



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL MARINE FISHERIES SERVICE**  
Pacific Islands Fisheries Science Center  
1845 Wasp Blvd. Bldg. 176 • Honolulu, Hawaii 96818  
(808) 725-5300

### FINAL Project Instructions


**Date Submitted:** June 21, 2018

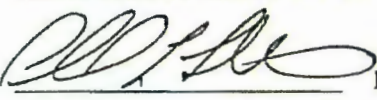
**Platform:** NOAA Ship *Oscar Elton Sette*

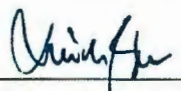
**Project Number:** SE-18-03 (OMAO), MACS 2018 (PIFSC)

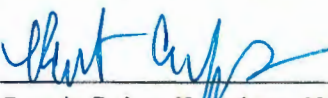
**Project Title:** Marianas Archipelago Cetacean Survey (MACS) 2018

**Project Dates:** July 8, 2018 HST (July 9, 2018 ChST) to August 16, 2018

Prepared by:  Dated: 6/19/18  
Erin Oleson, Chief Scientist  
Protected Species Division, Cetacean Research Program  
Pacific Islands Fisheries Science Center

Approved by:  Dated: 6/25/18  
Charles Littnan, Protected Species Division Director  
Pacific Islands Fisheries Science Center

Approved by:  Dated: 6/26/18  
Michael Seki, Ph.D., Director  
Pacific Islands Fisheries Science Center

Approved by:  Dated: 2 JUL 2018  
Captain Robert Kamphaus, NOAA  
Commanding Officer  
Marine Operations Center – Pacific Islands

## I. Overview

### A. Brief Summary and Project Period

The project is a cetacean survey in the waters west of the Mariana Archipelago from the islands to the West Mariana Ridge. The survey includes standard visual and passive acoustic towed array data collection, as well as opportunistic approaches to cetacean groups for photo-ID, biopsy, and satellite tagging. Cetaceans may be approached by the ship or by a small vessel launched from the ship. The survey also includes deployment and recovery of Drifting Acoustic Spar Buoy Recorders (DASBRs) to monitor for cetaceans in the broader region.

### B. Days at Sea (DAS)

Of the 39 DAS scheduled for this project (24 DAS for Leg 1, 15 DAS for Leg 2), 0 DAS are funded by an OMAO allocation, 39 DAS are funded by NMFS, 0 DAS are Program Funded, and 0 DAS are Other Agency funded. This project is estimated to exhibit a Medium Operational Tempo.

- Total DAS = 39
- OMAO Allocated DAS = 0, OMAO allocated DAS using OMAO operational funds
- Line Office Allocated DAS = 39, Line Office NMFS allocated DAS using OMAO operational funds
- Program Funded Days (PFD) = 0, One or more of the NOAA line offices are directly funding these DAS
- Other Agency Funded DAS = 0, Non-NOAA funded

### C. Operating Area

The study area includes the U.S. Exclusive Economic Zone (EEZ) coastal waters of Guam and the Commonwealth of the Northern Mariana Islands. The study area for this project covers waters from 10°N to 18° 30' N and 141°E and 147°E.

### D. Summary of Objectives

Shipboard operations will include support for the following data collection objectives:

1. Recover and redeploy Drifting Autonomous Spar Buoy Recorders (DASBRs) in the study area to assess occurrence of deep-diving whales.
2. Visual surveys of cetacean distribution, school size, and school composition to determine density and abundance. Visual surveys for cetaceans will occur during daylight hours.
3. Skin biopsies and satellite tagging of cetaceans for investigations of stock structure and phylogenetic relationships.
4. Photo identification and aerial photographs to document geographic variation in dolphin morphology, pigment patterns, health condition, school composition, and distribution of individual whales.

