



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

Project Instructions

Date Submitted: February 17, 2017

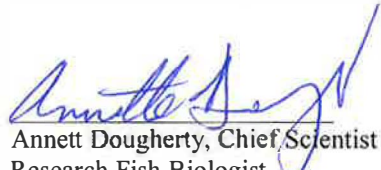
Platform: NOAA Ship *Oscar Dyson*

Project Number: DY-17-05 (AFSC)

Project Title: Eco-FOCI Spring Ichthyoplankton Survey

Project Dates: May 11 – June 2, 2017

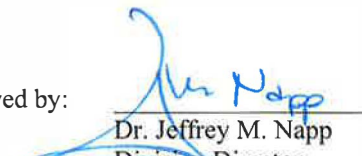
Prepared by:


Annett Dougherty, Chief Scientist
Research Fish Biologist
AFSC/RACE Division

Dated:

2/17/2017


Approved by:


Dr. Jeffrey M. Napp
Division Director
AFSC/RACE Division

Dated:

2/17/2017

Approved


Douglas P. DeMaster,
Science and Research Director
Alaska Fisheries Science Center

Dated:

2/17/2017

Approved by:

CDR Brian Parker, NOAA
Commanding Officer
Marine Operations Center – Pacific

Dated: April 27, 2017



I. Overview

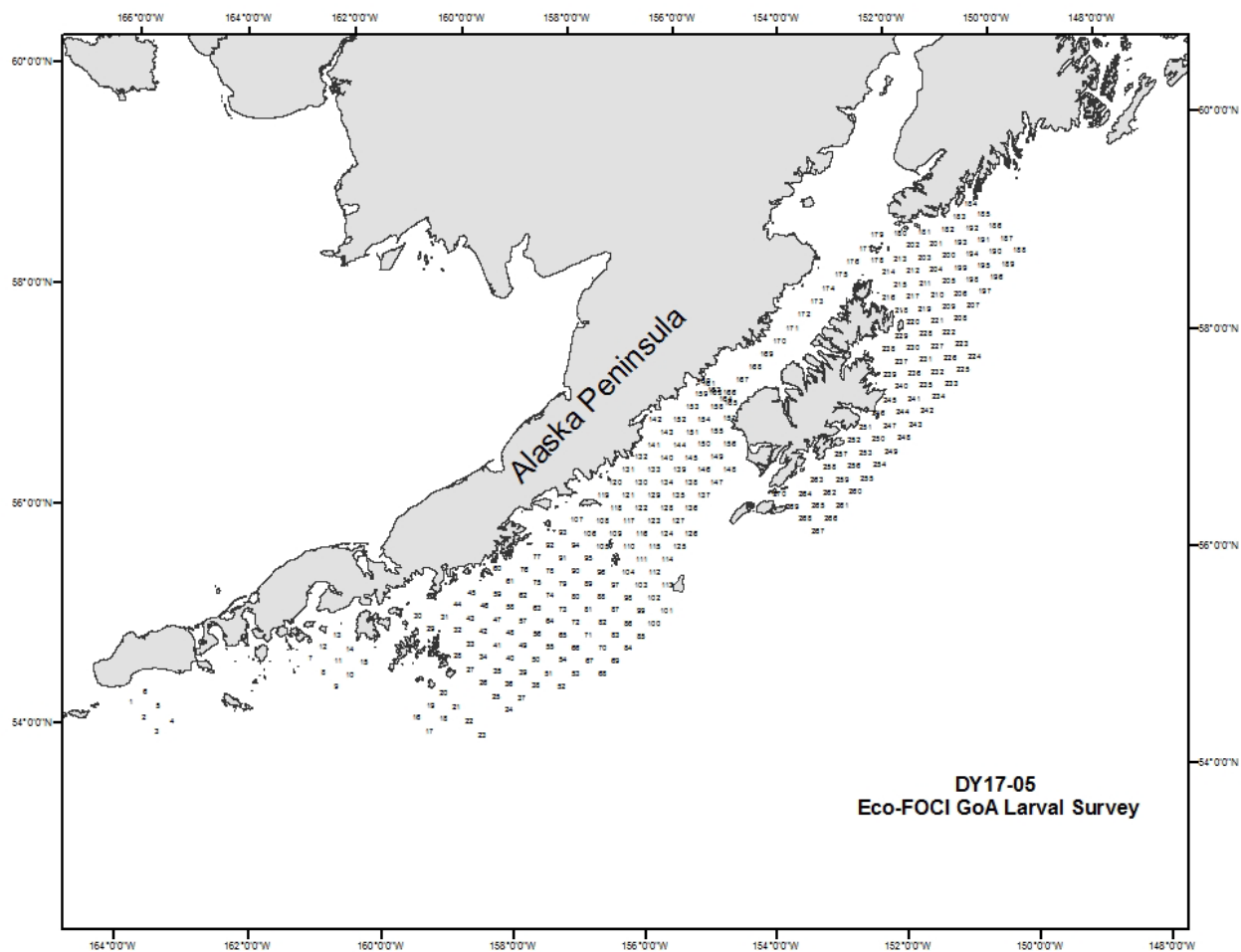
A. Brief Summary and Project Period

EcoFOCI Spring Ichthyoplankton survey in the western Gulf of Alaska, May 11- June 2, 2017.

B. Days at Sea (DAS)

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 – western 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 Unimak Pass and Shelikof Strait so that we may estimate the abundance, transport, and other 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 29-year time series of environmental and biological conditions in Shelikof Strait. Sampling will begin near Unimak Pass and continue up through Shelikof Strait along the Kenai Peninsula, and then along the east side of Kodiak Island as time permits. In