Final Project Instructions

Date Submitted: March 1, 2013

Platform: NOAA Ship *Bell M. Shimada*

Project Number: SH-13-03 (OMAO), 1304SH (SWFSC)

Project Title: CalCOFI/DEPM Survey, Fisheries Resources Division.

Project Dates: April 1, 2013 to May 6, 2013

Prepared by:_____ Dated: March 1, 2013
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Approved by: _____ Dated: _____
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Commanding Officer
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I. Overview

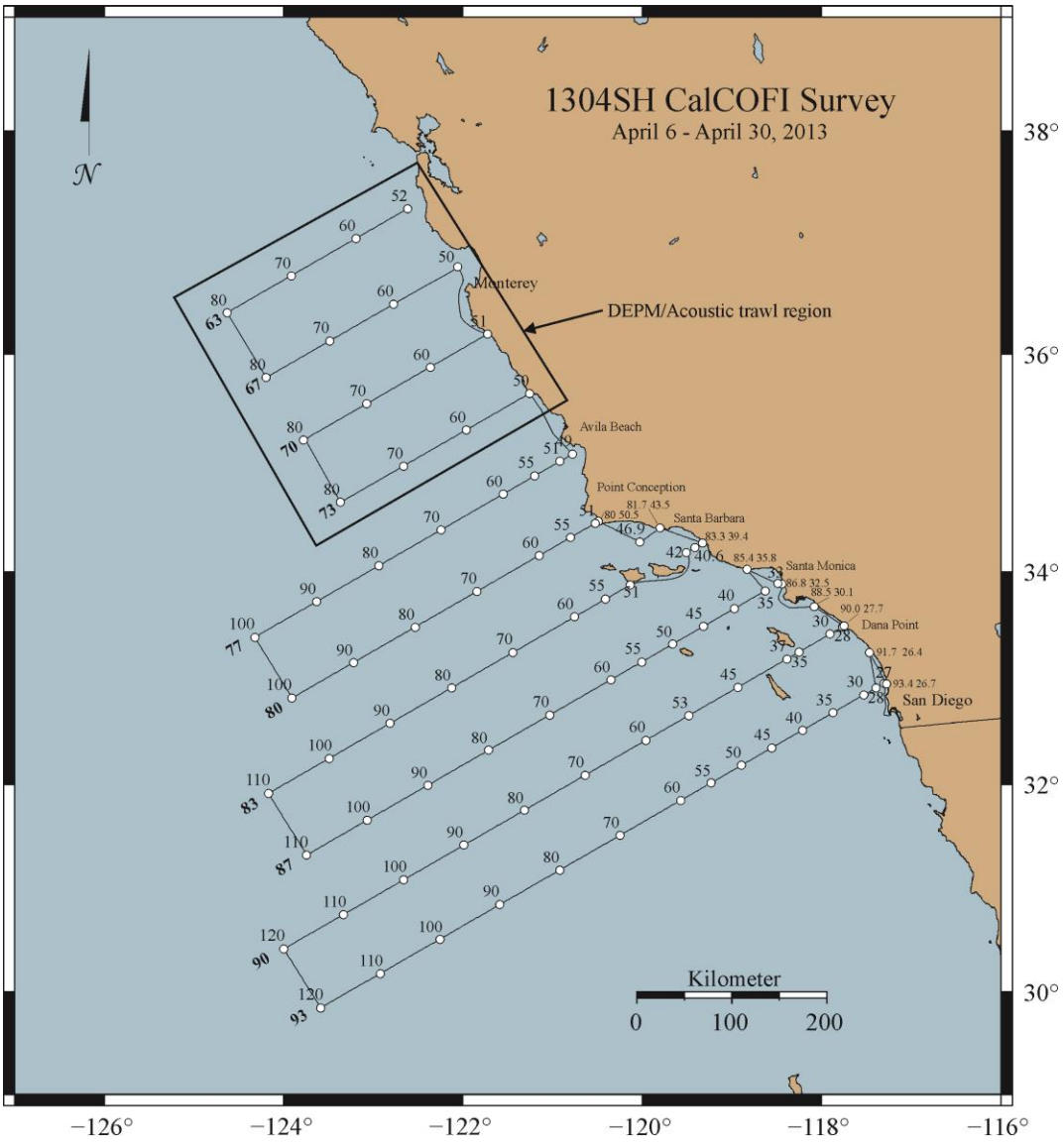
A. Brief Summary and Project Period

Survey the distributions and abundances of pelagic fish stocks, their prey, and their biotic and abiotic environments in the area of the California Current between San Francisco, California and San Diego, California during the period of April 6 to April 30, 2013.

B. Service Level Agreements

Of the 25 DAS scheduled for this project, 0 DAS are funded by the program and 25 DAS are funded by OMAO. This project is estimated to exhibit a medium Operational Tempo.

C. Operating Area



D. Summary of Objectives

Survey the distributions and abundances of pelagic fish stocks, their prey, and their biotic and abiotic environments in the area of the California Current between San Francisco, California and San Diego, California.

The following are specific objectives for the Spring CalCOFI.

I.D.1. Continuously sample pelagic fish eggs using the Continuous Underway Fish Egg Sampler (CUFES). The data will be used to estimate the distributions and abundances of spawning hake, anchovy, mackerel, and spawning Pacific sardine.

I.D.2. Continuously sample multi-frequency acoustic backscatter using the Simrad EK60. The data will be used to estimate the distributions and abundances of coastal pelagic fishes (e.g., sardine, anchovy, and mackerel), and krill species.

I.D.3. Continuously sample sea-surface temperature, salinity, and chlorophyll-a using a thermosalinometer and fluorometer. These data will be used to estimate the physical oceanographic habitats for target species.

I.D.4. Continuously sample air temperature, barometric pressure, and wind speed and direction using an integrated weather station.

I.D.5. Sample profiles of seawater temperature, salinity, chlorophyll-a, nutrients, and phytoplankton using a CTD with water-sampling rosette and other instruments at prescribed stations. Measurements of extracted chlorophyll and phaeophytin will be obtained with a fluorometer. Primary production will be measured as C^{14} uptake in a six hour in situ incubation. Nutrients will be measured with an auto-analyzer. These data will be used to estimate primary productivity and the biotic and abiotic habitats for target species.

I.D.6. Sample the light intensity in the photic zone using a standard secchi disk once per day in conjunction with a daytime CTD station. These data will be used to interpret the measurements of primary production.

I.D.7. Sample plankton using a CalBOBL (CalCOFI Bongo Oblique) at prescribed stations. These data will be used to estimate the distributions and abundances of ichthyoplankton and zooplankton species.

I.D.8. Sample plankton using a Manta (neuston) net at prescribed stations. These data will be used to estimate the distributions and abundances of ichthyoplankton species.