5. Passive acoustic monitoring for vocal cetaceans to augment assessments of distribution and abundance. Acoustic monitoring may be conducted 24 hours per day, including use of towed hydrophone array while underway and sonobuoys while on station.
6. Recover and redeploy a High-Frequency Acoustic Recording Package (HARP) at three offshore locations near Saipan, Tinian, and Pagan Island.
7. Conduct ancillary projects for Visiting Scientists as time allows.

E. Participating Institutions

NOAA NMFS Pacific Fisheries Science Center (PIFSC)

University of Hawaii at Manoa (UHM)

University of Hawaii at Manoa, Joint Institute for Marine and Atmospheric Research (JIMAR)

Lynker Technology, Inc. (Lynker)

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

<b>Name (Last, First)</b>	<b>Title</b>	<b>Date Aboard (ChST)</b>	<b>Date Disembark (ChST)</b>	<b>Gender</b>	<b>Affiliation</b>	<b>Nationality</b>
Oleson, Erin	Chief Scientist	7/07/18	8/02/18	F	PIFSC	USA
Keating, Jennifer	Acoustic Survey Lead	7/07/18	8/02/18	F	JIMAR	USA
Norris, Erik	Acoustic Survey	7/07/18	8/02/18	M	JIMAR	USA
Allen, Ann	Acoustic Survey	7/07/18	8/02/18	F	PIFSC	USA
Barkley, Yvonne	Acoustic Survey	7/07/18	8/02/18	F	UHM	USA
Yin, Suzanne	Visual Survey Lead	7/07/18	8/02/18	F	Lynker	USA
Vazquez, Ernesto	Visual Survey Lead	7/07/18	8/02/18	M	Lynker	Mexico
Bendlin, Andrea	Visual Survey	7/07/18	8/02/18	F	Lynker	USA
Ligon, Allan	Visual Survey	7/07/18	8/02/18	M	Contractor	USA
Ü, Adam	Visual Survey	7/07/18	8/02/18	M	Lynker	USA
Hill, Marie	Visual Survey	7/07/18	8/02/18	F	JIMAR	USA
Lanka, Maegha	Visiting Scientist	7/07/18	8/02/18	F	JIMAR	USA

## G. Administrative

### 1. Points of Contacts:

Erin Oleson, Chief Scientist  
NOAA/IRC  
Attn: NMFS/PIFSC/PSD/Erin Oleson  
1845 Wasp Blvd., Bldg. 176, Room 1256  
Honolulu, HI 96818  
(808) 725-5712  
Erin.Oleson@noaa.gov

LCDR Aaron Maggied, NOAA Ship Operations Officer  
NOAA Ship *Oscar Elton Sette*  
1897 Ranger Loop, Building 184  
Honolulu, HI 96818  
(808) 469-0074  
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.

- A. 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. 20311) issued to the Pacific Islands Fisheries Science Center by the National Marine Fisheries Service, Office of Protected Resources.
- B. 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. Direct take research activities have been evaluated under NEPA for their respective permits.
- C. CNMI DFW: Research activities during this project will be conducted under the Commonwealth of the Northern Mariana Islands (CNMI) Department of Lands and Natural Resources, Division of Fish and Wildlife, scientific research license (CNMI DFW #037528-18).

## 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 10 knots:

#### **Leg 1: 24 Days at Sea (ChST)**

07 July-08 July Scientists embark: Oleson, Keating, Norris, Allen, Barkley, Yin, Vazquez, Bendlin, Ligon, Ü, Hill, and Lanka.

09 July 0900 Depart Apra Harbor, Guam. Conduct welcome aboard brief, safety drills, commence visual survey and acoustic operations.

10 July - 31 July. Deploy Drifting Acoustic Spare Buoy Recorders (DASBRs) upon arrival at the site. Conduct daytime visual and passive acoustic survey operations for cetaceans. Conduct overnight passive acoustic operations. Recover DASBRs upon arrival at their location. Recover and deploy HARPs.

