



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

FINAL Project Instructions

Date Submitted: December 17, 2015

Platform: NOAA Ship *Oscar Dyson*

Project Number: DY-16-04 (OMAO)

Project Title: Acoustic-trawl survey of Shelikof Strait and Marmot Bay

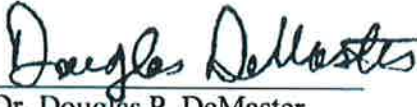
Project Dates: 13-24 March, 2016

Prepared by: 
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Dated: 12/16/15

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Dated: 12/18/15

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Dated: 12/18/15

Approved by: _____
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Commanding Officer
Marine Operations Center – Pacific

Dated: 04FEB2016



I. Overview

- A. Brief Summary and Project Period: Acoustic-trawl survey, ca. 13-24 March 2016
- B. Days at Sea (DAS): Of the 12 DAS scheduled for this project, 0 DAS are funded by an OMAO allocation, 12 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 High Operational Tempo.
- C. Operating Area: Shelikof Strait, Marmot Bay (see Appendix 1).
- D. Summary of Objectives: (1) collect acoustic-trawl (AT) data necessary to determine the distribution, biomass, and biological composition of walleye pollock; (2) collect target strength data using hull-mounted transducers for use in scaling acoustic data to estimates of absolute abundance; (3) calibrate the EK60 acoustic echosounder system using standard sphere calibration techniques; (4) collect physical oceanographic data (temperature and salinity profiles) at selected sites, and continuously collect sea surface temperature and salinity data; (5) conduct trawl hauls (AWT, PNE, Marinovich) to ground truth multi-frequency echo integration data collection.
- E. Participating Institutions: Alaska Fisheries Science Center, Seattle, WA
- F. Personnel/Science Party:

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Strasburger, Wesley	Fish Biologist	Mar 13	Mar 24	Male	AFSC	USA
Dougherty, Annette	Fish Biologist	Mar 13	Mar 24	Female	AFSC	USA
Furnish, Scott	IT Specialist	Feb 29	Mar 25	Male	AFSC	USA
Jones, Darin	Fish Biologist	Feb 29	Mar 25	Male	AFSC	USA
Levine, Robert	Fish Biologist	Mar 13	Mar 24	Male	AFSC	USA
Ressler, Patrick	Chief Scientist	Mar 13	Mar 24	Male	AFSC	USA
Phillips, Matthew	Fish Biologist	Feb 29	Mar 24	Male	AFSC-AIS	USA
Sawyer, Kim	Fish Biologist	Mar 13	Mar 24	Female	AFSC-UW	USA

G. Administrative

1. Points of Contacts: Patrick Ressler (Chief Scientist), 7600 Sand Point Way NE, Seattle, WA. 98115, 206-526-4237, patrick.ressler@noaa.gov; Alternate: Chris Wilson (MACE Program manager), 206-526-6435, Chris.Wilson@noaa.gov

2. Diplomatic Clearances

None Required.

3. Licenses and Permits

This project will be conducted under a Scientific Research Permit issued by the Alaska Regional Office, National Marine Fisheries Service (pending), and a Fish Resource Permit issued by the State of Alaska (pending). The Chief Scientist will be included as an authorized participant on both permits.

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:

Mar 13	Touch and go to exchange scientists in Kodiak, AK (exact date/time TBD)
Mar 13	Depart Kodiak
Mar 14-22	AT surveys in Shelikof Strait, Marmot Bay
Mar 23	Conduct sphere calibration in location TBD
Mar 24	Arrive Kodiak; project end

B. Staging and Destaging: Scientific gear will be loaded and mounted onto the vessel in Seattle prior to departure for the gear trials in Puget Sound on Jan. 25-26, 2016 or in Kodiak, AK prior to DY1602. At end of survey, de-stage some scientific gear and trawls for storage in Kodiak or shipment to Seattle. Some gear to be used in summer (DY1608) to remain aboard including 1) AWT on net reel and 2) some scientific gear in lab spaces, out of the way of subsequent projects.