I.D.9. Sample the vertically integrated abundance of fish eggs using a Pairovet net at prescribed stations. These data will be used to quantify the abundances and distributions of fish eggs.

I.D.10. Sample plankton using a PRPOOS (Planktonic Rate Processes in Oligotrophic Ocean Systems net) at all prescribed CalCOFI stations on lines 90.0 and 80.0 as well as stations out to and including station 70.0 on lines 86.7 and 83.3. These data will be used in analyses by the LTER (Long Term Ecological Research) project.

I.D.11. Continuously sample profiles of currents using the RDI/Teledyne Acoustic Doppler Current Profiler.

I.D.12. Continuously observe, during daylight hours, seabirds and mammals. These data will be used to estimate the distributions and abundances of seabirds and marine mammals.

I.D.13. North of Point Conception, sample fish near the surface at nighttime by conducting 2-5 surface trawls at stations (Appendix 2) or at random sites each night. The data will be used to estimate the reproductive parameters, distributions and demographics of sardine, anchovy and mackerel.

E. Participating Institutions

I.E.1 Southwest Fisheries Science Center (SWFSC)

I.E.2 Scripps Institution of Oceanography (SIO)

I.E.3 Monterey Bay Aquarium Research Institute (MBARI)

I.E.4 Farallon Institute Advanced Ecosystem Research (FIAER)

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

Name (Last, First)	**Title**	**Date Aboard**	**Date Disembark**	**Gender**	**Affiliation**	**Nationality**
Sessions, Steve**	Fishery Acoustician	April 6, 2013	April 6, 2013	M	SWFSC	US
Murfin, David**	Fishery Acoustician	April 6, 2013	April 6, 2013	M	SWFSC	US
Hays, Amy	Cruise Leader	April 6, 2013	April 30, 2013	F	SWFSC	US
Manion, Sue	Fishery Biologist	April 6, 2013	April 30, 2013	F	SWFSC	US
*Reed, Erin	Fishery Biologist	April 23, 2013	April 30, 2013	F	SWFSC	US
Wolgast, Jennifer	Oceanographer	April 6, 2013	April 30, 2013	F	SIO	US
*Wilkinson, James	Oceanographer	April 6, 2013	April 23, 2013	M	SIO	US
*Wolgast, David	Oceanographer	April 6, 2013	April 23, 2013	M	SIO	US
*Jiorle, Ralph	Oceanographer	April 6, 2013	April 23, 2013	M	SIO	US
Faber, David	Chemist	April 6, 2013	April 30, 2013	M	SIO	US
*Dovel,	LTER	April 6,	April 23,	F	SIO	US

Shonna		2013	2013			
*Engel, Eric	LTER	April 6, 2013	April 23, 2013	M	SIO	US
*Breese, Dawn	Bird Observer	April 6, 2013	April 23, 2013	F	FIAER	US
Whittaker, Katherine	Marine Mammal Observer	April 6, 2013	April 30, 2013	F	SIO	US
Debich, Amanda	Mar. Mammal Acoustician/Observer	April 6, 2013	April 30, 2013	F	SIO	US
*Renfree, Josiah	Fishery Acoustician	April 6, 2013	April 23, 2013	M	SWFSC	US
*Cutter, Randy	Fishery Acoustician	April 23, 2013	April 30, 2013	M	SWFSC	US
*Kaminski, Marya	Volunteer	April 6, 2013	April 23, 2013	F	SIO	US
*Mau, Scott	Fishery Acoustician	April 23, 2013	April 30, 2013	M	SWFSC	US
*Hill, Kevin	Fishery Biologist	April 23, 2013	April 30, 2013	M	SWFSC	US
*Lynn, Eric	Fishery Biologist	April 23, 2013	April 30, 2013	M	SWFSC	US
*Blum, Marguerite	Oceanographer	April 23, 2013	April 30, 2013	F	MBARI	US

***Note: Acoustic Calibration staff to be transferred ashore via small boat following completion of calibration efforts.*

**SIO, MBARI and SWFSC personnel will be transferred ashore or on board in Port San Luis, California by small boat at the completion of line 76.7. Both parties will be transported by Vessel Assist or comparable. Company(s) performing the transport will be contacted by SWFSC personnel prior the April 6 sailing date and prior to arrival in Port San Luis to arrange services.*

G. Administrative

1. Points of Contacts:

Chief Scientist/alternate: Sam McClatchie/Amy Hays (858-546-7083/858-546-7130); 8604 La Jolla Shores Drive, La Jolla, CA, 92037 (Sam.McClatchie@noaa.gov/Amy.Hays@noaa.gov)

Project Operation Lead: Sam McClatchie (858-546-7183); 8604 La Jolla Shores Drive, La Jolla, CA, 92037 (Sam.McClatchie@noaa.gov)

Ops Officer: LT Andrew Colegrove (206-427-2374) NOAA Ship Bell M. Shimada (OPS.Bell.Shimada@noaa.gov**)**

2. Diplomatic Clearances

N/A

3. Licenses and Permits

All marine mammal work is covered under a federal research permit NMFS Permit 727-1915 issued to Dr. John Hildebrand of SIO. All ichthyoplankton collections are covered under an MOU (Memo of Understanding) between the California Department of Fish and Game, the Southwest Region, National Marine Fisheries Service, NOAA and the Southwest Fisheries Science Center, National Marine Fisheries Service, NOAA.

II. Operations

A. Project Itinerary

SD Transit:	April 1: Depart Newport, OR
	April 4: Arrive San Diego, CA
	April 6: Calibration in San Diego Bay, CA (see attached Appendix 1.b.)
Leg I:	April 6: Depart San Diego, CA - CalCOFI
	April 23: Small Boat Transfer via Port San Luis, CA
	April 30: Arrive San Francisco, CA
NPT Transit:	May 3: Depart San Francisco, CA
	May 6: Arrive Newport, OR

B. Staging and De-staging

Staging for CalCOFI requires two full days. De-staging will be conducted in San Francisco, CA (pier TBD).

We request 1 laboratory van to be craned onto the afterdeck and secured in San Diego prior to Leg I departure. The dimension of the van is approximately 8x8x10 feet weighing 5800 lbs. Power requirement is 110V.

We request 1 electric winch to be craned onto the afterdeck and secured in San Diego prior to Leg I departure. The dimension of the winch is 4.5x4.5 feet. Power requirement is 440V 3-phase.

C. Operations to be Conducted

II.C.1. Underway Operations

II.C.1.a. Thermosalinometer sampling - The ship will provide and maintain a thermosalinometer (TSG), which is calibrated and in working order, for continuous measurement of surface water temperature and salinity. A backup unit (calibrated and in working order) will also be provided by the vessel and remain aboard during the cruise. The Scientific Computing System (SCS) will serve as the main data collection system.

