613	-74.7647	3839.680	7445.884
D15	38.6833	-74.7745	3840.997	7446.470
D16	38.6612	-74.8075	3839.670	7448.448
D17	38.6510	-74.7789	3839.060	7446.734
D18	38.6179	-74.7523	3837.075	7445.137
D19	38.6297	-74.7381	3837.782	7444.286
D20	38.6388	-74.7255	3838.330	7443.528
D21	38.6323	-74.7163	3837.938	7442.977
D22	38.6453	-74.7138	3838.719	7442.826
D23	38.6178	-74.6872	3837.065	7441.234
D24	38.6059	-74.6870	3836.357	7441.219
D25	38.6049	-74.6735	3836.297	7440.408
D26	38.6180	-74.6740	3837.078	7440.442
D27	38.6176	-74.6416	3837.054	7438.497
D28	38.6177	-74.5989	3837.061	7435.934
D29	38.5743	-74.6418	3834.459	7438.510
D39	38.5744	-74.6975	3834.465	7441.848
D31	38.5311	-74.6420	3831.863	7438.522

Table 2. Positions for benthic sampling stations in the NC-KH (N1-N21) and VA (V1-V12) WEAs.

Site	Dec Lat	Dec Lon	N Lat (ddmm.mmm)	W Lon (ddmm.mmm)
N1	36.4545	-75.2946	3627.269	7517.677
N2	36.4141	-75.2909	3624.848	7517.452
N3	36.4113	-75.2409	3624.680	7514.455
N4	36.4114	-75.1874	3624.686	7511.243
N5	36.4115	-75.1338	3624.690	7508.031
N6	36.4116	-75.0803	3624.693	7504.818
N7	36.3683	-75.0268	3622.098	7501.605
N8	36.3683	-75.0803	3622.097	7504.816
N9	36.3682	-75.1338	3622.094	7508.026
N10	36.3682	-75.1873	3622.089	7511.237
N11	36.3710	-75.2372	3622.259	7514.231
N12	36.3278	-75.1836	3619.668	7511.015
N13	36.3250	-75.1337	3619.497	7508.022
N14	36.3250	-75.0802	3619.500	7504.813
N15	36.3250	-75.0267	3619.502	7501.604
N16	36.2818	-75.0267	3616.905	7501.603
N17	36.2817	-75.0802	3616.904	7504.810
N18	36.2828	-75.1323	3616.966	7507.937
N19	36.2395	-75.0788	3614.372	7504.728
N20	36.2385	-75.0267	3614.309	7501.603
N21	36.1963	-75.0254	3611.777	7501.522
V1	36.8506	-75.2450	3651.037	7514.698
V2	36.8486	-75.3455	3650.915	7520.728
V3	36.8454	-75.4493	3650.723	7526.956
V4	36.8849	-75.3991	3653.093	7523.943
V5	36.8857	-75.3515	3653.142	7521.090
V6	36.8866	-75.2962	3653.196	7517.773
V7	36.9237	-75.2421	3655.421	7514.527
V8	36.9366	-75.3097	3656.193	7518.581
V9	36.9239	-75.3464	3655.433	7520.785
V10	36.9213	-75.3996	3655.280	7523.976
V11	36.9222	-75.4539	3655.335	7527.236
V12	36.9618	-75.4658	3657.707	7527.946

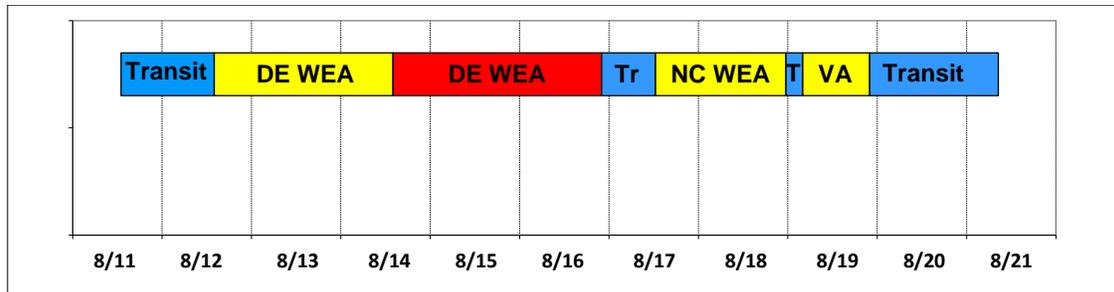


Fig. 3. Approximate timeline for major cruise operations. Blue bars are transits, yellow represents benthic sampling, and red represents multibeam mapping.

