

# IAATO Guidelines for Manned Submersible (HOV)\* Activities



**These guidelines are for primarily recreational activities.**

Activities, such as science and commercial filming, would fall outside these guidelines require separate permissions/certifications.

Prior to offering the activity, please ensure that submersible is included in your operators permit/ authorisation conditions (Advance Notification and EIA). Where applicable, all vehicles should carry equipment required by laws and rules within the permit/ authorisation agreement.

## Introduction

Underwater activities give a unique perspective on Antarctica's marine wildlife and the underwater icescape. Underwater activities have formed an integral part of National Programs marine research for many years, and increasingly expedition operators are delving into underwater exploration, using SCUBA, snorkelling or submersibles. Submersibles allow the underwater visitor to explore depths well beyond diving limits, often exploring areas which have never been investigated before. Done safely and responsibly, activities contribute to a greater understanding of the Antarctic ecosystem.

## Pre requisites

- Every submersible should have an operating manual available to the Submersible Pilots, as well as the Bridge Officers and Expedition Leader. This Operating Manual should adequately describe the functions and capabilities/ limitations of the vehicle; equipment on-board the vehicle and operating details including diving and surfacing.
- Submersibles operating in the Antarctic will be operating in water temperatures between -2 and +2 degrees Celsius and air temperatures to -10C. The Operating and Maintenance Procedures should take these consistently cold sea conditions into account. It may be necessary to consult with the manufacturer considering the suitability of the vehicle for polar operations including battery life, potential for thermal shock, condensation in lines (freezing) etc.
- A risk assessment and systems test should be undertaken pre-dive. This would include but not limited to:
  - Possibility of Entrapment from ice overhead.
  - Ice, Current, and Sea condition assessment. Additionally, surface weather should be considered, especially in areas known for katabatic winds, which can impede the recovery of the submersible and/or support tenders.

\*Human Occupied Vehicle (HOV)

## Diving in the Vicinity of Ice

- A pre-site survey should be conducted by ship's Captain and/or Ice Pilot, Expedition Leader, and Submersible Pilot. This should include and not be limited to:
  - Review of Chart and Bathymetry
  - Weather Forecast – is there a possibility of deteriorating weather conditions which might inhibit recovery?
  - Tidal information - be aware of current speed, and only operate within the safety parameters specific for the vehicle.
  - Proximity to Ice – What kind of Ice is it and how is it moving?



- No submersible activities should occur under fast ice.
- No submersible activities should occur under large concentrations of ice, which may inhibit recovery in the event of an emergency or uncontrolled surfacing.
- No submersible activities should occur in the vicinity of unstable sea ice.
- No submersible activities should occur in the region of a glacial terminus, where calving is possible.
- Adequate distance from large ice bergs should be maintained. Be aware icebergs not only break from the top down, but also send shooters from the lower parts of the iceberg.
- Bridge personnel should remain vigilant and report all weather, sea state and ice changes.
- Clear communication between the ship and manned submersibles must be kept.
- When in doubt, return the submersible to the surface for recovery.
- Smaller surface support vessels should follow IAATO guidelines for small boat activities in the vicinity of ice.

## Clothing and equipment

- Vehicle occupants and/or Surface Support should be appropriately clothed for Polar Waters.
- Support Divers should be outfitted with appropriate polar diving gear, and if using SCUBA follow IAATO Underwater Activity Guidelines.
- Adequate Emergency equipment for Surface Support and Vehicle occupants should be available for the entire operation. Emergency equipment available for vehicle occupants should be sufficient for the HOV's emergency life support window.
- Equipment should be regularly inspected and maintained.

## Briefing

- The Captain and/or Ice Master, Expedition Leader, Submersible Pilot, Surface Officer and Watch officers should have a site-specific briefing before every submersible operation.
- Briefings should include:
  - Emergency procedures
  - Overview of operation procedures from client perspective
  - Safety practices for changes in weather conditions and ice conditions
  - Familiarization of communication strategies between the guide and clients
  - Environmental awareness
  - Dive depth and Time

## Deployment

- Deployment of the submersible should be in accordance with the ship's and submersibles standard operating procedures and environmental operating procedures.
- Any activities that take place within a protected or managed area will be done in accordance with the relevant management plan provisions.
- During deployment of the Submersible, the attending small boat(s) should be flagged to alert other small boats or ships of the activity.

## Wildlife and Seafloor Considerations

- Leopard Seals are known to be curious, and may interact with the submersible. Submersible design and tough exterior proposes it is in no danger of damage by a Leopard Seal. Exceptions would be:
  - The surface support boats, especially with inflatable pontoons. These boats should be aware of the IAATO Leopard Seal Watching Guidelines.
  - Never “chum” marine animals.
  - Maintain appropriate distances from wildlife as outlined in IAATO Wildlife Watching Guidelines.
  - No matter the distance negative reactions to the submersible, such as rapidly swimming away, should be avoided at all times.
  - When setting down on the seafloor, care should be taken to avoid areas with high concentrations of marine life, especially soft invertebrates.
- While sitting on or hovering close to the bottom, use thrusters minimally to avoid disturbing the delicate benthic community.
- IAATO Vessel Code of Conduct should always be followed.

