



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Fisheries Science Center
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Final Project Instructions


Date Submitted: June 7, 2016

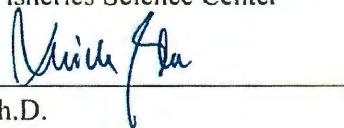
Platform: NOAA Ship (*Oscar Elton Sette*)

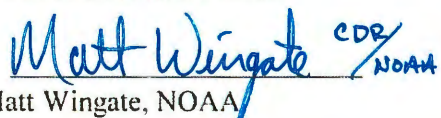
Project Number: SE-16-04 (PIFSC)

Project Title: Main Hawaiian Islands Cetacean Survey & Technology Assessment

Project Dates: Leg I: 28 June – 4 July, 2016
Leg II: 4-27 July, 2016

Prepared by:  Dated: 6/9/16
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Approved by:  Dated: 6/13/16
Michael Seki, Ph.D.
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Approved by:  ^{CDR} / _{NOAA} Dated: 6/16/16
Commander Matt Wingate, NOAA
Commanding Officer
Marine Operations Center - Pacific Islands

I. Overview

A. Brief Summary and Project Period

The project period will start on June 28, 2016 and end July 27, 2016. The primary objectives are to support the conduct of the following projects 1) test operational capabilities of APH-22 hexacopter from Sette, including evaluating launch and recovery protocols, and operational limits, including weather conditions, distance, and behavior of sampled cetacean groups, 2) conduct surveys for cetaceans along the windward and leeward coasts of the main Hawaiian Islands, including visual and acoustic surveys from Sette and sampling operations from launched small boats, and 3) deployment and recovery of High-Frequency Acoustic Recording Packages (HARPs), underwater gliders, and passive acoustic profiling floats. Activities will take place in waters near the main Hawaiian Islands, though will primary extend from Oahu to the Big Island nearshore and in pelagic waters out to 100 nmi from shore.

B. Days at Sea (DAS)

Of the 30 DAS scheduled for this project, 30 DAS are funded by an OMAO allocation, 30 DAS are funded by a Line Office Allocation, 0 DAS are Program Funded, and 0 DAS are Other Agency funded. This project is estimated to exhibit a medium Operational Tempo.

C. Operating Area (include optional map/figure showing op area)

The Operating Area for each leg of this project are as follows:

Leg I- lee of Hawaii Island

Leg II- main Hawaiian Islands

D. Summary of Objectives

The ship will conduct scientific operations in the waters surrounding the main Hawaiian Islands. The scientific objectives of this project are to:

Leg I:

Test the use of an APH-22 hexacopter for use from Sette. Operations will include several launches and recoveries to establish appropriate operating protocols from Sette, evaluate launch and recovery procedures and capability in various weather conditions, and assess ability to work with cetacean schools of various size, distance from ship, and behavior state. Launches and recoveries of the hexacopter may also occur from a small vessel launched from Sette. Recover and redeploy HARP off Kona, and calibrate volumetric towed hydrophone array, as time allows.

Leg II:

1. Survey and sample cetacean species near the main Hawaiian Islands to understand connectivity of cetacean populations within the Hawaiian Archipelago. Visual survey will occur from Sette and small boat launched from Sette and sampling will consist of behavioral observations, photographs, biopsy sampling, and satellite tagging. Acoustic monitoring may be conducted 24 hours per day from the ship and will consist of a variety of array transects and tests, including acoustic calibration of the towed array.

2. The ship will collect oceanographic data from routine conductivity-temperature-depth (CTD) and Expendable Bathythermograph (XBT) casts, and thermosalinograph (TSG) and echosounder (EK60) measurements throughout this leg. CTD casts will be conducted once each night.

3. Deploy acoustic Seaglider off Kona. Recover and redeploy the HARP at Kona (if not during Leg I), and possible second HARP. Deploy and recover autonomous acoustic profiling float as opportunities allow.

E. Participating Institutions

NOAA NMFS Pacific Islands Fisheries Science Center (NOAA-PIFSC)
 NOAA NMFS Southwest Fisheries Science Center (NOAA-SWFSC)
 University of Hawaii at Manoa, Joint Institute for Marine and Atmospheric Research (UHM JIMAR)
 Lynker Technologies, Inc. (Lynker)
 Aerial Imaging Solutions (AIS)
 Cascadia Research Collective (CRC)
 University of California San Diego, Scripps Institution of Oceanography (SIO)

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

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Oleson, Erin	Chief Scientist	6/28/2016	7/27/2016	F	NOAA-PIFSC	USA
Norris, Erik	Small Boat/Technology Operations Lead	6/28/2016	7/27/2016	M	UHM-JIMAR	USA
Yano, Kym	Cetacean Data Lead	6/28/2016	7/27/2016	F	Lynker	USA
Morse, Laura	Visual Survey	6/28/2016	7/27/2016	F	Lynker	USA
Ligon, Allan	Visual Survey	6/28/2016	7/27/2016	M	CRC	USA