Benthic Sampling Operations:

1. Grab sampling – Bottom grabs will be made at each designated site. Upon stopping the ship at each site, three replicate grabs for grain size and benthic infaunal analysis will be taken at each of designated station using either a 0.10 m² Young-modified Van Veen grab sampler. The grab sampler will be cocked open and lowered over the side and sent down to the bottom at the fastest speed allowable by the winch till it hits the bottom, then brought back up and lowered onto its wooden stand. The lids on top of the Van Veen buckets will be opened and the sample inspected by a member of the scientific crew for adequacy of the sample. Success or failure of the grab will be reported immediately to the bridge. Repositioning of the ship will not be necessary between replicates at a site. No more than three unsuccessful attempts are made to obtain any sample.

While each full grab is on deck its characteristics will be hand-recorded, a photo made of its surface, a 3 cm diameter core will be taken for grain size analysis and stored under refrigeration, and the remaining contents of the grab will be dumped into a dishpan to be sieved to remove excess sediment and preserved with 10% formalin for benthic infaunal analysis ashore. The grab sampler can then be washed clean with a salt water hose and readied for the next replicate grab.

2. Trawl sampling – The ship shall be repositioned to pass through the trawl site coordinates for each trawl unless otherwise indicated by the scientific crew. One trawl sample will be performed at each site. A 2 m beam trawl with ¼ inch mesh net will be deployed on a single 0.25” trawl wire using Oceanographic winch. Trawl will be done at a speed of ~2 kt using a scope of 2:1 for 15 minutes, or less if catches dictate as determined by the scientific crew. Unsuccessful trawls will be repeated after adjustments of weight and scope until successful. Due to the small size of the catch from this gear, the catch can be dropped from the net’s cod end into buckets or baskets and carried into the inside sorting area; the conveyor system will not be needed. Catch processing will consist of identification, enumeration, weighing and manual recording. Use of the ship’s FSCS system will not be necessary. Catches will be discarded following on-board processing, except possibly for a small number of unusual specimens that may be retained for preservation or freezing to be brought ashore.

3. Vertical CTD casts will be made at every third site visited at any time while on station, as long as it does not interfere with grab or trawl operations. We anticipate that the ship's survey tech(s) will be available for CTD operations as we have no scientific staff who has performed this function aboard *Bigelow* before.

Hydroacoustic Operations

1. Multi-frequency split beam sonar (EK60) – The EK60 sonar shall be operated continuously at all frequencies during passage through the WEA areas unless otherwise indicated by the chief scientist. The scientific crew will collect the raw data at the end of the cruise in order to analyze it for water column returns, i.e. fish presence. This may be modified by the chief scientist if EK60 emissions interfere with ME70 operation.
2. Multibeam sonar (ME70) – The ME70 sonar shall also be operated continuously during passage through the WEA areas unless otherwise indicated by the chief scientist. This raw data will be collected periodically during the cruise by the scientific crew in order to start processing it while on board. Adjustments to acoustic gain on the ME70 should be avoided. Any adjustments made once mapping operations begin must be recorded and reported to the chief scientist as gain adjustments affect the calibration and interpretation of backscatter values, whose collection is essential for this cruise.

In addition to operating ME70 during benthic sampling operations, it will also be operated exclusively in the DE WEA to produce full-coverage mapping of blocks A and B (Fig. 2, Table 3), which are known to contain contrasting sediment types and therefore constitute fisheries habitats of particular interest. A series of track lines will be plotted by the scientific crew to insure adequate coverage of these blocks. These will be transmitted to the ship prior to the cruise. A separation of 60 m between parallel mapping lines is anticipated for the blocks. Additional vertical CTD casts will be made periodically during this operation for the purpose of defining water column speed-of-sound profiles.

If one has not been done prior to the three months preceding this cruise, a patch test should be performed with the ME70 prior to arrival at the first WEA ops area to ensure correct compensation for ship's pitch, roll, and timing. If this has been done within the last three months, patch testing is not required. This needs to be performed in an area with a correct configuration of flat and sloped bottom surfaces. That area will be determined by the scientific crew and transmitted prior to the cruise. That area will likely be found off shore during transit.

