UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
Marine Operations Center
439 W. York Street
Norfolk, VA 23510-1114

MEMORANDUM FOR: Lieutenant Commander Nicholas Chrobak, NOAA
Commanding Officer, NOAA Ship *Nancy Foster*

FROM: Captain Anita L. Lopez, NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for NF-13-01
ROV Monitoring of Habitats off Puerto Rico, EPA

Attached is the final Project Instruction for NF-13-01, ROV Monitoring of Habitats off Puerto Rico, EPA, which is scheduled aboard NOAA Ship *Nancy Foster* during the period of 13 February – 2 March, 2013. Acknowledge receipt of these instructions via e-mail to **OpsMgr.MOA@noaa.gov** at Marine Operations Center-Atlantic.

Attachment

cc:
MOA1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

FINAL Project Instructions

Date Submitted: February 12, 2013

Platform: NOAA Ship *Nancy Foster*

Project Number: NF-13-01 (EPA)

Project Title: Remotely operated vehicle (ROV) video monitoring of nearshore and deep water habitats off north and west Puerto Rico

Project Dates: February 13, 2013 to March 2, 2013

Prepared by: _____ Dated: 2/12/13
Mark Reiss
Chief Scientist
U.S. Environmental Protection Agency (Region 2)

Approved by: _____ Dated: 2/12/13
Douglas Pabst
Acting Chief, Clean Water Regulatory Branch
U.S. Environmental Protection Agency (Region 2)

Approved by: _____ Dated: 2/12/13
Jeff Gratz
Deputy Director
EPA Region 2 - Clean Water Division

Approved by: _____ Dated: 12FEB13
Captain Anita L. Lopez, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. Overview

A. Brief Summary and Project Period

In response to NOAA-NMFS essential fish habitat concerns, EPA conducted a series of side scan SONAR surveys over the last several years to determine whether any hard bottom areas having vertical relief are present in the vicinity of EPA-designated ocean dredged material disposal sites off Puerto Rico. These surveys identified various potential reef areas outside San Juan, Arecibo and Mayaguez harbors. Unfortunately, SONAR technology cannot differentiate between live hard bottom and rock. Videographic confirmation is required to determine whether they are living coral reefs and must be afforded additional protections against degradation due to EPA regulated dredged material disposal activities. Accordingly, NOAA and EPA have jointly commissioned the present survey to obtain this confirmation.

Project Period:

Three (3) transit days, Seven (7) Science Days and three (3) Weather Days (13 total DAS) have been allocated to this project. Weather Days will be used for additional surveying in project areas or for transit.

B. Service Level Agreements

All DAS scheduled for this project are funded by EPA. This project is estimated to exhibit a Low Operational Tempo.

C. Operating Area:

North and West Coasts of Puerto Rico. See Figure 1.

D. Summary of Objectives

The Environmental Protection Agency (EPA) and NOAA's National Marine Fisheries Service (NMFS) is conducting this project to characterize near shore and deepwater hard bottom seafloor habitats (<300 m) present in the vicinity of ocean dredged material disposal sites and along transit routes to the sites off the north and west coast of Puerto Rico. As stated above, over the past several years, EPA has documented the presence of hard bottom areas with significant vertical relief in shallow waters outside Arecibo, Mayaguez and San Juan Harbor harbors and in deeper areas near the disposal sites using side scan SONAR. Many of these areas are located in water depths that are significantly greater than depths typically associated with coral; however NOAA-NMFS has also proposed listing several species of deepwater corals as threatened species under ESA. In addition, areas of high relief located in shallower areas along expected transit routes used by loaded dump scows may also be coral reef. Because scow malfunctions or weather conditions can cause discharges of dredged material outside designated boundaries of the sites, it is imperative for EPA and NOAA to determine whether these hard bottom areas are in fact populated by live coral or are just exposed rock faces and to document the relative health of these habitats.

The purpose of the cruise will be to collect video images using a moderate-depth Remotely Operated Vehicle (ROV) at point sampling locations of hard bottom features spread throughout the three study areas. The strategies developed for each survey area will take into account the minimum depths, general bathymetry, and time allotment. NOAA technicians will conduct multibeam bathymetry surveys during overnight periods during the survey to refine video ROV deployment locations for the following day. The objective of the ROV services will be to collect data for EPA and NOAA scientists to identify whether hard bottom habitats identified with side scan are comprised of live corals that warrant special protective measures and to document the condition of any corals at the selected study sites.

E. Participating Institutions

US Environmental Protection Agency (Region 2), NOAA National Marine Fisheries Service (Boqueron, PR), University of North Carolina at Wilmington-NURC

F. Personnel/Science Party

(Empty berths to be used, if required, by NOAA for training or educational purposes):

Name (Last, First)	**Title**	**Date Aboard**	**Date Disembark**	**Gender**	**Affiliation**	**Nationality**
Mark Reiss	Chief Scientist	2/20/13	3/2/13	Male	EPA	US
Lance Horn	ROV Operator	2/20/13	3/2/13	Male	UNCW	US
Glenn Taylor	ROV Operator	2/20/13	3/2/13	Male	UNCW	US

G. Administrative

1. Points of Contacts:

Chief Scientist: Mark Reiss, 290 Broadway, New York, NY 10007 (212)637-3799, reiss.mark@epa.gov

NOAA Consulting Scientist: Lisamarie Carrubba National Marine Fisheries Service NOAA. Boqueron PR (787) 851-3700, lisamarie.carrubba@noaa.gov

2. Diplomatic Clearances:

This project involves Marine Scientific Research in waters under the jurisdiction of the United States. No diplomatic clearance is necessary.

