UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Alaska Fisheries Science Center
RACE Division
7600 Sand Point Way N.E.
Seattle, Washington 98115-6349

Final Project Instructions

Date Submitted: April 10, 2015

Platform: NOAA Ship *Oscar Dyson*

Project Number: DY-15-05 (OMAO)

Project Title: EcoFOCI Spring Ichthyoplankton Survey

Project Dates: May 14, 2015 to June 05, 2015

Prepared by: _____ Dated: 4/13/2015
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Approved by: _____ Dated: 4/15/2015
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Approved by: _____ Dated: 4/15/15
Dr. Douglas P. DeMaster
Director
Alaska Fisheries Science Center

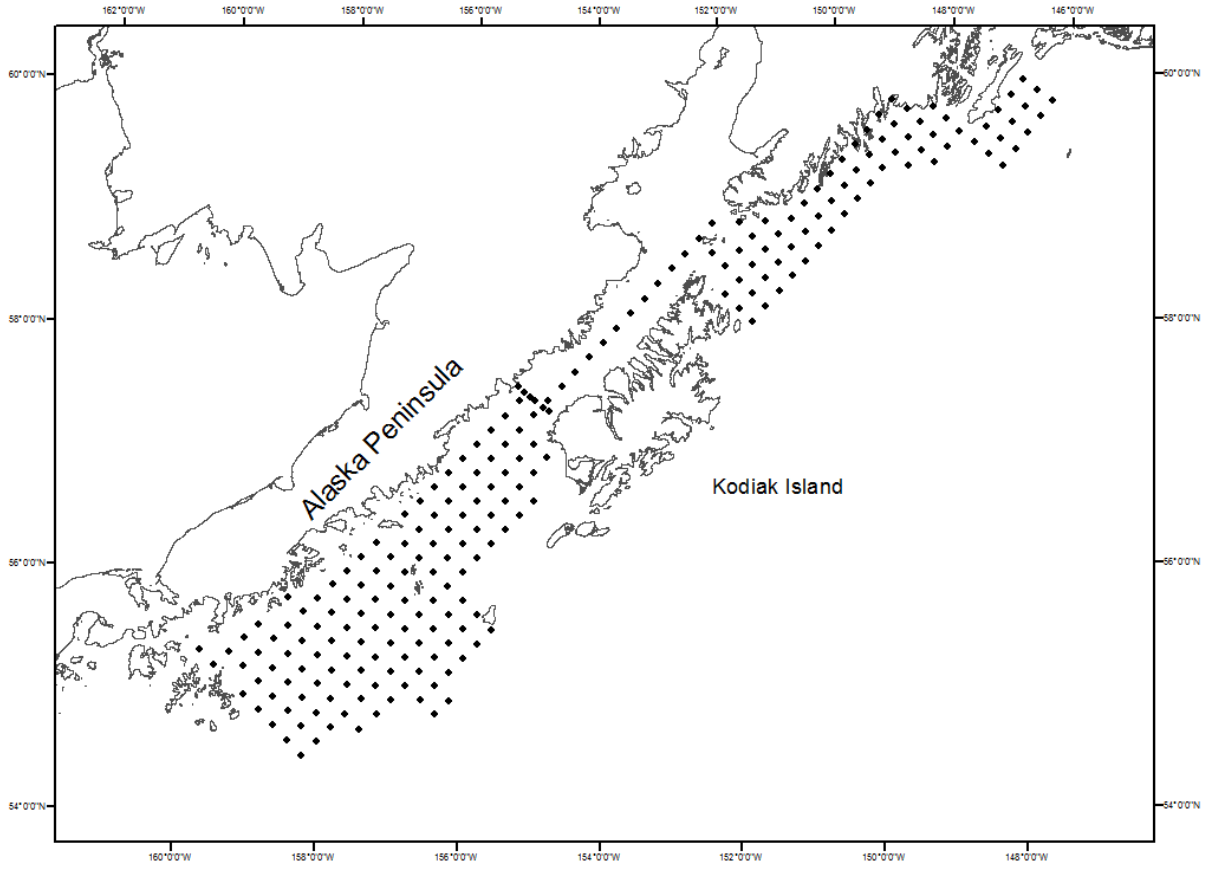
Approved by: _____ Dated: 16 April 2015
Captain Douglas D. Baird, Jr., NOAA
Commanding Officer
Marine Operations Center – Pacific

I. Overview

A. EcoFOCI Spring Ichthyoplankton Survey, May 14 – June 5, 2015

B. Days at Sea (DAS) **23**
Of the 23 DAS scheduled for this project, 23 DAS are funded by a line office allocation. This project is estimated to exhibit a High Operational Tempo.

C. Operating Area – Gulf of Alaska



D. Summary of Objectives

The objectives of this project are to conduct an ichthyoplankton survey and process studies in the region between the Shumagin Islands and Shelikof Strait so that we may estimate the abundance, transport, and factors influencing the survival of young walleye pollock larvae as well as other larval fish species. We will also occupy Line 8 to continue our 28-year time series of environmental and biological conditions in Shelikof Strait. Sampling will continue up through Shelikof Strait and progress along the Kenai Peninsula as time permits. In addition to this sampling, stations have been selected from the main grid for monitoring nutrients, salts, and

oxygen for PMEL scientists. A total of 4 satellite tracked drifters provided by PMEL may be released in areas of high larval walleye pollock abundance.

Marine Mammal, Endangered, and Protected Species

During fishing operations, take all proactive steps to avoid deploying the gear in any situation where there is a high likelihood for an incidental take of protected species or marine mammals. This could mean delaying a set or moving to a suitable alternate site. Be on the look for marine mammals or other protected species prior to initiating a tow and also at haul back.

Within 24 hours of any incidental take of, or injuries or mortalities to, marine mammals as a result of operations, the Chief Scientist/Field Party Chief shall report incident to the vessel CO, Jon Kurland (jon.kurland@noaa.gov, 907-586-7638) or Robyn Angliss (robyn.angliss@noaa.gov, 206-526-4032), and guy.fleischer@noaa.gov and jeff.napp@noaa.gov with cc to john.c.clary@noaa.gov. This information will be entered into the Protected Species Incidental Take (PSIT) system per instructions below.