Data: At the end of the cruise the ship will provide the Chief Scientist a DVD/CD with copies of the data from the Ship's navigation system (cruise track), electronic records from sea and weather sensors, CTD cast files, raw EK60 files, ME70 files, and the electronic event log files. A copy of the SCS data should also be provided to NEFSC in Woods Hole as well.

Table 3. Coordinates of corners for mapping blocks A and B in the DE WEA (Fig. 2).

Block: Corner	Dec Lat	Dec Lon	N Lat (ddmm.mmm)	W Lon (ddmm.mmm)
A: NE	38.6880	-74.7240	3841.280	7443.440
A: NW	38.6530	-74.7940	3839.180	7447.640
A: SE	38.6700	-74.7100	3840.200	7442.600
A: SW	38.6350	-74.7800	3838.100	7446.800
B: NE	38.6650	-74.7200	3839.900	7443.200
B: NW	38.6540	-74.7420	3839.240	7444.520
B: SE	38.6080	-74.6740	3836.480	7440.440
B: SW	38.5970	-74.6960	3835.820	7441.760

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:

Should the sea conditions (e.g. high wind, wave height, visibility etc.) inhibit normal hydroacoustic survey operations, the Chief Scientist and *Bigelow*'s Captain and Operations Officer(s) will discuss an alternative survey plan. At the discretion of the Captain and/or Operations Officer, we will either seek refuge until poor sea conditions abate or we will seek an alternative survey location.

III. Equipment

A. Provided by ship

Equipment and Capabilities provided by the ship (itemized)			
	Purpose	Item	Quantity
1	CTD Sampling	SeaCat SBE19 CTD profiler	1
	CTD Sampling	Computer(s) (meeting NOAA security standards) and electronic	1

		storage for running and retrieving CTD cast data	
2	Hydroacoustic Surveys	EK60 Split Beam, multi-frequency sonar	1
3	Hydroacoustic Surveys	ME70 Multibeam Sonar	1
4	Hydroacoustic Surveys/CTD Sampling	Computer(s) (meeting NOAA security standards) and electronic storage for running and logging hydroacoustic operations	ample
5	All Sampling	Ship's Scientific Computer System (SCS) to create records georeferenced by ship's navigation system (POS MV)	
6	Grab Sampling	Refrigerator (preferred) or Freezer space (if available) for cores	
7	Grab Sampling	Handheld VHF radios for communications on deck	1
8	Grab Sampling	3/4" Deck hose	1

B. Provided by Scientists

Equipment and Capabilities provided by the scientists (itemized)			
1	CTD Sampling	SeaCat SBE19 CTD profiler	2
2	Grab Sampling	0.10 m ² Van-Veen Grab Sampler with wooden stand	1
3	Grab Sampling	Grab Sampler Toolbox, inc:	1
4	Grab Sampling	WD-40	1
5	Grab Sampling	Zip ties (various sizes)	ample
6	Grab Sampling	Duct tape	ample
7	Grab Sampling	Electrical Tape	ample
8	Grab Sampling	Wrenches	set
9	Grab Sampling	Scientific Fisher Rulers for measuring sediment depth	ample
10	Grab Sampling	Coring tubes and caps (3 cm or 1 3/16" and larger)	ample
11	Grab Sampling	Core labels	ample
12	Grab Sampling	Sharpies	ample
13	Grab Sampling	Baggies (for double packing samples)	ample
14	Grab Sampling	Digital Camera (for photographing grab samples, water-resistant and drop-proof ideal)	2
15	Grab Sampling	Waterproof Paper Grab Sample Manual Log Sheets	ample
16	Grab Sampling	Waterproof Paper cut into small strips (for labeling photos, and double cores)	ample
	Grab Sampling	Plastic Sample Jars, 1 Gal., half Gal., Quart	ample
	Grab Sampling	100% Formalin, Borax Buffered <u>dyed</u> with Rose Bengal (5 gal.)	2
	Grab Sampling	Formalin neutralizer	ample
	Beam Trawling	2 m Beam Trawl Frames, bridle	2
	Beam Trawling	Spare Beam Trawl Nets	4
	Beam Trawling	Spare Sash Weights for Trawl	ample
	Beam Trawling	Buckets, 5 gal.	ample
	Beam Trawling	Fish Baskets, 1.5 bu	ample