01 August 0900 Arrive Saipan, CNMI.

02 August Scientists disembark: Oleson, Keating, Norris, Allen, Barkley, Yin, Vazquez, Bendlin, Ligon, Ü, Hill, and Lanka. Leg 1 complete.

#### **Leg 2: 15 Days at Sea**

03 August (ChST) Depart Saipan, CNMI. Commence transit to Ford Island, HI. No scientific operations are scheduled for the transit.

16 August (HST) Arrive Ford Island, HI. Leg 2 complete.

### B. Staging and Destaging:

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 Scientific Computing System (SCS), the Global Positioning System (GPS) navigational systems, and the scientific freezer to ensure that they are in proper working order. 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 starting on 14 May, with scheduled departure for *Sette* on 26 May.

#### 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.

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 mammal 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 small boat surveys, biopsy, photography, hexacopter, 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  $\leq 20$  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  $\leq 20$  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  $\leq 20$  degrees back toward the trackline, or 3) return to the position at which the ship diverted. Visual observation effort will resume once the ship is within 5 nmi of the trackline with the first two options.

Ship Equipment Required: The observation computer will be connected to the ship's global positioning system (GPS; for course, speed, and position information) and Scientific Computer System (SCS; for weather and heading information) via CAT5 cables. The observation computer system will require 2-3 CAT5 cables that connect the Flying Bridge to the eLab. 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. The Command need not maintain a log of visual or acoustic effort or sightings within SCS. 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 occur during day or night.

- a) **Towed linear array:** A towed hydrophone array will be deployed approximately 300 m behind the vessel (maximum length of two is ~330m). 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 daily 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. During acoustic survey operations, the vessel must maintain forward motion, 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. Larger rudder commands may be requested if the acoustics team determines that doing so will not damage array cabling. Such allowances may be weather dependent. 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. All active acoustic sensors (12kHz navigational sounder, EK-60 or ES-60 echosounders, ADCP) should be secured during towed hydrophone array operations as it interferes with detection of cetacean sounds on the array and reduces cetacean detection rates as animals react to the sound source.

- b) **Towed tetrahedral array:** The acoustics personnel will test the towed three-dimensional hydrophone array with tetrahedral hydrophone configuration. The towed tetrahedral array uses the same system as the towed linear array, except



that instead of two linear array components, the tetrahedral array will have one linear array and one three-dimensional array. Also identical to the towed linear array, the towed tetrahedral array will be deployed approximately 300 m behind the vessel (maximum length of two is ~330m).

The tetrahedral array is constructed using a three-dimensional aluminum frame and is no more than 1 m<sup>2</sup> 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 linear hydrophone array are expected with one important exception. During retrieval, the ship will slow down to 3 knots and remain at this speed until the tetrahedral array is 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.

- c) **Sonobuoys:** Sonobuoys 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. A chronological record of sonobuoy deployments will be kept by the ship with locations, dates, and times using SCS.

- 3. **Oceanography:** A chronological record of oceanographic stations (CTD, water samples, etc.) will be kept by the ship with locations, dates, and times in GMT using SCS. The ship will provide a copy of SCS data (e.g., ".MOA snap" file) 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) **eDNA Casts:** Conduct a shipboard CTD cast to collect eDNA water samples on an opportunistic basis at the discretion of the Chief Scientist.

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 for the purposes of collecting eDNA will generally occur at night and several casts may occur within the same night. Bottles will be triggered at TBD depths during the upcast. Two 1-L water samples will be retained from each triggered bottle, labeled with station location and depth, and then frozen for later analysis.

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 ship will provide two sets 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 secured.

Ship Personnel Requirements: The ship's Survey Technician will be responsible for the CTD operations and maintenance. Other designated scientists can assist as needed, particularly with collection and labeling of collected seawater. The Deck Department will provide the needed personnel to assist with CTD deployment.