Bradford, Amanda	Visual Survey	6/28/2016	7/27/2016	F	NOAA-PIFSC	USA
Barkley, Yvonne	Acoustics Lead	6/28/2016	7/27/2016	F	UHM-JIMAR	USA
Bayless, Ali	Acoustic survey	6/28/2016	7/27/2016	F	UHM-JIMAR	USA
Driskell, Rory	Acoustic survey	6/28/2016	7/27/2016	M	NOAA-PIFSC	USA
ENS Barbaro, Jacob	UAS Pilot	6/28/2016	7/27/2016	M	OMAO/SWFSC	USA
LTJG Europe, Hollis	UAS Pilot	6/28/2016	7/16/2016	F	OMAO/SWFSC	USA
Hill, Marie	Visual observer	6/28/2016	7/4/2016	F	UHM-JIMAR	USA
Fisher-Pool, Pollyanna	Visiting Scientist	6/28/2016	7/4/2016	F	Lynker	USA
LeRoi, Don	UAS Operations	6/28/2016	7/3/2016	M	AIS	USA
Perryman, Wayne	UAS Operations Lead	6/28/2016	7/3/2016	M	NOAA-SWFSC	USA
Bohlander, Jessie	UAS Pilot	6/28/2016	7/1/2016	F	NOAA-PIFSC	USA
Vazquez Morquecho, Ernesto	Visual Survey Lead	7/4/2016	7/27/2016	M	CRC	Mexico
TBD	Visual survey	7/4/2016	7/27/2016	F	Lynker	USA
Bendlin, Andrea	Visual survey	7/4/2016	7/16/2016	F	UHM-JIMAR	USA
Howe, Marian ("Merra")	Acoustic survey	7/4/2016	7/16/2016	F	UHM-JIMAR	USA
Van Uffelen, Lora	Acoustic survey / Glider pilot	7/14/2016	7/16/2016	F	UHM	USA

Baumann-Pickering, Simone	Acoustic survey	7/16/2016	7/27/2016	F	SIO	Germany (US green card holder)
Simonis, Anne	Acoustic survey	7/16/2016	7/27/2016	F	SIO	USA
Debich, Amanda	Visual survey	7/16/2016	7/27/2016	F	SIO	USA

G. Administrative

1. Points of Contacts:

Chief Scientists:

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Ship Operations Officer:

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OPS.Sette@noaa.gov

2. Diplomatic Clearances

None Required.

3. Licenses and Permits

The Chief Scientist will oversee the submission of required permit applications with federal and state agencies in order to obtain approval to conduct all planned scientific operations in U.S. waters prior to the start of the project.

ESA and MMPA: Direct take research activities during this project will be conducted under the Marine Mammal Protection Act and Endangered Species Act scientific research permit for marine mammals (NMFS Permit No. 15240-00) issued to the Pacific Islands Fisheries Science Center by the National Marine Fisheries Service, Office of Protected Resources. UAS flights over cetaceans will be conducted under the Marine Mammal Protection Act and Endangered Species Act scientific research permit for marine mammals (NMFS Permit No. XXX) issued to the Southwest Fisheries Science Center by the National Marine Fisheries Service, Office of Protected Resources

NEPA: This project meets the requirements of NOAA Administrative Order (NAO) Series 216-6, Environmental Review Procedures, Sections 5.05 and 6.03c.3(a) for Categorical Exclusions (CE) for Research Programs (Memo for the Record in process). Direct take research activities have been evaluated under NEPA for their respective 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:

The following operational plans can be considered only a guide as to how the Chief Scientist expects the surveys to progress without being able to predict the weather, operational and scheduling problems, and equipment failures. In particular, it should be noted that the transit time is approximate and may be altered based on weather or the progress of the survey. The following itinerary is based on a ship speed of 9.0 knots:

Leg I:

27 June: Depart Ford Island for transit to the Big Island. Embarked: Barbaro, Barkley, Bayless, Bohlander, Bradford, Driskell, Europe, Fisher-Pool, Hill, LeRoi, Ligon, Morse, Norris, Oleson, Perryman, Yano.

28 June- 3 July: Conduct APH-22 hexacopter test operations in lee of Big Island. Recover and redeploy HARPs and test towed hydrophone array as time allows. Launch acoustic Seaglider.

1 July: 1600 small boat transfer to Kona. Disembark Bohlander.

3 July: 0800 small boat transfer Kona. Disembark Perryman, LeRoi

4 July: 0900 small boat transfer to Oahu. Disembark Fisher-Pool, Hill.

Leg II:

The specific order of transect and island sampling is still being developed and is subject to change based on sampling success, weather, and project needs.

4 July: 0930. Small boat transfer from Oahu. Embark Bendlin, Howe, Vazquez Morquecho, 1 TBD.
Transit to cetacean survey line and begin survey operations.

5-14 July: Cetacean shipboard transect and near-island surveys within 100 nmi of the main Hawaiian Islands. Visual team on effort sunrise to sunset. Small boat launches for near island surveys or opportunistically as cetacean groups are sighted during transect surveys. Acoustic team potentially on-effort 24-hours per day, except during CTD. Conduct CTD following end of daily visual survey effort. Conduct XBTs at 0600 and 1200 during transect survey days. Survey effort will focus on the windward side of the main Hawaiian Islands as weather allows.

14 July: 1500 small boat transfer from Kona. Embark Van Uffelen.

15 July: Deploy Seaglider. Continue cetacean survey.

16 July: 0930 small boat transfer to Kona. Disembark Bendlin, Howe, Europe, Van Uffelen. Embark Baumann-Pickering, Debich, Simonis. Transit to cetacean survey line and begin survey operations.

17-26 July: Cetacean shipboard transect and near-island surveys within 100 nmi of the main Hawaiian Islands. Visual team on effort sunrise to sunset. Small boat launches for near island surveys or opportunistically as cetacean groups are sighted during transect surveys. Acoustic team potentially on-effort 24-hours per day, except during CTD. Conduct CTD following end of daily visual survey effort. Conduct XBTs at 0600 and 1200 during transect survey days. Survey effort will focus on the leeward side of the main Hawaiian Islands, and particularly near Cross Seamount and the Kohala Peninsula as weather allows.