3. Licenses and Permits:

No licenses or permits are necessary for this cruise. The Chief Scientist will coordinate with the U.S. Coast Guard to publish a Notice to Mariners of planned activities and operational areas.

II. Operations

A. Project Itinerary

The three general study areas are shown in Appendix 1. Initial survey locations selected from existing side scan SONAR records are provided in Table 1 for each of the three general study areas. Additional survey locations will be made available to the Operations Officer during the daily operations meeting after consideration of multibeam bathymetry collected by NOAA technicians during the preceding night. The following are estimates of locations.

Weather conditions may require changes to itinerary including sequencing of Study Areas. There are three weather days allotted to survey which may change timing, be used as additional survey days or be used as stand down days during the survey. If a determination is made by the Principal Investigator to use them as stand down days, ship may use this time for training purposes.

Coordinates for initial ROV deployment in the three general study areas

Location	**Latitude**	**Longitude**	**Note**
San Juan Study Area			
SJ-Deep-1	18 ^{o} 29.4’	66^{o} 07.4’	Bathymetric / Hard Bottom
SJ-Deep-2	18 ^{o} 29.9’	66^{o} 09.2’	Bathymetric / Hard Bottom
SJ-Outfall-1	18 ^{o} 29.217’	66^{o} 08.35’	San Juan Bayamon Outfall
Arecibo Study Area			
A-Deep-1	18 ^{o} 29.496’	66^{o} 43.255’	Bathymetric / Hard Bottom
A-Deep-2	18 ^{o} 29.414’	66^{o} 43.078’	Bathymetric / Hard Bottom
A-Deep-3	18 ^{o} 29.699’	66^{o} 42.315’	Hard Bottom
A-Shallow-1	18 ^{o} 28.956’	66^{o} 43.267’	Hard Bottom
A-Shallow-2	18 ^{o} 28.99’	66^{o} 42.99’	Hard Bottom
A-Outfall-1	18 ^{o} 29.567’	66^{o} 41.417’	Arecibo Outfall
Mayaguez Study Area			
M-Deep-1	18 ^{o} 14.37’	67^{o} 13.338’	Hard Bottom

M-Deep-2	18 ^{o} 14.185’	67^{o} 13.079’	Hard Bottom
M-Deep-3	18 ^{o} 13.614’	67^{o} 12.671’	Hard Bottom
M-Shallow-1	18 ^{o} 14.272’	67^{o} 12.61’	Hard Bottom
M-Shallow-2	18 ^{o} 13.596’	67^{o} 12.03’	Hard Bottom
M-Shallow-3	18 ^{o} 13.442’	67^{o} 11.894’	Hard Bottom
M-Outfall-1	18 ^{o} 14.55’	67^{o} 11.45’	Mayaguez Outfall

19 February (Tuesday): NOAA Ship *Nancy Foster* berthed in San Juan, PR

UNCW ROV team arrives (US Airways Flight 1032 from Charlotte at 1415).

20 February (Wednesday): NOAA Ship *Nancy Foster* berthed in San Juan, PR

ROV install team configures ROV and conducts USBL, POS/MV, GPS integration with Hypack; and installs hydrophone pole (topside operation, no diving required).

All: EPA Principal Investigator (Reiss) arrives (American Airlines Flight 413 from JFK at 1140).

1400-1500 Team operations meeting to go through ROV SOPs. SSI, procedures, and risk analysis.

21 February (Thursday): *Transit to San Juan Harbor Ocean Dredged Material Disposal Site Survey Area:* (0800-0900)

0900 - 1800 Video ROV Operations (Initial Locations) –EPA, NOAA, UNCW
1800 – Conduct overnight multibeam mapping operations in vicinity of San Juan Harbor ODMDS -NOAA

22 February (Friday): *Continue Survey in vicinity of San Juan Harbor ODMDS*

0800 - 1800 Video ROV Operations at positions selected from overnight multibeam bathymetry- EPA, NOAA, UNCW

1800 – Depart SJ and Transit to Arecibo Harbor ODMDS

23 February (Saturday): *Survey in vicinity of Arecibo Harbor ODMDS*

0800 - 1800 Video ROV Operations (Initial Locations) –EPA, NOAA, UNCW

1800 – Conduct overnight multibeam mapping operations in vicinity of Arecibo Harbor ODMDS -NOAA

24 February (Sunday): *Continue Survey in vicinity of Arecibo Harbor ODMDS Survey in vicinity of Mayaguez Harbor ODMDS*

0800 - 1800 Video ROV Operations at positions selected from overnight multibeam bathymetry –EPA, NOAA, UNCW

1800 – Depart Arecibo and Transit to Mayaguez Harbor ODMDS

25 February (Monday): *Survey in vicinity of Mayaguez Harbor ODMDS*

0800 - 1800 Video ROV Operations (Initial Locations) –EPA, NOAA, UNCW
1800 – Conduct overnight multibeam mapping operations

