



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Alaska Fisheries Science Center
7600 Sand Point Way NE
Seattle, WA 98115

DRAFT Project Instructions


Date Submitted: December 4, 2015

Platform: NOAA Ship *Oscar Dyson*

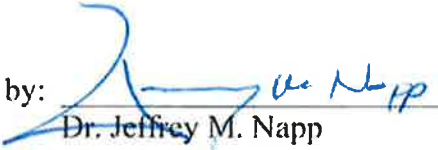
Project Number: DY-16-00 (OMAO)

Project Title: Gear Trials

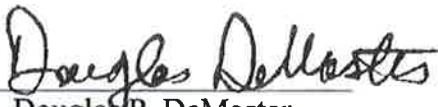
Project Dates: January 25, 2016 (approximate)

Prepared by: 
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Dated: 12/7/15

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Dated: 12/7/15

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Dated: 12/7/15

Approved by: _____
Commander Brian Parker, NOAA
Commanding Officer
Marine Operations Center – Pacific

Dated: December 23, 2015



I. Overview

- A. Brief Summary and Project Period: Acoustic system calibration, trawl and equipment testing, 25-26 January 2016. Scientific gear needed for gear trials will be loaded before 25 January. Pre-season gear loading will be completed while the ship is in Seattle.
- B. Days at Sea (DAS)
Of the 2 DAS scheduled for this project, 2 DAS are funded by OMAO. This project is estimated to exhibit a high Operational Tempo.
- C. Operating Area: Puget Sound, Port Madison (see Appendix 1)
- D. Summary of Objectives 1) complete pre-field season acoustic system calibration, 2) test acoustic-trawl (AT) survey trawling /oceanographic winches and sampling equipment,
- E. Participating Institutions: Alaska Fisheries Science Center (AFSC), Seattle WA
- F. Personnel/Science Party: name, title, gender, affiliation, and nationality

| Name (Last, First) | Title | Date Aboard | Date Disembark | Gender | Affiliation | Nationality |
|---------------------|-----------------|-------------|----------------|--------|-------------|-------------|
| Towler, Rick | IT Specialist | Jan 25-26 | Jan 25-26 | M | AFSC | USA |
| Furnish, Scott | IT Specialist | Jan 25-26 | Jan 25-26 | M | AFSC | USA |
| DeRobertis, Alex | Fish Biologist | Jan 25-26 | Jan 25-26 | M | AFSC | USA |
| Honkalehto, Taina | Chief Scientist | Jan 25-26 | Jan 25-26 | F | AFSC | USA |
| Jones, Darin | Fish Biologist | Jan 25-26 | Jan 25-26 | M | AFSC | USA |
| Lauffenburger, Nate | Fish Biologist | Jan 25-26 | Jan 25-26 | M | AFSC | USA |
| Wilson, Chris | Fish Biologist | Jan 25-26 | Jan 25-26 | M | AFSC | USA |

G. Administrative

- Points of Contacts: Taina Honkalehto 7600 Sand Point Way NE Seattle WA 98115, 206-526-4237, taina.honkalehto@noaa.gov; Alternate: Chris Wilson (MACE Program manager), 206-526-6435, Chris.Wilson@noaa.gov.
- Diplomatic Clearances
None Required.

3. Licenses and Permits

This project will be conducted under the Washington State Scientific Collection Permit (Permit #15-129). Permit Holder: Steven Porter (206-526-4271; steve.porter@noaa.gov).

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

Day 1

Embark scientists at a location TBD (e.g., Pier 90/91) in Puget Sound

Depart

Swing compass (1 hr)

Transit to Port Madison (1 hr);

anchor (1 hr);

conduct CTD & acoustic system calibration (2-3 hrs),

including noise testing (e.g., 38 kHz)

weigh anchor (1 hr)

Transit back to Pier to disembark for the night

Day 2

Embark scientists

Depart

Transit to deep area of Puget Sound (1 hr).

Trawl test (prioritized) – AWT with Cam-trawl; PNE; Oceo-wich (5 hrs);

Deploy Drop TS via CTD winch (1-2 hrs)

Return to Pier

Debarb scientists. End of Gear Trials.

Embark/debarb details TBD once plan is approved. We request that small boat transfers to Shilshole Marina be an option.

B. Staging and Destaging: To be determined in consultation with ship's personnel.

C. Operations to be conducted:

1. A standard sphere calibration of the centerboard-mounted scientific acoustic systems (18-, 38-, 70-, 120-, and 200-kHz) will be conducted in Port Madison, WA (priority 1, Figure 1). This requires anchoring the vessel at the bow (and stern) and suspending a calibration sphere assembly directly beneath the vessel's centerboard. A CTD cast will be conducted prior to the calibration. During the Feb. 2014 gear trials, the vessel was anchored at the position: 47° 43.358' N, 122° 31.162' W.