C. Operations to be Conducted:

1. Underway Operations:

1A. Survey operations will be conducted 24-hours per day. Acoustic data will be collected continuously along a series of parallel transects with a Simrad EK60 echo integration system incorporating five centerboard-mounted transducers (18-, 38-, 70-, 120-, and 200-kHz) and an ME-70 multibeam echosounder. Operating the following equipment will degrade the quality of the acoustic data:

- Other echosounders or acoustic equipment including the Doppler speed log and bridge Furuno depth sounder

- Bow thruster

It is requested that this equipment not be operated unless necessary to ensure the safe navigation of the vessel or at the discretion of the command. If the equipment is operated, these times will be noted in the ships SCS/electronic MOA.

Parallel transect spacing will be as follows: 7.5 nm in Shelikof Strait, and either 1.0 or 2.0 nm in Marmot Bay (Appendix A). Trackline start and end points will be provided in an electronic file to the Navigation Officer. Because the start point of the first trackline of each survey is selected randomly, tracklines will not necessarily match those from prior surveys. The ship is expected to maintain a shaft speed of no less than 105 RPM (averaging 11 to 12 knots) in favorable conditions (as weather and safe operation of the vessel allow).

Acoustic trawl survey operations require that an Aleutian wing trawl (AWT) midwater and poly Nor'eastern (PNE) bottom trawl with roller gear be loaded onto the net reels. A spare AWT and PNE will serve as backups. Codend liner mesh size will be 0.5" for both the AWT and the PNE. Fishbuster doors will be used with all trawls. Small fishes or zooplankton may be sampled using fine-mesh nets (e.g. Marinovich net). We request that the Chief Boatswain keep a trawl gear logbook to record any modifications made to trawl gear during the project.

Trawl hauls will be made to identify echo sign and provide pollock samples and other biological data. Haul duration will be kept to the minimum necessary to ensure an adequate sample. We anticipate that on average 2-3 tows will be conducted during a 24-hour period. Biological data collected from each haul will include species composition, sex composition, length frequencies, whole fish and ovary weights, maturities, and otoliths. Walleye pollock tissue samples will be collected from selected hauls for aging and fecundity studies.

A CamTrawl camera system will be deployed in the intermediate of the midwater trawl to optically sample fish. Prior to being loaded, the AWT will have been modified with an opening in the starboard side panel allowing the attachment of the camera. When the CamTrawl is not attached, the opening will be sewn shut to prevent fish escapement.

The Scientific Computing System (SCS) will run continuously throughout the project and will be configured to log data from various sensors at a sampling rate of 1 Hz.

When all trawl operations have been completed for the survey, sufficient time should be allotted for streaming of all trawl nets used during the survey. Trawl nets should be streamed behind the vessel with the codend open to ensure nets are clean and free of fish and other debris for storage. Nets should be visually

inspected as they are brought in and any debris still entangled in webbing should be removed.

1B. Target strength data collection will occur on an opportunistic basis. These data are used to validate the relationship between fish length and target strength. Data will be collected when certain conditions (i.e., low fish densities, single species) are encountered. Collecting target strength data typically involves repeated passes over an aggregation of fish at a vessel speed of less than 3 knots. One or two trawl hauls are made to provide species composition and biological data. When calm seas are encountered along with the above-mentioned conditions, a second approach to collecting target strength data may be attempted: with the vessel stopped, a “drop-TS” assembly containing a 38-kHz transducer will be lowered to a depth just above the fish sign.

1C. A standard sphere calibration of the centerboard-mounted scientific acoustic systems (18-, 38-, 70-, 120-, and 200-kHz) will be conducted at the end of the project in a location to be determined. This requires anchoring the vessel at the bow and stern or holding position using the ship's dynamic positioning system, and suspending a calibration sphere assembly directly beneath the vessel's centerboard. Which method to use for stabilizing the vessel will be discussed between the chief scientist and the commanding officer and decided after evaluating conditions at the calibration site. A CTD cast will be conducted prior to the calibration.