Seabirds can be sampled and retained for salvage – if take involves seabird, include Shannon Fitzgerald in notification at shannon.fitzgerald@noaa.gov. If take involves ESA-listed bird, retain specimen and we will notify FWS (to issue collection authority). Do not retain gulls – except Kittiwakes. Albatross are high priority.

KEY ACTIONS IN RESPONSE TO ALL INCIDENTAL TAKES

1. Prior to the project, communicate and coordinate with vessel crew about established protected species incidental take reporting and handling procedures whether NOAA, charter, or partner project. Ensure regional ESA biologists and pertinent staff are in the PSIT email alert notification list. The Office of Law Enforcement (OLE) will be notified of takes via PSIT email alert system for all non-marine mammal takes including seabirds within 48 hours of the event.

2. Notify the geographically-appropriate Regional Stranding Response Coordinator (numbers in this document) immediately following the incidental take of a marine mammal. Stranding Response Coordinator will contact Office of Law Enforcement (OLE). For live injured/uninjured marine mammals, priority should be to release the animal before notifying stranding response networks. NOTE: If Coordinators are unreachable, collect pertinent PSIT information and release animal and/or retain carcass if logistically feasible.

3. For a sea turtle or protected fish (injured/live/dead), follow the Terms and Conditions stated in your Fisheries Independent Monitoring Biological Opinion regarding reporting and data collection. If you do not have a current Biological Opinion, contact your designated Regional or Science Center Protected Species Point of Contact for instructions.

4. For handling, sampling and salvaging seabirds (ESA and non-ESA listed), contact regional United States Fish and Wildlife Service (USFWS) points of contact or NMFS regional seabird coordinator. If you have a permit, report seabird takes to PSIT.

PRE-PROJECT ACTIONS

1) Prior to the project, communicate and coordinate with vessel crew about established protected species incidental take reporting and handling procedures whether NOAA, charter, or partner project.

2) Ensure regional ESA biologists and pertinent protected resources staff is in the PSIT email alert notification list.

3) The NMFS Chief Scientist or Designee shall contact the appropriate Regional Stranding Network and query about additional numbers or specific contacts to reach in case of an incidental take of a marine mammal.

WHAT TO DO WITH LIVE, INJURED OR UNINJURED MARINE MAMMAL

If a live, injured or uninjured marine mammal is incidentally captured, the animal should be released immediately.

1) Considering human safety, work from the vessel as quickly and carefully as possible to free the animal from the gear. Ensure the animal can continue to breathe while freeing from the gear.

2) If it can be done immediately without further harming the animal, photograph the animal (dorsal and ventral sides including dorsal fin, flanks, head/jaw) and gear interaction at time of capture and when free from gear prior to release and collect required PSIT information.

3) If animal is NOT brought aboard the vessel and taking photos is not an option, provide a comprehensive summary of the incident following requirements described under 'PSIT narrative' in this document.

4) Notify Regional Stranding Response Coordinator about the incident.

5) Submit take information for submission to PSIT and attach any forms, photos, and narrative to the take record within a week of the event.

Note: Untrained personnel should not attempt to handle live injured/uninjured marine mammals or disentangle large whales. In the event of a large entangled whale, immediately call your regional entanglement response network.

WHAT TO DO WITH DEAD MARINE MAMMAL OR SEA TURTLE?

1) Notify Regional Stranding Network Coordinator about the take of a dead marine mammal.

2) For sea turtle takes, simply report the take/s to PSIT and follow the instructions listed in your Biological Opinion or follow Regional or Science Center Protected Species Point of Contact instructions.

3) If logistically feasible, the animal should be hauled aboard the vessel and retained for pick up by the local Stranding Network. Develop a plan with Stranding Network Coordinator or regional ESA biologist and/or relevant Center scientist for carcass pickup and subsequent necropsy.

4) If the animal cannot be hauled aboard due to human safety consideration or there is no feasible way for carcass retention onboard, release animal after necessary information is collected as described below.

5) Photos of the carcass should be taken: Dorsal fin, ventral side, and flank for marine mammals, as well as signs of entanglement, scars, and injuries. This also includes collecting required PSIT data.

6) Submit take information for submission to PSIT and attach any forms, photos, and narrative to the take record.

PSIT Reporting

Report [1] Species involved, [2] number dead, number injured and released, or number uninjured and released, [3] date and time, [4] latitude and longitude, [5] any mitigation measures taken, [6] other comments or observations germane to this take. Note if photo was taken.

In addition to the required PSIT information please complete a narrative which includes the following information.

1) Animal Condition (include photos)
Code 1 – Live Animal
Code 2 – Fresh Dead
Code 3 – Moderate Decomposition
Code 4 – Advanced Decomposition

2) Mention if animal escaped or was released.

3) Indicate if the animal or other marine mammals or sea turtles were seen in the vicinity of the vessel during fisheries operations.

4) Animal condition post-release: Describe any observed injuries, the condition and behavioral state of released or injured animal (e.g., no obvious injuries and animal swam away vigorously, did not swim away vigorously, animal surfaced to breathe, animal sank to bottom, or blood in water observed).

5) If gear was still attached to animal after release, describe how the gear was cut and approximately how much gear is left and where it is still entangled/injured.

6) Photos: Provide comprehensive photographic evidence or written description of live/dead or injured animal. Provide pictures (if possible) of how the animal was entangled in the gear, and any gear-related interactions such as wounds or constrictions.

7) Decision-making: Include rationale for any discretionary decisions taken by Chief Scientist/crew.

8) Describe possible causes for incidental capture of the animal and any additional mitigation measures that were taken, or might be taken to prevent similar captures in all subsequent operations.