- b) **Active Acoustics:** The navigational 12kHz echosounder, the scientific EK60 sounder, and all other active acoustic sources will be secured (off) during all cetacean operations unless required by the Command for ship safety.
- c) **CTD casts:** Conduct early evening shipboard CTD casts throughout the study area at the discretion of the Cruise Leader (approximately 21 casts in the study area, ~one cast in each "box" of survey grid, Figure 1). 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.

- 4. Small boat launches:** Small boat operations will use Steel Toe (SE-6, 19' safeboat owned by PIFSC) for opportunistic tagging, biopsy, and photo ID operations. CRP would like SE-4 (Northwind, 17' boat owned by the ship) for support small boat operations. Operations will be conducted when weather permits and in adhering to GAR assessments. When small boat operations are anticipated, a meeting will be held each morning to discuss that day's small boat operations and to assess the conditions likely to be encountered on the water that day. A small boat meeting may not be required each day, and in the event a small boat launch is necessary on a day without a morning meeting, a safety meeting will be conducted immediately prior to small boat launch. Small boat deployments will occur as cetacean groups of interest are encountered. Cetacean survey operations include collection of photographs, water samples for eDNA, prey samples, biopsy samples, and deployment of satellite tags on cetacean groups. Cetacean survey operations on SE-6 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. If SE-4 is requested for cetacean sampling launches, ship's coxswain and crew will be required to operate SE-4.

The Science Party may be able to provide qualified crew to support SE-4 operations if needed.

5. **Autonomous acoustic hardware deployments**

a) **High-Frequency Acoustic Recording Package (HARP) Recovery and Deployment:**

Two (2) HARPs will be recovered and redeployed near Saipan and Tinian and one (1) HARP will be deployed near Pagan. The timing of each HARP operation is TBD. The current HARP locations are:

Saipan: 15 19.021'N, 145 27.443'E

Tinian: 15 02.455'N, 145 45.245'E

Pagan: 17 57.785'N, 145 28.867'E

Ship Speed, Order of Operations: Deployment may occur during day or night. Recovery must occur during daylight hours.

Ship Equipment Required: The ship will provide the crane.

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

b) **Drifting Autonomous Spar Buoy Recorders (DASBRs) Deployment:**

Eight (8) DASBRs are planned to be deployed, recovered, and possibly redeployed over the duration of the survey. DASBRs consist of a spar buoy and polyurethane line, a submerged recorder and hydrophone system, and 25 to 35 lbs weight at 150 m depth. The spar buoys will be attached to a secondary round float using a 10 m floating line to aid in retrieval. Buoys will also be fitted with reflective tape. DASBRs will be deployed and retrieved during the survey by a member of the acoustics team and a member of the ship's crew. Deployment will be from the stern of the vessel and must occur at vessel speed no greater than 1.5 kts speed over ground, and buoy deployed such that it drifts away from the vessel. This will require communication with the bridge immediately prior to deployment to discuss expected drift and preferred location of deployment. Nighttime and daytime deployments are expected. Retrieval of buoys will be from the side station or starboard quarter. Buoys will be tracked with a satellite geolocator; when at close range (<5 nm), they will be re-located visually with the assistance of observers on big-eye binoculars. The DASBRs and buoys include a ring of reflective tape at the top, and the ship's spotlight will be necessary to locate buoys at night. Nighttime and daytime retrievals are anticipated. Deployment and retrieval (once buoys are located) should each require approximately 30 minutes.

6. **Salvage of Marine Mammals, Birds, and Turtles:** Marine mammal body parts and/or birds and/or turtles 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 or turtle 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 or turtles 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.

D. Dive Plan

No SCUBA diving will be conducted for this project.

E. Applicable Restrictions

Conditions which preclude normal operations:

1. **Mitigation Measures for Protected Species during Scientific Operation Mitigation Measures for Protected Species during Scientific Operations**

Monitoring Methods

The officer on watch, Chief Scientist (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 the CTD or other over-the-side operations (with the exception of visual survey or passive acoustic operations).