	Beam Trawling	Waterproof Paper Manual Trawl Log and Stroke Tally Sheets	ample
	Beam Trawling	Fish Measuring Boards, manual	2
	Beam Trawling	Waterproof inside labels for sample jars	ample
	Beam Trawling	Marel Electronic Scale (small: countertop model)	1
	Beam Trawling	Marel Electronic Scale (large: deck model)	1
	Beam Trawling	Glass Sample Jars with caps, various sizes	ample
	Beam Trawling	100% Formalin, Borax Buffered <u>undyed</u> (5 gal.)	1
	Grab & Trawl	¾" Deck Hose & Fittings suitable for salt water	2
	Hydrographic	SeaCat SBE19+ CTD profiler	2
	Data Retrieval/Logs	2TB Hard Drive	3
	Data Retrieval/Logs	Rite in Rain Field Notebooks	ample
	Data Retrieval/Logs	Pens and pencils	ample
	Data Retrieval/Logs	Premade datasheets in three ring binders for grab samples	ample
	Data Retrieval/Logs	Laptop computer (meeting NOAA security standards) for cruise tracking and data manipulation in field	1
	Data Retrieval/Logs	Scientific Drybox	1
	Personal Protective Equipment	Formalin respirator	1
	Personal Protective Equipment	Latex Gloves for use w/formalin	ample
	Personal Protective Equipment	Foul Weather Gear (for scientific crew)	6
	Personal Protective Equipment	Hard Hats (for scientific crew)	6
	Personal Protective Equipment	Boots (for scientific crew)	6 pair
	Personal Protective Equipment	Work Gloves (for scientific crew)	6 pair

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
 1. Formaldehyde Eater® complete spill kit
 2. Formaldehyde Eater® 5 gal. additional formaldehyde absorbent
 3. Additional 2 gal. heavy plastic bags for disposal of used absorbent
- Chemical safety and spill response procedures, such as excerpts of the program’s Chemical Hygiene Plan or SOPs relevant for shipboard laboratories: See Appendix I Chemical Hygiene Plan for general chemical safety procedures, and Appendix II spill Formaldehyde Eater Instructions for spill procedure.
- 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.
N/A: no bulk quantities of chemicals anticipated.

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

Common Name of Material	Quantity	Trained Individual	Spill control
Formalin (100%) borax buffered	One 5-Gallon Cubitainer	Vince Guida	Formaldehyde Eater Spill Kit + additional dry absorbent
Formalin (100%) Borax Buffered, w/ rose Bengal dye	Two 5-Gallon Cubitainers	Vince Guida	Formaldehyde Eater Spill Kit + additional dry absorbent

WD-40	12 oz.	Vince Guida	FE Dry absorbent
Formaldehyde Eater Spill Kit (dry absorbent + bags & PPE)	12 lbs.	Vince Guida	Kit contains disposal equipment & bags
Formaldehyde Eater (additional absorbent)	32 lbs.	Vince Guida	Kit contains disposal equipment & bags

Note: MSDS sheets will be brought on board for each of these.

V. Additional Projects

A. Supplementary (“Piggyback”) 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.

A. Data Classifications: *Under Development*

- a. OMAO Data
- b. Program Data

B. Responsibilities: *Under Development*

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 (www.nmfs.noaa.gov/pr/shipstrike/), Right Whale Sighting Advisory System (SAS) website (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 866-755-6622; right whale sightings south of that border should be reported to 877-WHALE HELP. 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 (www.nefsc.noaa.gov/psb/surveys/documents/20120919_Report_a_Right_Whale.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 alive and well may be reported using the Platforms of Opportunity (POP) forms and protocols. To information regarding the WhaleALERT application stellwagen.noaa.gov/protect/whalealert.html. For information on reporting a dead whale www.nefsc.noaa.gov/psb/surveys/documents/20120919_Report_a_Dead_Whale.pdf.