ENTANGLEMENT RESPONSE NETWORK NUMBER

Alaska Region: 1-877-925-7773

E. Participating Institutions

NOAA – Alaska Fisheries Science Center (AFSC)
7600 Sand Point Way N.E., Seattle, Washington 98115-0070

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

Name (Last, First)	**Title**	**Date Aboard**	**Date Disembark**	**Gender**	**Affiliation**	**Nationality**
Dougherty, Annette	Chief Sci.	5/12/2015	6/6/2015	F	AFSC	USA
Busby, Morgan	Sci.	5/12/2015	6/5/2015	M	AFSC	USA
Paquin, Melanie	Sci.	5/12/2015	6/5/2015	F	AFSC	USA
Randall, Jessica	Sci.	5/12/2015	6/5/2015	F	AFSC	USA
Wilson, Matt	Sci.	5/12/2015	6/6/2015	M	AFSC	USA

G. Administrative

1. Points of Contacts:
Annette Dougherty (Chief Scientist), AFSC, 7600 Sand Point Way NE, Bldg 4, Seattle WA 98115, ph:206-526-6523, Annette.Dougherty@noaa.gov
Jeff Napp (Division Leader), AFSC, 7600 Sand Point Way NE, Bldg 4, Seattle, WA 98115, ph:206-526-4148, Jeff.Napp@noaa.gov
Janet Duffy-Anderson (Project Leader), AFSC, 7600 Sand Point Way NE, Bldg 4, Seattle, WA 98115, ph: 206-526-6465, Janet.Duffy-Anderson@noaa.gov
Ann Matarese (Supervisor), AFSC, 7600 Sand Point Way NE, Bldg 4, Seattle, WA 98115, ph:206-526-4111, Ann.Matarese@noaa.gov

2. Diplomatic Clearances N/A

3. Licenses and Permits

This project will be conducted under the Blanket Scientific Research Permit #2015-B1 issued by the U.S. on December 3, 2014 effective January 31 – October 6, 2015 to AFSC research personnel and the *Oscar*

Dyson. In addition, the State of Alaska Fish Resource Permit CF-13-002 has been granted and is effective February 5, 2013 to December 31, 2015.

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:
Departure: May 14, 2015 Dutch Harbor, AK
Arrival: June 5, 2015 Kodiak, AK

B. Staging and Destaging:

Loading for this survey will be conducted by the previous survey personnel (DY-15-04) in Kodiak, AK. The scientific party will arrive in Dutch Harbor at least two days early to prepare for survey. FOCI equipment and samples will be off-loaded in Kodiak, AK. We request storage space (approx. 10'x15') in the City Pier 2 warehouse for gear and supplies to be loaded back onto *Oscar Dyson* 17-19 August for use during subsequent projects. All samples will be transported to the proper shipping avenues by the scientific party.

C. Operations to be Conducted: Operations for this survey will be conducted 24/7.

1. Underway Operations
The ship's Scientific Computer System (SCS) shall operate throughout the project, acquiring and logging data from navigation, meteorological, and oceanographic sensors. See FOCI Standard Operating Instructions (SOI 5.2 and SOI 5.3) for specific requirements at http:/www.pmel.noaa.gov/foci/operations/project_docs/FOCI_OD_SOI.pdf.

2. Station Operations

An ichthyoplankton survey will be conducted along the grid from the Shumagin Islands, through Shelikof Strait, and NE Kodiak to the Kenai Peninsula. A total of 223 stations have been planned, but all stations may not be occupied. The standard gear for this survey will be a 60-cm bongo array (SOI 3.2.2) with 0.505-mm mesh netting. The 20-cm bongo net (0.333-mm mesh netting) will be added to the wire for sampling on alternate cross-shelf survey lines as determined by the Chief Scientist. A FastCat will be mounted above the bongo array to provide depth, temperature, and salinity data. Tows will be to 100 meters or 10 meters off the bottom, whichever is shallower. Live tows may be conducted with the bongos to examine larval walleye pollock condition if larvae $\leq$ 8 mm are found. If larvae are collected for the pollock condition study, a CalVET tow to 70 meters will be conducted to collect small zooplankton. Locations of the stations for CalVET tows will be at the discretion of the Chief Scientist and the CO.

The samples collected from the 20-cm (alternate lines only) and 60-cm bongos will be processed in the following manner. Net 1from both the 20 and 60 cm bongos will be preserved in 1.8% formaldehyde, buffered with sodium borate, and boxed for shipment at the end of the survey.

Net 2 of the 60 cm bongo will be sorted for all fish larvae, which will be preserved in 100% ethanol. The remaining contents of Net 2 will be discarded unless otherwise requested. On lines without 20-cm bongos, there will be no 20-cm samples processed.

Line-8 sampling will include 20-cm and 60-cm bongos and conductivity, temperature, and depth (CTD) (SOI 3.2.1) profiles with Niskin bottle samples for chlorophyll, microzooplankton, and nutrients. Net tows at Line 8 will be to 10 meters off the bottom. The 60-cm bongo will be fitted with 0.505-mm on Net 1 and 0.333 –mm on Net 2, the 20-cm bongo mesh will be .153-mm. Net 1 of the 20-cm and Net 1 and Net 2 of 60-cm bongo samples will be preserved in 1.8% formaldehyde and buffered with sodium borate.

Marks to the MOA will be made in the Survey Office (Dry Lab) by a scientist on-watch who will be monitoring the FastCat operation throughout the station occupation. Marks will be made at surface-in, at-depth, and surface-out. The processing of FastCat files and CTD files will be the responsibility of the scientific personnel on watch.

Deployment of four satellite tracked drifters will occur at high larval pollock abundance areas. Scientific staff on watch will require the assistance of the Survey and Deck Department for deployment.

D. Dive Plan

Dives are not planned for this project.

E. Applicable Restrictions

Conditions that could preclude normal operations would be poor weather and equipment failure. Poor weather would be waited out in a sheltered area until operations could be resumed and modifications would be made to the sampling grid. Equipment failure (starboard winches) would have to be addressed immediately for the project to continue.