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 Chief Scientist. 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 Chief Scientist, to move again or to skip the station. The officer on watch will first consult with the Chief Scientist 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 Chief Scientist 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 20311 and do not require “move on” mitigation during daytime operations.

## **2. “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 these Instructions are covered for directed take under NMFS Take Permit 20311.

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 Chief Scientists, 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. E. 1. (above, “Mitigation Measures for Protected Species during Scientific Operations “), PIFSC has developed mitigation measures for our fisheries and ecosystem research projects to avoid take and comply with the Lecky, Murawski, and Merrick guidance.

## **III. Equipment**

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

- CTD system and heavy duty cage assembly
- Starboard J-frame and block for CTD

- Oceanographic winches and cables
- SEACAT portable CTD with backup
- Deck cranes with for SafeBoat deployment/recovery
- Thermosalinograph
- 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 network folder for science access
- Canopy covering all 4 bigeye mounts on flying bridge
- Small boat SE-4, including spare parts, and request ship's coxswain and crew for the operation of SE-4
- One (1) hip tank filled with small boat fuel.
- Copy machine
- Laminating machine
- Network access to a printer
- Internet access, with notification if privileges are removed
- Space in the Survey Tech's office for our photo-processing computer
- Space on aft deck for the acoustic winch and all scientific equipment
- Five (5) ship's GPS connections to the dry lab for observers and for acoustics computers. Please note that it is very important that all science computers be connected to the same ship's GPS. Two connections are needed at the forward desk (observers) and three connections are needed near the starboard side aft desk (acoustics)
- Four (4) CAT5 connections from the dry lab forward desk. Two connections to the flying bridge, one connection to the wet lab, and one connection to the Survey Tech's office
- Two (2) CAT5 connections from the dry lab forward table to the Chief Scientist stateroom
- Space on flying bridge for two (2) fish boxes of mammal equipment
- Space on the bow for one (1) box biopsy equipment

**B. Capabilities: It is requested that the ship provide the following:**

- Permission for the scientific party to ready scientific spaces (e.g. set up computer server, acoustic array work station and battery bank, etc.) during the week prior to departure from Ford Island (beginning 9 May)
- Assistance from the ship's deck department with the crane for staging and destaging

- Lunches provided from the stewards department for small boat operations

### **C. 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 and Survey Office
- 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 computers mounted in the E-lab with CAT5 KVM extension unit at CPUs and a remote console unit on the flying bridge
- Wireless routers for remote communication of data collection iPads from the flying bridge and bow
- Crossbows, biopsy darts and tips, sample vials, and long-handled dip nets
- One liquid nitrogen dewar (34 L) for biopsy sample preservation with MSDS
- Permits for specimen collection
- One pallets of sonobuoys (48 in x 40 in x 60 in, 1200 lbs when full)
- Three pallets of DASBRs
- 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, survey gear, biopsy gear)
- 19-ft Safeboat w/frame and cradle
- Battery bank for hydrophone array
- 3 HARPs and 600lbs of weights
- Two (2) pallet totes for HARP gear
- 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

<b>Common Name of Material</b>	<b>Quantity</b>	<b>Notes</b>	<b>Trained Individual</b>	<b>Spill Control</b>
Cetylcide	1 Liter	Stored in Wet Lab HazMat cabinet	Allan Ligon	C
Isopropyl (70%)	1 Liter	Stored in Wet Lab HazMat cabinet	Allan Ligon	F
Bleach	1 Gallon	Stored in Wet Lab HazMat cabinet	Allan Ligon	C
Ethanol (70%)	1 Liter	Stored in Wet Lab HazMat cabinet	Allan Ligon	F

#### C. Chemical safety and spill response procedures

##### **C: Corrosive**

- Wear appropriate protective equipment and clothing during cleanup.
- Ventilate closed spaces before entering them.
- Never mix chlorine bleach with any other household cleaners.
- 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 water. Collect in a non-combustible container for prompt disposal.