addition to this sampling, stations have been selected from the main grid for monitoring nutrients, salts, and oxygen for Pacific Marine and Environmental Laboratory (PMEL) scientists. A total of 2 satellite tracked drifters provided by PMEL may be released in areas of high larval walleye pollock abundance.

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.	May 9	June 2	F	AFSC/FOCI	USA
Kimmel, Dave	Scientist	May 9	June 2	M	AFSC/FOCI	USA
Lamb, Jesse	Scientist	May 9	June 2	M	AFSC/FOCI	USA
Spear, Adam	Scientist	May 9	June 2	M	AFSC/FOCI	USA
Deary, Alison	Scientist	May 9	June 2	F	AFSC/FOCI	USA

G. Administrative

1. Points of Contact:

Annette Dougherty (Chief Scientist)
NOAA-Fisheries, Alaska Fisheries Science Center
7600 Sand Point Way NE
Seattle, WA 98115
Ph: 206-536-6523, Annette.Dougherty@noaa.gov

Janet Duffy-Anderson, EcoFOCI Supervisor
7600 SandPoint Way NE
Seattle, WA 98115
Ph: 206-526-6465, Janet Duffy-Anderson@noaa.gov

LT Aras Zygas, Operations Officer, NOAA Ship *Oscar Dyson*
2002 NE Marine Science Dr.
Newport, OR 97365
Ph: (541) 867-8911 (Ship's VOIP), OPS.Oscar.Dyson@noaa.gov

2. Diplomatic Clearances – N/A

3. Licenses and Permits

This project will be conducted under the Scientific Research Permit (U.S.) #2017-B1 issued by the U.S. on January 4, 2017 effective February 1 – October 10, 2017 to AFSC research personnel and NOAA Ship *Oscar Dyson*. In addition, the State of Alaska Fish Resource Permit CF-16-01(1) has been granted and is effective January 1, 2016 to December 31, 2018.

