



Dive Plan Guide for Personal Submersibles

Revision 2016.1

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1. EVENT

1.1. PSUBS Guidelines Review

1. Planners should become familiar with existing PSUBS documentation for dive operations.
2. Restricted Areas. Known restricted areas that may impact dive operations can be researched at <http://www.psubs.org/diveops/restricted>
3. SUBNOTE. This system provides advance notification of local restrictions, required approvals, and safety considerations for submersible operations, helping operators plan dives responsibly and safely. See <http://www.psubs.org/diveops/SUBNOTE>
4. This document and other documents including “vessel emergency plan example”, “dive plan example” and PSUBS publication “Operating Guidelines for Personal Submersibles” can be found at <http://www.psubs.org/diveops/documents>

1.2. Dive Operation Summary

Create a descriptive summary of the planned dive operation that will provide sub owners and attendees with a high level overview of the event. All sections of this document should be considered a minimum set of information in the dive summary.

1.3. Maximum dive depth

1. Define the maximum dive depth for the event based upon the experience of the pilots involved, water conditions that might affect surface support, and the design depth of the least capable submarine.
2. Under no circumstances should dive operations occur in a water column greater than the rated depth of any attending submarine.

1.4. Number of dives

Define the number of dives based upon factors such as projected weather and dive area conditions, launch/recovery, and the “turn-around” time required to change crew or resupply consumables. Remember that you may have to wait in line at a public launch or boatyard for your turn to put your vessel in the water

1.5. Time & Location

1. Establish the time of day you expect to leave port.
2. Establish the time of day you expect arriving back in port.
3. Establish the detailed location of the dive location, preferably via GPS coordinates.

1.6. Surface Vessels

Identify the number and type of surface vessels that will be required to support dive operations. This includes direct submarine support and surface vessels for observers.

1.7. Safety Divers

1. Identify if safety divers will be required for the event and determine how many should be present on-site.
2. Reserve diver availability well in advance of the event. Divers from the local event area are often available to help.

1.8. Surface Support Personnel

1.7.1 Roles and Responsibilities

1. Identify the surface support personnel required and created a list of roles and responsibilities for each position.
2. Determine who will be assigned to each position.

1.7.2 Chain of command

Create a chain of command to ensure that all participants know who is authorized to make decisions regarding the dive operation. PSUBS recommends the following roles and chain of command for most dive events:

1. Surface Operations Coordinator (SOC). This position has responsibility for oversight of all segments of the operation, and is the final arbiter and decision maker for all matters.
2. Safety Officer. This position is responsible solely for safety related issues both on shore and water. Subordinate to the SOC, the Safety Officer shall be the final arbiter and decision maker for all matters related to safety.
3. Underwater Communications Officer (UCO). This position is responsible for all radio communications between the surface and submersibles operating under water.
4. Dive Master. This position is responsible for dive related coordination in the dive area. The dive master may delegate various responsibilities to other participants as they deem necessary.
5. Scuba Safety Divers. Safety divers take instruction from, and report to, the Dive Master.

1.7.3 PIC Privilege

1. The submersible pilot in command (PIC) has ultimate and final responsibility for his vessel and may override any command from any surface personnel to preserve the safety of his vessel and/or crew.

1.9. Command Communication

All surface command personnel shall carry radio equipment when required for effective communications and coordination of the event. The type of equipment and frequencies to be used shall be determined by the SOC.

1.10. Surface Observers

1. Determine an accurate count of participants to plan for observing logistics such as access to/from the dive area. Ensure planned facilities will accommodate all participants and communicate any costs involved.
2. Keep in mind that submarines attract much attention from the public and a number of unanticipated observers may be present. Have a plan in place on how these unanticipated observers will be handled relative to event operations.

1.11. Submarine Launch and Recovery

1. Research, identify, and survey the location and method (boat launch, boat lift, crane) submersibles are to gain water access. Ensure these facilities will accommodate all anticipated attending submarines and communicate any costs involved to all submarine owners.
2. Survey water depth at the planned launch and recovery location for all attending submarines, keeping in mind changes in tide and other similar considerations.

1.12. Supplies & Equipment

1. Identify any supplies or equipment that will be necessary to support both dive operations and the event in general. Take time to consider each element of the event, where supplies will come from, and who will be responsible for bringing them.
2. Document the address and phone number of local merchants including:
 - a. Dive shops
 - b. Hardware stores
 - c. Rental shops
 - d. Grocery stores
 - e. Restaurants
 - f. Lodging

1.13. Government Notification

1. Review the “Restricted Areas” and “SUBNOTES” sections of the PSUBS.ORG website to determine whether any federal, state, or local authority notification requirements apply to the planned dive operation.
2. If notification is required, follow the provided instructions within the applicable document.