26 February (Tuesday): *Continue Survey in vicinity of Mayaguez Harbor ODMDS*

0800 - 1800 Video ROV Operations at positions selected from overnight multibeam bathymetry – EPA, NOAA, UNCW

27 February –February 28 *(WEATHER DAYS and ADDITIONAL TIME to be allocated to additional ROV survey work in study areas or used for training and/or equipment calibration purposes. This determination will be made by Principal Investigator after consultation with ship crew)*

1 March (Friday): *Transit and Arrive in San Juan* (ATTENTION: PRINCIPAL INVESTIGATOR MAY BE DIRECTED TO ATTEND A DAYTIME MEETING IN SAN JUAN ON THIS DAY; IF SURVEY OBJECTIVES HAVE BEEN MET AND BERTHING/TRANSIT SCHEDULE ALLOWS)

2 March (Saturday): Demobilize and Science Crew departs

B. Staging and Destaging

ROV gear will have been loaded on the vessel in Charleston before departing for Puerto Rico (February 13, 2012). ROV equipment will need to be retrieved from the hold on February 20 AM in San Juan. Upon

transit/ return to San Juan, ROV equipment will be left on deck for use by following survey team (Tim Battista, NOAA).

C. Operations to be Conducted

Seabottom Video Acquisition Operations:

Benthic habitats in moderate depth water (>10m and <300m) will be visually-characterized using a ROV. This data will be collected to confirm whether hard bottom features identified using side scan SONAR on previous EPA surveys are comprised of live coral or rock and to characterize the health and diversity of any coral areas identified.

ROV (Nancy Foster):

The topside control system will be operated from the Wet Lab. The ROV will be deployed using the J-frame. A hydrophone pole will be mounted/deployed over the port side forward of the J frame. The pole can be easily retrieved before transiting to a new location. ROV operations will conform to SOPs (described in Attachment 1) that have previously been used by UNCW aboard the Nancy Foster.

The ROV sampling approach will be operated to conduct transects. The selection of ROV transects will largely be determined by side scan SONAR results obtained on previous EPA surveys and refined by overnight multibeam bathymetry collected by NOAA technicians. Sampling will be conducted using a modified stratified random sampling approach. Stratified "Regions" of interest will be identified for deployment based on visual and analytical assessment of the side scan SONAR and multibeam data. A number of sample stations (2-5) will be randomly identified within the "region". The geodetic coordinates will be provided to the Bridge as well as targeted in Hypack for display on the Bridge. Once the ship is on station, the USBL hydrophone pole will be rotated into position, and the ROV powered up for deployment. Deployment of the ROV at the deepest depths (250m) will require the most time on station. Time estimates: 1) 15 minutes to deploy the ROV to the seafloor, 2) 2 hour transects, and 3) 20 minutes for retrieval. The scientists anticipate sampling between 5 to 6 transects per day for a 10 hour daylight shift (Personnel are not to work more than 12 hours in a given day). Ship deck hand, safety observer, and deck boss (and other personnel, as appropriate) will be required during recovery and deployment, but can otherwise be operated by the scientists.

Multibeam Operations:

Overnight periods will be used to collect multibeam bathymetry in the vicinity of ROV operations and weather/stand down days may also be allocated by the Principal Investigator (in consultation with the ship's crew) for that purpose.. Methods will adhere to those SOPs specified by Tim Battista for use in the ensuing survey. The multibeam data will inform the selection of additional ROV deployment areas and be used to supplement NOAA benthic coverage maps.

D. Dive Plan

There are no dives planned for this survey

E. Applicable Restrictions

Conditions which preclude normal operations include poor weather conditions, equipment failure, safety concerns, and unforeseen circumstances. In the case of equipment failure, ship time will be used productively using other survey methods as available (e.g., providing additional coverage for ongoing NOAA mapping efforts) until repairs can be made to affected equipment. In the event of poor weather conditions, survey time will be redirected to areas that are in lee of island. Except in cases of safety, Principal Investigator will make decisions regarding reallocation of survey time in consultation with ship crew.

III. Equipment

A. Equipment and Capabilities Provided by the Ship

1) Hand held radios for communication between bridge, deck, and ROV tech teams.
2) CTD's 100m and 1000 m depth rating.
3) Dynamic Positioning System.

B. Equipment and Capabilities Provided by the Scientists

1) Underwater video + camera equipment + tow bodies (Phantom 2 ROV)
2) USBL Underwater tracking system and hydrophone pole
3) Five high end laptops and two flat screen monitors.
4) CARIS, ArcGIS, Hypack/Hysweep

IV. Hazardous Materials : N/A

A. Policy and Compliance: N/A

B. Radioactive Isotopes: N/A

C. Inventory (itemized) of Radioactive Materials: **N/A**

V. Additional Projects

A. Supplementary ("Piggyback") Projects

Weather days are allocated to the survey plan. In the event that sea conditions limit successful conduct of ROV surveys in one area of the operations, these days may be used to increase survey coverage in areas

allowing survey conduct (E.g., if ROV cannot be deployed along north coast of PR, those sea days may be allocated to survey additional areas off the west coast if conditions permit).