27 July: Arrive Ford Island. Disembark all scientists.

B. Staging and Destaging:

1. Staging

Assistance from the ship's personnel will be required to crane aboard big eye binoculars and stands, small boat fuel, small boat cradle, small boat, and acoustic array, and other project supplies. The Program requests the hydraulic connection to the towed array winch is checked and fully functional prior to sailing. The Program requests power, GPS, and data connections on the flying bridge are checked for continuity and are fully functional prior to sailing. All power to critical electronic components such as the Simrad GPTs should be checked for clean power signals using the appropriate electronic testing apparatus. If the power is not adequately clean, a separate power cleaning device for the GPTs will be installed.

Prior to sailing the ship's crew will inspect the port- and starboard-side J-frames and associated oceanographic winches, conducting cable and DESH-5 winch for CTD operations, the thermosalinograph, the flow-through Turner 10-AU fluorometer, the

Simrad EK60 echosounder, the Scientific Computing System (SCS), the Global Positioning System (GPS) navigational systems, and the scientific freezer to ensure that they are in proper working order. All transducer faces and propellers should be inspected and cleaned of marine life no sooner than 1 week prior to sailing using methods recommended by manufacturers (e.g., using a soft wood block to clean the Simrad EK60 transducer faces). The SeaBird 9/11+CTD system and frame, and the SEACAT portable CTD will be installed and inspected ensuring that they are fully operational. Electrical continuity of the J-frame conducting cable, the winch's slip ring assembly, and connections to the electronic laboratory will be confirmed by the Chief Electronics Technician before sailing. The scientific small boats will be operational and ready to be deployed prior to sailing.

One hip tank will be fueled prior to the project to re-supply fuel daily to the NOAA small boats during cetacean survey operations. Alternative fuel storage and delivery means may be explored and utilized as deemed necessary.

Load and stage equipment 24 and 27 June.

2. Destaging

Destage and offload equipment 27-28 July.

C. Operations to be Conducted:

The following operational plans can be considered only a guide as to how the Chief Scientist expects the surveys to progress without being able to predict the weather, operational and scheduling problems, and equipment failures. In particular, it should be noted that the amount of time required at each of the working areas is approximate and may be altered based on weather or the progress of the survey.

The Chief Scientist has the authority to revise or alter the technical portion of the instructions as work progresses, provided that, after consultation with the Commanding Officer, it is ascertained that the proposed changes will not (1) jeopardize the safety of personnel or the ship, (2) exceed the overall time allotted for the project, (3) result in undue additional expenses, and (4) alter the general intent of the project instructions. In addition, the Chief Scientist must notify the Office of the Director of the Pacific Islands Fisheries Science Center at the earliest opportunity prior to making: (1) deviations from the general project track or area of operations noted in the project instructions, (2) significant changes or additions of research operations to those specified in the project instructions, or (3) port calls not specifically identified in the project instructions.

Leg I:

- 1) **UAS Operational Assessment:** The APH-22 hexacopter will be launched and recovered from Sette

and Sette-launched small boat to establish operational protocols, capabilities, and limits when working from NOAA vessels. The goals of the effort are to establish communication protocols between the UAS pilot and ship's command, determine ship operational and UAS operational constraints during launch and recovery (i.e. ship positioning relative to weather, stationary vs. forward motion, etc.), establish operational limits for common weather conditions for both UAS launch and retrieval, as well as performance of camera optics at higher wind states, and test operational capability in one or more cetacean encounter scenarios.

Ship Speed, Order of Operations: Hexacopter operations will occur during daylight hours only. Deployment and retrieval operations will be established during at-sea testing.

Ship Equipment Required: None anticipated.

Ship Personnel Requirements: None anticipated; however operational protocols are not yet developed.

- 2) **Visual Surveys:** Visual observers will keep watch from the flying bridge for cetacean groups and to assist in tracking and recovering the hexacopter as needed. A watch will be maintained on the flying bridge during daylight hours by at least 2 observers at all times.

Ship Speed, Order of Operations: Ship speed and direction will be determined in consultation with the Chief Scientist and UAS team to provide highest probability of cetacean encounters for test UAS flights. On sighting a cetacean group or other feature of biological interest, the Chief Scientist or observer team on watch may request that the vessel be maneuvered to approach the group or feature for investigation. Biopsy and photography operations may commence from the bow, based on directions from the Chief Scientist or Mammal Observers. In some instances, the Chief Scientist may request the deployment of a small boat for biopsy, photography, or other operations.

Ship Equipment Required: The observation computer will be hooked up to the ship's global positioning system (GPS; for course, speed, and position information) and Scientific Computer System (SCS; for weather and heading information). If the SCS goes down for any reason, the ship's Electronics or Survey Technician must manually restart the WINDACS event (in addition to the other events). A log of observation conditions, watch effort, sightings, and other required information will be entered into the observation computer. Please note that it is very important that all science computers be connected to the same ship GPS.

Ship Personnel Requirements: The Commanding Officer shall ensure that the flying bridge work area is free of tobacco smoke at all times when observers are on watch.

- 3) **Passive Acoustics:** Passive acoustic towed array operations will be conducted using the same protocols for Leg I and Leg II. Please see further information for towed array operations described under Leg II.

4) **Autonomous acoustic hardware deployments**

- a) High-Frequency Acoustic Recording Package (HARP) Deployment: One HARP will be recovered and deployed near Kona during Leg I, as time permits. The HARP is currently deployed at position 19-34.985N, 156-00.939W. A second HARP may be deployed as equipment and time permits (exact position TBD).