2. MACE trawl testing AWT, PNE, Oeco-winch, and deploy DropTS (priority 2)

3. Miscellaneous (requiring no vessel time):

- Test heave correction input to EK60 and processing of data in Echoview.
- Test synchronized operation of ME70 and EK60 (master).
- Test SCS and scientific seawater system, -20 and -80 freezer operations, controlled environment room, calibrate the crane scales, CLAMS dry run.

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.

We request that ship's divers inspect and report the condition of the hull, propeller, centerboard transducers, and ME70 transducer once at some time when the ship is in Newport OR, Seattle WA, or Kodiak AK, prior to departure from Kodiak for the Shumagins survey on 7 Feb. 2016.

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.

E. Applicable Restrictions: No restrictions.

III. Equipment

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

1. Acoustic Equipment

GPS with NEMA 183 to ER60 (2)
50/200 kHz ES60 Bridge sounder
Furuno FE-700 fathometer

2. Trawling Equipment

3rd wire FS-70 net sonar with winch and accessories (2)
Simrad ITI net mensuration system (2)
Furuno CN24 headrope transducer

3. Oceanographic Equipment

Seabird CTD System

4. Biological Sampling Equipment

Fish lab conveyor system
Catch sorting and weighing table

5. Computing equipment

Scientific Computing System

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

1. Acoustic Equipment

- Simrad ER60 system (2)
- Simrad ES18 transducer (2)
- Simrad ES38B transducer (2)
- Simrad ES38DD transducer (in drop TS canister housing)
- Simrad ES70 transducer (1)
- Simrad ES120-7C transducer (2)
- Simrad ES200-7C transducer (3)
- Standard target & suspension assembly
- Simrad ME70 system
- Drop TS system housing and supplies

2. Trawling Equipment

- Aleutian wing trawl w/ 0.5" mesh liner installed (1)
- Poly nor'eastern trawl w/ 0.5" mesh liner installed
- Marinovich trawl, modified, with accessories (1)
- Dandyline (10 fm x 1/2 in.)
- Dandyline (30 fm x 5/8 in.)
- Fishbuster door with accessories (1 pair)
- Spare webbing & twine
- Spare 0.5" mesh cod end liner (1, for AWT)
- Spare hardware
- 500 lb. tom weights (4)
- 250 lb. tom weights (4)
- Pocket (1, installed on AWT)
- CamTrawl system
- Methot net with accessories (1)
- Miscellaneous supplies*

3. Oceanographic Equipment

- Seabird SBE39 (2)
- Seabird SBE 19plus CTD

4. Biological Sampling Equipment

- Dynamometer
- Marel M60 60 kg scale (2)
- Marel M60 6 kg scale (2)
- Glycerin/Thymol*
- Ethyl Alcohol*
- Formalin*
- Misc. biological supplies*

5. Computing equipment

- IBM compatibles w/Windows 7 Op.System*
- Dell PowerEdge MACEBASE Server
- Printers*

Note: * indicates amount not specified.

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 – see Appendix 2

- C. Chemical safety and spill response procedures -- see Appendix 2.
- D. Radioactive Materials

No Radioactive Isotopes are planned for this project

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 conducting a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and shortcomings 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.oma.noaa.gov/fleeteval.html> and provides a "Submit" button at the end of the form. Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared with the ships', specific concerns and praises are followed up on while not divulging the identity of the evaluator.