A. NOAA Fleet Ancillary Projects

Because operations are only scheduled for daylight hours, the overnight times will be used productively to conduct survey lines in the general area of operations to support NOAA-National Center for Coastal and ocean science data needs (POC Tim Battista)

VI. Disposition of Data and Reports

A. Data Responsibilities

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 3 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. There are no EPA night operations planned for the cruise. No Special dietary requirements are required for scientific participants.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Operations 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 – Atlantic
439 W. York Street
Norfolk, VA 23510
Telephone 757-441-6320
Fax 757-441-3760
E-mail MOA.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, Crocs, flip flops, or clogs) outside of private berthing areas is not permitted. 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. Every computer (including Mac) that will be hooked up to the ship's network must have a WORKING and UP TO DATE antivirus with a full computer scan BEFORE coming to the ship. The scan needs to have been performed within 5 days of coming to the ship.

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 (FRNS) 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.

Foreign National access must be sought not only for access to the ship involved in the project, it must also be sought and approved for the dates of any DOC facilities (marine centers or port offices) that foreign nationals might have to traverse to access to and from the ship.

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 FRNS 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:

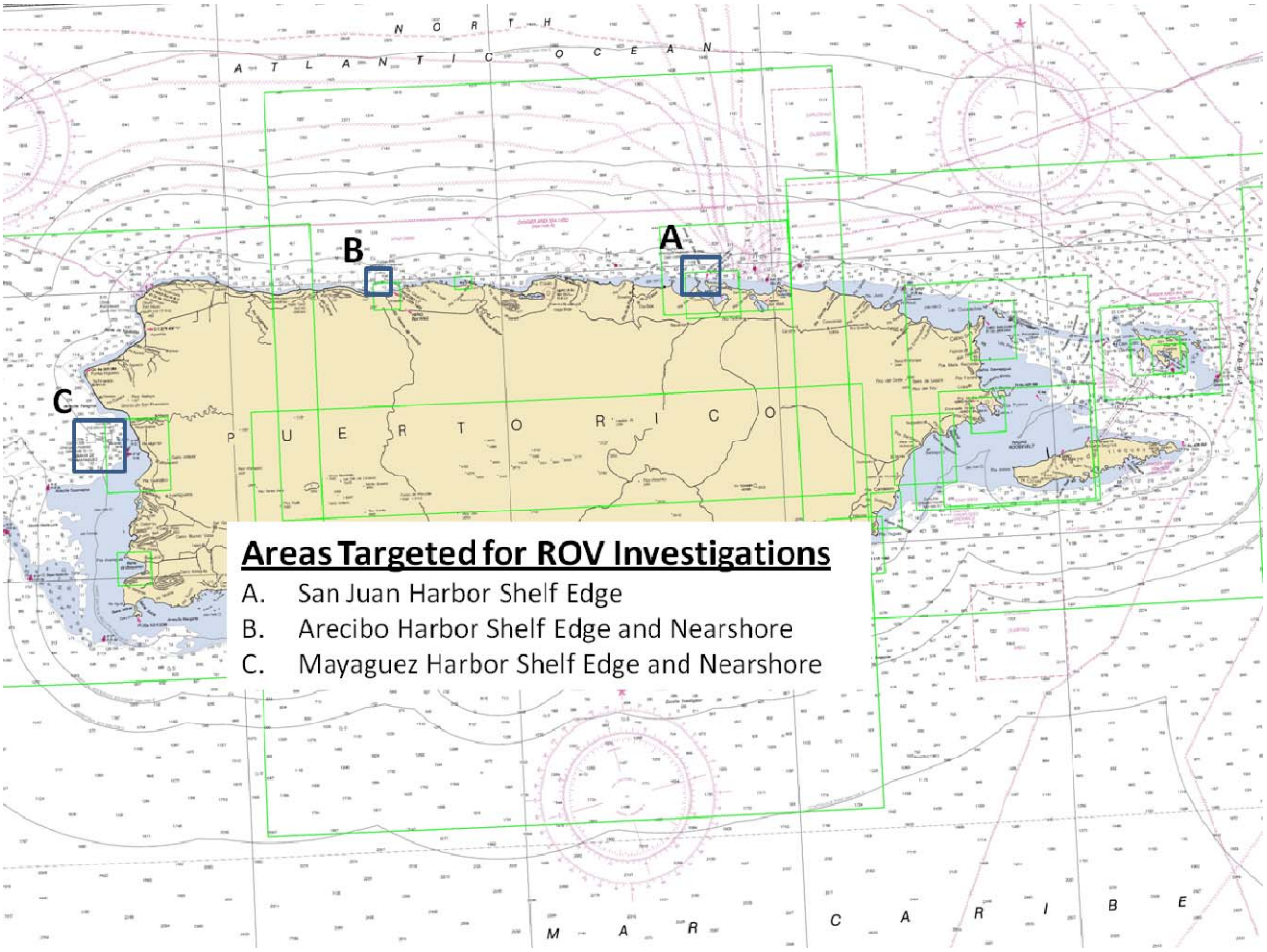
1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written NMAO approval and compliance with export and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

