

Ice Operations

Shear tests on brash ice

Shear tests on brash ice test to be carried out during first week of March 2020 (1-8 march).

1. Work out methods for collecting brash ice at the harbour and transportation of material to laboratory.

- It is proposed to bring the “rubber chamber” from the shear apparatus to the harbour by using a lorry and fill the “rubber chamber” with brash ice by using a crane w/grab.

2. Methods for characterization of physical and mechanical properties of brash ice

- Drill ice core samples of the level ice for determine the following physical properties: salinity, temperature profile, density and crystal structure compressive strength
- Measurements of Ice block size and distribution.
- Macro-porosity of brash ice during shear testing.
- Temperature of the brash ice during testing.

3. Preparation for testing

- Prepare a testing matrix of the most important factors for strength of brash ice.
- Estimate normal pressure during testing.
- Loading speed of applied shear force.
- “Sintering” of ice blocks are dependent of set time from the chamber is filled with brash ice to the start of the shear test.

4. How to do the Shear tests

- Methods for filling up the chamber with brash ice.
- Estimate time needed for closing the chamber after it is filled with brash ice. Is the ice temperature changed during this phase?
- Procedures for the shear test must be worked out.
- Estimate the time needed to open the chamber and remove ice after shear test is done
- How to remove tested brash ice from the chamber.
- How to refill the chamber and prepare for next shear test.

5. Analysing and publications results (report and journal paper).

- Plan for test, procedure for test.