III. Equipment

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

* Foreword hydrographic winch with slip rings and 3-conductor cable terminated for CTD,
* 12 Khz hull mounted Edgetech Acoustic release transducer
* Aft hydrographic winch with slip rings and 3-conductor cable terminated for the SBE 19+ for net tow operations,
* Sea-Bird Electronics' SBE19+ CTD system with stand, each CTD system should include underwater CTD, weights, pinger, and a deck unit for the system.
* 5 or 10-liter Niskin sampling bottles for use with rosette (10 plus 4 spares, 6 10-liter bottles required for Line 8 operations),
* Conductivity and temperature sensor package to provide dual sensors on the CTD (primary),
* For meteorological observations: 2 anemometers (one R.M. Young system interfaced to the SCS), calibrated air thermometer (wet and dry bulb) and a calibrated barometer and/or barograph,

* Freezer space for storage of biological samples (blast and storage freezers, -20 °C and -80 °C, turned on and operating)
* SIMRAD ES-60 and EK-60 echosounders,
* SIMRAD ME-70 Downward-Facing Multi-Beam Sonar, if available
* RD Instruments ADCP written to disk, if available
* Scientific Computer System (SCS),
* Minimum of 2 computers with internet and e-mail access,
* Laboratory with storage space,
* Sea-water hoses and nozzles to wash nets on hero deck and in the wet lab,
* Adequate deck lighting for night-time operations,
* Navigational equipment including GPS and radar,
* Safety harnesses for working on quarterdeck and fantail,
* Ship's crane(s) used for loading/unloading.
* Permission from CO to access Kodiak City Pier 2 warehouse to store gear at the end of DY15-05 which will retrieved for DY15-07. Access will be under supervisor of Dyson personnel.

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

* Sea-Bird Electronics' SBE FastCat and SeaCat system,
* Flourometer, light meter and dual oxygen sensors to be mounted on CTD,
* Conductivity and temperature sensor package to provide dual sensors on the CTD (backup),
* 60 cm bongo sampling arrays,
* 20 cm bongo sampling arrays,
* Manual wire angle indicator,
* CalVET net array,
* Larval sampling and sorting equipment, personal protection gear, computers, misc. office supplies, flowmeters, misc. coolers, egg rearing supplies,
* Productively tanks (two 1'x1'x3'),
* Multinet frame, weight, sampling nets and codends. Misc. scientific sampling and processing equipment,
* Chlorophyll and nutrient sampling equipment,
* 4 satellite track drifters (provided by PMEL)

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

Dyson loaded 1/20/2015 by FOCI and MACE personnel. All chemicals listed will be used for the entire 2015 Dyson field season. Chemical volumes at the end of each survey will be reported to the Ops Officer and the designated scientist on each survey will be required to report to the chemical owners. The name of the group responsible for each of the chemicals is designated after the chemical name in the table. MSDS, chemical hygiene plan, and SOPs will be provided to the Dyson before the loading of the vessel.

Common Name	**Concentration**	**Amount**	**Spill Response (all FOCI/MACE/PMEL/EMA personnel)**	**Notes**
Dihydrogen		20 liters	Spill Control: W	Not a regulated

Oxide Property of PMEL			Gloves Paper towels	chemical/solution. Used for oxygen titrations.
Ethanol Property of FOCI	100%	4 -1 gal. plastic jugs	Gloves 3M Sorbent Pads Plastic bag	Store in Chem. Lab yellow flammables cabinet.
Ethylene Glycol Property of FOCI	100%	1 – 500 ml	Gloves Paper towels Plastic bag	Not a regulated chemical. Store in Spill Kit.
Formaldehyde Property of FOCI	37%	5 – 5 gal. barrels	Gloves Eye Protection Fan-Pads Formalex PolyForm-F Plastic bags	Store in Fish Lab flammable cabinets. Will need to place 2-3 in each cabinet.
Formaldehyde Property of Sandi Neidetcher	37%	8 – 1 liter plastic bottles	Gloves Eye Protection Fan-Pads Formalex PolyForm-F Plastic bag	Store in Fish Lab flammable cabinet.
Formaldehyde Property of Troy Buckley	37%	8 – 1 liter plastic bottles	Gloves Eye Protection Fan-Pads Formalex PolyForm-F Plastic bag	Store in Fish Lab flammable cabinet.
Glycerol/Thymol Solution Property of MACE	50 %	2 – 5 gal. buckets	Gloves Paper towels Kitty litter	Not a regulated chemical/solution. Store in Fish Lab under sink.
Lithium 3v Batteries Property of FOCI		12	NA	Store in Survey Office for Spring Mooring Multi-Net use
Lithium 9v Batteries		8	NA	In SeaBird and Wetlabs

Property of PMEL				instruments
Lithium AA Batteries Property of PMEL		96	NA	In SeaBird instruments and MicroCats Saft LS14500
Lithium D Cell Batteries Property of PMEL		150	NA	In RCM9 & Peggy Mooring
Lithium Transponder Batteries Property of MACE		3	NA	Avoid heat and moisture during storage. Storage container will be provided by MACE.
Manganese Chloride Property of PMEL	3M	1 liter		Not a regulated chemical/solution. Used for oxygen titrations.
Potassium Iodate Property of PMEL	0.00167 M	1 liter	Spill Control: PI Gloves Plastic bag	Used for oxygen titrations.
Sodium Borate Solution Property of FOCI	5-6%	1 – 5 gal.	Gloves Paper towels Plastic bag	Not a regulated chemical. Working container will be secured on Fish Lab counter.
Sodium Borate Powder Property of FOCI	100%	1 – 500 g	Gloves Wet paper towels Plastic bag	Not a regulated chemical. Stored in Spill Kit.
Sodium Iodide/NaOH Solution Property of PMEL	0.11M	1 liter	Spill Control: B	Used for oxygen titrations.
Sodium	0.11 M	1 liter	Spill Control: ST	Used for oxygen