All SCS data will be provided to SWFSC personnel at the completion of the cruise.

II.C.2.b. Acoustics: Calibration of the Simrad EK60 echosounders will be performed at the beginning of the cruise (requiring 6 hours). The ship will sail at 0800 on April 6, anchor in San Diego Bay, San Diego (see appendix 1.b.), and calibrate. The keel will remain in the retracted position. Three motorized down-riggers, two on one side of the vessel and one on the other, will be used to swing a 38.1 mm diameter tungsten carbide sphere beneath the keel-mounted transducers.

The EK60 echosounder will be operated at 18, 38, 70, 120 and 200 kHz and interfaced to a data acquisition system to estimate small pelagic fish and krill biomasses between 10 and 250 m. The instrumented keel will be extended to mid-depth (ca. transducers at 7.5 m), during all survey operations. Any changes to this depth should be avoided, and reported to the acoustic-system operator(s). The vessel's Simrad ES60 depth sounder and Doppler current meter may be used minimally at the discretion of the Commanding Officer, but will normally remain off while underway. The ship shall inform the Cruise Leader of any use of the vessel's sounders, as it interferes with the signals received on the EK60s that will be used continuously.

II.C.2.c. ADCP: The ship's ADCP should run continuously and be logged to a data acquisition system. Complete system settings will be provided by the oceanographer, but will include 5-minute averaging of currents, AGC and 4 beam returns in 60 8-meter bins. The ADCP transmissions will be triggered by, and thereby synchronized with, the EK60s to avoid cross talk.

II.C.2.d. CUFES: The egg pump will be mounted inside the ship's hull drawing water from a depth of three meters. During leg I, the pump will run continuously between stations to sample any pelagic fish eggs. Approximately 640 liters/minute is sent through a concentrator which filters all material larger than 505µm. The sieved material is then collected and identified. All fish eggs are identified to lowest taxa, counted and entered into the data acquisition software. Each sample entry is coupled with sea surface temperature, geographical position, wind speed and direction, date and time, and surface salinity. Sampling intervals will vary in length, depending on the number of fish eggs seen, from five to 30 minutes. If two consecutive samples have a concentration of Pacific sardine eggs equal to or greater than 1 egg per minute, the ship will stop to conduct a Pairovet tow. Pairovet tows will continue at four mile intervals until a concentration of less than one egg per minute is observed in two consecutive samples.

It is requested that prior to departure on April 6 that the CUFES intake be cleared from all marine growth.

II.C.2.e. Bird Observations: During daylight hours a bird observer will be posted on the flying bridge to identify and count birds while the ship is underway during cruise transects.

II.C.f. Acoustic hydrophone: During transit between most daylight stations, an acoustic hydrophone array will be towed from the stern at a distance of 300 meters with a deck loaded winch to record sounds from marine mammals. The winch is 440V 3-phase with a deck pattern of 4.5 by 4.5 feet. Upon approaching a station, a sonobuoy will be deployed one nautical mile prior to stopping for station work.

II.C.2. Station Operations

Each standard station will include the following:

II.C.2.a. CTD/Rosette consisting of 24 10-liter hydrographic bottles will be lowered to approximately 500 meters (depth permitting) at each station to measure physical parameters and collect water at discrete depths for analysis of: salinity, nutrients, oxygen, chlorophyll, etc. Casts conducted on line 66.7 will be to a depth of 1000 meters.

NOTE: SIO will provide their own CTD sensor and 24 bottle (10 liter) rosette unit for use on leg I. Please record CTD deployed, CTD at depth and CTD recovered for SCS.

II.C.2.b. CalBOBL (CalCOFI Bongo Oblique): standard oblique plankton tow with 300 meters of wire out, depth permitting, using paired 505 μm mesh nets with 71 cm diameter openings. The technical requirements for this tow are: Descent wire rate of 50 meters per minute and an ascent wire rate of 20 meters per minute. All tows with ascending wire angles lower than 38° or higher than 51° in the final 100 meters of wire will be repeated. Additionally, a 45° wire angle should be closely maintained during the ascent and descent of the net frame. A self-contained LOPC (Laser Optical Particle Counter) will be mounted in the port side opening during each tow. The port side sample will be preserved in buffered ethanol at every station.

Please record Bongo deployed and Bongo recovered for SCS.

II.C.2.c. Manta net (neuston) tow: using a 505 μm mesh net on a frame with a mouth area of 0.1333 m^2. Tows are 15 minutes in duration at towing speed of approximately 1.5 - 2.0 knots. Wire angles should be kept between 15° and 25°. Manta operations will be discontinued after completion of line 76.7.

Please record Manta deployed and Manta recovered in SCS.

II.C.2.d. Pairovet net: will be fished from 70 meters to the surface (depth permitting) using paired 25 cm diameter 150 μm mesh nets at all stations out to and including station 100.0. The technical requirements for Pairovet tows are: Descent rate of 70 meters per minute, a terminal depth time of 10 seconds and an ascent rate of 70 meters per minute. All tows with wire angles exceeding 15° during the ascent will be repeated.

Please record Pairovet deployed and Pairovet recovered for SCS.

II.C.2.e. PRPOOS (Planktonic Rate Processes in Oligotrophic Ocean Systems) net will be taken at all leg I stations on line 90.0 and 80.0 as well as stations out to and including

station 70.0 on lines 86.7 and 83.3. These stations are occupied as part of the LTER (Long Term Ecological Research) project. The mesh of the PRPOOS net is 202 μm and the tow is a vertical cast up from 210 meters. The technical requirements for the PRPOOS tows are: Decent rate of 40 meters per minute, a terminal depth time of 20 seconds and an ascent rate of 50 meters per minute.

Please record PRPOOS deployed and PRPOOS recovered for SCS.

II.C.2.f. Primary productivity: at about 1100 hours on each day of leg I a primary productivity CTD cast consisting of six 10-liter hydrographic bottles (mounted on CTD frame) will be carried out. The cast arrangement will be determined by a Secchi disc observation. This cast will be in conjunction with an already scheduled station. The purpose of the cast is to collect water from six discrete depths for daily *in situ* productivity experiments. Measurements of extracted chlorophyll and phaeophytin will be obtained with a fluorometer. Primary production will be measured as C^{14} uptake in a six hour *in situ* incubation. Nutrients will be measured with an auto-analyzer. All radioisotope work areas will be given a wipe test before the departure of the SIO technical staff. Primary productivity on leg I after line 76.7 will be incubated over a 24 hour cycle rather than a daylight cycle.

II.C.2.g. A light meter (Secchi disk) will be used to measure the light intensity in the euphotic zone once a day with the primary productivity cast and all daytime stations.

Please record Secchi deployed and Secchi recovered for SCS.

II.C.2.h. Weather observations.