Ship Speed, Order of Operations: Deployment may occur during day or night.

Ship Equipment Required: The ship will provide the crane.

Ship Personnel Requirements: The Deck Department will provide the needed personnel to assist with deployment.

- 5) **Small boat launches:** Small boat operations will use SE-6. Operations will be conducted when weather permits and in adhering to GAR assessments. A meeting will be held prior to small boat launches to discuss the small boat operations and to assess the conditions at the time of the launch. Ship Equipment Required: The ship will provide the crane, hard hats, and PFDs necessary for small boat operations.

Ship Personnel Requirements: Ship personnel are required for launching the lab's small boat and for participating in introductory small boat briefing.

Leg II:

- 1) **Visual Surveys:** Line-transect survey methods will be used to collect cetacean abundance data. A watch for cetaceans will be maintained on the flying bridge during daylight hours by six (6) mammal observers. Each observer will work in 2-hour rotations, manning each of the following three stations on the flying bridge for 40 minutes: a port side 25 x 150 binocular station, a center-line data recorder position, and a starboard 25 x 150 binocular station. Ship Speed, Order of Operations: During shipboard cetacean visual surveys, search effort should start on a trackline determined in advance in consultation between the Chief Scientist and the Command. The *Sette* should travel at 10 kt (speed over ground) along the designated trackline. While on search effort, if the ship's speed over ground should deviate from this by more than 1 kt, the bridge personnel will notify the mammal team on watch or the Chief Scientist.

On sighting a cetacean group or other feature of biological interest, the Chief Scientist or observer team on watch may request that the vessel be maneuvered to approach the group or feature for investigation. Biopsy and photography operations may commence from the bow, based on directions from the Chief Scientist or Mammal Observers. In some instances, the Chief Scientist may request the deployment of a small boat for biopsy, photography, or other operations.

It may occasionally be necessary to divert the ship's course from the established trackline during regular effort due to glare or adverse sea conditions. Under these circumstances, the ship may divert up to 20 degrees from the established course. This deviation may continue until the ship is 5 nm from the trackline, at which point the ship should turn back toward the trackline at an angle of ≤ 20 degrees.

When the observers have completed scientific operations for the sighting, the ship will return to the trackline either at or ahead of the previous sighting location. If the pursuit of the sighting ends within 5 nm from the trackline, the ship will return to the trackline at an angle of ≤ 20 degrees to the trackline and effort will resume immediately after the initial sighting location is behind the beam of the ship. If the pursuit of the sighting has taken the ship more than 5 nm from the trackline, the observers should be notified. The Chief Scientist or Senior Observers may request that the ship either: 1) proceed

directly toward the next waypoint; 2) take a heading of ≤ 20 degrees back toward the trackline, or 3) return to the position at which the ship diverted. Visual observation effort would resume immediately with the first two options.

Ship Equipment Required: The observation computer will be hooked up to the ship's global positioning system (GPS; for course, speed, and position information) and Scientific Computer System (SCS; for weather and heading information). If the SCS goes down for any reason, the ship's Electronics or Survey Technician must manually restart the WINDACS event (in addition to the other events). A log of observation conditions, watch effort, sightings, and other required information will be entered into the observation computer. Please note that it is very important that all science computers be connected to the same ship GPS.

Ship Personnel Requirements: Weather permitting, the observer team on the flying bridge will conduct visual watches for cetaceans during all daylight hours (from sunrise to sunset). The Commanding Officer shall ensure that the flying bridge work area is free of tobacco smoke at all times when observers are on watch.

2) **Passive Acoustics:** Passive acoustic operations may during day or night.

a) Towed linear array: A towed hydrophone array will be deployed approximately 300 m behind the vessel. Acoustics personnel will monitor the array, record sounds made by cetaceans, and localize their positions to assist in other sampling operations.

Ship Speed, Order of Operations: The array will be retrieved for each CTD or when requested by acoustics personnel during other periods. To retrieve the array, the ship will first slow down to 5 kt and maintain its current heading. During array retrieval and deployment, the ship's course and speed must be maintained. Vessel speed must be within 3 and 10 kt, and turning must not exceed 180° . When traveling at 10 kt, it is requested that the ship use rudder commands on the order of 3 to 5 degrees to prevent damage to the towed hydrophone array cable. When traveling at less than 10 kt, larger rudder commands may be used so long as the officer on watch is mindful of the cable angle and reduces rudder commands if requested by the acoustic personnel. The acoustics team must be informed of potential hazards, such as fishing gear, with the maximum lead time.

Ship Equipment Required: The array will be wound onto a hydraulic-powered winch supplied by the PIFSC. The winch and hoses will be provided by PIFSC; the ship will provide hydraulic power and connectors. Hookup to a ship-powered hydraulic system will be required. With the exception of the hydraulic winch hookups and safety apparel, all of the necessary equipment will be supplied and operated by scientific personnel.