Figure 1. Primary Areas of Operation



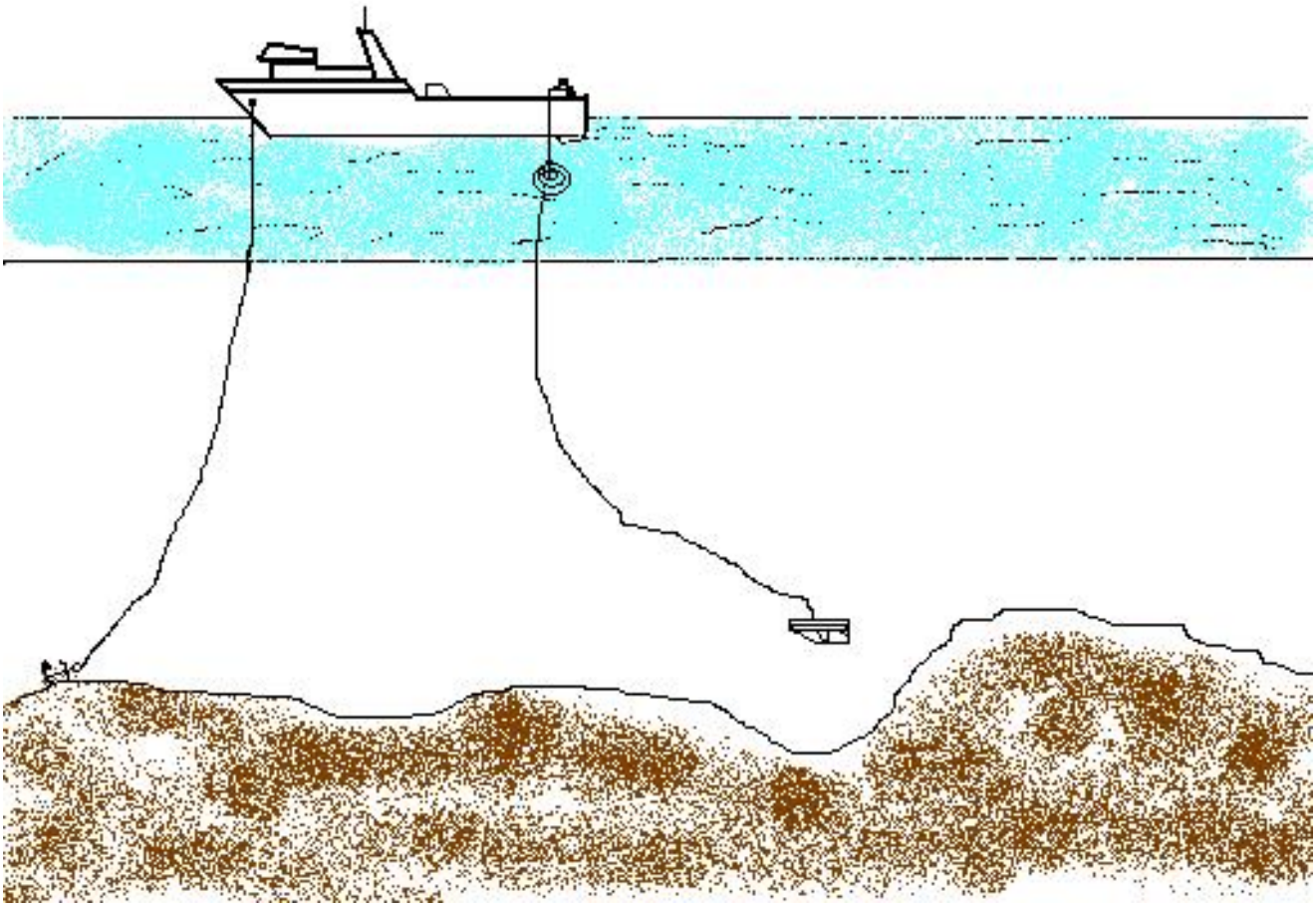
ROV Doployment Procedures

General idea of this operation is to follow the ROV at approx. 1-2 knots (SOG), while it collects data on a particular target (using a transect line over it). This does not mean the ship will be pointing in the same direction as the ideal course needed.

- The ship is placed up current of the dive site approximately one quarter mile. This will give us the time we need to get the ROV and downweight deploy and get the ship turned INTO the current for the dive.
- The ship needs to be initially positioned so that the ROV streams out off the port side (ship moving to starboard). With the current on the port beam will provide the setup, however, strong winds may have to be considered and factored in to provide this scenario.
- Once the ship is moving to starboard, the ROV is lowered into the water on the port side and released with a quick release shackle. The ROV takes a heading perpendicular to the ship and drives away while cable is payed out so that the cable does not go near the ship's props. This section of cable, approximately 70 feet, has a polypro tow line that attaches to the ROV on one end and the downweight on the other end to strain relief the ROV umbilical.
- While the ROV is driving away from the boat, the winch wire is hard shackled into the downweight and moused. The polypro tow line is attached to the downweight, which is then deployed over the side. A small loop of 1/8" nylon is tied to the wire rope (on the first dive and remains in place for the remainder of the mission) every 50 feet, while the umbilical has matching loops of line every 50 feet with brass clips on them. As the downweight is lowered, the umbilical is clipped onto the wire every 50 feet, again to minimize the strain on the umbilical.
- When the downweight (and ROV) are at 50 feet (on clip on), the vessel can maneuver to turn 90 degrees into the current, wind or a combination of both, while the downweight continues to be lowered to working depth, usually 20-30 feet above the bottom.
- Once the downweight is at working depth, the ship will stem at about 2 knots (SOG) and makes way towards the target. Speed is adjusted according to the currents and the resulting wire angle to the downweight (deck needs access to the umbilical clips attached to the wire rope).
- The ROV will "tow" directly behind and at the same depth as the downweight until we drive the ROV down to the sea floor. At this point the ROV follows the bottom and has the ability to move a minimal lateral distance from the direction of travel of the downweight. Recommended speed is 1 knot (SOG), anything faster is just a blur. The downweight depth is adjusted throughout the dive to account for the changing depths of the features we are documenting, so it is critical that the winch operator be standing by the winch controls during the entire dive.

