



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southwest Fisheries Science Center  
8901 La Jolla Shores Drive  
La Jolla, CA 92037-1508

*Project*  
**PASCAL Survey Instructions**

**Date Submitted:** 19 July 2016  
**Platform:** NOAA Ship *Bell M. Shimada*  
**Project Number:** SH-16-11 (QMAO), SWFSC MMTD Cruise No. 1650  
**Project Title:** PASCAL: Passive Acoustic Survey of Cetacean Abundance Levels  
**Project Dates:** August 19, 2016 to September 30, 2016

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8/11/2016

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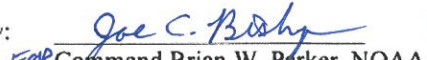
  
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Dated:

8/17/2016



## I. Overview

### A. Brief Summary and Project Period

SWFSC will conduct a dedicated acoustic survey for cetaceans throughout the California Current off the U.S. West Coast from 19 August through 30 September 2016. The survey will be called PASCAL: Passive Acoustic Survey of Cetacean Abundance Levels. Focal study species are beaked whales (family Ziphiidae), which due to their cryptic nature are less amenable to visual survey than most other cetacean species. Other species of interest for acoustic survey are sperm whales, and dwarf and pygmy sperm whales. Data will be collected from a network of approximately 20 drifting acoustic spar buoy recorders that will be deployed during the first leg of study and retrieved during the second. DASBR hydrophones are suspended 100 m below the surface. Because of this, and since the DASBRs are away from the ship, there is little noise to mask cetacean detections, and the depth of hydrophone improves detection of deep-diving species. Using 20 DASBRs, deployed for approximately 20 to 30 days each, should allow collection of far more acoustic data for the species of interest than have ever been collected to date and will be an unprecedented opportunity to collect data on these cryptic species for which NOAA stock assessments contain relatively little information.

Between DASBR deployments, scientists will conduct dedicated towed hydrophone array work to (a) estimate the depth distribution of calling beaked whales, which are needed to estimate the horizontal range of DASBR detections (for density estimation) and (b) provide visual confirmation of the species identification associated with different beaked whale call types within the genus *Mesoplodon*. Currently, *Mesoplodon* acoustic signals can be identified to genus but not to species within this genus, which compromises the information content and hence the value of marine mammal stock assessments for these species. Once *Mesoplodon* calls are correctly assigned to species identified by observers, then the DASBR data can be used to generate species-specific estimates of density (our density estimates are currently at the genus level for beaked whales).

### B. Days at Sea (DAS)

Of the 40 DAS scheduled for this project, 00 DAS are funded by an OMAO allocation, 40 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 low Operational Tempo.

### C. Operating Area

The principal study area includes the U.S. West Coast Exclusive Economic Zone (EEZ) – Washington, Oregon, and California coastal waters out to a distance of approximately 300 nautical miles. On Legs 1 and 2, the survey is planned to be predetermined tracklines to place the DASBRs. Leg 3 tracklines will be determined by the locations of the DASBRs that need to be recovered. A map of the survey area with tracklines is shown in the Appendix, Figure 1.

D. Summary of Objectives

The primary objective of this project is to estimate density of beaked whales and other acoustically surveyable species (e.g., sperm whales *Physeter macrocephalus*, and pygmy and dwarf sperm whales (genus *Kogia*)) throughout the California Current ecosystem using new survey technology and increased acoustic sampling effort compared to past large-scale transect surveys (which have been more visually focused). PASCAL is expected to provide far more acoustic detections than during previous large-scale cetacean assessment surveys, thus providing improved estimates of density (and in turn, improving existing spatial models and trend estimates). A secondary objective is to improve the ability to identify acoustic calls to the species level. For example, many beaked whale detections are identifiable to the genus level (e.g., *Mesoplodon*), but lack paired visual sighting confirmation to allow *Mesoplodon* calls to be identified to species. Once calls are identified to the species level, species-specific density estimates for *Mesoplodon* in the California Current can be provided for the first time.

