Peace Project Water Use Plan

Physical Works Terms of Reference

- GMSWORKS-26 Communications and Safety Improvements – Williston, Dinosaur and Peace

April 21, 2008
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Terms of Reference for the Peace Water Use Plan
Communications and Safety Improvements

1.0 INTRODUCTION

This Terms of Reference describes the plan to improve safety and communication for recreational users of the Williston and Dinosaur reservoirs and the Peace River. Communication and safety improvements to these areas were approved by the Consultative Committee for the Peace Project Water Use Plan (WUP). The Peace Water Use Plan water use planning process was initiated in February 2001 and completed in May 2003.

These Terms of Reference are submitted in response to the Order (Files No. 76975-35/Peace) issued by the Comptroller of Water Rights on August 9, 2007. Specifically, the Order states:

Schedule A:

5. The licensee shall submit within nine months of the date of this Order, for approval by the comptroller, terms of reference for maintenance and enhancement of reliable and safe navigational access at sites on Williston Lake Reservoir though a combination of:

   b. signage to provide location information of access facilities and hazards associated with operations; and

   c. radio repeater station(s) to enhance communication to boaters.

Schedule B:

2. The licensee shall submit within 12 months of the date of this Order, for approval by the Comptroller, terms of reference for:

   b. a study to evaluate signage at Hudson’s Hope park to display information about the current reservoir levels.

Schedule C:

3. The licensee shall submit within nine months of the date of this Order, for approval by the comptroller, terms of reference for maintenance and enhancement of reliable and safe navigational access between Peace Canyon Dam and the Pine River confluence through:

   a. Radio repeater station(s) to enhance communication to boaters.
2.0 DESCRIPTION OF PROJECT

2.1 Location

The headwaters of the Peace, a tributary of the Mackenzie River, are located in north-eastern British Columbia (Figure 2-1). The Peace is formed by the confluence of the Finlay and Parsnip rivers flowing in opposite directions in the Rocky Mountain Trench. At the confluence the Peace flows east and is the only river to cut through the Rocky Mountains. Once out of the Peace Canyon the river maintains an easterly direction, crossing the B.C./Alberta border. The Peace drains into Great Slave Lake and joins the Mackenzie River before it enters the Arctic Ocean.

Figure 2-1: Place Names in Peace Water Use Plan
2.2 Existing Works

The existing works comprising the Peace project include:

W.A.C. Bennett Dam:

- This dam, commissioned in 1967, is located at head of the Peace Canyon forming Williston Reservoir. The earthfill dam is 2040 m (6692.8 ft.) in length at the crest and 183 m (600.4 ft.) high with a crest elevation of 679.7 m (2230.0 ft.) above sea level.

- Williston Reservoir covers approximately 1773 square kilometres (km\(^2\)) (684.6 square miles (miles\(^2\))) at full pool and has an active storage of 393 Million cubic metres (Mm\(^3\)) (32 Million acre feet (MAF)). The operating range of the reservoir for power generation is between 672.08 m (2205.0 ft.) and 642.00 m (2106.3 ft.).

- The spillway has three radial gates and nine sluice gates. The sill elevation for the radial gates is 653.53 m (2144.1 ft.) and the sluice gates 641.60 m (2105 ft.). The maximum discharge is 9200 m\(^3\)/s (325 000 ft\(^3\)/s) using the radial and sluice gates.

- Power Intakes: There is one power intake for each unit. They are located on the left side of the dam. Intakes are 3.96 x 5.94 m (13 x 19.5 ft.). The sill elevation for intakes 1 to 3 is 594.36 m (1950.0 ft.). The sill elevation of intakes 4 to 10 is 627.89 m (2060.0 ft.).

G.M. Shrum Generating Station:

- The underground G.M. Shrum Generating Station has 10 units with a total installed capacity of 2730 MW. Once through the turbines, the water is discharged through two manifolds, one for units G1 to G5 and one for G6 to G10, into the upper end of Dinosaur Reservoir.