VIII. Miscellaneous

A. Meals and Berthing

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

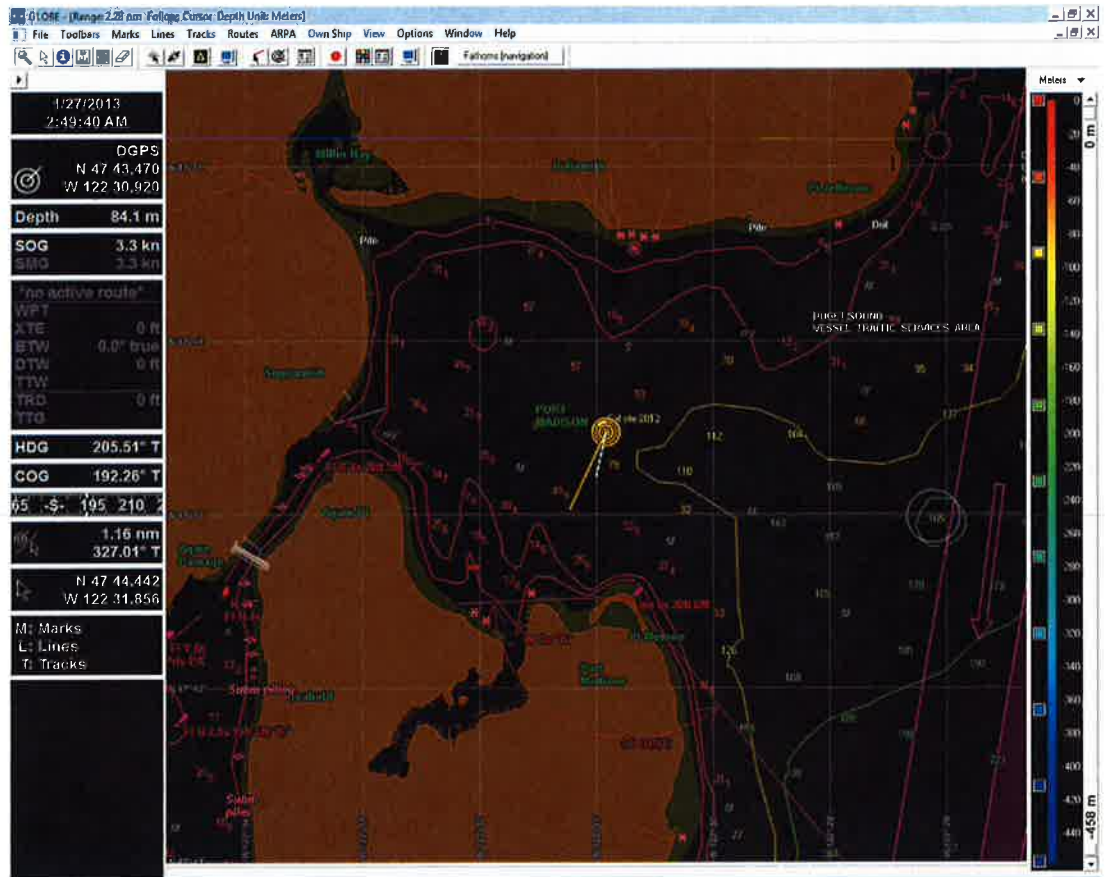
Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

E. Foreign National Guests Access to OMAO Facilities and Platforms

No Foreign nationals will participate in this Puget Sound gear trial project.

VIII. Appendices

Appendix 1. Port Madison calibration area.



Appendix 2.

Hazardous materials sections B (Inventory) and C (Chemical safety spill kit contents and response procedures.)

Inventory (itemized)

Dyson will be loaded on a date TBD prior to gear trials on 1/25/2016 by FOCI and MACE personnel. All chemicals listed will be used for the entire 2016 Dyson field season. Chemical volumes will be reported to the Ops Officer and the designated contact for each survey will be required to report to 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 Oxide Property of PMEL | | 20 liters | Spill Control: W Gloves Paper towels | Not a regulated 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 | 37% | 8 – 1 liter plastic bottles | Gloves Eye Protection Fan-Pads Formalex PolyForm-F Plastic bag | Store in Fish Lab flammable cabinet. |
| Property of Troy Buckley | | | | |
| Glycerol/Thymol Solution | 50 % | 2 – 5 gal. buckets | Gloves Paper towels Kitty litter | Not a regulated chemical/solution. Store in Fish Lab under sink. |
| Property of MACE | | | | |
| Lithium 3v Batteries | | 12 | NA | Store in Survey Office for Spring Mooring Multi-Net use |
| Property of FOCI | | | | |
| Lithium 9v Batteries | | 8 | NA | In SeaBird and Wetlabs instruments |
| Property of PMEL | | | | |
| Lithium AA Batteries | | 96 | NA | In SeaBird instruments and MicroCats Saft LS14500 |
| Property of PMEL | | | | |
| Lithium D Cell Batteries | | 150 | NA | In RCM9 & Peggy Mooring |
| Property of PMEL | | | | |
| Manganese Chloride | 3M | 1 liter | | Not a regulated chemical/solution. Used for oxygen titrations. |
| Property of PMEL | | | | |
| Potassium Iodate | 0.00167 M | 1 liter | Spill Control: PI Gloves Plastic bag | Used for oxygen titrations. |
| Property of PMEL | | | | |
| Sodium Borate Solution | 5-6% | 1 – 5 gal. | Gloves Paper towels Plastic bag | Not a regulated chemical. Working container will be secured on Fish Lab counter. |
| Property of FOCI | | | | |
| Sodium Borate | 100% | 1 – 500 g | Gloves | Not a regulated |