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 11, 2017 Dutch Harbor, AK

Arrival: June 2, 2017 Kodiak, AK

B. Staging and Destaging:

Loading for this survey will be conducted by the previous survey personnel (DY-17-04) in Kodiak, AK. The scientific party will arrive in Dutch Harbor at least two days early to prepare for the survey. We will require dedicated use of the chemistry lab, hydrographic, wet, dry, and fish processing lab for sample and equipment preparation and request as much counter and cabinet space as possible. FOCI equipment and samples will be off-loaded in Kodiak, AK on June 2, 2017 and we request ship's assistance with unloading including the use of the ship's crane and a crane operator. We request storage space (approx. 10'x15', no HAZMAT to be stored) 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.

2. Station Operations

An ichthyoplankton survey will be conducted along the grid from the Gulf side of Unimak Pass to the Shumagin Islands, through Shelikof Strait, to the Kenai Peninsula

and along NE Kodiak. A total of 270 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 California Cooperative Oceanic Fisheries Investigation (CalCOFI) Vertical Egg Tow (CalVET) (SOI 3.2.6) to examine larval walleye pollock condition if larvae ≤ 8 mm are found. If larvae are collected for the pollock condition study, a CalVET tow (with 53 μ m mesh) 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 Commanding Officer (CO). The CalVET is a vertical tow and will be deployed and retrieved at a rate of 45 - 60 m/min. The FastCat will be mounted above the CalVET.

A total of 40 Neuston tows will be conducted along the shelf break and other known areas of abundance to acquire sablefish larvae for special studies. The net mesh will be 505 μ m and fished at a ship speed of 1.5 to 2.0 knots. The ship will be asked to standby for a rough count of sablefish larvae to determine if another Neuston tow will be conducted at that station. Each Neuston tow will be conducted for 10 minutes. The first Neuston sample conducted at each station will be a quantitative sample and preserved in 1.5% formaldehyde. The second Neuston sample will be sorted for larvae and preserved in 100% ethanol.

The samples collected from the 20-cm (alternate lines only) and 60-cm bongos will be processed in the following manner. Net 1 from 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. Additional CTD profiles without firing the Niskin bottles may be requested throughout the survey for calibration purposes.

Marks to the Marine Operations Abstract (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. For the CTD and the CalVET, the mark will be at-depth. The processing of FastCat files and CTD files will be the responsibility of the scientific personnel on watch.

Deployment of two 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

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program (<http://www.ndc.noaa.gov/dr.html>) and require the approval of the ship's Commanding Officer.

Dives are not planned for this project.

E. Applicable Restrictions

Conditions which preclude normal operations: poor weather and equipment failure. Poor weather may be waited out in a sheltered area until operations may be resumed and modifications may be made in the sampling grid. Sheltered areas are of scientific interest; therefore, while waiting out poor weather, the Chief Scientist may request sampling operations to assess local physical conditions, zooplankton, and fish populations. Equipment failure 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 DY17-05 which will be retrieved for DY17-07. Access will be under supervision of Dyson personnel.

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

- * Sea-Bird Electronics' SBE FastCat and SeaCat system,
- * Fluorometer, 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,
- * Chlorophyll and nutrient sampling equipment,
- * Desktop computers (2)
- * Cruise Operations Database (COD) software
- * Electronic and COD paper forms
- * 2 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 (itemized)

NOAA vessel *Oscar Dyson* was loaded 1/19/2017 by FOCI and MACE personnel. All chemicals listed will be used for the entire 2017 *Dyson* field season. Chemical volumes will be reported to the Operations 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/E MA personnel)	Notes
DNA Away Property of FOCI	100%	1 – 250 ml	Gloves Paper towels Plastic bag	Not a regulated chemical.
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.