Peace Canyon Dam:

- This dam is located at the foot of the Peace Canyon forming Dinosaur Reservoir. The Peace Canyon Dam consists of a concrete gravity dam and earthfill saddle dam on the right abutment. The main dam is 325 m (1066.3 ft.) long and 61 m (200.1 ft.) high with a crest elevation of 507.5 m (1665.0 ft.) above sea level. The saddle dam is 200 m (656.2 ft.) long and 20 m (65.6 ft.) high.

- Dinosaur Reservoir covers approximately 9 km\(^2\) (3.5 miles\(^2\)) at full pool. It has limited active storage. The shoreline length is 54.4 km (33.8 miles). The normal operating range is between 502.92 m (1650.0 ft.) and 500.00 m (1640.4 ft.).

- The spillway has six radial gates. The sill elevation for the radial gates is 491.3 m (1611.9 ft.). The maximum discharge is 10 280 m\(^3\)/s (363 000 ft\(^3\)/s).

- Power Intake: There is one power intake for each unit. The intakes are 6.7 x 12.4 m (22.0 x 40.7 ft.). The sill elevation is 426.3 m (1516.5 ft.).
Peace Canyon Generating Station:

- The Peace Canyon Generating Station has four units with a total installed capacity of 700 MW. The water is discharged into the Peace.

3.0 BACKGROUND

The Peace Water Use Plan Committee (the Committee) recommended a package that included operating constraints and non-operating programs for the Peace system that would result in more equitable use of the water resources of the Peace System. In respect of recreational use of the system the Committee concluded that marine radio communication and improved signage was required. Such improvement would enhance the quality and safety of the recreation experience in the Peace system. The radio channel would provide a valuable safety net for boaters. The signage is intended to provide information about the location of access facilities, hazards associated with operating the hydroelectric facilities, and the marine channel.

At the present time boaters resort to a network of private radio channels to provide coverage on the various parts of the Williston/Dinosaur/Peace system. The BC Forest Service, BC Hydro, Canfor, Abitibi Consolidated, the RCMP and the Portage Mountain Yacht Club all operate proprietary channels and maintain repeater stations in the Williston area. These channels are officially off-limits to recreational users but the reality is everyone has at least some of them programmed into their radios. For example, Canfor owns and maintains a repeater station at Bevel Mountain near the mouth of the Ospika River. It is a proprietary channel for their operations but it offers good coverage over most of the Parsnip and Finlay arms of the reservoir and covers some of the Peace arm. As a result it is programmed into most recreational radios on the Williston Reservoir. The Bevel channel is monitored on an ad hoc basis by a person in McKenzie, B.C. The Portage Mountain Yacht Club channel is also privately operated for the exclusive use of members of the yacht club who also pay a person to monitor the channel. Other channels, covering the reservoir are not likely monitored.

The BC Hydro system has complete coverage of the reservoir, however, its frequencies are only available to employees for business purposes, although some “leakage” of these frequencies is likely occurring. This system is maintained and monitored regularly by BC Hydro. The appended report: ‘VHF Marine Distress System Proposal’ by BC Hydro Engineering describes the BC Hydro system on Williston Reservoir.

On the Dinosaur Reservoir boaters rely on cell phones for the eastern half of the reservoir. The western half of the reservoir is not covered as cell phones and existing radio systems are excluded by the steep narrow canyon. On the Peace River, between peace Canyon Dam and the Pine River, cell phone coverage is spotty. Boaters currently rely on a number of forestry channels, oil and gas communication channels and trucking channels for radio coverage on the river. Again, these are likely proprietary networks that are supposed to be dedicated to their specific owners.