| | | | | |
|-----------------------------|--------|---------|---------------------------------|--------------------------------|
| Powder | | | Wet paper towels Plastic bag | chemical. Stored in Spill Kit. |
| Property of FOCI | | | | |
| Sodium Iodide/NaOH Solution | 0.11M | 1 liter | Spill Control: B | Used for oxygen titrations. |
| Property of PMEL | | | | |
| Sodium Thiosulfate | 0.11 M | 1 liter | Spill Control: ST | Used for oxygen titrations. |
| Property of PMEL | | | | |
| Sulfuric Acid | 5 M | 1 liter | Spill Control: A | Used for oxygen titrations. |
| Property of PMEL | | | | |
| | | | | |

Chemical safety and spill response procedures

| | | | | |
|--------------------------------|-------------------------------|---|--|--|
| | | | | |
| | | | | |
| | | | | |
| FOCI 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 cleanup/Fan Pads | N/A | Bags may be packed full and sealed. |

| PMEL Acid- Base Spill Kit Contents | Amount | Use | Total Spill Volume Controllable | Notes |
|---|---------------|---|---|--------------|
| Spilfyter Acid Neutralizer | 1 box | Clean up acid spill—H ₂ SO ₄ | 1.5l of 5M Sulfuric Acid 5.57l of 10% (1N) HCl | |
| Spilfyter Base Neutralizer | 1 box | Clean up base spill--NaOH | 2.0l of Sodium Hydroxide | |
| Vinyl Gloves | 1 box | Protect hands during cleanup | N/A | |
| Foxtail/Dustpan | 1 each | Pick up absorbed neutralizer | N/A | |
| Rubber apron | 1 each | Protect during cleanup | N/A | |
| Paper Towels | 1 roll | Absorb liquids | N/A | |
| Goggles | 2 pair | Protect eyes | N/A | |
| Chemical absorbent | 1 liter | Absorb liquids | 0.5l | |
| Plastic Bags | 2 each | Contain used absorbents/waste | N/A | |

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).

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

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° c to prevent polymerization of paraformaldehyde.

First Aid

- * If swallowed, give large amounts of drinking water and induce vomiting.
- * 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.

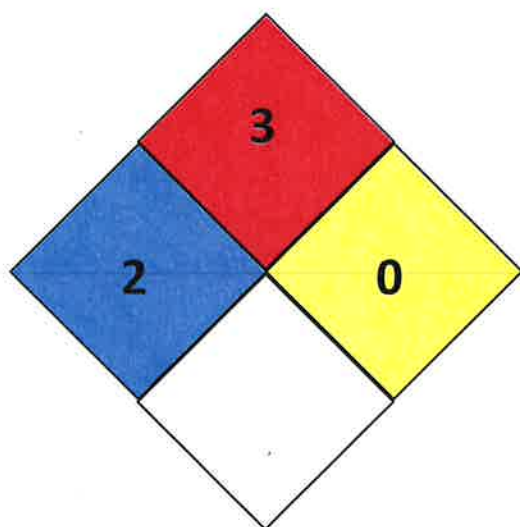
*Fan Pads may be used to absorb small spills alone but these pads work best when used with Formalex to immediately control the vapor layer.

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

| | |
|---|--|
| #1 Process | General use in the field or on research vessels for otolith preservation |
| #2 Hazardous Chemicals/Class of Hazardous Chemicals | 100% Glycerin may cause eye or skin irritation |

| | |
|--|---|
| <p>#3 Personal Protective Equipment/ Decontamination</p> | <p>Gloves, splash goggles, lab coat or rain gear.</p> <p>For small spills dilute with water and mop up.</p> <p>For larger spills, absorb with inert material.</p> <p>In case of skin/eye contact: flush with running water for at least 15 min.</p> <p>In case of ingestion: Do not induce vomiting.</p> <p>In case of inhalation: move to fresh air.</p> |
| <p>#4 Engineering/ Ventilation Controls</p> | <p>Provide exhaust ventilation to keep airborne concentrations of vapors low.</p> |
| <p>#5 Special Handling Procedures and Storage Requirements</p> | <p>Store at room temp in tightly closed container.</p> |
| <p>#6 Waste Disposal</p> | <p>Dispose of waste and residues in accordance with local authority requirements. Incinerate. When released into water, this material is expected to readily biodegrade and is not expected to significantly bioaccumulate.</p> |