Common Name	Concentration	Amount	Spill Response (all FOCI/MACE/PMEL/E MA personnel)	Notes
Formaldehyde Property of FOCI	37%	8 – 2.5 gal. barrels	Gloves Eye Protection Fan-Pads Formalex PolyForm-F Plastic bags	Store in Fish Lab flammable cabinets. Will need to place 4 in each cabinet.
Glycerol/Thymol Solution Property of MACE	50 %	2 – 5 gal., bucket	Gloves Paper towels Kitty litter	Not a regulated chemical/solution. Store in Fish Lab under sink.
Lithium 9v Batteries Property of PMEL		8	NA	In SeaBird and Wetlabs 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 DD Cell Batteries Property of PMEL		2 x 12 each	NA	In Argo Floats, stored on aft-deck, outside
Manganese Chloride Property of PMEL	3M	1 liter	Gloves Kitty Litter Plastic bag	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.

Common Name	Concentration	Amount	Spill Response (all FOCI/MACE/PMEL/EMA personnel)	Notes
Sodium Iodide/NaOH Solution Property of PMEL	4 M NaI, 8 M NaOH	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.

FOCI Spill Kit Contents	Amount	Use	Total Spill Volume Controllable	Notes
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_2SO_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 (kitty litter)	1 liter	Absorb liquids	0.5l	
Plastic Bags	2 each	Contain used absorbents/waste	N/A	

C. Chemical Safety and Spill Response Procedures

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 needed.

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)

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

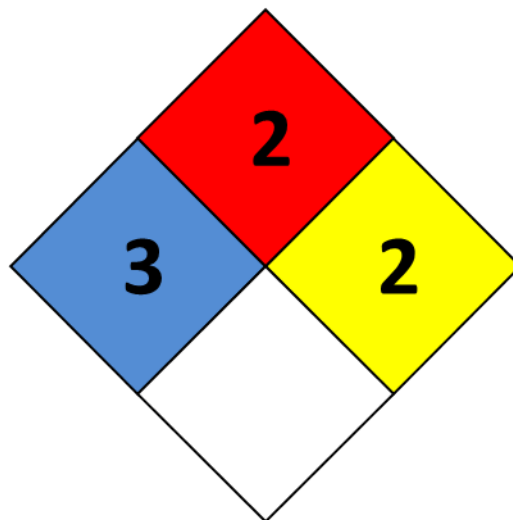
Chemical Name: 37% Formaldehyde

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

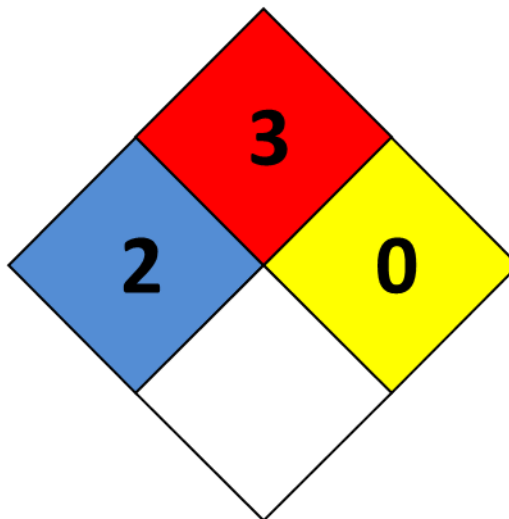
Chemical Name: 100% Alcohol

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.

D. Radioactive Materials

No Radioactive Isotopes are planned for this project.

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.

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 <https://sites.google.com/a/noaa.gov/omao-intranet-dev/operations/marine/customer-satisfaction-survey> and provides a "Submit" button at the end of the form. It is also located at https://docs.google.com/a/noaa.gov/forms/d/1a5hCCkgIwaSII4DmrHPudAehQ9HqhRqY3J_FXqbJp9g/viewform. 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](mailto: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 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 Jeff Napp (jeff.napp@noaa.gov; 526-4148). 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. 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 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.
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.
4. 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.
5. 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

