

### Measuring Ice Thickness

Facility:	Written By:	Approved By:	Date Created:	Date of Last Revision

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Cold Weather Work	Thermal Winter Boots	First Aid/CPR
Drowning	Suitable Winter Clothing	
	Thermal Winter Gloves	
	Ice Picks	
	Survival Floatation Device	

#### Safe Work Procedure:

- 1) Wear all required PPE
- 2) When performing the initial ice checks a floatation suit/jacket is necessary. Unknowns such as ice thickness, hanging ice and ice strength have not been determined
- 3) Decide where the hole should be drilled
- 4) Use a snow shovel to clear an area approximately 4'x4'
- 5) Use an ice auger to cut through the ice, be cautious not to cut all the way through on the initial cut
- 6) While auguring pull auger out of hole to clean off auger fins. Keep an eye on the hole that you are cutting when the auger is removed or when clear bluish ice shavings start to surface stop auguring and remove the auger.
- 7) Use your hand to remove ice shavings from hole
- 8) Examine hole; look for a decisive line between two noticeably different colors of ice. Generally the top layer will be white that the bottom layer will be blue. White ice is ice that has formed after the initial freeze on top of the blue ice by means of snow melting then re-freezing. The white color comes from high levels of oxygen freezing into the ice; this level of oxygen weakens the structure of the ice
- 9) Take a tape measure and measure the thickness of the white ice and record this value as *white ice thickness*
- 10) Do not get the auger and finish cutting through the ice. Once broken through the bottom of the ice cover, remove the auger
- 11) Using a piece of lath with a lip or other suitable measuring device run the lath down the side of the ice hole until you find the bottom of the ice cover, pull the lath snug up tight against the bottom of the ice cover. Mark the lath, retrieve the lath and measure this distance. Record this distance as *total ice thickness*.
- 12) Subtract the *white ice thickness* from the *total ice thickness*; this value is recorded as a *blue ice thickness*
- 13) Add ½ of the *white ice thickness* to the *blue ice thickness* and record this value as *converted ice thickness*
- 14) Use *converted ice thickness* value in Golds formula to get the load capacity for the ice
- 15) One last measurement that needs to be taken is *Freeboard*; this distance is used when loading ice sheets. Measure this distance with a measuring tape in the ice hole measuring the distance between the water and the top of the ice cover.
- 16) Record this Value and keep this information on record.

***If an emergency situation occurs while conducting this task, or there is an equipment malfunction, engage the emergency stop and follow the lock out procedure***  
**REPORT ANY HAZARDOUS SITUATIONS TO YOUR SUPERVISOR**

<p style="text-align: center;"><b>Guidance Documents/Standards:</b></p> <p>MB Workplace Safety &amp; Health Act &amp; Regulations:          Part 2.1 Safe Work Procedures          Section 5 Duties of Workers          Part 6.2 PPE          Part 8 Musculoskeletal Injuries          Part 12 Hearing Conservation</p>	<p>This Safe Work Procedure will be reviewed any time the task, equipment or materials change and at a minimum of every three years</p> <p>Reviewed By WSH Committee:          Date:</p>
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