E. Participating Institutions

NOAA/NMFS/Southwest Fisheries Science Center, La Jolla, CA

F. Personnel/Science Party: name, title, gender, affiliation, and nationality (sort by aboard date)

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Rankin, Shannon	Sr. Acoustician	18-Aug-16	23-Aug-16	Female	SWFSC	USA
Holland, Robert	Computer Specialist	18-Aug-16	23-Aug-16	Male	SWFSC	USA
Moore, Jeff	Chief Scientist	22-Aug-16	7-Sep-16	Male	SWFSC	USA
Pitman, Robert	Sr. Marine Mammal Observer	22-Aug-16	30-Sep-16	Male	SWFSC	USA
Keating, Jennifer	Sr. Acoustic Technician	22 Aug-16	30-Sep-16	Female	SWFSC	USA
Forney, Karin	Marine Mammal Observer	22-Aug-16	7-Sep-16	Female	SWFSC	USA
Sanders, Greg	Visiting Scientist	22-Aug-16	7-Sep-16	Male	BOEM	USA
Giddings, Ashlyn	Acoustic Technician	22-Aug-16	7-Sep-16	Female	Scripps Inst. Oceanography	USA
Schlenger, Andrew (AJ)	Visiting Scientist	22-Aug-16	7-Sep-16	Male	Scripps Inst. Oceanography	USA
Barlow, Jay	Chief Scientist	11-Sep-16	30-Sep-16	Male	SWFSC	USA
Keen, Eric	Acoustic Technician	11-Sep-16	30-Sep-16	Male	SWFSC	USA
Archer, Eric	Marine Mammal Observer	11-Sep-16	30-Sep-16	Male	SWFSC	USA
Cairns, Colette	Visiting Scientist	10-Sep-16	30-Sep-16	Female	NOAA Office of Protected Resources, HQ	USA

G. Administrative

1. Points of Contacts:

Primary Point of Contact

Annette Henry, Survey Coordinator, SWFSC  
8901 La Jolla Shores Drive  
La Jolla, CA 92037  
Office: (858) 546-5672  
Cell: (858) 735-7733  
[Annette.Henry@noaa.gov](mailto:Annette.Henry@noaa.gov)

Alternate land based POC

Robin LeRoux, MMTD Deputy Director  
8901 La Jolla Shores Drive  
La Jolla, CA 92037  
Office: (858) 546-5659  
Cell: (858) 640-0693  
[Robin.LeRoux@noaa.gov](mailto:Robin.LeRoux@noaa.gov)

Operations Officer  
NOAA Ship *Bell M. Shimada*  
Phone: 808-648-5457  
Email: [Ops.Bell.Shimada@noaa.gov](mailto:Ops.Bell.Shimada@noaa.gov)

2. Diplomatic Clearances

None Required.

3. Licenses and Permits

This project will be conducted under the NMFS Marine Mammal Permit No. 19091, NMS Permits MULTI 2013-009, MULTI-2016-010, and USFWS Migratory Bird Treaty Permit MB033305-0.

**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:

Mobilization: 18 August, Newport, OR - Acoustic towed array setup  
Leg 1: 19-23 August, Newport, OR to San Diego, CA (may arrive on 22nd - depends on departure and weather)  
"Touch and Go" San Diego, CA: Load remaining equipment and scientists

If ship arrives on 22<sup>nd</sup>, will depart on 23<sup>rd</sup>; if arrival is after 1600 on 23rd, ship will depart morning of the 24th.

Leg 2: 23 August - 7 September, San Diego, CA to San Diego, CA

Leg 3: 11 - 30 September, San Diego, CA to San Diego, CA

B. Staging and Destaging:

Staging of the ship:

18 August: Newport, OR

- Acoustic winch, deck cable, and tow cable to be loaded on ship
- 5 DASBRs buoys - each buoy consists of 1 or 1.5 m spar buoy, 100-200 m of line in a plastic bucket, a recorder (approx. 2 kg) and small 15 lb anchor. Equipment will be in one fish box and one small crate.
- Assistance loading and securing this equipment in Newport is required