IX. Appendices

A. Station List (order and number of operations may change).

<u>Station</u>	<u>Grid ID</u>	<u>Latitude(N)</u>	<u>Longitude (W)</u>
1	gf105	54.2879	164.2684
2	gh105	54.1731	164.0241
3	gj105	54.0583	163.7806
4	gj107	54.1793	163.5848
5	gh107	54.2941	163.8277
6	gf107	54.4089	164.0715
7	gn123	54.9174	161.5226
8	gp123	54.8026	161.2865
9	gr123	54.6878	161.0513

<u>Station</u>	<u>Grid ID</u>	<u>Latitude(N)</u>	<u>Longitude (W)</u>
10	gr125	54.8088	160.8524
11	gp125	54.9235	161.0871
12	gn125	55.0383	161.3226
13	gn127	55.1593	161.1219
14	gp127	55.0445	160.8870
15	gr127	54.9297	160.6529
16	gz127	54.4706	159.7241
17	hb127	54.3547	159.4994
18	hb129	54.4768	159.3004
19	gz129	54.5915	159.5263
20	gz131	54.7125	159.3279
21	hb131	54.5985	159.1014
22	hd131	54.4786	158.8838
23	hf131	54.3585	158.6662
24	hf135	54.6022	158.2681
25	hd135	54.7216	158.4858
26	hb135	54.8396	158.7012
27	gz135	54.9544	158.9293
28	gx135	55.0692	159.1581
29	gt135	55.2988	159.6180
30	gr135	55.4135	159.8490
31	gt137	55.4197	159.4160
32	gv137	55.3049	159.1863
33	gx137	55.1901	158.9574
34	gz137	55.0754	158.7291
35	hb137	54.9606	158.5016
36	hd137	54.8426	158.2867
37	hf137	54.7235	158.0691
38	hf139	54.8444	157.8701
39	hd139	54.9631	158.0877
40	hb139	55.0815	158.3014
41	gz139	55.1963	158.5283
42	gx139	55.3111	158.7560
43	gv139	55.4259	158.9844
44	gt139	55.5407	159.2135
45	gt141	55.6616	159.0103
46	gv141	55.5468	158.7818
47	gx141	55.4321	158.5540
48	gz141	55.3173	158.3269
49	hb141	55.2025	158.1006
50	hd141	55.0834	157.8887

<u>Station</u>	<u>Grid ID</u>	<u>Latitude(N)</u>	<u>Longitude (W)</u>
51	hf141	54.9650	157.6711
52	hh141	54.8463	157.4535
53	hh143	54.9791	157.2260
54	hf143	55.0939	157.4497
55	hd143	55.2087	157.6740
56	hb143	55.3234	157.8991
57	gz143	55.4382	158.1249
58	gx143	55.5530	158.3513
59	gv143	55.6678	158.5786
60	gt145	55.9035	158.6021
61	gv145	55.7888	158.3747
62	gx145	55.6740	158.1481
63	gz145	55.5592	157.9222
64	hb145	55.4444	157.6971
65	hd145	55.3296	157.4726
66	hf145	55.2148	157.2488
67	hh145	55.1000	157.0257
68	hj145	54.9853	156.8033
69	hj147	55.1062	156.6030
70	hh147	55.2210	156.8248
71	hf147	55.3358	157.0473
72	hd147	55.4506	157.2705
73	hb147	55.5654	157.4944
74	gz147	55.6801	157.7189
75	gx147	55.7949	157.9442
76	gv147	55.9097	158.1702
77	gv149	56.0307	157.9651
78	gx149	55.9159	157.7397
79	gz149	55.8011	157.5150
80	hb149	55.6863	157.2911
81	hd149	55.5715	157.0678
82	hf149	55.4567	156.8452
83	hh149	55.3420	156.6232
84	hj149	55.2272	156.4020
85	hj151	55.3481	156.2004
86	hh151	55.4629	156.4211
87	hf151	55.5777	156.6424
88	hd151	55.6925	156.8644
89	hb151	55.8073	157.0871
90	gz151	55.9221	157.3105
91	gx151	56.0368	157.5346