Signage, located at the key access points to the reservoirs and lakes (primarily the boat launch facilities) will compliment the marine channel network. Signage can be
designed to provide a map of the reservoirs and rivers showing the other access points to the water. The signs can also display marine channel information to the boaters as well as pointers on radio use protocols and etiquette. The signs should also display information sources for up-to-date-Information on river flows and reservoir levels and any changes there-in. One sign to be located at the boat launch site at the Peace Canyon Recreation Area on Dinosaur Reservoir will include an electronic display that continually updates water levels and forecasts for dinosaur Reservoir. The levels on this reservoir change diurnally and can be inconvenient for users of the reservoir, potentially impacting their safety.

4.0 BENEFITS OF IMPROVED COMMUNICATION AND SAFETY

Ultimately the objective of this project is to improve the safety of recreational users of the reservoirs and the Peace River immediately downstream of the Peace Canyon Dam by information available and access to that information. Knowledge of immediate, daily and seasonal changes to reservoir levels and river flows, due to hydroelectric operations, is critical to safe enjoyment of these resources. However, the communication system must be reliable and simple in order for it to be available to and useful for all recreation users.

In addition, improved signage will indicate the facilities available for accessing and using the Peace system including locations of boat launches and marine channel frequencies.

5.0 WORK PLAN

The first stage is assembling a comprehensive marine communication network for the Williston Dinosaur and Peace River areas is to identify the existing radio resources in the area both public and private. There are currently a number of agencies and industries operating in the three areas and each appear to have set up limited private communication channels to service their operations. The forest industry has a number of frequencies on the Williston to guide logging trucks along the reservoir as well as the log barge on Williston Reservoir. Some repeater tower sites are shared by the forest industry, the forest service and the RCMP. Other tower sites have been abandoned. BC Hydro has a network of four towers that link into a southern network and many of these stations are in a declining state of repair. What is needed then as a first step is a comprehensive inventory and assessment of the existing radio resources in the area especially in the context of the potential to upgrade the BC Hydro system as per the attached proposal.

The second stage in the project would be an assessment of which of these resources might be available as components of a marine communication network. This may simply be permission to use the repeater site to install separate, stand alone radio equipment, or it may include taking over the repeater site and sharing the network with other users. For example, the Portage Mountain Yacht Club may be amenable to contributing their proprietary channel and installation as part of a larger marine network that would benefit their users.
The third stage is to develop a plan (or plans) for a marine communication network based on the resources that are available in the area and the resources that would need to be added to provide secure and complete coverage of the area in question.

Design of the signage can occur independently of the development of the marine channel network. However, the signs should not be built until the information about the marine channel has been finalized and the network is being installed. Signage that is to be placed at boat launch sites can be prepared ahead of time and held until construction at any individual site has been completed. Installation can be made part of the boat launch construction project if the signage is ready for installation.

6.0 DELIVERABLES

The expected end result is to have this project include the following deliverables:

- A study that details current radio communication resources covering the Williston and Dinosaur reservoirs and the Peace River (from Peace Canyon Dam to Fort St. John) including private repeaters and public access frequencies.
- From the study, a recommended plan for a radio communication network that will provide public access coverage to the reservoirs and the river.
- Development of the radio network for the Williston and Dinosaur reservoirs and the Peace River between Peace Canyon Dam and Fort St. John.
- Information signage at all boat launch facilities on the two reservoirs and the Peace River.
- Electronic information signage at Hudson’s Hope Park to display current reservoir levels and daily forecasts.
- An annual maintenance plan and budget for the repeater stations and the information signage.

7.0 SCHEDULE

The following are the milestone dates for the work:

- Submission of Terms of Reference to the Comptroller of Water Rights – May 2008
- Completion of Feasibility Study for a communication network and costs – December 2008.
- Completion of Design for Electronic and other information signage – December 2008
- Installation of Electronic sign at Hudson’s Hope Park – June 2009
- Installation of information signage at boat launches – As necessary
8.0 **COST OBJECTIVES**

The following tables show the costs associated with this project.