2. SAFETY

2.1. Pre-Dive Briefing

1. Prior to launch of vessels a pre-dive briefing should be held with all parties of the dive operation including observers, to review dive site information, planned activities, and

emergency procedures.

2. Other subject matter should include:
 - a. Identify surface support personnel.
 - b. Identify surface support vessels and crews.
 - c. Establish working communication method and channels (VHF, FRS).
 - d. Identify any contemporaneous issues.

2.2. Emergency Plan

1. A comprehensive emergency plan is required that describes the process or procedure to be used in the event of an emergency situation during dive operations.
2. Compile a list of emergency contacts including:
 - e. Police, Fire, Rescue phone numbers.
 - f. Local USCG phone number if operating in USCG jurisdiction.
 - g. Cell phone numbers of all dive operation personnel.
 - h. Nearest dive shop and phone number.
 - i. Nearest hardware store for tools and parts.
 - j. Nearest rental shop for large tools and equipment.
3. Define the parameters by which an emergency situation will be realized. For example:
 - a. Emergency Buoy released.
 - b. Verbal call by submarine pilot or surface crew.
 - c. Hand signal.
 - d. Loss of communication.
 - e. Other
4. Define the role of support crew or participants in the event of an emergency.
 - a. Who will decide when it is time to call for help.
 - b. Who will make the call for help.
 - c. How will the call for help be made (radio, cell phone).
 - d. Who will act as the primary coordinator with rescue personnel.
5. When planning an event in a remote area where cell-phone signal is not reliable, use of a long-range two-way radio (VHF, FRS, CB) must be available between the on-water dive location and a person having access to a land line who is available to contact help.

3. VESSELS

3.1. Required Documentation

1. A comprehensive emergency plan for each vessel is required.
2. Each owner/operator shall be responsible for submitting a comprehensive emergency plan specific to their vessel describing the recommended process or procedures to be used in the event of an emergency.
3. Emergency plans shall be submitted to the SOC or other delegated officer prior to launching of the vessel.

3.2. Required Equipment

1. Determine any specific equipment necessary for support vessels.
2. Determine any specific equipment necessary for submersible vessels.
3. Communicate these requirements to owner/operators well in advance of the dive event.

3.3. Required Pilot Experience

1. Determine if the planned dive shall be open to all submarine pilots, or limited to pilots possessing a certain level of experience.
2. Communicate any limitations or requirements under this section to all submarine owners well in advance of the dive event.

3.4. On-Site Vessel Inspections

1. Determine if on-site vessel inspections will be required.
2. Compile a list of inspection criteria and communicate this to all submarine owner/operators well in advance of the dive event.
3. Identify personnel who will act as inspectors and ensure they are familiar with and understand all inspection criteria vessels must meet to participate in dive operations.

4. TRANSPORT

4.1. Route of Travel

1. Identify and survey the water route submersibles will take to/from the diving operational area, keeping in mind potential hazards such as:
 - a. Water depth along route of travel
 - b. Obstacles and obstructions
 - c. Conflicting surface traffic

4.2. Observers

1. Determine how surface observers will be transported to the dive area (if necessary) and coordinate appropriate services.
2. Communicate any associated costs to all participants well in advance of the event.

4.3. Compliance with Law

1. Investigate, understand, and comply with any law or regulation related to surface or underwater transit to the diving location.
2. If submarines are to be towed to the dive area by surface boats, investigate any special rules, lighting, or signal flags required by law well in advance of the event.

5. DIVE SITE

5.1. Arrival Survey

Upon arrival at the site location a contemporaneous survey shall be performed to ensure the site matches dive plan specifications.

5.2. Water Depth

1. The water depth shall be no deeper than the shallowest operating depth of any attending submarine.
2. The water depth should be no deeper than 30 feet when inexperienced pilots are participating in dive operations.

5.3. Operational Limits

1. Determine the physical size and area where diving is to occur and communicate any limitations to all submersible pilots.
2. Use visual references when appropriate or use surface vessels and buoys to mark the area.

5.4. Exclusion Zones

1. Determine if any exclusion zones should be identified within the dive area and communicate these zones to all submarine pilots.

5.5. Obstacles & Obstructions

1. Identify any known surface or sub-surface obstacles/obstructions and communicate these danger areas to all submarine pilots.
2. Do not operate in an area where currents or surface conditions are likely to affect a submarine or surface vessel from keeping a safe distance from any obstacle or obstruction

5.6. Marine Environment

1. All vessels, surface and submersible, should operate in a manner that minimizes impact to the environment.
2. If operating within a particularly environmentally sensitive area, create specific guidelines such as, avoiding contact with bottom, maintaining neutral buoyancy, configuring thrusters so prop wash is directed upwards, etc.