**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.

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.

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 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 or Principal Investigator, as appropriate. 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](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 makeup 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. Unless prior arrangements are made, the science party may move aboard the night before scheduled departure and must move off the ship the day after scheduled arrival (at the end of project). The Chief Scientist/Principal Investigator 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 or Principal Investigator 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>.

NHSQs must be submitted every 2 years for individuals under the age of 50 and every 1 year for ages 50 and above. NHSQs must be accompanied by NOAA Form (NF) 57-10-02 - Tuberculosis

Screening Document in compliance with OMAO Policy 1008 (Tuberculosis Protection Program, which requires a yearly PPD or TB exam).

The completed forms should be sent to the Marine 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](http://ocio.os.doc.gov/ITPolicyandPrograms/IT_Privacy/PROD01_008240)).

The only secure submission process approved by NOAA is [Accellion Secure File Transfer](#) which requires the sender to set up an account using a valid NOAA email address and password. [Accellion's Web Users Guide](#) is a valuable aid in using this service. As a cost-reduction measure under the DOC contract with Accellion, user accounts expire after 30 days of inactivity. Simply re-register to send and receive files.

Persons without a NOAA email account must fax or mail their forms.

**Contact information:**

Marine 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 has increased, on average per ship, to 768 kbs and is shared by all vessel's staff and the science team at no charge to sailing personnel. Increased bandwidth in 7 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.

Computer Operating Systems that the support vendor has identified as reaching "End of Life" for support will not be allowed on the shipboard network. Examples include Microsoft Windows XP and Vista as well as Windows Server 2003.

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 Designated Escorts (if any) 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 subject to Export Administration Regulations (EAR) that will be brought aboard the ship. .

The Commanding Officer and the Chief Scientist will keep each other informed of controlled technologies belonging to the ship and to the scientific party and will work together to implement any access controls necessary to ensure no unlicensed export occurs.

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 DSN 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, if not sailing for the project, 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 207-12 Appendix C (Certification of Conditions and Responsibilities for a Foreign National) within three days of the FN's arrival onboard the ship.