<table>
<thead>
<tr>
<th>Total (estimated)</th>
<th>$926,000</th>
</tr>
</thead>
</table>

Attachment 1

VHF MARINE DISTRESS SYSTEM
PROPOSAL

Prepared by: ____________________________________________
R. Luk, E.I.T.

Reviewed by: ____________________________________________
S. Lancashire, P. Eng.

Accepted by: ____________________________________________
Brian Hills, P.Eng.
Project Manager

Prepared for:
BC Hydro
VHF MARINE DISTRESS SYSTEM

1.0 SUMMARY

BC Hydro is requested by Land and Water BC to investigate alternatives to provide a VHF marine distress communication system on Williston Lake and the surrounding areas, for use by the general public.

This report lists the alternatives for installing the VHF Marine Distress System and to provide guidelines for further discussions.

BC Hydro Engineering recommends replacing the repeaters at Deception Cone (DEC), Wolverine Mountain (WVN), and Carbon Creek (CBC), adding two new repeaters at Bullhead (BLH) and Morfee Mountain (MRE), and grouping the sites into two networks (Option 2).

Option 2 will reduce the power consumption at the solar-powered sites; however, this option will also increase the complexity of system monitoring.
2.0 SYSTEM ARCHITECTURE

2.1 Existing BC Hydro radio system

BC Hydro has an existing mobile radio system on Williston Lake and the surrounding area for internal use. This includes solar-powered repeater sites at DEC, WVN, and CBC and AC-powered repeater sites at BLH and MRE.

Figure 1a and 1b shows the geographical locations, communication paths, and one-line diagram for the existing BC Hydro radio system in these areas.

![Diagram of existing BC Hydro repeater sites](image1.png)

Figure 1a. Location and path diagram of the existing BC Hydro repeater sites

![One-line diagram of existing BC Hydro repeater sites](image2.png)

Figure 1b. One-line diagram of the existing BC Hydro repeater sites

In the VHF Marine Distress System, the existing repeaters at DEC, WVN, and CBC will be replaced and two new repeaters at BLH and MRE will be added. The new system will be designed for use by the general public and therefore increase in marine communications is anticipated. The existing solar and battery system will not be sufficient to handle this increase traffic and the following equipment will need to be upgraded,

- Solar panels
- Solar regulators
- Batteries
- Battery chargers
2.2 **Option 1**

For this option, all sites will be grouped into one network and will be linked through an audio bridge. Figure 2a, 2b and 2c shows the path diagram, the one-line diagram and the network diagram from the user view.

![Path diagram for Option 1](image)

**Figure 2a:** Path diagram for Option 1

![One line diagram for Option 1](image)

**Figure 2b.** One line diagram for Option 1
2.3 **Option 2**

For this option, the system will be separated into two networks. The solar-powered sites will be grouped as one network and the AC-powered sites will be grouped as another network, as shown in figure 3a.

Figure 3b and 3c shows the one-line diagram and the network diagram from the user view.
3.0 BENEFITS AND CONSTRAINTS

BC Hydro needs to account for the risks that may cause a system failure.

3.1 Option 1

Benefits

By operating any of the repeater sites, the system will activate the rest of the repeater sites. This will simplify the system operations and monitoring.