II.C.3.a. Order of Operations for each standard station:

1) CTD to 515 meters with 24 bottle rosette (depth permitting).

2) Secchi disk (daylight stations only, Secchi will be first prior to CTD on Primary Productivity station of the day which is typically 0900-1100).

3) PRPOOS net tow [lines 90.0,86.7 (out to station 70), 83.3 (out to station 70) and 80.0 only, total of 35 stations].

4) Pairovet net tow (on all lines out to station 100.0 but not to include near shore SCCOOS).

5) Manta net tow (on all stations except for near shore SCCOOS and all stations after line 76.7).

6) Bongo net tow (on all stations).

7) After the completion of the six primary CalCOFI lines, work will continue north of Point Conception performing surface trawls between sunset and sunrise, and bongo, CTD and pairovet tows at fixed stations.

A surface tow using a 264 Nordic Rope Trawl fitted with a marine mammal exclusion device (MMED) will be conducted during nighttime operations. Each tow will be fished on the surface for a 30 minute duration at a towing speed of approximately 3.5 knots. The catch of each tow will be processed in the following manner: Sardines collected in each trawl will be randomly subsampled. Standard length and body weight will be measured, otoliths will be collected, and ovaries preserved in buffered formalin. These fish are assigned a maturity code based on a four stage system developed during a previous Trinational Sardine Forum.

Please mark each location of when day time acoustic data collection stops for the day. We will return to this exact location 30 minutes prior to sunrise of the following day to resume day time acoustics collection after the last trawl of the night.

There will be three trawls per night, first set approximately one hour after sunset. Trawls may or may not occur on predetermined stations. Trawl spacing will be determined based on sardine egg density and other factors.

At the end of the last trawl we will request to go to the marked location from the end of acoustics collection of the previous day. Line transects will resume from this location.

II.C.4.a. Plankton Nets, Oceanographic Sampling Devices, Video Camera and ROV Deployments: The SWFSC deploys a wide variety of gear to sample the marine environment during all of their research cruises. These types of gear are not considered to pose any risk to protected species and are therefore not subject to specific mitigation measures. However, the OOD and crew monitor for any unusual circumstances that may arise at a sampling site and use their professional judgment and discretion to avoid any potential risks to protected species during deployment of all research equipment.

II.C.4.b. The officer on watch, Chief Scientist (or other designated member of the Scientific Party), and crew standing watch on the bridge visually scan for marine mammals, sea turtles, and other ESA listed species (protected species) during all daytime operations. 7X bridge binoculars are used as necessary to survey the area as far as environmental conditions (lighting, sea state, precipitation, fog, etc.) will allow. A member of the crew designated to stand watch for protected species (dedicated to that function) visually scans the waters surrounding the vessel at least 30 minutes before the trawl net is to be put into the water. This typically occurs during transit prior to arrival at the sampling station, but may also include time on station if other types of gear or equipment (e.g., bongo nets) are deployed before the trawl.

"Move-On" Rule. If any marine mammals or sea turtles are sighted anywhere around the vessel in the 30 minutes before setting the 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. 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 to move again or to skip the station. The officer on watch will consult with the Chief Scientist or other designated scientist (identified prior to the voyage and noted on the cruise plan) and other experienced crew as necessary to

determine the best strategy to avoid potential takes of these species. Strategies are based on the species encountered, their numbers and behavior, their position and vector relative to the vessel, and other factors. For instance, a whale transiting through the area and heading away from the vessel may not require any move, or may require only 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 the dolphins 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 or officer on watch. The efficacy of the "move-on" rule is limited during night time or other periods of limited visibility; research gear is deployed as necessary when visibility is poor, although operational lighting from the vessel illuminates the water in the immediate vicinity of the vessel during gear setting and retrieval.

Trawl operations are usually the first activity undertaken upon arrival at a new station in order to reduce the opportunity to attract marine mammals and other protected species to the vessel. However, in some cases, bongo or vertical nets may be deployed before the trawl in order to check for high densities of jellyfish and salps that may compromise the integrity of the trawl gear. Other exceptions include instances where trawls can only be conducted after night has fully fallen, but CTD's, bongo nets or other samples can be conducted during the crepuscular period (e.g., the juvenile rockfish survey). The order of gear deployment is determined on a case-by-case basis by the Chief Scientist based on environmental conditions and sonar information at the sampling site. Other activities, such as water sampling and most plankton tows, are conducted in conjunction with, or upon completion of, trawl activities.

Once the trawl net is in the water, the officer on watch, Chief Scientist, or other designated scientist, and/or crew standing watch continue to monitor the waters around the vessel and maintain a lookout for marine mammal and sea turtle presence as far away as environmental conditions allow (as noted previously, visibility can be limited for various reasons). If these species are sighted before the gear is fully retrieved, the most appropriate response to avoid incidental take is determined by the professional judgment of the officer on watch, in consultation with the Chief Scientist or other designated scientist and other experienced crew as necessary. These judgments take into consideration the species, numbers, and behavior of the animals, the status of the trawl net operation (net opening, depth, and distance from the stern), the time it would take to retrieve the net, and safety considerations for changing speed or course. Consideration is also given to the increase in likelihood of marine mammal interactions during retrieval of the net, especially when the trawl doors have been retrieved and the net is near the surface and no longer under tension. Acoustic pingers and excluder devices are not operational under these conditions. In some situations, risk of adverse interactions may be diminished by continuing to trawl with the net at depth until the marine mammals and/or sea turtles have left the area before beginning haul-back operations. In other situations, swift retrieval of the net may be the best course of action. The appropriate course of action to minimize the risk of incidental take of protected species is determined by the professional judgment of the officer on watch and appropriate crew based on all situation variables, even if the choices compromise the value of the data collected at the station.

If trawling operations have been delayed because of the presence of marine mammals or sea turtles, the vessel resumes trawl operations (when practical) only when these species have not been sighted within 30 minutes or else otherwise determined to no longer be at risk. This decision is at the discretion of the officer on watch and is situationally dependent.

Care is taken when emptying the trawl, including opening the cod end as close to the deck as possible in order to avoid damage to protected species that may be caught in the gear but are not visible upon retrieval. The gear is emptied as quickly as possible after retrieval in order to determine whether or not protected species are present.

II.C.4.c. Standard tow durations have been reduced to 30 minutes or less at targeted depth, excluding deployment and retrieval time, to reduce the likelihood of attracting and incidentally taking protected species. These short tow durations decrease the opportunity for curious marine mammals to find the vessel and investigate. The resulting tow distances are typically 1 to 2 nautical miles, depending on the survey and trawl speed. Additionally, short tow times reduce the likelihood that captured sea turtles would drown.