Ship Personnel Requirements: Ship personnel are needed to secure the acoustic winch to the deck using ship baxter bolts and then hook up the winch to the ship-powered hydraulic system. Needle gunning creates interference within the passive and active acoustics systems and is therefore generally not permitted during the project. Specific requests for needle gunning in specific spaces that are less likely to impact acoustics operations will be considered by the Chief Scientist and acoustics team.

b) Towed tetrahedral hydrophone array: The acoustics personnel may test the towed 3-dimensional hydrophone array with tetrahedral hydrophone configuration. The array is constructed using a

three-dimensional aluminum frame and is no more than 1 m² in overall dimensions. It is lightweight and small enough to be handled by 1-2 acoustics personnel during deployment and retrieval. Acoustics personnel will be testing the tetrahedral array's overall performance, including how well it tows behind the ship at various speeds, detection and localization abilities, and noise levels. When the tetrahedral array is deployed, acoustics personnel may request the bridge to turn the ship in various directions at different speeds when possible. Specific directions will be communicated to the bridge.

Ship Speed, Order of Operations: Similar ship operations for deployment and retrieval of the standard hydrophone array are expected with one important exception. During deployment and retrieval, the ship will slow down to 3 knots and remain at this speed until the tetrahedral array is fully deployed or fully retrieved on deck. With the three-dimensional aluminum frame, additional considerations must be taken to minimize strain and tension on equipment. Any additional directions or necessary equipment will be communicated to the bridge and ship's personnel prior to operations.

Ship Personnel Requirements: Ship personnel may be needed to assist with the deployment and retrieval of the tetrahedral array, either for handling the array or operating the winch. The bridge 12kHz echosounder should be secured during towed hydrophone array operations as it interferes with detection of cetacean sounds on the array.

- c) **Localization Test for Hydrophone Arrays:** In order to test the linear or tetrahedral array's performance, acoustics personnel require the use of a small boat (SE-4 or SE-6) to conduct a localization test. This test can be performed opportunistically during good weather and has no set date or time.

Ship Speed, Order of Operations: The small boat will drive to a given location 5-6 nmi away from the ship and remain stationary with acoustic projector in the water for the duration of the test. Shipboard acoustic personnel will provide a straight-line transect for the ship to pass 1-2 mi from the small boat while localizing on the test signals. All necessary testing equipment will be provided by the acoustics personnel. The test may require several hours.

Ship Equipment Required: The localization test requires use of a small boat. The EK-60 and ADCP must be secured during localization tests so as not to interfere with identification and localization of test signals.

Ship Personnel Requirements: Ship personnel will be required to assist with launch and recovery of the small boat. A ship coxswain and crew member will be required if the scientific party's coxswain is unavailable.

- d) **Compact Acoustic Recording Buoy (CARB):** The CARB may be deployed during small boat operations and opportunistically from the ship at the discretion of the Chief Scientist.

Ship Speed, Order of Operations: For ship deployments, the acoustic personnel will contact the bridge to ask permission to deploy the CARB and to request that the ship slow to 3 kt prior to deployment.

Ship Equipment Required: For ship deployments, the CARB will need to be recovered by a small boat. The ship will provide the crane, hard hats, and PFDs necessary for small boat operations.

Ship Personnel Requirements: At the time of a CARB deployment from the ship, it is requested

the officer on watch mark the deployment location. This point will serve as a backup to the scientific party's GPS. For ship deployments, ship personnel are required for launching the lab's small boat.

- e) Sonobuoys: A sonobuoy will be deployed each evening 1 mile before arriving at the CTD station. Sonobuoys also may be deployed periodically from the ship on an opportunistic basis at the discretion of the Lead Acoustician. The acoustics personnel will contact the bridge to ask permission to deploy the sonobuoy prior to deployment.

Ship Speed, Order of Operations: The acoustic personnel will contact the bridge to ask permission to deploy the sonobuoy.

- 3) **Oceanography:** A chronological record of oceanographic stations (CTD, XBT, and surface water samples) will be kept by the ship with locations, dates, and times in GMT using SCS. The ship will provide a copy of SCS data and the Weather Log to the Chief Scientist at the completion of the project.

Ship Personnel Requirements: The collection of oceanographic samples and their processing will be conducted by the ship's Survey Technician with assistance from the Deck Department and Science Party as required.

- a) CTD casts: Conduct an early evening shipboard CTD cast each day. The CTD will be equipped with both a WetLab profiling and Seapoint flow-through fluorometer (for comparison between flow-through and non-flow-through sensors), and redundant dissolved oxygen sensors.
Ship Speed, Order of Operations: All casts are to be engaged to a depth range of 1000 m, where bottom depths permit. When bottom depths are too shallow for the 1000-m cast, the Chief Scientist and ship's Survey Technician will determine a safe depth for the cast and notify the bridge prior to operations. Cast descent rates will be 30 m/min for the first 100 m of the cast, then 60 m/min after that, including the upcast between bottles. Cast times are subject to change given daily small boat and other operations schedules. Additional CTD stations may be requested by the Chief Scientist in areas of special interest.

Ship Equipment Required: The ship will provide the Sea-Bird CTD system, which will be maintained and operated by the ship's Survey Technician. The crew of the vessel will operate the winch and other deck equipment and will be responsible for the termination (and any necessary reterminations) of the CTD cable pigtail to the conducting cable of the winch. All instruments, their spares, and spare parts provided by the ship must be maintained in working order and, if applicable, have current calibrations (within the previous 12 months). The PIFSC will provide a set of sensors to be used on all casts; conducting CTD casts with dual sensors provides immediate feedback about the performance of the sensors and the validity of the data. To ensure longevity of the CTD and bottles, the CTD must be rinsed completely with fresh water after every cast, and the CTD and rosette must then be covered and secured.

Ship Personnel Requirements: The ship's Survey Technician will be responsible for the CTD operations and maintenance. The Shipboard Operations Lead and other designated scientists can assist if needed. The Deck Department will provide the needed personnel to assist with CTD deployment.