23 August: San Diego, CA

- 15 buoy recording systems - 1 or 1.5 m spar buoy, 100-200 m of line in a plastic bucket, a recorder (approx. 2-15 kg) and a small 15 lb anchor (recording systems will be in fish boxes and wooden crate)
- 2 tetrahedral hydrophone arrays
- 1 fishbox backup towed array equipment
- 1 fishbox biopsy equipment
- 2 fishboxes observer equipment
- 3 cases big eye binoculars
- 3 binocular stands
- acoustic equipment to be hand carried aboard the vessel by scientists

3 October: San Diego, CA - Destaging of all MMTD survey equipment

C. Operations to be conducted:

***Passive Acoustics***

**Towed Hydrophone Array:** A towed hydrophone array will be deployed approximately 300 m behind the vessel on Legs 2 and 3, weather and scientific operations permitting. The array will be deployed by the acoustics personnel prior to the start of visual observations, and will be retrieved when necessary. Acousticians will be responsible for maintaining equipment, recording input, and monitoring automatic detection programs. Real-time monitoring of the array, and recording sounds made by cetaceans to localize their positions will also be conducted. The acoustician will determine the optimal towing speed for the array along the designated trackline. If the ship's speed should deviate from this by more than 1 kt, the bridge personnel will notify the acoustician on watch or the Chief scientist.

The array will be towed, weather permitting, at all times except during DASBR deployment and retrieval. To retrieve the array, the ship will first slow down to 5 kts and maintain its current heading. During array retrieval and deployment, the ships' course and speed must be maintained. During Leg 2, the chief scientist and acoustic team will work with the Commanding Officer to assess the maneuvering limits of the ship for this array (typically, vessel speed must be within 3 and 10 kts, turning must not exceed 180°, and rudder angle limits will be determined during Leg 2). The acoustics team must be informed of potential hazards with the maximum lead-time. Trolling or rod and reel fishing cannot occur when the array is deployed.

**DASBR Buoys:** Twenty (20) Drifting Autonomous Spar Buoy Recorders (DASBRs are planned to be deployed during Legs 1 and 2. Retrieval of DASBRs will take place during Legs 2 and 3. Two versions of the DASBR will be deployed. The four original-design DASBRs consist of a large white spar buoy attached to a conducting cable with hydrophones, drogue, and 15-lb weight at 100 m depth. The 16 newer versions consist of a black ABS spar buoy, bungee and nylon line, a submerged recorder and hydrophone system, and a 15-lb weight at 100 m depth. Both systems include sub-surface floats for additional buoyancy. The spar buoys will be attached to a secondary round buoy using a 10 m floating line to aid in detection and retrieval. Buoys will also be fitted with a flashing light and 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, 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. Buoys will be retrieved during Legs 2 and 3. Retrieval of buoys will be from the side station or starboard quarter. Buoys will be tracked with two satellite geolocators; when at close range (<5 nm), they will be re-located visually 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. Vessel speeds will generally be 10 kts to accommodate towed hydrophone surveys. Faster speeds may be required on Legs 2 and 3 to allow pickup of all DASBRs, depending on the weather and buoy drift rates.

### **Visual Surveys**

Marine mammal observers will maintain a daily watch for cetaceans, with emphasis on target species (beaked whales and *Kogia sp.*). Watch will be maintained on the flying bridge during daylight hours (approximately 0600 to 1900) by mammal observers. An "independent observer" may keep a separate watch of animals sighted during the cetacean survey operations, to be compared later with the observer team's data.

On sighting a marine mammal school or other feature of biological interest, the Chief scientist or marine mammal observer team on watch may request that the vessel be

maneuvered to approach the school or feature for investigation. When the ship approaches a school of dolphins, the observers will make independent estimates of school size. Biopsy and photography operations may commence from the bow, based on directions from the Chief scientist or Senior Marine Mammal Observers.

When the observers have completed scientific operations for the sighting, the ship will resume the same course and speed as prior to the sighting. 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 Marine Mammal Observers may request that, rather than proceed directly toward the next waypoint, the ship take a heading of 20 degrees back toward the trackline or return to the position at which the ship diverted before resuming effort.