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, Atlantic salmon, whale, dolphin, porpoise, marine turtle, or seal (e.g., collision with a whale or bycatch of a sea turtle), the NMFS Greater Atlantic Regional Fisheries Office must be notified within 24 hours of the interaction. All e-mail correspondences should be made to the following e-mail address: incidental.take@noaa.gov. Please indicate in the subject line which protected species was encountered. If the take involves a marine mammal, or sea turtle that is alive, injured and in need of assistance or monitoring, please call the NOAA Northeast Region marine animal hotline at: [866-755-6622](tel:866-755-6622). The chief scientist will be notified before reports are made.

If the vessel's company notices an animal that is entangled, injured, in distress, or dead, outside the scope of scientific operations, 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, Sturgeon and Atlantic salmon bycatch: All marine turtles, sturgeon and Atlantic salmon taken incidental to fishing activities must be handled, resuscitated (turtles only) and documented according to established procedures in the Endangered Species Act Section 7 Consultation Biological Opinion issued on November 30, 2012. 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 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 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 turtles shall, if feasible, shall be frozen and returned to the Woods Hole Laboratory. A sea turtle take with a 2 m beam trawl (79 X 18 inch mouth) towed at 2 kt. is highly unlikely.

Marine mammal bycatch: All marine mammals taken incidental to fishing activities must 1) be completely disentangle from gear 2) take photographs, document any injuries, and returned to the sea immediately 3) for dead specimens, be clearly photographed (multiple views if possible, including at least one photograph of the head, 4) be identified to the species level, 5) weigh(kg) and measure(cm)if possible (snout to tail (seals), beak to the notch in the fluke/tail (whales, dolphins and porpoises)) 6) attached a carcass tag 7)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. A marine mammal take with a 2 m beam trawl (79 X 18 inch mouth) towed at 2 kt. is highly unlikely.

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 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.

- 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 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 below. 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. Arrangements should also be made to ensure that NEFSC scientists with dietary restrictions are accommodated.

Name (Last, First)	Title	Date Aboard	Date Disembark	Dietary Needs
McHenry, Jennifer	Data Collection Specialist	08/11/2015	8/21/2015	Vegan (e.g. does not eat meat, fish, or animal products including milk, cheese, eggs, honey etc.)

Welch, Heather	Data Collection Specialist	08/11/2015	8/21/2015	Vegetarian (e.g. does not eat meat or fish)
Rosendale, John	Data Collection Specialist	08/11/2015	8/21/2015	NA
Guida, Vincent	Chief Scientist	08/11/2015	8/21/2015	NA
Timmons, DeMond	Data Collection Specialist	08/11/2015	8/21/2015	NA
Habeck, Ehren	Data Collection Specialist	08/11/2015	8/21/2015	Gluten-free diet required
Baskin, Liza	Data Collection Specialist	08/11/2015	8/21/2015	NA
Gilruth, Jordan	Data Collection Specialist	08/11/2015	8/21/2015	NA

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.

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 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 (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
Email 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.

C. 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 email 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 through the ship's Commanding Officer 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.

APPENDIX I. NEFSC Chemical Hygiene Plan

Abstracted from Jobe, B.L. and A.S. Kubinec.

Hazardous Materials Management Plan for the Northeast Fisheries Science Center.
NEFSC Reference Document 97-04.

2. Basic Guidelines for Handling Chemicals - It is prudent to minimize all chemical exposures. Because few laboratories are without hazards, general precautions, i.e., "skin contact with chemicals should be avoided as a cardinal rule", for handling all laboratory chemicals should be adopted, rather than specific guidelines for particular chemicals,

- (a) Use chemical fume hoods, engineering controls, and personal protective equipment (PPE) as advised by MSDS and exposure monitoring.
- (b) Inspect non-disposable gloves before using.
- (c) Know where emergency equipment is located and how to use it. This includes spill materials, fire extinguishers, fire blankets, eyewashes, safety showers, and first aid kits. Ensure that access to this equipment is not blocked.
- (d) Ensure that all containers are labeled properly--including secondary containers. Primary containers should always have the original manufacturer's label plus the date received and date opened. Secondary containers should be labeled with each chemical name (spell out the full name in plain English, no abbreviations), the percent solution of each component (i.e., 0.5% Aroclor in 50% Benzene), the hazard (toxic, flammable, etc.), the date the solution was prepared, and the initials of the preparer.
- (e) Do not smell or taste chemicals.
- (f) Do not eat, drink, apply cosmetics, chew gum, or smoke in areas where laboratory chemicals are present. Contact lenses are not recommended in laboratories.
- (g) Do not bring or store food or beverages in laboratories, storage areas, or refrigerators where chemicals are present.
- (h) Do not pipette by mouth.
- (i) Use proper hygiene practices, e.g., remove personal protective equipment (PPE) and wash hands with soap and water before leaving area.
- (j) When moving large containers, use lab carts or plastic carriers purchased for that purpose.
- (k) Do not dispose of any chemical into the sewage system unless it has been previously approved in writing by the ASR. Follow all waste disposal procedures, as outlined in Chapter 4.

