

## **Checklist of yacht specific items for preparing safe Antarctic voyages**

### **Preamble:**

Antarctica is one of the most remote and demanding cruising areas in the world's oceans. Weather conditions can be extreme, ice can pose a danger at any time and limited external assistance is available should things go wrong. Any yacht expedition heading south of 60°S needs enhanced planning and preparations and should be crewed by experienced yachtsmen.

The intention of the checklist is to support those planning yacht operations, and to provide guidance as to appropriate standards for Antarctic yacht operation. The safety of a yacht and her crew is the sole and inescapable responsibility of the person in charge who must do his best to ensure that the yacht is fully equipped, thoroughly seaworthy and manned by an experienced crew who have undergone appropriate training and are physically fit to face bad weather and the general conditions of sailing in the Antarctic which can be subject to rapid change.

Yachts heading towards Antarctica must be completely self-sufficient for very extended periods of time, capable of withstanding heavy storms and prepared to meet serious emergencies without the expectation of outside assistance. The materials used in the relevant areas of the vessel structure should provide adequate toughness and ductility to minimize the risk of structure failure due to impact or crushing, brittle failure and other causes. Yachts should be prepared for being "knocked down" and also for encountering extreme weather and sea conditions.

These checklist items for use by stakeholders do not replace, but rather supplement, the requirements of governmental authority, flag states or international regulations. All yachts are to comply with all relevant IMO regulations under SOLAS and MARPOL and with all relevant provisions under the Environmental Protocol and ATCM Resolutions and also appropriate national requirements.

### **Personal preparation:**

- Ensure good knowledge and understanding of the appropriate environmental protocols and regulations in the Antarctic Treaty System
- Consideration should be given to visiting Antarctic waters during Austral summer months and preferably areas with low ice concentration to avoid hazards. Only experienced and highly prepared crews should consider voyages outside the Austral summer or to an area outside the more commonly visited areas.
- Review appropriate web sites (of national governments, IAATO, IMO, Antarctic Treaty System recommended sites) and other sources of information about the Antarctic, e.g. specialized technical publications
- Risk assessments for all planned activities should be provided beforehand
- Finding anchoring/mooring sites that offer shelter from wind, waves/tides, and moving ice can be a challenge. Consult appropriate publications and Antarctic sailing experts to identify suitable locations within the area in which you intend to cruise
- Experience, training and knowledge are the basis for pre-expedition decisions:
  - Involve experienced yachtsmen particularly of sailing in high latitudes
  - Ensure absolute self sufficiency for at least two weeks in excess of planned trip duration when operating south of 60 degrees: This includes comprehensive spares, tools and, most importantly, the ability to fit/use them. Carry a reserve of enough food, drinking water and fuel.
  - Consideration needs to be given to the fact that Antarctica is a large area remote from search and rescue services and that responders may take days or weeks to find the location
  - Don't rely only on maps and charts-based GPS positioning
  - Detailed study of the nautical charts of the area considered to be sailed
  - Update information on rescue coordination centre responsibilities and contact those early
  - First aid equipment training for crew members verified by necessary certifications

- All crew and passengers should be comprehensively briefed on vessel operations, safety procedures, environmental considerations and bio-security
- Specific training for crew members in ship and sailing techniques relevant for high latitude operations (e.g. ISAF Sea Survival Course). Particularly courses including “Navigation in icy waters” and “Sailing with severe weather conditions” would be an advantage as well as personal experience
- Reports/ Information:
  - Appropriate procedures based on domestic legislations, including reporting to competent authorities, must be taken prior to the departure towards Antarctica
  - Provide to your authorizing government agency the details they require for advance notification of your activity (dates and places of the planned expedition) to include that information in EIES
  - Inform the appropriate MRCC of your intended voyage route, vessel details, equipment carried, and personnel on board; provide, if possible, the vessel’s position at 08:00 and 20:00 hours to a MRCC or, alternatively, to a ship located nearby that can relay this information to MRCC
  - Post visit report to permitting authorities afterwards
  - Weather and ice observations are encouraged to be reported regularly to the Voluntary Observation Program

**Technical preparation:**

- Vessel structure and general equipment:
  - All hull types should be strong. For yachts regularly visiting Antarctica, well-built and sturdy metal hulls should be favored. Remember that the hull should be accessible from inside for damage control purposes.
  - The vessel should be stable and able to withstand extreme weather conditions and large seas. Consider the vessel’s watertight integrity. Small vessels may have great difficulty in these conditions and could expect to be rolled over.
  - All items onboard should be prepared for withstanding extraordinary conditions; keep them well protected not to cause damage by flying loosely around.
  - Comprehensive tool kit and spare parts inventory
  - Decks should be fitted with safety harness jackstays and attachment points
  - Robust mast & rigging on sailing vessels
  - Heavy weather sails for sailing yachts (storm sails, including a tri-sail and storm jib)
  - Bolt cutters or other appropriate equipment (e.g. hydraulic cutters) should be carried on sailboats in order to free a broken rig.
- Antarctic specification:
  - Spotlight for ice identification at night
  - Radar
  - Multiple shore landing craft if possible
  - Means to combat icing of the vessel and rig necessary in case of freezing weather conditions
  - Cold weather treatment for fuel
  - Storm boards (storm shutters or blanking plates) with the ability to replace, cover or repair any hatch or opening
- Anchoring and mooring:
  - Multiple sets of anchoring equipment and cables should be carried, suitable for the size of vessel, the type of seabed and the depth of water likely to be encountered. Possibly consider having heavier anchor(s) and chains than it is required as standard for the size of the vessel.
  - Shorelines and associated equipment/ good ground tackle are recommended where their use is possible.
- Communication equipment (installed on the vessel and portable for carriage onto a lifeboat or liferaft):

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- Long-range communications systems: satellite (Iridium, Inmarsat) and/or HF/SSB radio
- VHF marine radio to talk to other vessels and aircraft in the event of a rescue, including portable set(s) for use off the vessel
- Suitable means to receive weather and ice information
- Preferably two 406 EPIRB (Emergency Position Indicating Radio Beacon)
- Rescue equipment:
  - Comprehensive first aid equipment such as a Category A kit
  - Ocean-going man-overboard marking and retrieval equipment (e.g. throwable horseshoe buoys)
  - Ocean-going grade life rafts (SOLAS rafts with a SOLAS A pack), lifejackets (cp. ISO12042 part 2 275N) and survival suits and safety harnesses for at least 100% capacity; Immersion or survival suits should be carried for all onboard which are compatible with the lifejackets.
  - Search and rescue transponder (SART) or GPS EPIRB to ensure that in the event of an incident, efforts can be focused upon rescue rather than search
  - Automatic Identification System (AIS) is recommended for collision avoidance as well as detection by search aircraft or ships
  - Personal Locator Beacon (PLB) or related devices, such as a Man Overboard Beacon on larger vessels, may be helpful to ease rescue operations in relation to a single person
  - Fire extinguisher and blanket
  - Flares and other pyrotechnics
  - Collision mat or similar material to be hauled over a damaged part of the hull
  - Portable spotlight
  - Tapered plugs
  - A sturdy boarding ladder or platform is highly recommended
- Other necessary equipment:
  - availability of an appropriate, relevant and up-to-date nautical chart set covering the area planned to be sailed
  - navigation system with redundancy
  - Other critical boat systems (i.e. steering, autopilot) should be robust and where possible with backup system (i.e. with redundancy)