Fire Services – Water/Ice Rescue

Background

The City of Greater Sudbury is the largest municipality in Ontario based on land mass. Within the City limits, there are 330 lakes over 10 hectares in size. Approximately 12.2% of the City consists of lakes, rivers and creeks. Lake Wanapitei is the largest city-contained lake in the world at 13, 257 hectares, maximum depth of 142 meters and 160 kilometers of shoreline.

There are seven significant river systems (Spanish, Onaping, Wahnapitae, Whitson, Rapid, Vermilion, Nelson) and a number of large creek systems (Sandcherry, Junction) running through the City limits. These rivers and creeks have high seasonal water flows, sections of whitewater, a number of Hydro One and VALE hydro dams and other water control structures. Junction Creek flows through the City core and includes a one kilometer stretch of tunnel waterway.

Ice and water rescue events are low frequency but high risk when they occur (11 events between January 1, 2017 and May 28, 2018). These events often occur at night, in adverse weather, unknown water, ice and snow conditions. The consequences of these incidents can be life threatening to both the victims and the rescuers, if not responded to quickly. Successful rescues require appropriate equipment, competent vessel operators, crew and rescuers.

On November 26, 2017, an incident involving two boaters stranded on an island on Lake Wanapitei occurred. Following that incident, an after-action review of the ice/water rescue program was conducted and gaps were identified. It was determined that Greater Sudbury Fire Service was not fully compliant with Transport Canada legislation regarding vessel operations. As a result of the review:

- The Chief/General Manager of Community Safety has now been appointed as the Authorized Representative under The Canada Shipping Act.
- Firefighters operating and crewing Fire Service vessels are now trained, certified and in compliance with Transport Canada's requirements.
- Opportunities to improve response capability have been identified.
- Vessel safety equipment and electronics have been upgraded.
- All vessels have been registered with Transport Canada as commercial workboats.

Legislative Requirements

By-law 2014-84, a By-law of the City of Greater Sudbury to Establish and Regulate the City of Greater Sudbury Fire Services, establishes four components of water rescue across all fire beats. These components, as approved by Council, are:

- **Water Shore Based – Level 1:** Rescue of persons from water by reaching or throwing rescue lines (no water entry).
- **Water Surface – Level 2:** Rescue of persons from the surface of the water through the use of a rescue boat.
- **Swift Water – Level 2:** Rescue of persons from watercourses with any current greater than 0.5 m/sec (1 knot).
- **Ice and Cold Water:** Rescue of persons in water that is below 21°C (70°F) including use of shoreline techniques and rescue boats.

Ontario Regulation 379/18, new legislation under the Fire Protection and Prevention Act, 1997, will require mandatory certification of all firefighters to National Fire Protection Association (NFPA) standards. This will include all aspects of ice and water rescue identified in NFPA Standard 1006. The NFPA standards are considered best practice, internationally recognized and evidence-based. This regulation is the result of numerous coroner's inquests identifying the need to implement mandatory certification of fire service personnel to ensure public and firefighter safety (Fire Marshal's Communiqués 2017-06 and 2018-02). Further information concerning the implementation of this new regulation and the impact on the delivery of fire services will be provided to Council at a future date.

The Occupational Health and Safety Act (OHSA) requires that employers provide information, instruction and supervision to their workers to protect their health and safety. Vessels are considered workplaces under this act. OHSA Section 21 Guidance Note GN#6-3 states, "when using boats, ensure that the boat has the appropriate safety equipment and that the operator is competent to operate the vessel in the conditions encountered".

The Canada Shipping Act, federal legislation administered by Transport Canada, requires that all commercial vessels be properly registered, certified to commercial vessel standard, and equipped with mandatory safety and VHF radio equipment. Transport Canada considers all government-owned or operated vessels as commercial vessels. There are no exemptions for fire vessel operation. Commercial vessel operators and crew must be trained and certified to standards based on the size of the vessel and the size of the waterbody the vessel operates on.

Under the Canada Shipping Act, every Canadian vessel must have a person designated as the "Authorized Representative". The Chief/General Manager of

Community Safety has been designated as the "Authorized Representative" for Fire Service vessels. Under the Act, the "Authorized Representative" of a Canadian vessel shall: a) ensure that the vessel and its machinery and equipment meet the requirements of the regulations; b) develop procedures for the safe operation of the vessel and for dealing with emergencies; and c) ensure that the crew and passengers receive safety training.

Discussion

Greater Sudbury Fire Services conducts water rescue boat activities with three Zodiac boats on trailers, equipped with 25 hp outboard motors and located at Stations 1 (Van Horne), 10 (Azilda), and 16 (Val Therese). A 6.7 metre Stanley Pulsecraft aluminum boat, powered by a 150 hp outboard motor, is located at Station 22 (Skead) and is docked at a private marina on Lake Wanapitei generally from mid-May to mid-October. This vessel (Marine 22) was manufactured in 2005 by Connor Industries in Parry Sound. The vessel has primarily been operated by volunteer firefighters from Station 22 with support from Career Station 3 (Leon). Following the after-action review, this vessel and trailer received a complete inspection and refurbishing at Connor Industries. The electronics have been upgraded, including the installation of a marine radio with Digital Select Calling (DSC) capability. DSC is a system designed to replace voice calling in emergency situations. Vessels equipped with this system can send and receive distress signals that include GPS location coordinates. Distress calls can also be pre-defined when they are sent, i.e "fire", "disabled and sinking", "man overboard."