Recovery is just the opposite. The ROV and down weight are brought up into the water column well above and safe from the bottom, but below and out of reach of the ship's props. The ship will maneuvered to allow the vessel to drift to starboard (wind/current on port beam) so that the ROV streams out from the port side. At this point the downweight is recovered and all attachments are removed from the downweight. While the ROV is being pulled close to the ship by hand, the wire rope is attached to a hook that fits on the end of a removable pole. When the ROV is close to the ship, the hook is placed on the crash frame of the ROV and the pole is removed. The wire rope and J frame are used to bring the ROV out of the water onto the deck.

TETHER MANAGEMENT



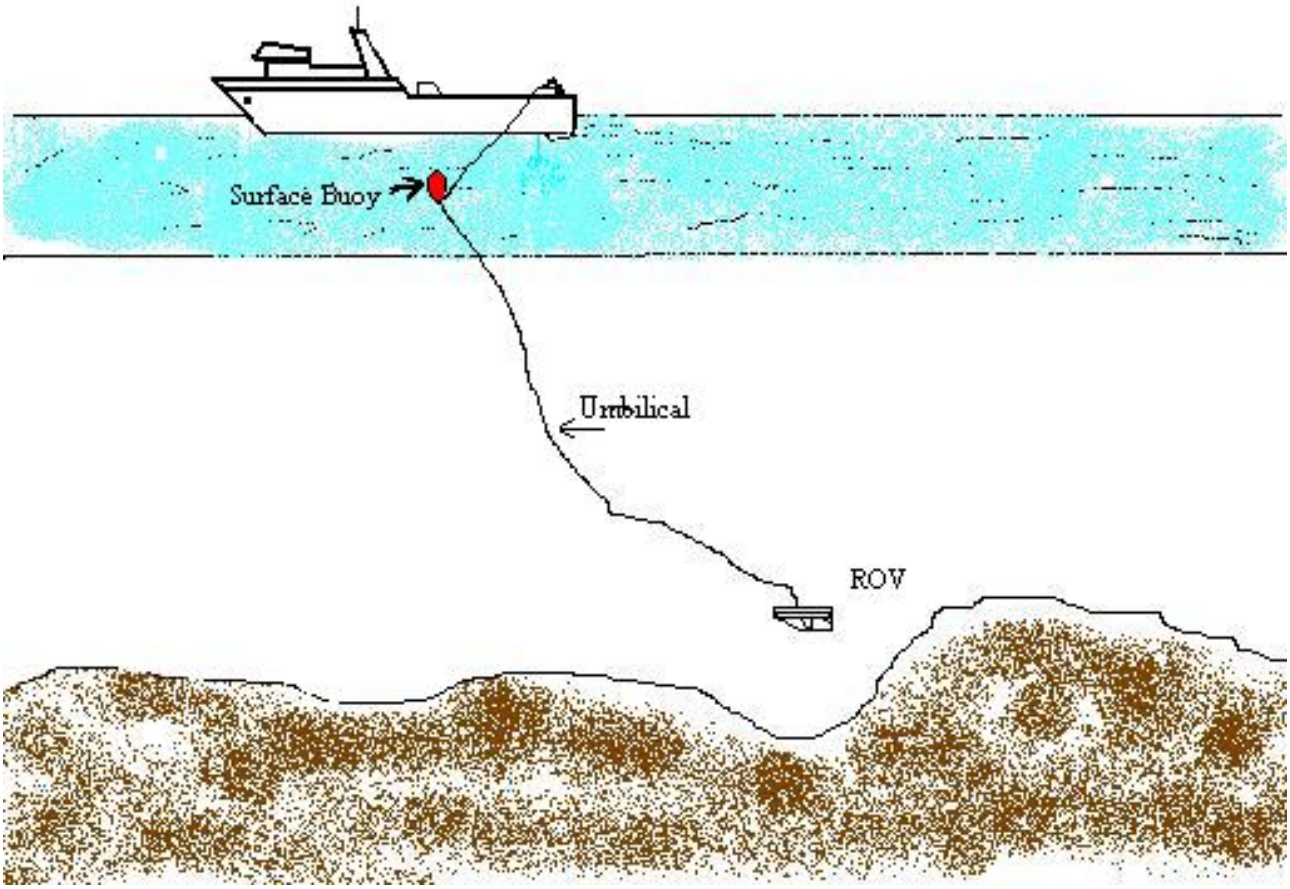
Scenario 1

ROV is free swimming from a vessel which is at anchor. The ROV is free swimming on bottom or mid water. The ROV is neutrally buoyant and cable is paid out by tender on an as needed basis. Tether is coded so the amount paid out is known. The tether should **always** be tended with communications set up between the tender and operator as to advise operator of the orientation of the tether in relation to the vessel.