II.C.4.d. The SWFSC uses several different types of trawl nets for different surveys. The two types that have taken marine mammals in the past are the Nordic 264 and the Modified Cobb trawl. Currently, all Nordic 264 nets are outfitted with marine mammal excluder devices (MMEDs) developed for the SWFSC. These excluder devices enable fish to pass through a grid and into the codend while preventing the passage of marine mammals, which bump into the slanted grid and slide out through an escape opening or swim back out of the mouth of the net .

While this excluder device was designed to minimize small cetacean and pinniped mortalities in trawl gear, the design is an adaptation of turtle excluder devices used in trawl gears in the Atlantic and Gulf of Mexico. The SWFSC believes that due to its similar configuration to turtle excluder devices, the excluder device may also be effective at reducing sea turtle capture and mortality in mid-water trawls. To date, SWFSC has had no known interactions with sea turtles when using mid-water trawl gear with an excluder device in place, so further testing is needed to validate this hypothesis.

II.C.4.e. Vessel speeds are restricted on research cruises in part to reduce the risk of ship strikes with marine mammals. Transit speeds vary from 6-14 knots, but average 10 knots. The vessel's speed during active sampling is typically 2-4 knots due to sampling design. Thus, these much slower speeds essentially eliminate the risk of ship strikes.

As noted above, if marine mammals are sighted near the vessel within 30 minutes prior to deployment of the trawl net, the vessel will be moved away from the animals to a new station.

At any time during a survey or in transit, any crew member that sights marine mammals that may intersect with the vessel course immediately communicates their presence to the bridge for appropriate course alteration or speed reduction as possible to avoid incidental collisions, particularly with large whales (e.g., blue whales).

While underway on leg I:

We will have a bird observer on the flying bridge during all daylight transects.

We will have 2 marine mammal observers on the flying bridge during all daylight transects.

We will have a marine mammal acoustician with a towed hydrophone. The hydrophone will be towed off the stern at a distance of 300 meters between daylight stations. The hydrophone will be deployed at a ship speed of 5 knots while leaving a station. Once deployed, ship can travel at full speed. The hydrophone can be retrieved at ship's full speed.

At 1 mile prior to each daylight station marine mammal observers will deploy 2 sonobuoys. The hydrophone will be retrieved at this time.

Communication will be open to bridge during all hydrophone deployments and retrievals.

D. Dive Plan

N/A

E. Applicable Restrictions

Conditions which preclude normal operations:

In the event of poor weather conditions, we will work with the ship's officers on developing the best strategy for completion of all stations safely.

We have replacement gear for all operations. Equipment failure should not impact our project.

III. Equipment

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

We request the following systems and their associated support services, sufficient consumables, back-up units, and on-site spares. All measurement instruments are assumed to have current calibrations and we request that all pertinent calibration information be included in the data package.

Starboard hydro winch with 0.375" cable for standard Bongo, Pairovet and Manta tows

J-frame w/blocks to accommodate 0.375" cable

Port and starboard trawl winches with 1" diameter mechanical cable

Stern gantries with blocks to accommodate 1" cable

Access to the trawl ramp at the completion of line 76.7

Constant temperature room set at $22^{o}C \pm 1^{o}C$ ($71.5^{o}F \pm 2^{o}F$)

NOTE: The vessel has no constant temperature room. The constant environment room is

sufficient if we are allowed to open and close the door to control temperature and ventilation.

Winch monitoring system

Knudsen 12 kHz depth recorder or comparable

Acoustic Doppler Current Profiler

Multifrequency EK60 transducers (ES18-11, ES38B, ES120-7C, ES200-7C).

12-bottle rosette frame capable of carrying 10-liter niskin bottles, fitted with SBE911+ CTD unit (spare only to be used in case of equipment loss or failure).

Pump, collector and concentrator unit for CUFES water sampling.

GPS feed to flying bridge for use by bird observers.

110V power to science van on main deck.

440V power to science winch on main deck.

-80^{o}C Freezer

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

37% Formalin (SWFSC)

Ethanol (SWFSC)

Tris buffer (SWFSC)

Sodium borate (SWFSC)

30 cc and 50 cc syringes (SWFSC)

Canulas (SWFSC)

Pint, quart and gallon jars (SWFSC)

Inside and outside labels (SWFSC)

CalCOFI net tow data sheets (SWFSC)

71 cm CalCOFI Bongo frames (SWFSC)

71 cm CalCOFI 505 μm mesh nets (SWFSC)

CalCOFI 150 μm Pairovet nets and codends (SWFSC)

CalCOFI Pairovet frames (SWFSC)

333 μm mesh codends (SWFSC)

Digital flowmeters (SWFSC)

PRPOOS frames (SIO)

170 lb PRPOOS weight (SIO)

202 μm mesh PRPOOS nets and codends (SIO)

75 lb Bongo weight (SWFSC)

100 lb hydro weight (SWFSC)

CalCOFI Manta net frames (SWFSC)

60 cm CalCOFI 505 μm mesh Manta nets (SWFSC)

Standard CalCOFI tool boxes (SWFSC)

Bucket thermometers and holders (SIO)

Hand held inclinometer for Pairovet and Bongo tows (SWFSC)

Oxygen auto-titration rig with reagents (SIO)

Oxygen flasks (SIO)

Guildline Portasal (SIO)

Salinity bottles (SIO)

Standard sea water (SIO)

Data sheets for scheduled hydrographic work (SIO)

Weather observation sheets (SIO)

Primary productivity incubation rack (SIO)

C^{14} and other chemicals for primary productivity work (SIO)

24 niskin bottles (10 liter) for rosette (SIO)

SBE911+ CTD unit with necessary sensors (SIO)

Turner fluorometer (SIO)

90% acetone and all supplies for chlorophyll extraction (SIO)

Nutrient auto analyzer (SIO)

Chemicals for all nutrient analyses (SIO)

EK60 calibration apparatus (SWFSC)

LOPC (SIO)

Isotope van (SIO)

Winch for acoustic array (SIO)

Dissecting microscopes (SWFSC)

Sonobuoys (SIO)

NETS Nordic 264 midwater trawl (SWFSC)

NETS 3.0 m X Lite trawl doors (SWFSC)

Trawl rigging (SWFSC)

Fish measuring boards (SWFSC)

Motion compensated scales (SWFSC)

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 the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and a chemical hygiene plan. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per FEC 07, the scientific party will include with their project instructions and provide to the CO of the respective ship 60 to 90 days before departure:

- A list of hazardous materials by name and anticipated quantity
- Include a chemical spill plan the addresses all of the chemicals the program is bringing aboard. This shall include:
    - Procedures on how the spilled chemicals will be contained and cleaned up.
    - A complete inventory (including volumes/amounts) of the chemical spill supplies and equipment brought aboard by the program. This must be sufficient to clean and neutralize <u>all</u> of the chemicals brought aboard by the program.
    - A list of the trained personnel that will be accompanying the project and the training they've completed.