### **Biopsy Sampling**

Samples for genetic analyses of cetaceans will be collected on an opportunistic basis. The animals to be sampled will be approached by the research vessel during normal survey operations or will approach the vessel on their own. Samples will be collected, from animals within 80 m of the bow of the vessel, using a dart fired from a crossbow or rifle.

### **Photography**

Photographs of marine mammals will be taken on an opportunistic basis. These will be used to study social behavior and movement patterns of identified individuals, and to study geographic variation. The animals to be sampled will be approached by the research vessel during normal survey operations or will approach the vessel on their own.

### **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. All marine mammal specimens obtained will be archived at the SWFSC but may be released on extended loan to recognized research institutions according to existing guidelines. All bird specimens will be donated to the San Diego Natural History Museum.

### **Oceanography**

*Thermosalinograph Sampling:* The ship will provide and maintain a thermosalinograph (TSG) for continuous measurement of surface water temperature and salinity. The TSG will continuously collect surface water temperature and salinity from the ship's clean seawater system.

### **Active Acoustics**

The bridge and survey department are not to use echosounders during the cruise except for shallow water navigation. This is a passive acoustic survey and active acoustic

equipment aboard vessels has been known to interfere with the passive acoustic array. The ship's navigational depth sounders may be on when the ship is inshore in depths of 30 fathoms or less. The Commanding Officer will inform the Chief scientist or Lead Acoustician any time the navigational depth sounders are used.

### **Collection of Fish**

Fish will be collected on an opportunistic basis at the discretion of the Chief scientist. Fish will be measured, sexed, and stomach contents will be examined and recorded by scientific personnel. The Chief scientist will be responsible for the disposition of the catch, in accordance with NOAA Administrative Order 202-735B, dated January 9, 1989. While underway, trolling gear will be used when conditions permit. While stationary, hook-and-line gear may be used. Trolling or rod and reel fishing cannot occur when the hydrophone array is deployed.

#### **D. Dive Plan**

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

Dives are not planned for this project.

#### **E. Applicable Restrictions**

Conditions that preclude normal operations are: poor weather conditions, equipment failure, safety concerns, and unforeseen circumstances. Equipment failure issues will be remedied as soon as possible.

### **III. Equipment** (Hazardous materials are not to be listed here. They should be included in Hazardous Materials Section.)

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

1. Insulated cable running from location site for CPUs (SIC or Chief Scientist stateroom and acoustics laboratories) to the flying bridge consoles (minimum two connections).
2. Power and ship's GPS 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 – there will be six computers in the dry lab that will require GPS connections)
3. Canopy on flying bridge
4. Freezer space for biological samples (standard freezer -20° C and -80° C freezer)
5. Storage space on aft deck for up to 14 DASBRs in 4 fish boxes (48" x 44" x 30")
6. Deck space for 2 fish boxes for acoustics equipment
7. Hydraulic power unit for passive acoustic winch



8. Hansen Coupling Division female LL6-HKP/LL8-HKP ends to quick connect style connectors on hose from hydraulic power supply for acoustic winch
9. Space of the aft deck for the acoustic winch (4' x 3' footprint)
10. Four (4) ship's GPS connections to the acoustics lab for computers
11. Space on flying bridge for 2 fish boxes of mammal equipment
12. Space on bow for one box biopsy equipment
13. Grappling hook and line
14. Spotlight to find DASBRs at night