1D. Conductivity-temperature-depth (CTD) data may be collected with a Seabird SeaCat system at trawl locations and at other selected locations. Temperature and depth profile data will be collected with a Seabird SBE39 micro-bathythermograph attached to the trawl headrope. Sea surface temperature and salinity will be collected continuously throughout the Project and logged with the vessel's Scientific Collection System (SCS).

1E. If single-species aggregations are encountered (e.g. rockfish, euphausiid, capelin), opportunistic trawl hauls (AWT and Marinovich) may be conducted to ground truth multi-frequency echo integration data collection.

D. Dive Plan

It may be requested to deploy divers during the survey if it is suspected that the propeller has been fouled.

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:

Conditions which preclude normal operations include: poor weather conditions, equipment failure, safety concerns, and other unforeseen circumstances. The Chief Scientist will confer with the commanding officer to mitigate the impacts of these circumstances on the project goals.

III. Equipment

A. Equipment and Capabilities Provided by the ship (number is 1 unless specified)

1. Acoustic Equipment

GPS with NEMA 183 to EK60 (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 SBE 911plus 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 (number is 1 unless specified)

1. Acoustic Equipment

Simrad EK60 system (2)

Simrad ES18 transducer (2)

Simrad ES38B transducer (2)

Simrad ES38DD transducer (1)

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

Note that some of this equipment is ship's equipment and some is supplied by the scientists, but the scientific party will operate and troubleshoot the equipment.

2. Trawling Equipment

Aleutian wing trawl (AWT) w/accessories (e.g., 0.5" mesh liners) (2)

- Poly nor'eastern (PNE) trawl w/accessories (e.g., 0.5" mesh liners) (2)
- Marinovich trawl w/accessories (1)
- Dandylines (bridles) (30 fm x 5/8 in.) for PNE, 83-112, mod Marinovich
- Dandylines (bridles) (45 fm x 5/8 in.) for AWT
- Fishbuster door with accessories (2 sets) – set with sensor pockets to be used as primary set
- Spare webbing & twine
- Spare 0.5" mesh cod end liners (2)
- Spare hardware
- 500 lb. tom weights (4)
- 250 lb. tom weights (4)
- CamTrawl system
- 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)
 - Fish baskets (30)
 - 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

Please see Appendix 2.

C. Chemical safety and spill response procedures

Please see Appendix 2.

D. Radioactive Materials

No Radioactive Isotopes are planned for this project

E. Other

N/A.

V. Additional Projects

A. Supplementary ("Piggyback") Projects

Secondary objectives of the project include scientific research requested by AFSC and other investigators. Anticipated projects include specimen collections from standard trawl hauls such as ovary collection from pre-spawning walleye pollock and rockfish, and a seabird observer conducting visual census for seabirds from the bridge with binoculars during daylight hours. Detailed descriptions of additional ancillary projects will be provided as soon as received. Significant changes to these projects that affect vessel operations will be communicated as soon as they are known.

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

1. An electronic Marine Operations Abstract (MOA) will be created to log all operations via daily transfers of position data from the ship's SCS system to MACE. An appropriate logging interval will be chosen for automated track position data. Specific events (and frequency) to be recorded will be decided at the beginning of the project. Globe software will be available to log operations data as a backup. All times should be recorded as Greenwich Mean Time (GMT)
2. The data sets requested by the Chief Scientist from the ship will include the following: electronic files (MOA) from the SCS of all operations logged during the project, and backup media (e.g., DVDs) with all sensor data logged to the Scientific Computer System (SCS).
3. The Chief Scientist will represent the AFSC lab director for data disposition. A single copy of all data gathered by the vessel will be delivered to the Chief Scientist, who in turn will be responsible for distributing data to other investigators desiring copies.

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, per OMAO Procedure 1201-08, NOAA Ship Vessel Familiarization, 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.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, Revised 02 JAN 2012)) 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.