NOTE: This mode of operation is the safest of modes for two main reasons:

1. The vessel wheels are not under power thus are not turning.

2. The vessel is in a relatively stationary position so the ROV will not be dragged into any structure.

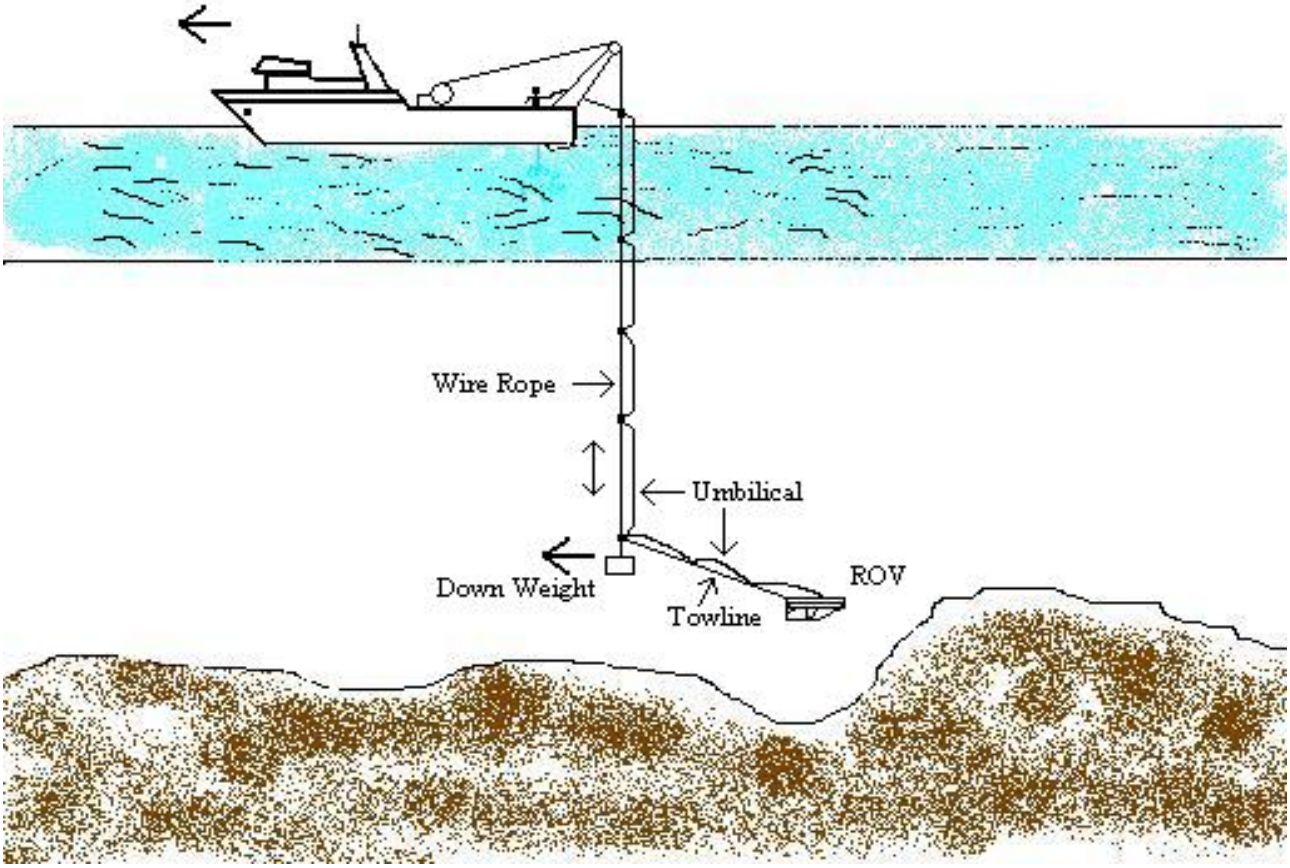


Scenario 2

ROV is free swimming from a vessel which is not at anchor, but ROV is marked with a surface buoy attached to the tether. The ROV is deployed with the vessel adrift and out of gear. When the ROV reaches the desired working depth a large Norwegian buoy is affixed to the tether and placed overboard along with additional tether. With the buoy clear of the vessel and in sight of the bridge the vessel is free to maneuver in order to follow the buoy. Maneuvers must be coordinated with the tender.

NOTE:

1. Communications must be set up between the vessel's bridge, ROV operator, and the tender.
2. The buoy must be in sight of vessel's bridge at all times.
3. Tether must be tended at all times.
4. Recommended for small, maneuverable vessels only.



Scenario 3

ROV is being towed via a tow bridle which is attached to a suppressor weight and is deployed from a vessel not at anchor. The ROV is attached to the down weight by a tow bridle which is approximately 60 feet in length. The tether is attached to the tow bridle so that no strain is placed on the tether. With the vessel adrift the ROV/Tow Bridle assemblage is placed in the water from the stern of the vessel. Tether and bridle are paid out until the end of the bridle is reached. The bridle is then shackled to a 300 lbs. suppressor weight which is then lowered into the water on a static line by an A-frame. The tether is clipped to the static line roughly every 50 feet in a manner in which no tension is placed on the tether. After the suppressor weight is 50 feet in the water the vessel is free to make necessary maneuvers coordinated with the tender.