Constraints

This configuration will not optimize the use of power and may cause power outage to the solar-powered sites. For example, a battery failure at WVN will cause an outage in its coverage area and will also disconnect DEC from the system. The table describes the impact to the network in the case of a power outage at each site.
<table>
<thead>
<tr>
<th>Sites</th>
<th>Risks</th>
<th>Usage</th>
<th>Access to site by*</th>
<th>Impact on Coverage</th>
<th>Days of Autonomy**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deception Cone (DEC)</td>
<td>Solar power outage Battery failure</td>
<td>Low</td>
<td>Helicopter</td>
<td>DEC – covers Finlay Reach (north of Williston Lake)</td>
<td>10 days</td>
</tr>
<tr>
<td>Wolverine Mountain (WVN)</td>
<td>Solar power outage Battery failure</td>
<td>Low</td>
<td>Helicopter</td>
<td>WVN – covers central Williston Lake</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DEC – covers Finlay Reach (north of Williston Lake)</td>
<td></td>
</tr>
<tr>
<td>Carbon Creek (CBC)</td>
<td>Solar power outage Battery failure</td>
<td>Low</td>
<td>Helicopter</td>
<td>CBC – covers north of Peace Reach (easterly portion of Williston Lake)</td>
<td></td>
</tr>
<tr>
<td>Bullhead (BLH)</td>
<td>AC power outage Battery failure</td>
<td>High</td>
<td>4-wheel drive road</td>
<td>BLH – covers the Dinosaur Lake (Peace River near Hudson Hope)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DEC – covers Finlay Reach (north of Williston Lake)</td>
<td></td>
</tr>
<tr>
<td>Morfee Mountain (MRE)</td>
<td>AC power outage Battery failure</td>
<td>High</td>
<td>4-wheel drive road</td>
<td>MRE – covers Parsnip Reach (southerly portion of Williston lake near Mackenzie)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WVN – covers central Williston Lake</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DEC – covers Finlay Reach (north of Williston Lake)</td>
<td></td>
</tr>
</tbody>
</table>

*The system restore time will depend on the accessibility to the sites.  
**The time the repeater will continue to operate in the case of a power outage, with an assumption of 20% talk time.

### 3.2 Option 2

**Benefits**

Having the system separated into two networks will reduce the usage of the solar-powered sites and therefore reduce the risk of power outage at DEC, WVN, and CBC. With an assumption of 5% talk time for the solar-powered sites, the days of autonomy will be increased from 10 days to 28 days.

**Constraints**

This configuration will limit communications to its own network and will increase the complexity of system monitoring. For example, a boater at DEC will not be able to communicate with another boater at BLH.
The monitoring station will be located near the town area to monitor the AC powered network and a yagi antenna pointing towards the CBC repeater site will be required to monitor the solar powered network.

4.0 EQUIPMENT INSTALLATIONS

Repeaters at the solar-powered site (DEC, WVN, and CBC)

The existing low power wide band Daniels radios will be re-crystallised for VHF marine operations. Due to the anticipated increase in communications for marine operations, the existing solar panels and the solar regulators will need to be upgraded to handle the traffic.

Repeater at the AC-powered site (BLH and MRE)

A new marine VHF repeater will be installed in addition to the existing BC Hydro VHF radio system. Due to the anticipated increase in communications for marine operations, a new battery and a new AC charger will need to be installed at each of the sites to handle the traffic.

5.0 CHANNEL ASSIGNMENT AND COVERAGE

The existing BC Hydro VHF radio frequencies which cover the Williston Lake area will be removed and a new marine radio channel will be assigned to each of the five sites.

Table 1 shows the proposed marine radio channel assigned to each of the sites and figure 4 shows the geographical coverage for each of the sites.

<table>
<thead>
<tr>
<th>Repeater Locations</th>
<th>Proposed Channel</th>
<th>Transmit Frequency (MHz)</th>
<th>Receive Frequency (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deception Cone (DEC)</td>
<td>02</td>
<td>156.100</td>
<td>160.700</td>
</tr>
<tr>
<td>Wolverine Mountain (WVN)</td>
<td>28</td>
<td>157.400</td>
<td>162.000</td>
</tr>
<tr>
<td>Carbon Creek (CBC)</td>
<td>24</td>
<td>157.200</td>
<td>161.800</td>
</tr>
<tr>
<td>Bullhead (BLH)</td>
<td>01</td>
<td>156.050</td>
<td>160.650</td>
</tr>
<tr>
<td>Morfee Mountain (MRE)</td>
<td>03</td>
<td>156.150</td>
<td>160.750</td>
</tr>
</tbody>
</table>
6.0 SYSTEM MONITORING

Due to the grouped repeater arrangement of the system, any users within the repeater coverage area will be able to monitor the entire network. The size of the network will depend on whether option 1 or option 2 is selected.