Common Name of Material	Qty	Notes	Trained Individual	Spill control
Ethyl alcohol (95%)	20 gallons(in 5 gallon cans)	UN1170, Waste contained and disposed of by SIO at end of project, Stored in preservation alcove and cabinet under fume hood	Amy Hays	F
Buffered Etyl alcohol (95%)	20 L (in 20 ml vials)	No waste. Stored in Chem lab	Amy Hays	F
Buffered formalin (10%)	20 gallons in 4 oz. and 8 oz. jars.	Stored in wet lab, no waste	Amy Hays	F
Formaldehyde solution (37%)	5 gallons	No waste, Stored in preservation alcove fume hood	Amy Hays	F
Tris buffer	500ml	Stored in Chem lab	Amy Hays	F
Sodium borate powder	500gr	Stored in Chem lab	Amy Hays	F
HCL (1.2N)	4L	UN1789, No waste, Stored in Radiation van on aft deck	David Wolgast	A
Sulfuric acid (10 Normal)	4L	Stored in Chem lab, waste neutralized by base in assay	David Wolgast	A
Acetone (90%)	7L	UN1090, Waste contained and disposed of by SIO at end of project, Stored in Rad van	David Wolgast	F
Mangannous Chloride	4L	No waste, stored in CTD hanger	David Wolgast	A

Common Name of Material	Qty	Notes	Trained Individual	Spill control
Sodium Hydroxide/Sodium Iodide	4L	UN1824, Waste neutralized by acid in assay, Stored in CTD hanger	David Wolgast	A
Ethanol (95%)	1L	UN1170, No waste, Stored in Constant environment room	David Wolgast	F
Ecolume Scintillation Fluid	2.5L	No waste, Stored in Rad van	David Wolgast	F
14C Sodium Bicarbonate (5.0mCi)	20ml	Waste contained and disposed of by SIO at end of project, UCSD EH&S, Stored in Rad van	David Wolgast	Waste remains in Rad van vacuum jugs in secondary containment
HCL (12N)	150ml	No waste, Stored in wet lab/Dropper bottles with secondary containment	Shonna Dovel	A
Isopropyl Alcohol (91%)	30ml	No waste, Stored in wet lab/Dropper bottles with secondary containment	Shonna Dovel	A
Liquid Nitrogen	50L Dewar	No waste, Stored wet lab	Shonna Dovel	A
Acetone (90%)	7L	No waste, Stored in wet lab and -80 freezer with secondary containment	Shonna Dovel	F
HCL (1N)	400ml	No waste, Stored in wet lab/Dropper bottles with secondary containment	Shonna Dovel	A

Common Name of Material	Qty	Notes	Trained Individual	Spill control
0.01 mg/ml DAPI 4',6-Diamidino-2-Phenylindole,Dihydrochloride	4x1-ml aliquots	Stored in Chem lab. Concentrated DAPI in freezer with secondary containment	Shonna Dovel	A
Buffered Formalin (10%)	2L	Stored in Chem lab fume hood with secondary containment	Shonna Dovel	F
Alkaline Lugol's fixative (100%)	250ml	Stored in Chem lab refer with secondary containment	Shonna Dovel	F
Paraformaldehyde (10%)	.5L	Stored in Chem lab refer with secondary containment	Shonna Dovel	F
Proflavin (0.033%)	250ml	Stored in Chem lab refer with secondary containment	Shonna Dovel	F
Sodium Thiosulfate (0.190M)	250ml	Stored in Chem lab refer with secondary containment	Shonna Dovel	F
Basic Lugol's fixative (100%)	500ml	Stored in Chem lab fume hood with secondary containment	Shonna Dovel	F
Acetone (90%)	6L	Stored in Rad van, no waste	Marguerite Blum	F
Gluteraldehyde	120ml	Stored in Rad van, no waste	Marguerite Blum	F
Liquid Nitrogen	18L dewar	No waste, Stored wet lab	Marguerite Blum	A
HCL (5%)	250ml	No waste, Stored in Rad van	Marguerite Blum	A
Paraformalin (10%)	20ml	No waste, Stored in Rad van	Marguerite Blum	F
Cytoscint Coctail	1 gallon	No waste, Stored in Rad van	Marguerite Blum	F

Common Name of Material	Qty	Notes	Trained Individual	Spill control
14C Sodium Bicarbonate	100mCi	Waste contained and disposed of by SIO at end of project, UCSD EH&S, Stored in Rad van	Marguerite Blum	Waste remains in Rad van vacuum jugs in secondary containment
Ammonium Molybdate (po4)	108g	No waste, Stored in Chem lab	David Faber	
Dihydrazine Sulfate	25.6g	No waste, Stored in Chem lab	David Faber	
Sulfanilamide	50g	No waste, Stored in Chem lab	David Faber	
N-1-N	5g	No waste, Stored in Chem lab	David Faber	
Imidazole	68g	No waste, Stored in Chem lab	David Faber	
Copper Sulfate	2g	No waste, Stored in Chem lab	David Faber	
Ammonium Chloride	250g	No waste, Stored in Chem lab	David Faber	
Cadmium Columns	30g	No waste, Stored in Chem lab	David Faber	
Ammonium Molybdate	129.6g	No waste, Stored in Chem lab	David Faber	
Tartaric Acid	1000g	No waste, Stored in Chem lab	David Faber	A
SnCl2	80g	No waste, Stored in Chem lab	David Faber	
Potassium Phosphate	3.4g	No waste, Stored in Chem lab	David Faber	
Potassium Nitrate	6.16g	No waste, Stored in Chem lab	David Faber	

Common Name of Material	Qty	Notes	Trained Individual	Spill control
Sodium Nitrite	1.4g	No waste, Stored in Chem lab	David Faber	
Sodium Hexafluorosilicate	2.12g	No waste, Stored in Chem lab	David Faber	
Phenol	12g	No waste, Stored in Chem lab	David Faber	
Sodium Citrate	560g	No waste, Stored in Chem lab	David Faber	
Sodium Nitroprusside	1L	No waste, Stored in Chem lab	David Faber	A
Sodium Hydroxide	400g	No waste, Stored in Chem lab	David Faber	A
Ammonia Sulphate	0.8g	No waste, Stored in Chem lab	David Faber	A
Tetraborate	360g	No waste, Stored in Chem lab	David Faber	
Sulfite	2.4g	No waste, Stored in Chem lab	David Faber	
o-phthalaldehyde	24g	No waste, Stored in Chem lab	David Faber	
Ethanol	1500ml	No waste, Stored in Chem lab	David Faber	F
HCL (dilute 1.2N)	2.5L	No waste, Stored in Chem lab	David Faber	A
HCL (conc. 12N)	4L	No waste, Stored in Chem lab	David Faber	A

SPILL CONTROL

A: ACID/Bases

- Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas.
- Ventilate closed spaces before entering them.
- Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.