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

1. Four 7x50 hand-held binoculars
2. Two 25x 150 binoculars and stands
3. Three digital cameras, lenses, and accessories
4. Six handheld radios
5. Three laptop computers for Chief scientist, photo-ID team, and backup unit
6. One desktop computers mounted in the acoustics room with CAT6 KVM extension units at CPUs and at remote console unit on the flying bridge
7. Portable GPS component
8. Crossbows, biopsy darts and tips, sample vials and storage solution (Ethanol) with SDS (MSDS)
9. One notebook computer for biopsy data entry and two printers: a small deskjet and a thermal label printer
10. One long-handled dip net
11. Computer data storage media (external hard drives, flash drives)
12. Hydrophone arrays and directional hydrophones
13. Hydraulic winch for hydrophone array, 3' x 4' footprint, ~400 lbs
14. Hansen Coupling Division male LL6-HKP/LL8-HKP ends to quick connect style connectors on 21' hose to hydraulic power supply for acoustic winch
15. Acoustics recording equipment, including mixer and recording rack, laptop computers (3), desktop computers (2), and accessory equipment.
16. Two fish boxes for deck storage of backup acoustic equipment
17. Twenty DASBR buoy systems
18. Permits for specimen collection
19. 2 x 4's to build platform for biopsy station
20. Printer for chief scientist room
21. Box of copy paper

**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 of Material	Qty	Notes	Trained Individual	Spill control
Bleach	1 x 500 ml	Corrosive	Robert Pitman	C
Ethanol	1 x 4000 ml	Flammable	Robert Pitman	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: Flammable**

- Use only in a well-ventilated area.
- Avoid contact with eyes, skin, and clothing.
- Keep containers tightly closed.
- Avoid contact with heat, sparks, flame, and sources of ignition.
- Store in a tightly closed container in a cool, dry, well-ventilated area
- Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container; remove all sources of ignition; use a spark-proof tool; and provide ventilation.

Inventory of Spill Kit supplies

Product Name	Amount	Chemicals it is useful against	Amount it can clean up
No brand name	1 kit	Bleach, Ethanol	4 liters

D. Radioactive Materials

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary (“Piggyback”) Projects

No Supplementary Projects are planned.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

VI. Disposition of Data and Reports

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

A. Data Classifications: *Under Development*

- a. OMAO Data
- b. Program Data

B. Responsibilities: *Under Development*

**VII. Meetings, Vessel Familiarization, and Project Evaluations**

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

B. Vessel Familiarization Meeting: The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project's start and is normally presented by the ship's Operations Officer.

C. Post-Project Meeting: The Commanding Officer is responsible for 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. The form is available at <http://www.oma.noaa.gov/fleeteval.html> and provides a "Submit" button at the end of

the form. Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared with the ships', specific concerns and praises are followed up on while not divulging the identity of the evaluator.

## **VIII. Miscellaneous**

### **A. Meals and Berthing**

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

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non-NOAA or non-Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 17, 2000 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

### **B. Medical Forms and Emergency Contacts**

The NOAA Health Services Questionnaire (NHSQ, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA

website <http://www.oma.noaa.gov/find/media/documents/noaa-health-services-questionnaire>.

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](http://ocio.os.doc.gov/ITPolicyandPrograms/IT_Privacy/PROD01_008240)).

The only secure email process approved by NOAA is Accellion Secure File Transfer which requires the sender to setup an account. Accellion's Web Users Guide is a valuable aid in using this service, however to reduce cost the DOC contract doesn't provide for automatically issuing full functioning accounts. To receive access to a "Send Tab", after your Accellion account has been established send an email from the associated email account to [accellionAlerts@doc.gov](mailto:accellionAlerts@doc.gov) requesting access to the "Send Tab" function. They will notify you via email usually within 1 business day of your approval. The "Send Tab" function will be accessible for 30 days.

Contact information: Include only the Pacific OR Atlantic Office as applicable.

Regional Director of Health Services  
Marine Operations Center – Atlantic  
439 W. York Street  
Norfolk, VA 23510  
Telephone 757-441-6320  
Fax 757-441-3760  
Email [MOA.Health.Services@noaa.gov](mailto:MOA.Health.Services@noaa.gov)

Regional Director of Health Services  
Marine Operations Center – Pacific  
2002 SE Marine Science Dr.  
Newport, OR 97365  
Telephone 541-867-8822  
Fax 541-867-8856  
Email [MOP.Health-Services@noaa.gov](mailto:MOP.Health.Services@noaa.gov)

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

C. Shipboard Safety

Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. At the discretion of the ship CO, safety shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship's Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire.

D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via email and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required and it must be arranged through the ship's Commanding Officer at least 30 days in advance.