<u>Station</u>	<u>Grid ID</u>	<u>Latitude(N)</u>	<u>Longitude (W)</u>
92	gv151	56.1516	157.7594
93	gv153	56.2726	157.5530
94	gx153	56.1578	157.3288
95	gz153	56.0430	157.1053
96	hb153	55.9282	156.8826
97	hd153	55.8134	156.6605
98	hf153	55.6987	156.4390
99	hh153	55.5839	156.2183
100	hj153	55.4691	155.9982
101	hj155	55.5900	155.7954
102	hh155	55.7048	156.0149
103	hf155	55.8196	156.2350
104	hd155	55.9344	156.4559
105	gz155	56.1640	156.8995
106	gx155	56.2787	157.1224
107	gv155	56.3935	157.3459
108	gx157	56.3997	156.9153
109	gz157	56.2849	156.6930
110	hb157	56.1701	156.4715
111	hd157	56.0554	156.2506
112	hf157	55.9406	156.0304
113	hh157	55.8258	155.8109
114	hf159	56.0615	155.8251
115	hd159	56.1763	156.0447
116	hb159	56.2911	156.2650
117	gz159	56.4059	156.4859
118	gx159	56.5207	156.7075
119	gv159	56.6354	156.9298
120	gv161	56.7564	156.7208
121	gx161	56.6416	156.4991
122	gz161	56.5268	156.2781
123	hb161	56.4120	156.0578
124	hd161	56.2973	155.8382
125	hf161	56.1825	155.6192
126	hf163	56.3034	155.4126
127	hd163	56.4182	155.6310
128	hb163	56.5330	155.8500
129	gz163	56.6478	156.0697
130	gx163	56.7626	156.2900
131	gv163	56.8774	156.5111
132	gv165	56.9983	156.3007

<u>Station</u>	<u>Grid ID</u>	<u>Latitude(N)</u>	<u>Longitude (W)</u>
133	gx165	56.8835	156.0803
134	gz165	56.7687	155.8606
135	hb165	56.6540	155.6415
136	hd165	56.5392	155.4231
137	hd167	56.6601	155.2146
138	hb167	56.7749	155.4324
139	gz167	56.8897	155.6508
140	gx167	57.0045	155.8698
141	gv167	57.1193	156.0896
142	gt169	57.3550	156.0833
143	gv169	57.2402	155.8778
144	gx169	57.1254	155.6587
145	gz169	57.0107	155.4403
146	hb169	56.8959	155.2225
147	hd169	56.7811	155.0054
148	hd171	56.9020	154.7956
149	hb171	57.0168	155.0120
150	gz171	57.1316	155.2291
151	gx171	57.2464	155.4469
152	gv171	57.3612	155.6653
153	gv173	57.4821	155.4521
154	gx173	57.3674	155.2344
155	gz173	57.2526	155.0173
156	hb173	57.1378	154.8008
157	gz175	57.3735	154.8047
158	gx175	57.4883	155.0212
159	gv175	57.6031	155.2383
160	FOX61	57.7200	155.2600
161	FOX60	57.6800	155.1700
162	FOX59	57.6400	155.0700
163	FOX58	57.6100	155.0100
164	FOX57	57.5500	154.8800
165	FOX56	57.5200	154.7800
166	gx177	57.6093	154.8073
167	gx179	57.7302	154.5927
168	gx181	57.8512	154.3773
169	gx183	57.9721	154.1612
170	gx185	58.0931	153.9444
171	gx187	58.2141	153.7269
172	gx189	58.3350	153.5086
173	gx191	58.4560	153.2895