- **Large Spills**: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.
- **Small Spills**: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
- Never return spills in original containers for re-use.
- Neutralize spill area and washings with soda ash or lime. Collect in a non-combustible container for prompt disposal.
- J. T. Baker NEUTRASORB® acid neutralizers are recommended for spills of this product.

F: Formalin/Formaldehyde/Ethanol/Acetone

- 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.

Inventory of Spill Kit supplies

Product Name	Amount	Chemicals it is useful against	Amount it can clean up
Chemical Spill pads	100	Formaldehyde, Alcohols	29 gallons
Formaldehyde Eater	5 gal	Formaldehyde	10 gallons

**Note: Please see attached Appendix 1.a. detailing spill control efforts for Scripps Institution of Oceanography.

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.

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory of hazardous material indicating all materials have been used or 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 scientific chemicals is not permitted during projects aboard NOAA ships.

B. Radioactive Isotopes

The Chief Scientist is responsible for complying with OMAO 0701-10 Radioactive Material aboard NOAA Ships. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

At least three months in advance of a domestic project and eight months in advance of a foreign project start date the shall submit required documentation to MOC-CO, including:

1. NOAA Form 57-07-02, Request to Use Radioactive Material aboard a NOAA Ship
2. Draft Project Instructions
3. Nuclear Regulatory Commission (NRC) Materials License (NRC Form 374) or a state license for each state the ship will operate in with RAM on board the ship.
4. Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters (NRC Form 241), if only state license(s) are submitted).
5. MSDS
6. Experiment or usage protocols, including spill cleanup procedures.

Scientific parties will follow responsibilities as outlined in the procedure, including requirements for storage and use, routine wipe tests, signage, and material disposal as outline in OMAO 0701-10.

All radioisotope work will be conducted by NRC or State licensed investigators only, and copies of these licenses shall be provided per OMAO 0701-10 at least three months prior to the start date of domestic projects and eight months in advance of foreign project start dates.

C. Inventory (itemized) of Radioactive Materials

Common Name Radioactive Material	**Concentration**	**Amount**	**Notes**
14C Sodium Bicarbonate	5.0mCi	20ml	To be used and stored in Science provided Rad van on main deck of ship. All waste contained and offloaded on Feb.2 by UCSD,EH&S
14C Sodium Bicarbonate	100mCi	20ml	To be used and stored in Science provided Rad van on main deck of ship. All waste contained and offloaded on Feb.2 by UCSD,EH&S

V. Additional Projects

A. Supplementary ("Piggyback") Projects

If time permits, the SWFSC's fishery acousticians will test recently constructed submersible video cameras to be placed on the interior surface of the Nordic 264 trawl. The cameras will be placed in order to watch fish behavior as well as to determine effects and efficiency of the marine mammal excluder device.

B. NOAA Fleet Ancillary Projects

N/A

VI. Disposition of Data and Reports

A. Data Responsibilities

The Chief Scientist will receive all original data related to the project. The Chief Scientist will in turn furnish the Commanding Officer with a complete inventory listing of all data gathered by the scientific party, detailing types of operations and quantities of data prior to departing the ship. All data gathered by the vessel's personnel that are desired by the Chief Scientist will be released to him, including supplementary data specimens and photos gathered by the scientific crew.

B. Pre and Post Project Meeting

Prior to departure, the Chief Scientist will conduct a meeting of the scientific party to train them in sample collection and inform them of project objectives. Some vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship's Operations Officer.

Post-Project Meeting: Upon completion of the project, a meeting will normally be held at 0830 (unless prior alternate arrangements are made) and attended by the ship's officers, the Chief Scientist and members of the scientific party to review the project. Concerns regarding safety, efficiency, and suggestions for improvements for future projects should be discussed. Minutes of the post-project meeting will be distributed to all participants by email, and to the Commanding Officer and Chief of Operations, Marine Operations Center.

C. Ship Operation Evaluation Report

Within seven days of the completion of the project, a Ship Operation Evaluation form is to be completed by the Chief Scientist. The preferred method of transmittal of this form is via email to omao.customer.satisfaction@noaa.gov. If email is not an option, a hard copy may be forwarded to:

Director, NOAA Marine and Aviation Operations
NOAA Office of Marine and Aviation Operations
8403 Colesville Road, Suite 500
Silver Spring, MD 20910

VII. 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 survey.

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 7, 1999 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, Revised: 02 JAN 2012) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website http://www.corporateservices.noaa.gov/~noaaforms/eforms/nf57-10-01.pdf. The completed form should be sent to the Regional Director of Health Services at Marine Operations Center. The participant can mail, fax, or scan the form into an email using the contact information below. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the project to allow time for the participant to obtain and submit additional information that health services might require before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of the NHSQ. Be sure to include proof of tuberculosis (TB) testing, sign and date the 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.

Contact information:

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

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

C. Shipboard Safety

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. Steel-toed shoes are required to participate in any work dealing with suspended loads, including CTD deployments and recovery. The ship does not provide steel-toed boots. Hard hats are also 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.

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 e-mail 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 it must be arranged at least 30 days in advance.

E. IT Security

Any computer that will be hooked into the ship's network must comply with the *NMAO 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 these requirements prior to boarding the ship is required.

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

F. Foreign National Guests Access to OMAO Facilities and Platforms

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

The following are basic requirements. Full compliance with NAO 207-12 is required.

Responsibilities of the Chief Scientist:

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

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

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written NMAO approval 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 e-mail 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 Regional Security Officer.

Responsibilities of the Foreign National Sponsor:

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

Appendices

1. Figures, maps, tables, images, etc.

Appendix 1.a. Detailed list of Scripp's Oceanography Chemicals and spill control plan.

Scripps Oceanography, CalCOFI Chemical Spill Kit List, Bell Shimada March 2012

The main concern here is the 10 normal Sulfuric Acid which is secured to the bench in wooden box to prevent spill. We bring a 13.5 lbs bag of Baking soda to neutralize acid in the event of a spill.

Our Radiation van has a spill kit that consists of 2 x 1/2 gallon of Safety Sorbent, the spill kits listed below were just ordered along with additional baking soda.