E. IT Security

Any computer that will be hooked into the ship's network must comply with the *OMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

- (1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

Completion of the above requirements prior to boarding the ship is required.

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

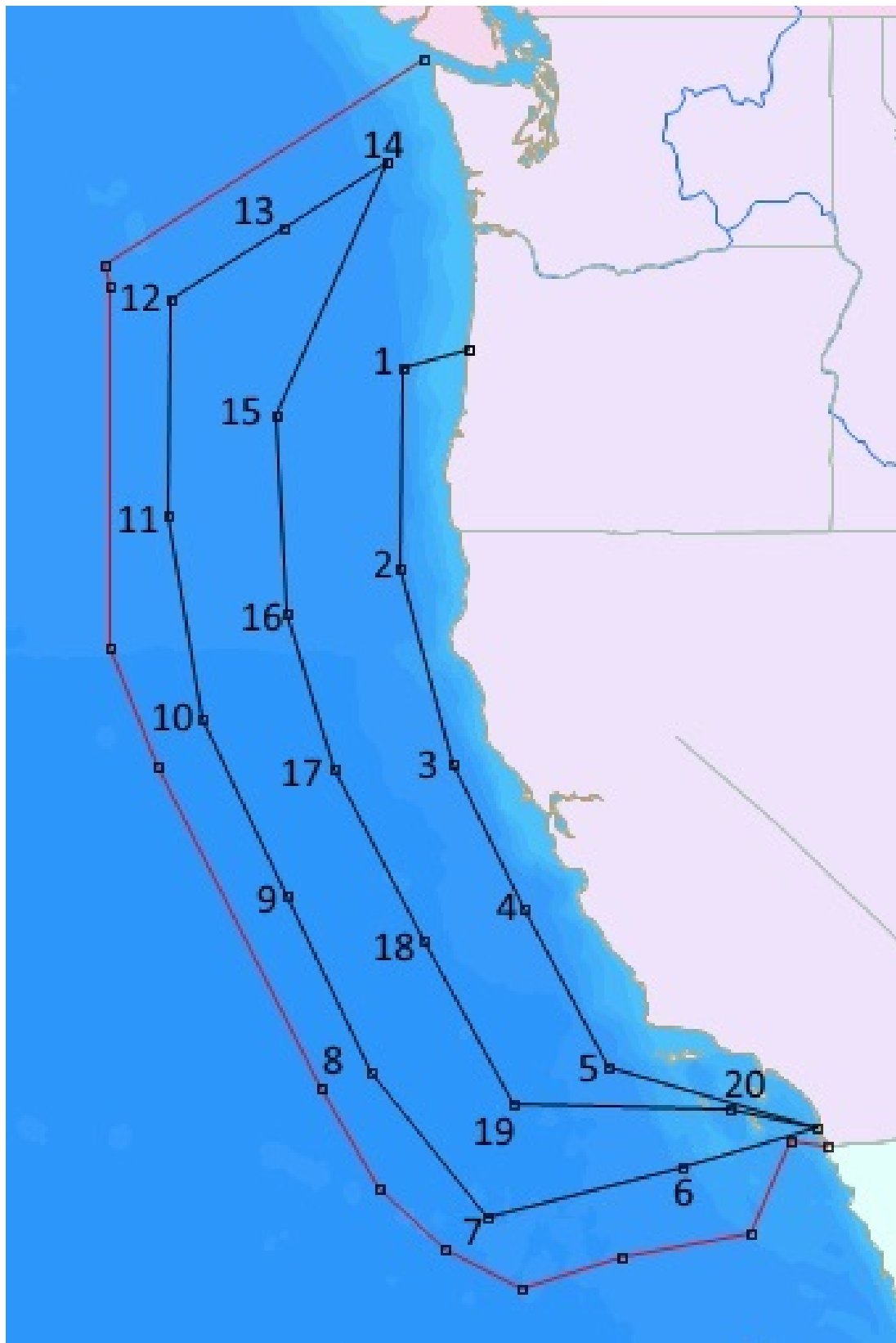
F. Foreign National Guests Access to OMAO Facilities and Platforms

Foreign National access to the NOAA ship or Federal Facilities is not required for this project.