<u>Station</u>	<u>Grid ID</u>	<u>Latitude(N)</u>	<u>Longitude (W)</u>
174	gx193	58.5769	153.0697
175	gx195	58.6979	152.8492
176	gx197	58.8188	152.6279
177	gx199	58.9398	152.4058
178	gz199	58.8250	152.1978
179	gx201	59.0607	152.1829
180	gz203	59.0669	151.7527
181	hb205	59.0731	151.3238
182	hd207	59.0793	150.8962
183	hd209	59.1970	150.6781
184	hd211	59.3144	150.4600
185	hf211	59.2064	150.2460
186	hh211	59.0916	150.0447
187	hj211	58.9768	149.8439
188	hl211	58.8620	149.6436
189	hl209	58.7411	149.8652
190	hj209	58.8570	150.0640
191	hh209	58.9707	150.2677
192	hf209	59.0854	150.4699
193	hf207	58.9645	150.6929
194	hh207	58.8497	150.4900
195	hj207	58.7349	150.2878
196	hl207	58.6201	150.0860
197	hl205	58.4992	150.3061
198	hj205	58.6140	150.5086
199	hh205	58.7287	150.7115
200	hf205	58.8435	150.9151
201	hd205	58.9583	151.1192
202	hb203	58.9521	151.5468
203	hd203	58.8374	151.3414
204	hf203	58.7226	151.1366
205	hh203	58.6078	150.9323
206	hj203	58.4930	150.7286
207	hl203	58.3782	150.5254
208	hl201	58.2573	150.7439
209	hj201	58.3720	150.9479
210	hh201	58.4868	151.1523
211	hf201	58.6016	151.3573
212	hd201	58.7164	151.5629
213	hb201	58.8312	151.7689
214	hb199	58.7102	151.9903

<u>Station</u>	<u>Grid ID</u>	<u>Latitude(N)</u>	<u>Longitude (W)</u>
215	hd199	58.5954	151.7835
216	hd197	58.4745	152.0034
217	hf199	58.4807	151.5772
218	hf197	58.3597	151.7964
219	hh199	58.3659	151.3715
220	hh197	58.2449	151.5900
221	hj199	58.2511	151.1664
222	hl199	58.1363	150.9617
223	hn199	58.0215	150.7577
224	hp199	57.9047	150.5473
225	hp197	57.7854	150.7600
226	hn197	57.9006	150.9741
227	hl197	58.0153	151.1788
228	hj197	58.1301	151.3841
229	hh195	58.1240	151.8077
230	hj195	58.0092	151.6012
231	hl195	57.8944	151.3952
232	hn195	57.7796	151.1897
233	hp195	57.6656	150.9728
234	hp193	57.5455	151.1857
235	hn193	57.6586	151.4047
236	hl193	57.7734	151.6108
237	hj193	57.8882	151.8175
238	hh193	58.0030	152.0247
239	hj191	57.7673	152.0330
240	hl191	57.6525	151.8257
241	hn191	57.5377	151.6189
242	hp191	57.4249	151.3986
243	hp189	57.3039	151.6114
244	hn189	57.4167	151.8324
245	hl189	57.5315	152.0398
246	hl187	57.4106	152.2533
247	hn187	57.2958	152.0452
248	hp187	57.1826	151.8243
249	hp185	57.0608	152.0371
250	hn185	57.1748	152.2573
251	hl185	57.2896	152.4660
252	hl183	57.1686	152.6781
253	hn183	57.0539	152.4687
254	hp183	56.9386	152.2500
255	hp181	56.8161	152.4629

<u>Station</u>	<u>Grid ID</u>	<u>Latitude(N)</u>	<u>Longitude (W)</u>
256	hn181	56.9329	152.6794
257	hl181	57.0477	152.8895
258	hl179	56.9267	153.1002
259	hn179	56.8120	152.8894
260	hp179	56.6931	152.6757
261	hp177	56.5728	152.8833
262	hn177	56.6910	153.0988
263	hl177	56.8058	153.3102
264	hl175	56.6848	153.5195
265	hn175	56.5700	153.3075
266	hp175	56.4501	153.0944
267	hp173	56.3320	153.2968
268	hn173	56.4491	153.5155
269	hl173	56.5639	153.7281
270	hj173	56.6787	153.9414