In addition to the spill kit in the Rad van we bring 6 x 1/2gallon additional cartons of Safety Sorbent

http://wyksorbents.com/anti-slip-safety-sorbent/

Safety Sorbent 8 x 1/2 gallon (http://wyksorbents.com/anti-slip-safety-sorbent/)

Sodium Bicarbonate (Arm & Hammer baking soda) 2 x 13.5 lbs bag for Acid Spills

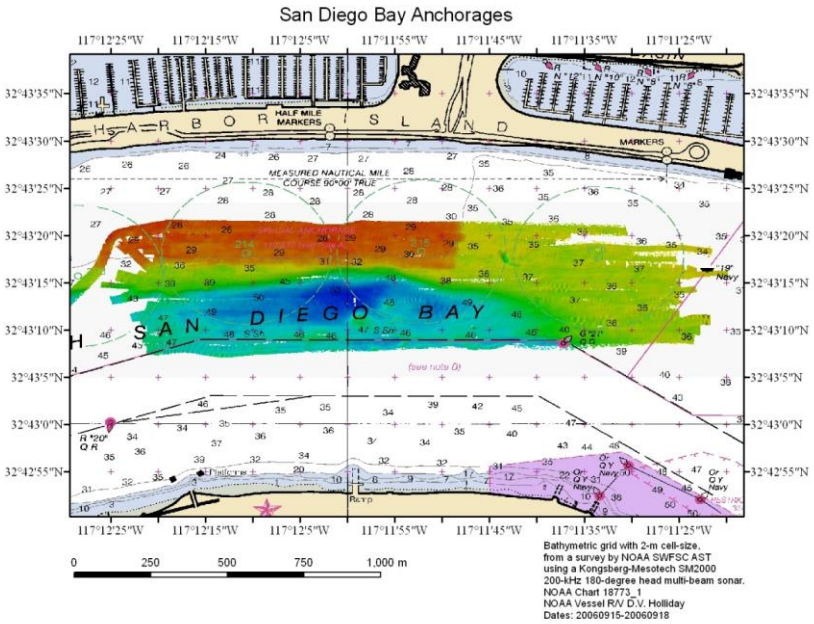
Portable Allwik Economy Spill Kit in Yellow Bag x2
(http://www.fastenal.com/web/products/detail.ex?sku=1007705)

Vinyl gloves 20+ boxes (50-100) count

Containment bags 3 rolls of 50 each

Roll paper towels 12 each.

Appendix 1.b. Bathymetry of the special anchorages off Shelter Island, San Diego Bay (red is shallowest, dark blue is deepest). The echo sounder calibrations will be conducted here (32° 43.20' N, 117° 12.0' W) on April 6, 2013. The ship will anchor in the deepest possible water, outside of the channel.



2. Station/Waypoint List (coordinates in Latitude, Longitude: degree-minutes)

Schedule Order	Line	Station	Deg Lat	Min Lat	Deg Lon	Min Lon
1	93.3	26.7	32	57.36	117	18.3
2	93.4	26.4	32	56.94	117	16.38
3	91.7	26.4	33	14.58	117	27.9
4	93.3	28	32	54.78	117	23.64
5	93.3	30	32	50.76	117	31.86
6	93.3	35	32	40.74	117	52.32
7	93.3	40	32	30.78	118	12.78
8	93.3	45	32	20.76	118	33.24
9	93.3	50	32	10.74	118	53.58
10	93.3	55	32	0.78	119	13.98
11	93.3	60	31	50.76	119	34.26

12	93.3	70	31	30.78	120	14.76
13	93.3	80	31	10.74	120	55.14
14	93.3	90	30	50.76	121	35.34
15	93.3	100	30	30.78	122	15.42
16	93.3	110	30	10.74	122	55.38
17	93.3	120	29	50.76	123	35.16
18	90	120	30	25.02	123	59.88
19	90	110	30	45.06	123	19.86
20	90	100	31	5.04	122	39.72
21	90	90	31	25.02	121	59.4
22	90	80	31	45.06	121	18.9
23	90	70	32	5.04	120	38.28
24	90	60	32	25.02	119	57.54
25	90	53	32	39.06	119	28.92
26	90	45	32	55.02	118	56.1
27	90	37	33	11.04	118	23.22
28	90	35	33	15.06	118	14.94
29	90	30	33	25.02	117	54.3
30	90	28	33	29.04	117	46.08
31	90	27.7	33	29.64	117	44.82
32	88.5	30.1	33	40.44	118	4.98
33	86.8	32.5	33	53.28	118	26.64
34	86.7	33	33	53.34	118	29.4
35	85.4	35.8	34	1.26	118	50.04
36	86.7	35	33	49.32	118	37.68
37	86.7	40	33	39.36	118	58.44
38	86.7	45	33	29.34	119	19.14
39	86.7	50	33	19.32	119	39.78
40	86.7	55	33	9.36	120	0.36
41	86.7	60	32	59.34	120	20.94
42	86.7	70	32	39.36	121	1.98
43	86.7	80	32	19.32	121	42.84
44	86.7	90	31	59.34	122	23.58
45	86.7	100	31	39.36	123	4.14
46	86.7	110	31	19.32	123	44.58
47	83.3	110	31	54.66	124	10.2
48	83.3	100	32	14.7	123	29.52
49	83.3	90	32	34.68	122	48.66
50	83.3	80	32	54.66	122	7.68
51	83.3	70	33	14.7	121	26.52
52	83.3	60	33	34.68	120	45.24

53	83.3	55	33	44.7	120	24.54
54	83.3	51	33	52.68	120	7.92
55	83.3	42	34	10.68	119	30.48
56	83.3	40.6	34	13.5	119	24.66
57	83.3	39.4	34	15.9	119	19.62
58	81.7	43.5	34	24.3	119	48
59	81.8	46.9	34	16.44	120	1.5
60	80	50.5	34	27.96	120	29.34
61	80	51	34	27	120	31.38
62	80	55	34	18.96	120	48.12
63	80	60	34	9	121	9
64	80	70	33	48.96	121	50.58
65	80	80	33	28.98	122	31.98
66	80	90	33	9	123	13.2
67	80	100	32	48.96	123	54.3
68	76.7	100	33	23.28	124	19.32
69	76.7	90	33	43.26	123	37.98
70	76.7	80	34	3.24	122	56.46
71	76.7	70	34	23.28	122	14.76
72	76.7	60	34	43.26	121	32.88
73	76.7	55	34	53.28	121	11.88
74	76.7	51	35	1.26	120	55.02
75	76.7	49	35	5.28	120	46.62
76	73.3	50	35	38.58	121	15.3
77	73.3	60	35	18.6	121	57.66
78	73.3	70	34	58.62	122	39.84
79	73.3	80	34	38.58	123	21.84
80	70	80	35	12.9	123	46.68
81	70	70	35	32.88	123	4.38
82	70	60	35	52.92	122	21.9
83	70	51	36	10.92	121	43.5
84	66.7	50	36	47.16	122	3.36
85	66.7	60	36	27.18	122	46.32
86	66.7	70	36	7.2	123	29.1
87	66.7	80	35	47.16	124	11.7
88	63.3	80	36	22.5	124	37.74
89	63.3	70	36	42.54	123	54.78
90	63.3	60	37	2.52	123	11.7
91	63.3	52	37	18.54	122	37.02