Thiosulfate Property of PMEL				titrations.
Sulfuric Acid Property of PMEL	5 M	1 liter	Spill Control: A	Used for oxygen titrations.
Spill Kit Contents	**Amount**	**Use**	**Total Spill Volume Controllable**	**Notes**
Formalex	1 – 5 gallon 2 -1 gallon	Formaldehyde cleanup (all concentrations)	1:1 control	Formalex will be used in conjunction with Fan-Pads to reduce spill volume.
Fan-Pads	2 rolls (50 sheets each roll)	Formaldehyde cleanup (all concentrations)	50 sheets = 50 - 150 ml spills	Formalex will be used in conjunction with Fan-Pads to reduce total spill volume.
PolyForm-F	1 – 5 gal. bucket	Formaldehyde cleanup (all concentrations)	1:1 control	Pour onto large spill immediately to deactivate formaldehyde.
3 M Pads	10 pads	Ethanol cleanup	10 pads=10 - 250ml spills	Pads may be reused if dried out under fume hood.
Nitrile Gloves	8 pairs each S,M,L,XL	For all cleanup procedures	N/A	Gloves will be restocked by each survey group.
Eye Protection	4 pairs goggles 1 face shield	Formaldehyde cleanup	N/A	Eye protection will be cleaned before re-use.
Tyvex Lab Coats	2 coats	Formaldehyde cleanup	N/A	Coats will be cleaned with Fan-Pads and Formalex before reuse.
Plastic Bags	2	Formaldehyde	N/A	Bags may be

		cleanup/Fan Pads		packed full and sealed.

SPILL CONTROL

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.

B:Base

☐ Use proper PPE.

☐ Ventilate area.

☐ Neutralize with dilute acid such as HCl if possible.

☐ Absorb with cat litter or vermiculite.

☐ Vacuum or sweep up material and place into suitable disposal container.

☐ Do not breath dust.

☐ Do not get water on spilled substances.

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.

PI:Potassium Iodate

☐ Avoid Contact with combustibles (wood, paper, clothing …).

☐ Keep substance damp with water spray.

☐ Vacuum or sweep up material and place into suitable disposable container (plastic bag).

MC:Mercuric Chloride

☐ Vacuum or sweep up material and place into suitable disposable container (plastic bag).

☐ Wear SCBA or other appropriate breathing apparatus and PPE.

☐ Avoid breathing dust.

☐ Keep in closed container for disposal.

ST: Sodium Thiosulfate

☐ Ventilate area of leak or spill.

☐ Wear protective gloves and clean body-covering

☐ Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

☐ Recover liquid or particulate in 5 gallon bucket. Absorb with a kitty litter and place in disposable bag. Do
not use combustible materials, such as saw dust to absorb.

W: Water

☐ Absorb the liquid and wash with water

☐ Wear PPE

E: Ethanol

☐ Eliminate all ignition sources

☐ Wear PPE

E. Inventory (itemized) of Radioactive Materials N/A

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*

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 http://www.omao.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 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.

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/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 – Pacific
2002 SE Marine Science Dr.
Newport, OR 97365
Telephone 541-867-8822
Fax 541-867-8856
Email MOP.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.

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 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.

E. 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.

F. 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.

IX. Appendices

1. Station/Waypoint List (coordinates in Latitude, Longitude: degree-minutes)

Station	Grid	Lat Deg	Lat DecMin		Long Deg	Long DecMin	
1	gr135	55°	24.8118	N	159°	50.9400	W
2	gt135	55°	17.9250	N	159°	37.0800	W
3	gx135	55°	4.1508	N	159°	9.4860	W
4	gz135	54°	57.2640	N	158°	55.7580	W
5	hb135	54°	50.3766	N	158°	42.0720	W
6	hd135	54°	43.2972	N	158°	29.1450	W
7	hf135	54°	36.1308	N	158°	16.0884	W
8	hf137	54°	43.4082	N	158°	4.1472	W
9	hd137	54°	50.5536	N	158°	17.2038	W
10	hb137	54°	57.6342	N	158°	30.0960	W
11	gz137	55°	4.5210	N	158°	43.7460	W
12	gx137	55°	11.4084	N	158°	57.4440	W
13	gv137	55°	18.2952	N	159°	11.1780	W
14	gt137	55°	25.1820	N	159°	24.9600	W
15	gt139	55°	32.4396	N	159°	12.8100	W
16	gv139	55°	25.5528	N	158°	59.0640	W
17	gx139	55°	18.6654	N	158°	45.3600	W
18	gz139	55°	11.7786	N	158°	31.6980	W
19	hb139	55°	4.8912	N	158°	18.0840	W
20	hd139	54°	57.7886	N	158°	5.2628	W
21	hf139	54°	50.6647	N	157°	52.2061	W
22	hh141	54°	50.7756	N	157°	27.2084	W
23	hf141	54°	57.8992	N	157°	40.2651	W
24	hd141	55°	5.0018	N	157°	53.3217	W
25	hb141	55°	12.1488	N	158°	6.0360	W
26	gz141	55°	19.0356	N	158°	19.6140	W
27	gx141	55°	25.9230	N	158°	33.2400	W
28	gv141	55°	32.8098	N	158°	46.9080	W
29	gt141	55°	39.6972	N	159°	0.6180	W
30	gv143	55°	40.0674	N	158°	34.7160	W
31	gx143	55°	33.1806	N	158°	21.0780	W
32	gz143	55°	26.2932	N	158°	7.4940	W
33	hb143	55°	19.4064	N	157°	53.9460	W