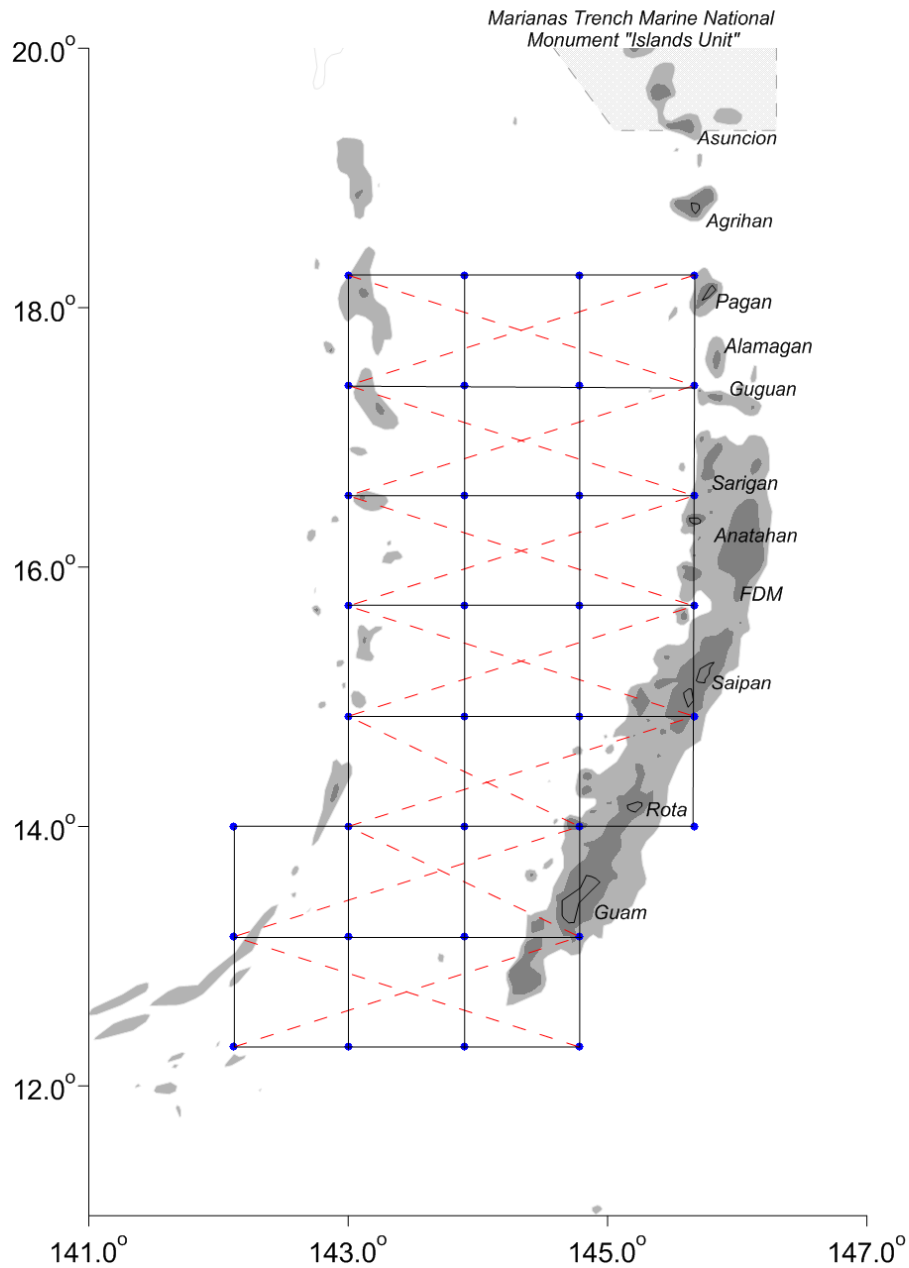
## **IX. Appendices**

**Figure 1.** Overall survey design for SE-18-03 (MACS).

**Table 1.** Underlying survey grid waypoints for SE-18-03 (MACS).



# MACS 2018 Survey Plan



**Figure 1.** The project’s overall survey design, which includes the CTD survey grid and survey trackline. There are 21 boxes in the grid. Our goal will be to visually and acoustically survey and conduct one evening CTD in each box. The zigzag trackline gives us an efficient path to conduct that survey, though is only a guide. If we have to leave the trackline to recover or deploy a DASBR, our survey track will deviate. In each case the Chief Scientist will be in touch with the OOD to determine what path we want back to the trackline, or how to proceed to the next grid square.

**Table 1.** The project's underlying survey grid point locations (A1-H4).

<b>Mark Name</b>	<b>Latitude</b>	<b>Longitude</b>
A1	18.25	143.00
A2	18.25	143.90
A3	18.25	144.78
A4	18.25	145.67
B1	17.40	143.00
B2	17.40	143.90
B3	17.40	144.78
B4	17.40	145.67
C1	16.55	143.00
C2	16.55	143.90
C3	16.55	144.78
C4	16.55	145.67
D1	15.70	143.00
D2	15.70	143.90
D3	15.70	144.78
D4	15.70	145.67
E1	14.85	143.00
E2	14.85	143.90
E3	14.85	144.78
E4	14.85	145.67
F1	14.00	142.12
F2	14.00	143.00
F3	14.00	143.90
F4	14.00	144.78
F5	14.00	145.67
G1	13.15	142.12
G2	13.15	143.00
G3	13.15	143.90
G4	13.15	144.78
H1	12.30	142.12
H2	12.30	143.00
H3	12.30	143.90
H4	12.30	144.78