- b) **XBT Drops:** XBTs will be deployed twice per day, at 0600 and 1200, as well as on biological features of interest or at the request of the acoustics team throughout the day.

Ship Equipment Required: XBTs will be provided by the PIFSC, the Sippican MK-21 system will be provided by and maintained by the ship, and the ship will provide the launcher and computer.

Ship Personnel Requirements: XBTs will be conducted by the ship's Survey Technician, with assistance from the Shipboard Operations Lead or other designated scientists as needed.

- c) **Active Acoustics:** The scientific EK60 depth sounder will be operated as requested from the Chief Scientist and as needed by the Command at 38, 70, and 120 kHz.

Ship Speed, Order of Operations: The vessel's navigational depth sounder may be used at the discretion of the Commanding Officer, but will normally remain off while underway in deep waters. The navigational depth sounder aboard NOAA Ship *Sette* is known to interfere with the EK60 scientific sounder and with towed array cetacean detection operations. Since synchronization may not be possible, the navigational sounder should remain off when not in shallow water. The ship's navigational depth sounders will be on when the ship is inshore in depths of 30 fathoms or less. The command will inform the Chief Scientist or Shipboard Operations Lead at any time the navigational depth sounders are used. The Chief Scientist or an acoustic technician may secure one or more channels of the EK60 to obtain higher quality passive acoustic recordings. The science party will request permission from the bridge in advance of securing an EK60 channel(s), and will notify the bridge when the channel(s) has been turned back on. There may be extended periods of non-operation, particularly during beaked whale tracking efforts.

Ship Equipment Required: The EK60 will be interfaced to a data acquisition system to estimate micronekton biomass between 0 and 1,000 m.

Ship Personnel Requirements: Needle gunning creates interference within the passive and active acoustics systems and is therefore generally not permitted during the project. Specific requests for needle gunning in specific spaces that are less likely to impact acoustics operations will be considered by the Chief Scientist and acoustics team.

- 6) **Small boat launches:** Small boat operations will use SE-6; operations will be conducted when weather permits and in adhering to GAR assessments. A daily meeting at 0700 will be held to discuss that day's small boat operations and to assess the conditions likely to be encountered on the water that day. Small boat deployments will occur as cetacean groups of interest are encountered. Cetacean survey operations include collection of photographs, biopsy samples, and deployment of satellite tags on cetacean groups. Cetacean survey operations will use Program-provided coxswain.

Ship Equipment Required: The ship will provide the crane, hard hats, and PFDs necessary for small boat operations.

Ship Personnel Requirements: Ship personnel are required for launching the lab's small boat and for participating in introductory small boat briefing.

7) **Autonomous acoustic hardware deployments**

- a) High-Frequency Acoustic Recording Package (HARP) Deployment: If not completed during Leg I, one HARP will be recovered and deployed near Kona during Leg II at position 19-34.985N, 156-00.939W. A second HARP may be deployed as equipment and time permits.

Ship Speed, Order of Operations: Deployment may occur during day or night.

Ship Equipment Required: The ship will provide the crane.

Ship Personnel Requirements: The Deck Department will provide the needed personnel to assist with deployment.

- b) Acoustic Seaglider deployment: An autonomous underwater glider equipped with passive acoustic package will be deployed during Leg II. Deployment will require 3-4 hours on station while the glider conducts a test dive and confirms satellite communication.

Ship Speed, Order of Operations: Deployment will occur in the morning and likely from a ship-launched small boat.

Ship Equipment Required: The glider will most likely be deployed from small boat. Reliable internet connectivity and SSH capability is required during and after glider deployment operations to enable the pilot to communicate with the glider. If possible to prioritize access for the glider pilot that would facilitate more efficient and likely more successful deployment operations.

Ship Personnel Requirements: The Deck Department will provide the needed personnel to assist with glider deployment.

- c) Acoustic profiler: A passive acoustic profiling float will be deployed and recovered as opportunities allow during the latter half of the project. The profiler will remain in the water for several hours to days and will be recovered through contact with its Iridium transmitter.

Ship Speed, Order of Operations: Deployment will occur during day.

Ship Equipment Required: The ship's crane may be required to launch or recover the profiler. Alternatively the profiler may be deployed from small boat. Reliable internet connectivity is required during the profiler operations to enable the pilot to communicate with and keep track of the profiler's location.

Ship Personnel Requirements: The Deck Department will provide the needed personnel to assist with profiler deployment and recovery.

- 8) **Salvage of Marine Mammals and Birds:** Marine mammal body parts and/or birds may be salvaged on an opportunistic basis at the discretion of the Chief Scientist. This includes whale and dolphin ivory and carcasses, and whole bird specimens. In the event that this occurs, scientific freezer space will be used to store the salvaged material. Permits to salvage and import marine mammal parts and birds will be present on the vessel. All marine mammal specimens obtained will be archived at the PIFSC or SWFSC but may be released on extended loan to recognized research institutions according to existing guidelines.

3. Mitigation Measures for Protected Species during Scientific Operations

3.1. Monitoring methods

The officer on watch, Chief Scientist (CS) (or other designated member of the Scientific Party), and small boat crew will visually scan for marine mammals, sea turtles, and other ESA-listed species (protected species) during all fishing and over-the-side operations. The member of the crew designated to stand watch for marine mammals is dedicated to that function and visually scans the waters surrounding the vessel prior to the planned start of putting CTD, Cobb trawl, IK trawl, traps, or night-light into the water.