34	hd143	55°	12.5190	N	157°	40.4400	W
35	hf143	55°	5.6322	N	157°	26.9820	W
36	hh143	54°	58.7448	N	157°	13.5600	W
37	hh145	55°	6.0024	N	157°	1.5420	W
38	hf145	55°	12.8892	N	157°	14.9280	W
39	hd145	55°	19.7766	N	157°	28.3560	W
40	hb145	55°	26.6634	N	157°	41.8260	W
41	gz145	55°	33.5508	N	157°	55.3320	W
42	gx145	55°	40.4376	N	158°	8.8860	W
43	gv145	55°	47.3250	N	158°	22.4820	W
44	gt145	55°	54.2118	N	158°	36.1260	W
45	gv147	55°	54.5820	N	158°	10.2120	W
46	gx147	55°	47.6952	N	157°	56.6520	W
47	gz147	55°	40.8078	N	157°	43.1340	W
48	hb147	55°	33.9210	N	157°	29.6640	W
49	hd147	55°	27.0342	N	157°	16.2300	W
50	hf147	55°	20.1468	N	157°	2.8380	W
51	hh147	55°	13.2600	N	156°	49.4880	W
52	hj147	55°	6.3726	N	156°	36.1800	W
53	hl147	54°	59.6161	N	156°	22.5580	W
54	hl149	55°	6.7052	N	156°	10.8136	W
55	hj149	55°	13.6320	N	156°	24.1200	W
56	hh149	55°	20.5200	N	156°	37.3920	W
57	hf149	55°	27.4044	N	156°	50.7120	W
58	hd149	55°	34.2912	N	157°	4.0680	W
59	hb149	55°	41.1786	N	157°	17.4660	W
60	gz149	55°	48.0654	N	157°	30.9000	W
61	gx149	55°	54.9522	N	157°	44.3820	W
62	gv149	56°	1.8396	N	157°	57.9060	W
63	gv151	56°	9.0972	N	157°	45.5640	W
64	gx151	56°	2.2098	N	157°	32.0760	W
65	gz151	55°	55.3230	N	157°	18.6300	W
66	hb151	55°	48.4356	N	157°	5.2260	W
67	hd151	55°	41.5488	N	156°	51.8640	W
68	hf151	55°	34.6614	N	156°	38.5440	W
69	hh151	55°	27.7746	N	156°	25.2660	W
70	hj151	55°	20.8860	N	156°	12.0240	W
71	hj153	55°	28.1460	N	155°	59.8920	W
72	hh153	55°	35.0322	N	156°	13.0980	W
73	hf153	55°	41.9190	N	156°	26.3400	W
74	hd153	55°	48.8058	N	156°	39.6300	W
75	hb153	55°	55.6932	N	156°	52.9560	W
76	gz153	56°	2.5800	N	157°	6.3180	W

77	gx153	56°	9.4674	N	157°	19.7280	W
78	gv153	56°	16.3542	N	157°	33.1800	W
79	gv155	56°	23.6118	N	157°	20.7540	W
80	gx155	56°	16.7244	N	157°	7.3440	W
81	gz155	56°	9.8376	N	156°	53.9700	W
82	hd155	55°	56.0634	N	156°	27.3540	W
83	hf155	55°	49.1766	N	156°	14.1000	W
84	hh155	55°	42.2892	N	156°	0.8940	W
85	hj155	55°	35.4000	N	155°	47.7240	W
86	hj157	55°	35.5200	N	155°	42.6594	W
87	hh157	55°	48.6540	N	155°	49.5468	W
88	hf157	55°	56.4336	N	156°	1.8240	W
89	hd157	56°	3.3210	N	156°	15.0360	W
90	hb157	56°	10.2078	N	156°	28.2900	W
91	gz157	56°	17.0952	N	156°	41.5800	W
92	gx157	56°	23.9820	N	156°	54.9180	W
93	gv159	56°	38.1264	N	156°	55.7880	W
94	gx159	56°	31.2396	N	156°	42.4500	W
95	gz159	56°	24.3522	N	156°	29.1540	W
96	hb159	56°	17.4654	N	156°	15.9000	W
97	hd159	56°	10.5780	N	156°	2.6820	W
98	hd161	56°	17.8356	N	155°	50.2920	W
99	hb161	56°	24.7224	N	156°	3.4680	W
100	gz161	56°	31.6098	N	156°	16.6860	W
101	gx161	56°	38.4966	N	156°	29.9460	W
102	gv161	56°	45.3840	N	156°	43.2480	W
103	gv163	56°	52.6410	N	156°	30.6660	W
104	gx163	56°	45.7542	N	156°	17.4000	W
105	gz163	56°	38.8674	N	156°	4.1820	W
106	hb163	56°	31.9800	N	155°	51.0000	W
107	hd163	56°	25.0932	N	155°	37.8600	W
108	hd165	56°	32.3502	N	155°	25.3860	W
109	hb165	56°	39.2376	N	155°	38.4900	W
110	gz165	56°	46.1244	N	155°	51.6360	W
111	gx165	56°	53.0118	N	156°	4.8180	W
112	gv165	56°	59.8986	N	156°	18.0420	W
113	gv167	57°	7.1562	N	156°	5.3760	W
114	gx167	57°	0.2688	N	155°	52.1880	W
115	gz167	56°	53.3820	N	155°	39.0480	W
116	hb167	56°	46.4946	N	155°	25.9440	W
117	hd167	56°	39.6078	N	155°	12.8760	W
118	hd169	56°	46.8654	N	155°	0.3240	W
119	hb169	56°	53.7522	N	155°	13.3500	W

120	gz169	57°	0.6390	N	155°	26.4180	W
121	gx169	57°	7.5264	N	155°	39.5220	W
122	gv169	57°	14.4132	N	155°	52.6680	W
123	gv171	57°	21.6708	N	155°	39.9180	W
124	gx171	57°	14.7840	N	155°	26.8140	W
125	gz171	57°	7.8966	N	155°	13.7460	W
126	hb171	57°	1.0098	N	155°	0.7200	W
127	hd173	57°	1.3800	N	154°	35.1060	W
128	hb173	57°	8.2668	N	154°	48.0480	W
129	gz173	57°	15.1542	N	155°	1.0380	W
130	gv173	57°	28.9284	N	155°	27.1260	W
131	gv175	57°	36.1854	N	155°	14.2980	W
132	gx175	57°	29.2986	N	155°	1.2720	W
133	FOX56	57°	31.2000	N	154°	46.8000	W
134	FOX57	57°	33.0000	N	154°	52.8000	W
135	FOX58	57°	36.6000	N	155°	0.6000	W
136	FOX59	57°	38.4000	N	155°	4.2000	W
137	FOX60	57°	40.8000	N	155°	10.2000	W
138	FOX61	57°	43.2000	N	155°	15.6000	W
139	gx177	57°	36.5556	N	154°	48.4380	W
140	gx179	57°	43.8132	N	154°	35.5620	W
141	gx181	57°	51.0708	N	154°	22.6380	W
142	gx183	57°	58.3278	N	154°	9.6720	W
143	gx185	58°	5.5854	N	153°	56.6640	W
144	gx187	58°	12.8430	N	153°	43.6140	W
145	gx189	58°	20.1000	N	153°	30.5160	W
146	gx191	58°	27.3576	N	153°	17.3700	W
147	gx193	58°	34.6152	N	153°	4.1820	W
148	gx195	58°	41.8722	N	152°	50.9520	W
149	gx197	58°	49.1298	N	152°	37.6740	W
150	gx199	58°	56.3874	N	152°	24.3480	W
151	gz199	58°	49.5000	N	152°	11.8680	W
152	gx201	59°	3.6444	N	152°	10.9740	W
153	hb201	58°	49.8702	N	151°	46.1340	W
154	gz199	58°	49.5000	N	152°	11.8680	W
155	hb199	58°	42.6132	N	151°	59.4180	W
156	hd199	58°	35.7258	N	151°	47.0100	W
157	hd197	58°	28.4688	N	152°	0.2040	W
158	hf197	58°	21.5814	N	151°	47.7840	W
159	hh197	58°	14.6946	N	151°	35.4000	W
160	hh199	58°	21.9516	N	151°	22.2900	W
161	hf199	58°	28.8390	N	151°	34.6320	W
162	hd201	58°	42.9834	N	151°	33.7740	W

