

Working on the ice

Every operation on the ice must be preceded by a risk analysis and a resulting contingency plan, which defines the framework conditions and the required safety equipment for the activities in advance of the expedition. Information regarding risk analyses can be found here: [Preparing safety concepts for onshore & on ice work](#)

Safe working on the ice during Polarstern expeditions

The question of the responsibilities of every cruise member, the cruise leader or the employer during expeditions is fundamental.

The suggestions you will find below are based on several years of experience of colleagues who have been working repeatedly in Arctic and Antarctic areas.

In the end, the responsibility for a safe expedition progress lies with the chief scientist. He may deviate from regulations if well justified. Such deviations must be documented in writing and signed with date and signature.

Working on the ice (Photo: Tim Heitland)



Responsibility

Captain:

The captain has the ultimate decision-making authority in all questions concerning the ship operation and is responsible for every person onboard. If the safety of the ship demands it, his competences are also valid for working onshore or on the ice. You have to correspond to his orders immediately.

Chief scientist:

The chief scientist is responsible for the scientific participants in general. Because the chief scientist cannot be at the same time at all places he ensures that all participants are informed about safety measures before the respective activities and that safety relevant equipment is present sufficiently. In case already existing regulations are not sufficient, he may issue additional rules. The chief scientist finally decides in compliance with the regulations if activities can be conducted.

Group leader:

The group leader is responsible for the adherence to the safety regulations within his group. He sets a good example, oversees the behaviour of his colleagues and encourages them to comply with the rules. He is bound to the orders of the chief scientist but may issue additional measures.

Participant:

Each participant has to adhere to the safety regulations and other measures issued by the group leader and chief scientist.

Procedures onboard

Information is based on the long-time experience onboard RV Polarstern. There may have been deviations in specific cases but this was not in accordance with the regular behaviour patterns. The procedures in a special case have to be examined and authorised by the chief scientist in accordance with his responsibilities.

The chief scientist is entitled to issue deviations in favour of other regulations. Such deviations must be documented in writing and signed with date and signature (e.g. risk assessments & operating instructions).

In unusual cases of deviation from the good practice the captain will make an entry in the ship's log book.

Regulations of the helicopter operator and ship operator must not be changed. Some rules of the AWI logistics department can only be changed after agreement with the logistic coordinator for instance regarding devices owned by the logistics department.

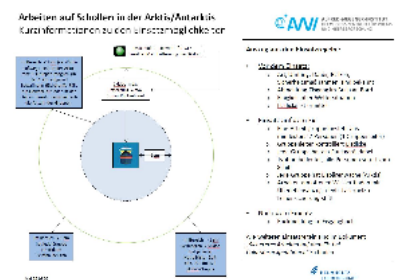
Always remember that it has to be possible to rescue the persons not aboard with the second helicopter or from the ship itself within a reasonable timeframe. If this cannot be ensured, the operation is not safe and cannot be conducted.

Usual procedures:

Before the start of the operation on site:

- Detailed consultation of the chief scientist with the scientific group about the means of operation, time span, risks and safety measures for the work on the ice.

Working on the ice (Figure: Matthias Siebenhüner)



Survival suit Hansen E-300-2
(Photo Hansen)

- Captain, chief scientist and meteorologist have to agree upon the the weather situation and the possibility to work on the ice.
- A survey party determines ice thickness and ice quality in the vicinity of the ship.
- Decision making about the operation by the scientific cruise leadership.

Operation on the ice:

- Record your absence in the respective book.
- A working group consists of 2 persons at least and has a group leader.
- The group leader is responsible for the regular control / assessment of ice thickness and load-bearing capacity.
- Each group has to carry a radio device or a Iridium telephone for distances >1 NM. The typhon is the onboard emergency signal for operations close to the ship the. It means: **EVERYBODY BACK ONBOARD!**
- Up to 5 groups are possible in the vicinity of the ship (max.1 NM = ca.45min walking) because of the logistical efforts for rescue in the Arctic and Antarctic and due to the armament of the polar bear watch in the Arctic. The number of groups will be reduced if weapons fail or the helicopter is in use.
- A hand line may be installed e.g. to the gangway of the ship during longer stays in order to find the ship under difficult conditions such as fog or white out.
- Maximum distance by Skidoo is 45 min return time (only 1 skidoo group >1 NM: mandatory are 2 Skidoos with emergency box containing tent, GPS and AIS).
- Operations at night are only possible after early agreement and planning because emergency measures may take place time-lagged.
- Polar bear watch for each group. The dedicated watchman only ensures safety of the group a must not fulfill other tasks. Group members can take turns so there should be at least 2 persons per group with the respective education. There has to be at least one person on the bridge deck that oversees the operations within <1 NM with regard to polar bears and keeps contact to the groups via radio. According to situation, this may require more manpower.
- While working on or close to the open water you need to wear a survival suit probably with warm clothing below. Additionally, the person in questions has to be secured with a line.
- **There is only survival gear for helicopter operation. Additional survival gear can be lend from the clothing storehouse.**
- Stations on the ice with RV Polarstern leaving the ice edge: max. 6 persons, survival gear, tents, GPS, AIS, Iridium telephone. The ship may move away up to 95 NM.

After operation:

- Return notion in the respective book.

Field toilets

Pop up tents and field toilets including all necessary equipment are available on board RV Polarstern.

<https://www.carplife.uk.com/product-page/bivvy-loo>

<https://wheretomorrow.co.uk/collections/zelte/products/lumaland-outdoor-pop-up-duschzelt-umkleidezelt-toilettenzelt-stehzelt-camping-trekking-reise-155x155x220-cm-verschiedene-farben?variant=39523400253576>



Data sheet Hansen E300-2 Worksuit:
(Hansen)



E-300-2-survival-suit.pdf

Device to rescue yourself from ice holes

(handed out from the clothing storehouse)