3.2. Operational procedures

“Move-On” Rule. If any marine mammals or sea turtles are sighted anywhere around the vessel in the 30 minutes before setting any gear, the vessel may be moved away from the animals to a different section of the sampling area if the animals appear to be at risk of interaction with the gear at the discretion of the officer on watch in consultation with the CS. Small moves within the sampling area can be accomplished without leaving the sample station. After moving on, if marine mammals or sea turtles are still visible from the vessel and appear to be at risk, the officer on watch may decide, in consultation with the CS, to move again or to skip the station. The officer on watch will first consult with the CS or other designated scientist and other experienced crew as necessary to determine the best strategy to avoid potential takes of these species based on those encountered, their numbers and behavior, position and vector relative to the vessel, and other factors. For instance, a whale transiting through the area and heading away from the vessel might not require any move or only require a short move from the initial sampling site while a pod of dolphins gathered around the vessel may require a longer move from the initial sampling site or possibly cancellation of the station if they follow the vessel. In most cases, trawl gear is not deployed if marine mammals have been sighted from the ship in the previous 30 minutes unless those animals do not appear to be in danger of interactions with the trawl, as determined by the judgment of the CS and officer on watch. The efficacy of the “move-on” rule is limited during night time or other periods of limited visibility; although operational lighting from the vessel illuminates the water in the immediate vicinity of the vessel during gear setting and retrieval.

Cetacean visual and acoustic survey operations, including approach and sampling of cetaceans during this project are permitted under NMFS Take Permit 15240 and do not require “move on” mitigation during daytime operations.

D. Dive Plan

No SCUBA diving for this project.

E. Applicable Restrictions

1. “Take” of Protected Species

a. Under the Marine Mammal Protection Act and Endangered Species Act it is unlawful

to take a protected species. The MMPA defines take as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." The ESA defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." An incidental take is one that incidental to, but not the purpose of, otherwise lawful activities. Science activities listed in the these Instructions are covered for directed take under NMFS Take Permit 15240.

b. In the event of an incidental take of a marine mammal or federally listed threatened or endangered species during the project, the chief scientist will report the incident to the PIFSC Director and Deputy Director IMMEDIATELY via IRIDIUM, INMARSAT, and email. Samples should not be collected from any incidentally taken marine mammals, sea turtles, or seabirds. Photos of the incidentally caught animal should be taken to properly identify the species, but the process of taking the photos must not contribute to the further injury of the animal. These photos are for the purposes of internal NMFS verification only, and must not be shared outside of PIFSC or the Office of Protected Resources (i.e., do not post the photos on the internet).

c. As described at II. C. 3. (above), PIFSC has developed mitigation measures for our fisheries and ecosystem research projects to avoid take and comply with the Lecky, Murawski, and Merrick guidance. A copy of these documents is also available at <https://sites.google.com/a/noaa.gov/pifsc-science-operations/home/nepa-permits/protected-species-mitigation-measures> and on the ship's bridge.

III. Equipment

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

Equipment

- CTD system and heavy duty cage assembly
- Starboard J-frame and block for CTD
- Oceanographic winches and cables (port and starboard)
- SEACAT portable CTD with backup
- Deck cranes with 600-lb static-lift block (for SafeBoat deployment/recovery)
- Thermosalinograph
- EK60 and ES60 echosounder system at the frequencies of 38 kHz, 70 kHz, and 120 kHz
- GPS navigational system
- Depth sounders and recorders
- Scientific freezer, kept between -30° and -20°C at all times
- Two-way radios for communication from the electronics lab to the winch operator
- Operational Scientific Computing System (SCS)
- Navigational equipment and course plotter
- Supplies necessary for at least two re-terminations of the J-frame conducting cable
- Adequate fresh water for gear wash down

- Iridium phone
- A minimum of 2 terabyte shared network space
- Insulated cable running from location site for CPUs (E-lab) to the flying bridge consoles
- Power, ship's GPS, and ship's SCS connections to CPUs running the flying bridge consoles (please note that it is very important that all science computers be connected to the same ship's GPS)
- Canopy on flying bridge
- Small boat SE-4, including spare parts
- One hip tank
- Refrigerator space for biological and oceanographic samples and satellite tags
- Sippican XBT launcher (prefer aft deck location) and connection to Sippican software
- Copy machine
- Network access to a printer
- Internet access, with notification if privileges are removed
- Space on aft deck for the acoustic winch
- Two (2) ship's GPS connections to the dry lab for acoustics computers (please note that it is very important that all science computers be connected to the same ship's GPS).

Capabilities

- Permission for the scientific party to ready scientific spaces (e.g. set up computer server, acoustic array work station and battery bank, etc.) the 2 working days prior to departure from Ford Island
 - Assistance from the ship's deck department with the crane for staging and destaging.
- Daily lunches provided from the stewards department for small boat operations.
- Reliable and continuous internet connectivity during Seaglider deployment. Requires SSH connection to communicate with glider.
- Wireless access on the flying bridge to facilitate electronic data collection.