163	hf201	58°	36.0960	N	151°	21.4380	W
164	hh201	58°	29.2092	N	151°	9.1380	W
165	hh203	58°	36.4668	N	150°	55.9380	W
166	hf203	58°	43.3536	N	151°	8.1960	W
167	hd203	58°	50.2410	N	151°	20.4840	W
168	hb203	58°	57.1278	N	151°	32.8080	W
169	gz203	59°	4.0146	N	151°	45.1620	W
170	hb205	59°	4.3854	N	151°	19.4280	W
171	hd205	58°	57.4980	N	151°	7.1520	W
172	hf205	58°	50.6112	N	150°	54.9060	W
173	hh205	58°	43.7238	N	150°	42.6900	W
174	hh207	58°	50.9814	N	150°	29.4000	W
175	hf207	58°	57.8682	N	150°	41.5740	W
176	hd207	59°	4.7556	N	150°	53.7720	W
177	hd209	59°	11.8200	N	150°	40.6800	W
178	hf209	59°	5.1258	N	150°	28.1940	W
179	hh209	58°	58.2390	N	150°	16.0620	W
180	hh211	59°	5.4960	N	150°	2.6820	W
181	hf211	59°	12.3834	N	150°	14.7600	W
182	hd211	59°	18.8640	N	150°	27.6000	W
183	hd213	59°	25.8840	N	150°	14.5200	W
184	hf213	59°	19.6404	N	150°	1.2840	W
185	hh213	59°	12.7536	N	149°	49.2480	W
186	hh215	59°	20.0340	N	149°	35.6940	W
187	hf215	59°	26.8980	N	149°	47.7600	W
188	hd215	59°	32.8740	N	150°	1.4280	W
189	hd217	59°	39.8460	N	149°	48.3420	W
190	hf217	59°	34.0020	N	149°	34.4340	W
191	hh217	59°	27.2340	N	149°	22.2660	W
192	hj219	59°	27.6600	N	148°	56.6940	W
193	hh219	59°	34.4100	N	149°	8.8380	W
194	hf219	59°	41.1480	N	149°	21.0060	W
195	hd219	59°	46.7940	N	149°	35.2560	W
196	hd221	59°	53.7120	N	149°	22.1700	W
197	hf221	59°	48.2760	N	149°	7.5780	W
198	hh221	59°	41.5560	N	148°	55.4100	W
199	hj221	59°	34.8300	N	148°	43.2660	W
200	hl221	59°	28.0980	N	148°	31.1280	W
201	hl223	59°	35.2680	N	148°	17.6940	W
202	hj223	59°	41.9760	N	148°	29.8320	W
203	hh223	59°	48.6780	N	148°	41.9820	W
204	hf223	59°	55.3740	N	148°	54.1560	W
205	hd223	60°	0.6120	N	149°	9.0840	W

206	hh225	59°	55.7760	N	148°	28.5600	W
207	hj225	59°	49.0980	N	148°	16.4040	W
208	hl225	59°	42.4080	N	148°	4.2600	W
209	hn225	59°	36.3720	N	147°	50.8920	W
210	hp225	59°	29.8560	N	147°	38.1120	W
211	hr225	59°	23.7360	N	147°	24.7200	W
212	hr227	59°	31.1040	N	147°	10.9440	W
213	hp227	59°	37.1280	N	147°	24.4800	W
214	hn227	59°	43.5840	N	147°	37.3200	W
215	hn229	59°	50.7660	N	147°	23.7420	W
216	hp229	59°	44.3760	N	147°	10.8420	W
217	hr229	59°	38.4480	N	146°	57.1740	W
218	hr231	59°	45.7620	N	146°	43.3980	W
219	hp231	59°	51.6000	N	146°	57.2040	W
220	hn231	59°	57.9240	N	147°	10.1640	W
221	hn233	60°	5.0520	N	146°	56.5860	W
222	hp233	59°	58.7940	N	146°	43.5720	W
223	hr233	59°	53.0520	N	146°	29.6280	W

2. Chemical Hygiene Plan and Standard Operating Procedures (SOPs)

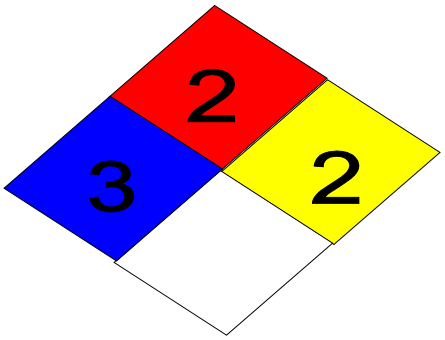
Chemical Hygiene Plan

Previous sections of the Project Instructions include a list of hazardous materials by name and anticipated quantity. Chemicals will be transported, stored and used in a manner that will avoid any spills and adequate containment, absorbents and cleanup materials will be available in the event of a chemical spill.