G. 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 must forward the information described below to 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, follow marine mammal procedure above but also 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. Immediately notify bridge if incidental takes occur.

2. Immediately notify bridge if incidental takes occur.
3. 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 small live injured/uninjured marine mammals, priority should be to release the animal before notifying stranding response networks. If a large whale is entangled by the gear, contact entanglement response network before taking further action (Entanglement Response Network Number, Alaska Region: 1-877-925-7773).
4. 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.
5. 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) 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.

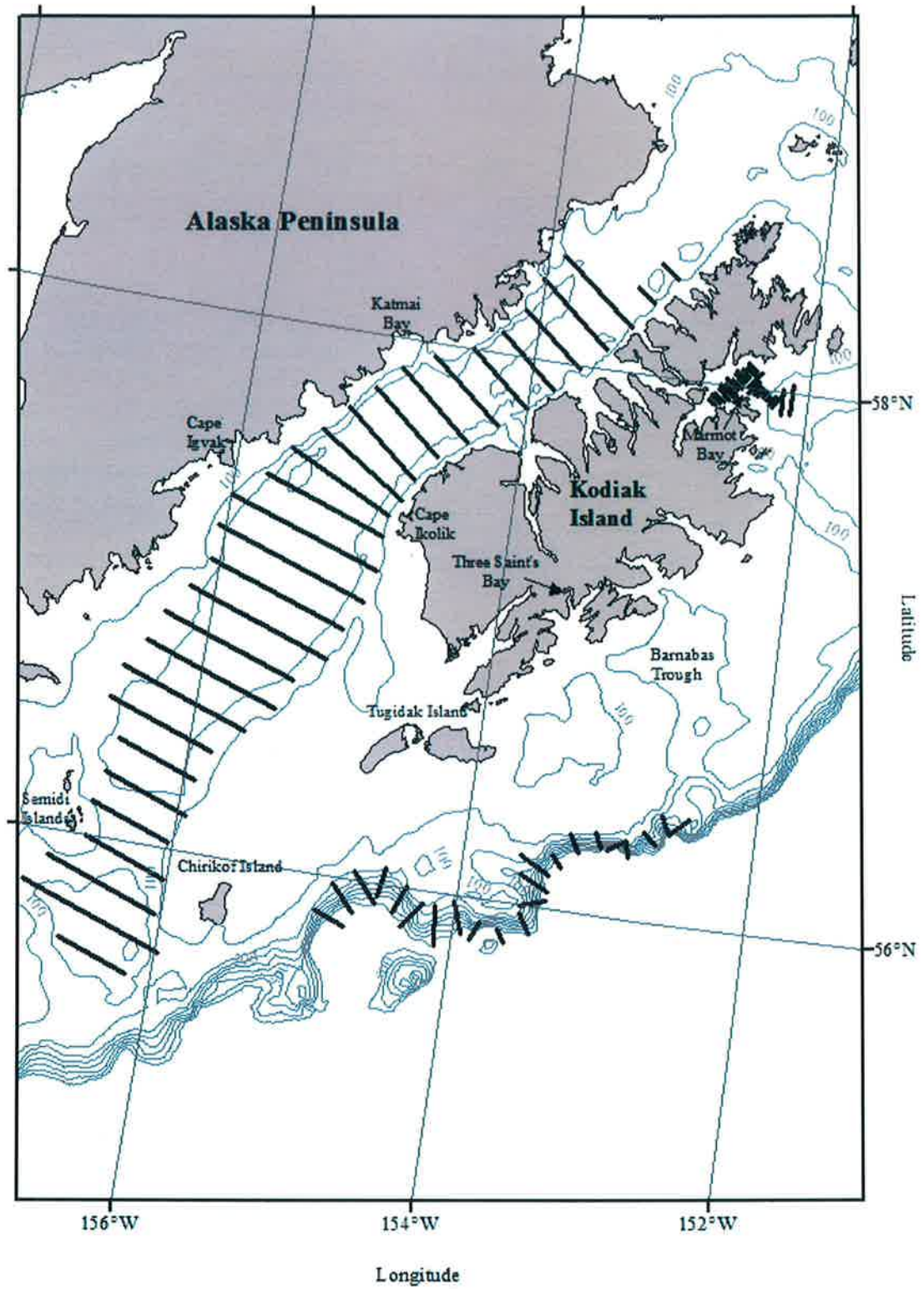
ENTANGLEMENT RESPONSE NETWORK NUMBER

Alaska Region: 1-877-925-7773

VIII. Appendices

Appendix 1.