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

- WetLabs profiling fluorometer
- Redundant dissolved oxygen sensors
- Computers, monitors, and external hard drives for data collection, processing, and archiving, set up in E-Lab
- Fuel for SafeBoats
- Visual survey equipment (hand-held binoculars, deck-mounted binoculars and stands, video camera, digital SLR cameras, handheld radios, portable GPSs)
- A desktop computer mounted in the E-lab with CAT5 KVM extension units at CPUs and a remote console unit on the flying bridge
- Crossbows, biopsy darts and tips, and sample vials
- One liquid nitrogen dewar (34 L) for biopsy sample preservation with MSDS
- XBT probes (Deep Blues) – 4 cases to be stored on the aft deck in a pallet tub

- Permits for specimen collection
- One pallet of sonobuoys (48 in x 40 in x 60 in, 1200 lbs when full)
- Hydrophone arrays
- Hydraulic winch for hydrophone array
- Hansen Coupling Division male LL6-HKP/LL8-HKP ends to quick connect style connectors on 50-ft hose to hydraulic power supply for acoustic winch
- Acoustics recording equipment, including desktop computers (4), and accessory equipment.
- Five pallet tubs (Steel Toe supplies, acoustic equipment, XBTs, survey gear, biopsy gear)
- 19-ft Safeboat w/frame and cradle
- Battery bank for hydrophone array
- 3 HARPs and 600lbs of weights
 - Acoustic seaglider and support gear
 - Acoustic profiler and support gear
- Compact Acoustic Recording Device (CARB)
- Satellite tagging gear

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

Common Name	Concentration	Amount	Notes
Cetylclide	100%	1-gal	Stored in Wet Lab HazMat cabinet
Isopropyl	70%	1-gal	Stored in Wet Lab HazMat cabinet
Bleach	100%	1-gal	Stored in Wet Lab HazMat cabinet
Ethanol	70%	1-gal	Stored in Wet Lab HazMat cabinet
Gasoline, unleaded		400 gallons	Stored in Hip Tanks
Lithium Metal Batteries		3 battery packs	Stored in HARP pressure cases

C. Chemical safety and spill response procedures

See attached Appendix # 1

D. Radioactive Materials

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary ("Piggyback") Projects

No Supplementary Projects are planned.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

VI. Disposition of Data and Reports

Disposition of data gathered aboard NOAA ships will conform to NAO 216-101 *Ocean Data Acquisitions* and NAO 212-15 *Management of Environmental Data and Information*. To guide the implementation of these NAOs, NOAA's Environmental Data Management Committee (EDMC) provides the *NOAA Data Documentation Procedural Directive* (data documentation) and *NOAA Data Management Planning Procedural Directive* (preparation of Data Management Plans). OMAO is developing procedures and allocating resources to manage OMAO data and Programs are encouraged to do the same for their Project data.

The bridge will keep track of all scientific station operations (e.g., each small boat launch and retrieval, trapping, IK tow, Cobb Trawl, CTD cast, and drifting night-light). Each of these station operations will be assigned a unique station number using a sequential number sequence starting with Station #1 for the first scientific station operation. Each station number will have a start and end position, date, time, and depth over water. The Bridge will use the SCS system to event mark the start and end time of each station operation. For small boat sampling operations, the same station number will be used for both launch and recovery. The Survey Tech and scientists will collect the more detailed primary data associated with each of the station operations.

Data Disposition: The Chief Scientist shall be considered to be the representative of the NMFS PIFSC Science Director for purposes of data disposition. A single copy of all data gathered by the vessel will be delivered to the Chief Scientist upon request who will be responsible for checking in a complete copy of this data to the PIFSC Scientific Information Services (SIS) Data Services group.

A. Data Classifications: *Under Development*

a. OMAO Data

b. Program Data

B. Responsibilities: *Under Development*

VII. Meetings, Vessel Familiarization, and Project Evaluations

A. Pre-Project Meeting: The Chief Scientist and Commanding Officer will conduct a meeting of pertinent members of the scientific party and ship's crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship's Operations Officer usually is delegated to assist the Chief Scientist in arranging this meeting.

- B. Vessel Familiarization Meeting: The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project's start and is normally presented by the ship's Operations Officer.
- C. Post-Project Meeting: The Commanding Officer is responsible for conducted a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and short comings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.

D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. The form is available at <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 acellionAlerts@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

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow's March 16, 2006 memo (<http://deemedexports.noaa.gov>). National Marine Fisheries Service personnel will use the Foreign National Registration System (FNRS) to submit requests for access to NOAA facilities and ships. The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their designated Line Office Deemed Export point of contact to assist with the process.

Full compliance with NAO 207-12 is required.

Responsibilities of the Chief Scientist:

1. Provide the Commanding Officer with the email generated by the Servicing Security Office granting approval for the foreign national guest's visit. (For NMFS-sponsored guests, this email will be transmitted by FNRS.) This email will identify the guest's DSN and will serve as evidence that the requirements of NAO 207-12 have been complied with.
2. Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
3. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.
4. Export Control - Ensure that approved controls are in place for any technologies that are subject to Export Administration Regulations (EAR).

The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.

2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written approval from the Director of the Office of Marine and Aviation Operations and compliance with export and sanction regulations.
3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Chief Scientist or the DSN of the FNRS or Servicing Security Office email granting approval for the foreign national guest's visit.
5. Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.
6. Export Control - 8 weeks in advance of the project, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program controlled technology. The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.
7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.

Responsibilities of the Foreign National Sponsor:

1. Export Control - The foreign national's sponsor is responsible for obtaining any required export licenses and complying with any conditions of those licenses prior to the foreign national being provided access to the controlled technology onboard regardless of the technology's ownership.
2. The DSN of the foreign national shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified individual must be a U.S. citizen and a NOAA or DOC employee. According to DOC/OSY, this requirement cannot be altered.
3. Ensure completion and submission of Appendix C (Certification of Conditions and Responsibilities for a Foreign National

VIII. Appendices

Chemical MSDS: Cetylclide, Isopropyl, Bleach, Ethanol, Gasoline unleaded, and Lithium Metal Batteries