Marine 22, although functional, is not the most appropriate watercraft for rescue work. The vessel has high vertical sides that make re-boarding of casualties difficult and would likely require rescuers to leave the vessel and enter the water to assist with casualty re-boarding. The boat is equipped with a mechanical bow ramp that can be lowered to water level; however, the boat manufacturer has advised that it should not be lowered in any type of wave action as the free surface water entering the boat could cause it to capsize.

Marine 22

← Vertical side view

Bow ramp view →

Inflatable Zodiac boats are best suited for rescue, trailer easily and can be rapidly deployed. The current Zodiac boats used by Fire Services however, are too small for effective rescue work on the larger bodies of water in the City of Greater Sudbury.

Efficient and safe water rescue in the City of Greater Sudbury will require a rationalization of the existing vessel fleet in terms of best locations to provide emergency response from and appropriate selection of watercraft to conduct that response.

Sudbury Fire Zodiac with two rescuers and a vessel operator

The acquisition of a rigid hull inflatable boat (RHIB) of a size and configuration for quick and safe response to emergencies needs to be considered. As quoted by the Canadian Coast Guard Search and Rescue, "The CCG utilizes RHIBS as standard vessels for SAR (search and rescue) across our fleet. Rescue services from Canada to Australia, Great Britain to the United States rely on Rigid Hull Inflatable Boats to service inland, bay, near coastal and ocean rescues, law enforcement and environmental missions. It is because these vessels offer such a wealth of different mission platform support, and stability in adverse conditions, that they have become indispensable tools of the International Search and Rescue (SAR) Community**."**

In addition to using boats for ice/water rescue situations, Greater Sudbury Fire Services also utilizes "human-powered" craft including Rapid Deployment Craft (RDCs) and RIT-Craft. These craft are carried on all five career response trucks, inflated upon arrival on scene, and rapidly deployed over ice or into water. They are designed for multi-season use and can be easily paddled or dragged by the rescuers. In addition, these craft can be towed by a boat, all-terrain vehicle or snowmobile. RDCs and RIT-Craft enhance rescue capabilities in swift water and poor ice conditions while providing a safe working platform that enables swift casualty retrieval.

Rapid Deployment Craft

Training

Water and ice technical rescue is provided at an enhanced level by all career stations, the Val Therese composite station, and some volunteer firefighters in the Azilda and Skead stations. Awareness level is provided to the remaining volunteer stations. In addition to the training components of rescue, Fire Services must comply with the federal government requirements related to the operation of vessels and the use of marine radios.

Under the Canada Shipping Act, the majority of lakes and rivers in the City of Greater Sudbury are classified as Sheltered Waters Voyage. The exception is Lake Wanapitei, which because of its size, is classed as Near Coastal Voyage, Class 2. In order to be the operator of a commercial vessel less than eight metres in length on Lake Wanapitei, the operator must possess a Transport Canada Small Vessel Operators Proficiency Certification (SVOP, 26 hours classroom) and a Marine Emergency Duties Certification (MED A3, 8 hours classroom) issued by Transport Canada. Search and rescue boats operate in conjunction with the Canadian Joint Forces Rescue Co-ordination Centre in Trenton for all air and water emergencies, and to communicate with other boaters using marine radios. As such, operators must possess a Restricted Operator's Certificate, Maritime (ROCM, 8 hours classroom) in order to utilize marine radios. Industry Canada is the federal regulating body for radio communications.

Operators of commercial vessels less than eight metres in length on Sheltered Waters, require a Transport Canada Pleasure Craft Operators Card (PCOC), MED A3 and a RCOM for marine radio communications.

Crew members on commercial vessels less than eight metres in length, operating in Sheltered Waters or Near Coastal Voyage Class 2 waterways, require: a PCOC, MED A3 certification, and if operating a marine radio, a ROCM.

Additional Transport Canada requirements for all vessel operators and crew include: First Aid certification at either the Marine Level or Standard First Aid Level; emergency equipment practice; person overboard drills; and, agency specific training.

In April of 2018, 27 volunteer firefighters at the Azilda, Skead and Garson stations received MED A3 and ROCM training. Garson station, although not designated as an ice/water rescue station, is the closest responding volunteer station to provide assistance to Skead station.

In May of 2018, volunteer firefighters at the Skead and Garson stations were offered SVOP training which would certify them to operate vessels on Lake Wanapitei. Nine volunteers received the training, two from Skead and seven from Garson. During the same time period, 70 career firefighters received SVOP, MED A3 and ROCM training.

It is important to note that complying with Transport Canada's proficiency requirements does not achieve the necessary training for conducting technical water rescue. It only meets the legal requirements to operate a small commercial vessel and/or crew the vessel. This can be considered as the non-emergency requirement. The training of firefighters for the actual rescue of persons on water, in swift water and on ice is a separate component that requires extensive training and a maintenance component that is in adherence to the NFPA 1006 standard. This can be considered as the emergency requirement. In April and May of this year, 13 instructor-level career firefighters received this training consistent with the NFPA 1006 standard.

Conclusion

In a municipality containing a significant number of waterbodies and river systems, the public has an expectation that Fire Services will respond to water-related emergency situations. City Council has established the level of response to be provided under the Establishing and Regulating By-Law #2014-84.

Greater Sudbury Fire Services is now fully compliant with the Canada Shipping Act and Transport Canada's requirements for the operation of small commercial vessels. However, as Council may be aware, the Government of Ontario has recently legislated training requirements for firefighter and technical rescue. Additional information on the impact of this requirement will be provided to Council in a future report.

Reference documents

- 2017-06e Municipal Bylaws Swift Water Rescue
- 2018-02e NFPA 1006, Standard for Technical Rescue