- (l) Do not work alone out-of-hours unless the procedure and chemicals used have been pre-approved by the ASR.
- (m) Do not wear open toed shoes in laboratories.
- (n) Do not store chemicals above the head, on top of high shelves used mostly for books or computers, or on top of file cabinets.
- (o) Use only those chemicals for which the quality of the ventilation system is appropriate e.g. perchloric acid requires a special fume hood.
- (p) Handle and store laboratory glassware with care. Do not use damaged glassware. Use extra care with Dewar flasks and other evacuated glass apparatus. Shield them to contain chemicals and fragments should implosion occur. Use equipment only for its designated purpose.
- (q) Contemplate and address safety, health and environmental concerns before commencing work on new equipment or procedures.
- (m) Be alert to unsafe conditions and report them for the benefit of others.

3. Personal Protective Equipment - For each hazardous substance being handled Personal Protective Equipment (PPE) should be provided. For each lab PPE should include protective apparel compatible with the required degree of protection for the hazardous substance being handled. Each employee must be properly fitted and trained on the proper use and care of the PPE.

- (a) Goggles/glasses--Only American National Standards Institute, Inc. (ANSI) approved prescription or plain safety glasses or goggles shall be worn. These will be worn wherever or whenever chemicals are being handled.
- (b) Gloves--Gloves appropriate to the chemical hazard shall be worn when handling chemicals and/or potentially contaminated glassware. Consult the MSDS, a vendor or a chemical handbook for the best gloves. For example, when handling benzene, regular latex gloves provide only minimal short-term protection. A better choice for long-term handling would be Neoprene (for handling up to 16 minutes) or industrial type fluoroelastomer (for handling up to 6 hours). The source for these recommendations is the supplier.
- (c) Clothing/Lab coat--Cloth or disposable lab coats shall be worn when hazardous materials are being handled.
- (d) Hearing protection--If environmental monitoring has determined that OSHA acceptable noise levels have been exceeded (see Section 02), hearing protection shall be worn.

- (e) Respirators--Respirators shall be worn when necessary to maintain exposures below PEL's (Permissible Exposure Level) as determined by exposure monitoring in Section 02. When a respirator must be worn, Department of Commerce (DOC) policy on respirators shall be followed, as set forth in the DOC Occupational Safety and Health Manual and the NMFS Respiratory Protection Program in Chapter 9.
- (f) Hoods--Fume hoods shall be used when using hazardous chemicals. Fume hoods should provide 80-120 linear feet per minute of air flow. Hoods shall not be used as a storage area for chemicals. Fume hood windows (sashes) should be lowered (closed) at all times, except when necessary to raise (open) them. The hood fan should be turned on whenever a chemical is inside the hood, whether or not any work is being done inside the hood. Hoods shall be inspected and monitored on a routine basis (see Section 02.).

APPENDIX II.
Instructions for use of Formaldehyde Eater™ for Spill Cleanup

Clift Industries, Inc.
PO Box 67153
Charlotte, NC 28226

Gently pour the Formaldehyde Eater™ around the edges of the spill building a dike or barrier to contain it. Then slowly pour the Formaldehyde Eater™ absorber working from the outside of the spill inward until the liquid is completely covered. Allow Formaldehyde Eater™ at least 5 to 10 minutes to completely neutralize and absorb the spill. The product will form into a solid mass making it easy to clean up. Prepare the disposal bags. Gently sweep up the material and place in the disposal bags. Dispose of properly according to Regulations in your area.

Note: The re-sealable 5 gal. bucket for the Formaldehyde Eater kit will be used to store bags of used absorbent should the need arise.