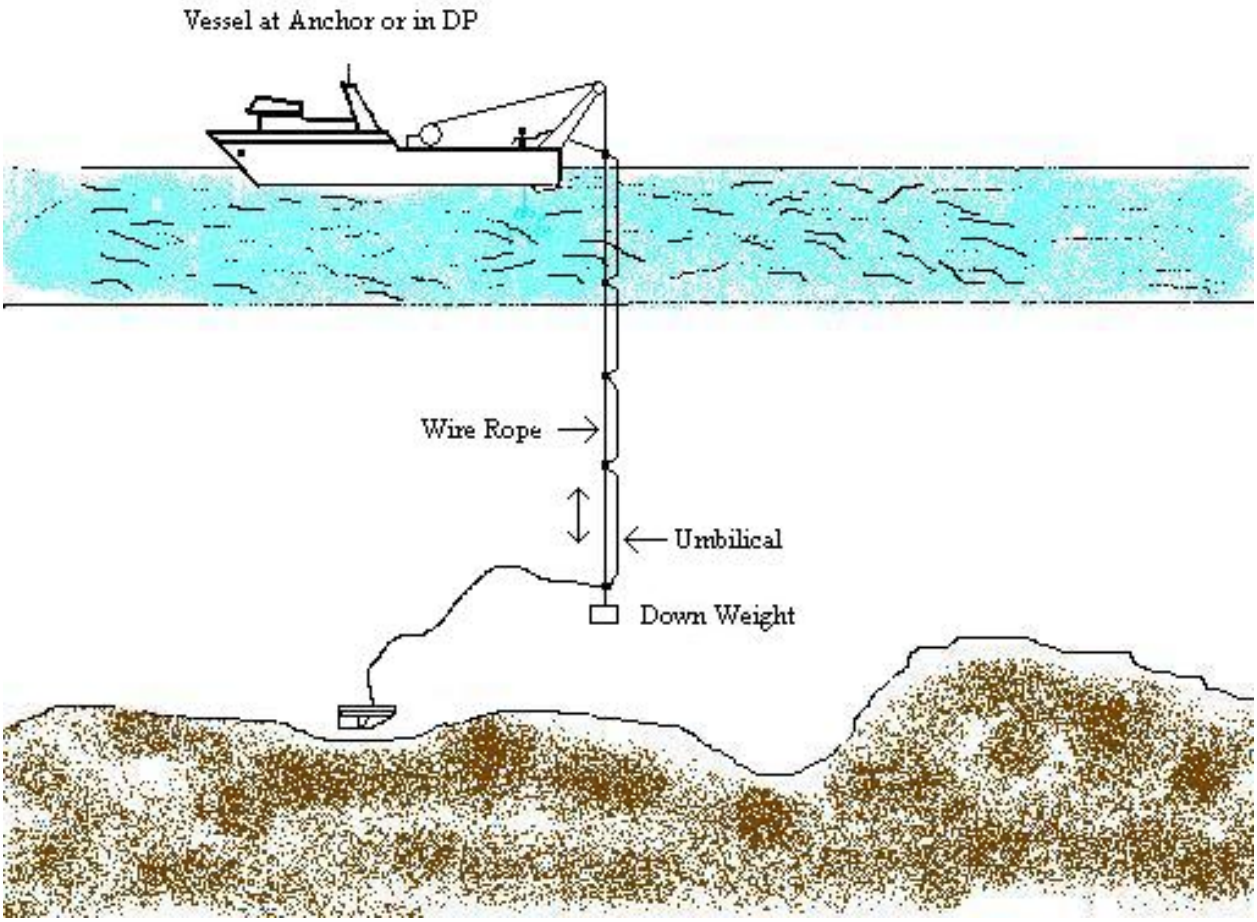
NOTE: This mode of operation is extremely dangerous due to vessel being in gear and the chance of unforeseen hangs being present in the tow path. Pre-dive coordination is, therefore, very important.

1. Communications must be set up between the vessel's bridge, ROV operator, and the tether tender.

2. Tether must be tended at all times.

3. The depth of the ROV is controlled by the depth of the suppressor weight.

4. Vessel speed should not exceed 2 kts.



Scenario 4

ROV is attached to a suppressor weight via the tether and is deployed from a vessel which is at anchor. This method of deployment is very effective in strong current situations by alleviating the drag created by the current on the tether. The ROV is placed in the water and starts to descend in the water column. After the working depth is reached or 200 feet of tether is paid out the tether is affixed to a static line just above a suppressor weight. The suppressor weight is then lowered into the water via an A-frame. The tether is then clipped to the static line every 50 feet. The suppressor weight can be lowered to a depth not to exceed the working depth minus 30 feet. This will keep the suppressor weight from pinning the ROV between it and the bottom.

NOTE:

1. Communications must be set up between the vessel's bridge, ROV operator, and the tender.
2. Tether must be tended at all times.
3. The circumference of travel by the ROV is controlled by the depth of the suppressor weight.
4. Vessel crew shall notify the ROV operator and tender of major current changes, wind shifts, or loss of dynamic positioning.