Proposed survey areas and tracklines:



Appendix 2.

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

Inventory (itemized)

Dyson loaded 1/28/2016 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	37%	5 – 5 gal. barrels	Gloves Eye Protection	Store in Fish Lab flammable cabinets. Will need to place 2-3

Property of FOCI			Fan-Pads Formalex PolyForm-F Plastic bags	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%	16 – 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.
Hydrochloric Acid		1 – 500 ml	Gloves 1-1 Spilfyter Acid	Stored in over- pack bucket.

Property of PMEL			Neutralizer	
Lithium 3v Batteries		9	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	Used for oxygen titrations.

Property of PMEL			Plastic bag	
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 Thiosulfate Property of PMEL	0.11 M	1 liter	Spill Control: ST	Used for oxygen titrations.
Sulfuric Acid Property of PMEL	5 M	1 liter	Spill Control: A	Used for oxygen titrations.

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.

Tyvek 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)

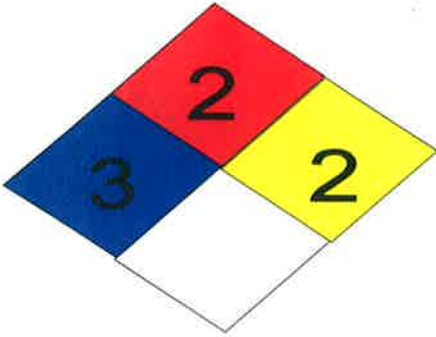
Chemical Hygiene Plan

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.

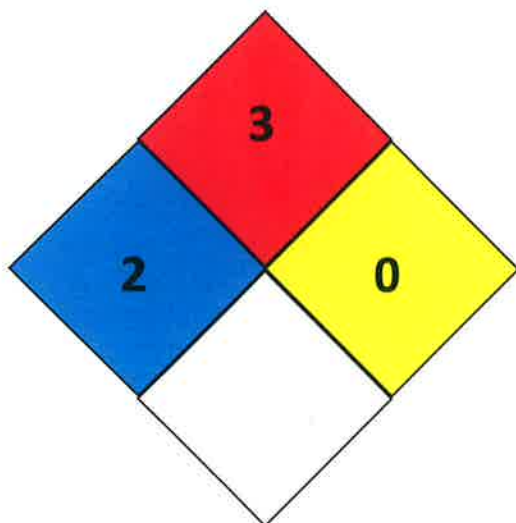
*Fan Pads may be used to absorb small spills alone but these pads work best when used with Formalex to immediately control the vapor layer.

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

* 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 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

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.

**ALASKA FISHERIES SCIENCE CENTER STANDARD OPERATING PROCEDURES
 RACE/MACE FOR HAZARDOUS CHEMICALS
 Dec 2013**



Glycerin (50%)/Thymol(0.3%)
 solution

#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
#3 Personal Protective Equipment/ Decontamination	Gloves, splash goggles, lab coat or rain gear. For small spills dilute with water and mop up. For larger spills, absorb with inert material. In case of skin/eye contact: flush with running water for at least 15 min. In case of ingestion: Do not induce vomiting. In case of inhalation: move to fresh air.
#4 Engineering/ Ventilation Controls	Provide exhaust ventilation to keep airborne concentrations of vapors low.
#5 Special Handling Procedures and Storage Requirements	Store at room temp in tightly closed container.
#6 Waste Disposal	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.