The scientific chemicals to be used for this project are: (1) ethyl alcohol (100%) and (2) formaldehyde (37%). Other chemicals brought aboard are consumer products in consumer quantities. Dilutions of the scientific chemicals will be used to preserve in faunal organisms collected with benthic grab samplers, as described in the Operations section of these Project Instructions. Use of these chemicals and the specified dilutions will only occur in exterior locations on the ship away from air intakes. Scientific chemicals shall not be disposed over the side.

Standard Operating Procedures and Information Sheets are provided here for the scientific chemicals. Included are details concerning personal protective equipment, work area precautions, special handling and storage requirements, spill and accident procedures/first aid, waste disposal and other pertinent information. Both small and large spills are of particular concern. In both cases, the spill response is intended to first contain the spill and then neutralize it. This may be easily accomplished for small spills depending on the degree of vessel motion and the prevailing

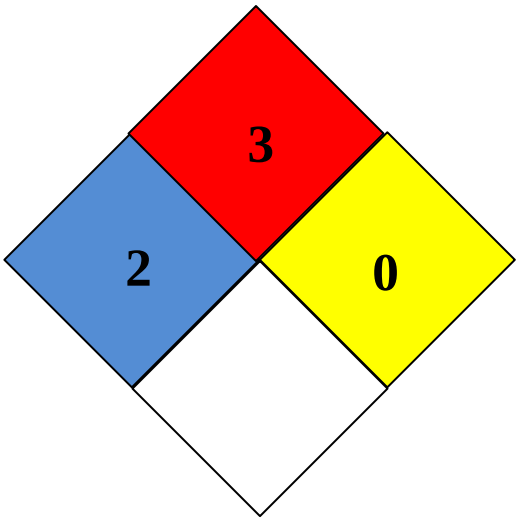
environmental conditions. In all cases, the first responder should quickly evaluate the risks of personal exposure versus the potential impacts of a delayed response to the spill and act accordingly. For example, if the spill is small and it is safe to do so, a neutralizing agent should be rapidly applied to encircle/contain the spill and then cover it. However, a large formaldehyde spill (> 1 L) is extremely hazardous and individuals at risk of exposure should immediately leave the area. The CO or OOD should be notified immediately so that a response team with self-contained breathing apparatus (SCBA) can be deployed to complete the cleanup operation or dispense the hazard with a fire hose directed overboard. The vessel's course should be adjusted to minimize exposure of personnel to wind-driven vapors and to limit spread of the spill due to vessel motion. The reportable quantity (RQ) of formaldehyde is 1,000 pounds and the RQ for ethyl alcohol is 5,000 pounds which greatly exceed the quantities brought aboard for this project.



Standard Operating Procedures – Formaldehyde At-Sea
Chemical Name: 37% Formaldehyde
UN Number: 1198
Hazard Ratings: (on a scale of 0 to 4)
Health (blue): 3 Flammability (red): 2
Reactivity (yellow): 2 Special (white):
Personal Protection Gear Needed
*gloves
*goggles or face shield
Special Handling Instructions
* If a ventilation hood is not available, then pouring of chemical must be done outside. At least two people should be involved with large chemical transfers in case of an emergency.
* Chemical must be stored at temperatures above 15^{o} c to prevent polymerization of paraformaldehyde.
First Aid
* If swallowed, give large amounts of drinking water and induce vomitting.
*If vapors inhaled, get out into fresh air immediately. Give oxygen if breathing is difficult.
* If spilled on skin or splashed in eyes, flush with water for at least 15 minutes.
Spill Cleanup Procedures

For small spills (500-1000 mls):
Cover spill quickly with a Fan Pad and spray on Formalex to deactivate and absorb chemical. Let material sit for 10 - 15 minutes. Dispose of materials in plastic bag.
For large spills (1000 mls - ?):
Use a combination of Fan Pads and Formalex as quickly as possible to contain spill and deactivate it. Vacate area and try to ventilate room, if possible. Call Bridge immediately.
Deactivation/Disposal Procedures At Sea
*Formalex is a greenish liquid that is to be used to insure proper chemical deactivation. Formalex should also be used in conjunction with Fan Pads. Place used Fan Pad in plastic bag, seal, and put in bottom of Spill Kit.
*Fan Pads may be used to absorb small spills alone but these pads work best when used with Formalex to immediately control the vapor layer.
Shipping Procedures and Restrictions
37% formaldehyde cannot be ship by air due to its flammability rating.
All quantities should be over-packed with absorbency material in case the original container is damaged. When shipping by barge or land, labels are not required for quantities under 110 gallons by D.O.T. but the container should have MSDSs and the UN number readily available.

Standard Operating Procedures – Ethanol At-Sea



Chemical Name: 100% Alcohol
UN Number: 1170
Hazard Ratings: (on a scale of 0 to 4)
Health (blue): 2 Flammability (red): 3
Reactivity (yellow): 1 Special (white):
Personal Protection Gear Needed

*gloves
*goggles or face shield when pouring

Special Handling Instructions

* Keep away from heat, flame, and other potential ignition sources.
* Store in a well ventilated area or in a flammable cabinet.

First Aid

* If swallowed, give large amounts of drinking water and induce vomitting.
* If vapors inhaled, get out into fresh air immediately. Give oxygen if breathing is difficult.
* If spilled on skin or splashed in eyes, flush with water for at least 15 minutes.

Spill Cleanup Procedures

Absorb ethanol with 3M Sorbent Pads and allow to dry in a well ventilated area away from ignition source.

Deactivation/Disposal Procedures At Sea

Use 3M Sorbent Pads to absorb the ethanol. Put used pads outside to dry (secure from blowing overboard and exposure to flame). Once dry, the pads may be reused or burned.

Shipping Procedures and Restrictions

Due to the flammability rating of 95% ethanol, this chemical cannot be shipped by air. Transportation by barge or land vehicle will require the ethanol container to be over-packed with absorbent materials such as clumping kitty litter or shredded paper. Include MSDSs and the UN number with the shipment for reference in the event of a spill.