#### **VIII. Appendices**

1. Tracklines
2. Waypoints and deployment stations by leg
3. Diagram of DASBR construction





Planned Leg 1 and 2 transect lines (black lines) and acoustic buoy deployment locations (associated open squares) for PASCAL 2016. Red lines and associated open squares mark the boundary of the study area.

Table 1. Waypoints and DASBR deployment stations. DASBRs should be deployed in the following order on Legs 1-2. Distance between most stations is approximately 175 nmi; time between stations is approximately 18-20 hours at 10 kts. Note: Leg 3 requires locating DASBRs and no waypoints are provided.

Leg	Port/DASBR Station	Latitude	Longitude	Date (Approx.)	DASBR No.	DASBR Recorder Type and ID	Depth Recorder	Hydrophone Array No.
1	Newport	44 38.000 N	124 03.000 W	19-Aug				
1	1	44 21.157 N	125 18.395 W	19-Aug	B-5	Soundtrap 4300 #A		5
1	2	41 29.393 N	125 21.816 W	20-Aug	B-6	Soundtrap 4300 #B	OT-1	6
1	3	38 34.397 N	124 21.784 W	21-Aug	B-7	Soundtrap 4300 #C		7
1	4	36 20.753 N	122 56.912 W	22-Aug	B-8	Soundtrap 4300 #D		8
1	5	33 51.063 N	121 19.619 W	22-Aug	B-9	Soundtrap 4300 #E	OT-2	9
1	San Diego	32 38.000 N	117 10.000 W	23-Aug				
2	San Diego	32 38.000 N	117 10.000 W	23-Aug				
2	6	32 11.669 N	119 54.746 W	24-Aug	B-10	Soundtrap 4300 #F		10
2	7	31 22.159 N	123 42.453 W	25-Aug	B-1	SM3M #1		1
2	8	33 45.879 N	125 54.937 W	26-Aug	W-1	SM2+Bat #1	SM2+	GDA-1
2	9	36 32.461 N	127 34.300 W	27-Aug	B-11	Soundtrap 4300 #G		11
2	10	39 14.831 N	129 11.593 W	28-Aug	B-2	SM3M #2	OT-3	2
2	11	42 14.267 N	129 50.924 W	29-Aug	W-2	SM2+Bat #2	SM2+	GDA-2
2	12	45 15.778 N	129 46.784 W	30-Aug	B-12	Soundtrap 4300 #H		12
2	13	46 13.748 N	127 36.370 W	31-Aug	B-3	SM3M #3	OT-5	3
2	14	47 06.472 N	125 36.307 W	31-Aug	W-3	SM2+Bat #3	SM2+	GDA-3
2	15	43 40.924 N	127 44.650 W	1-Sep	B-13	Soundtrap 4300 #I		13
2	16	40 48.712 N	127 32.230 W	2-Sep	B-14	Soundtrap 4300 #J	OT-6	14
2	17	38 31.146 N	126 38.408 W	3-Sep	B-4	SM3M #4		4
2	18	35 50.512 N	124 54.905 W	4-Sep	W-4	SM2+Bat #4	SM2+	GDA-4
2	19	33 12.924 N	123 09.332 W	5-Sep	B-15	Soundtrap 4300 #K	OT-1	15
2	20	33 08.555 N	118 59.592 W	6-Sep	B-16	Soundtrap 300HF #1		16
2	San Diego	32 38.000 N	117 10.000 W	7-Sep				

<b>Leg</b>	<b>Port/DASBR Station</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Date (Approx.)</b>	<b>DASBR No.</b>	<b>DASBR Recorder Type and ID</b>	<b>Depth Recorder</b>	<b>Hydrophone Array No.</b>
3	San Diego	32 38.000 N	117 10.000 W	11-Sep				
3		Locate DASBRs between						
3		San Diego and Washington						
3	San Diego	32 38.000 N	117 10.000 W	30-Sep				