The system will be self-monitored by the system users or by a volunteered community organization. BC Hydro will not be responsible for monitoring the system. The yacht club should be contacted for their interest and level of involvement.

7.0 YUKON VHF MARINE DISTRESS SYSTEM

Yukon has a similar system that was built in partnership with Yukon Amateur Radio Association (YARA), Yukon Power Squadron, Yukon Electric, and Industry Canada. Please refer to Appendix A for the YARA Brochure and Appendix B for the Yukon Government News Release.
8.0 **COSTS**

The estimated capital costs of installing the marine distress system for either option is $263k based on the following costs:

<table>
<thead>
<tr>
<th>Costs ($)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase of five new batteries</td>
<td>35k</td>
</tr>
<tr>
<td>Purchase of two new radios and modifications of three existing radios</td>
<td>12k</td>
</tr>
<tr>
<td>Purchase of three solar panels and regulators</td>
<td>39k</td>
</tr>
<tr>
<td>Purchase of two AC Chargers</td>
<td>2k</td>
</tr>
<tr>
<td>Installations</td>
<td>100k</td>
</tr>
<tr>
<td>Engineering</td>
<td>25k</td>
</tr>
<tr>
<td>Public Consultations and Communications</td>
<td>approx. 50k</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td><strong>263k</strong></td>
</tr>
</tbody>
</table>

9.0 **REGULATIONS AND REUSE**

The system architecture is subject to the approval by Industry Canada.

10.0 **LIABILITY**

BC Hydro's liability and responsibility need to be addressed. An agreement may be required between BCH and the municipality.
YARA Meetings
Visitors always welcome
146.940- MHz in Whitehorse
1st Monday of the month, Sept – June, 7:00 p.m., Whitehorse, 60 Norseman Drive, near the DC3 at the airport, in the EMO building.
GPS - N 69°42.9’ - W 135°04.7’
Saturday morning breakfast club - 9:30 am, A & W, Whitehorse
Sunday evening net, 8:00 p.m.

About YARA
Check the website for lots of information and photos
www.yara.ca

YARA members are involved in community events and projects throughout the year as well as Emergency Measures Organization communications support.
- Yukon Marine Radio System
- Haines-Chilkat Bike Race
- Skagway-Whitehorse Road Relay
- Canada Day Demo and Radio Contest
- EMO exercises & disasters
- Guest HF shack for contests

YARA members have Vehicle Licence plates with their distinctive "HAM" call sign e.g. VY1RM

About Amateur Radio
Amateur radio offers an exciting world of radio communications – voice, digital, satellite, APRS/GPS tracking and even Morse code.

Talk to your friends Yukon-wide with miniature handheld radios and mobile car/boat radios. Work the world with handhelds, mobile and short wave radio.

Join the fun with community events and emergency measures exercises

Get your Amateur Radio License
1. Join a YARA class or use a self study manual
2. Review the exam questions from Industry Canada
3. Write the multiple choice exam
4. Industry Canada will send you a FREE license to operate on VHF & UHF frequencies and use repeaters and links with inexpensive radios

Get an Advanced Rating
- Build your own transmitters, kits and other equipment
- Operate with higher powered transmitters

Get more information
- Monthly meetings – visitors welcome
  - www.yara.ca/
  - www.rac.ca/
  - Ron, VY1RM, 668-7380
  - Bob, VY1MB, 667-2570

Yukon Amateur Radio Association (YARA)
- Radio communications for recreation and service
- Mobile radio links to Yukon Communities
- Connecting Yukon to the World
- Supporting marine emergency radio
- Volunteering at community events

Printed 2005
Yukon Linked Repeater System

Yukon Amateur Radio Association

- 146.94-  
- 146.82-  
- 146.88 Not Linked  
- 147.06+  
- 146.52

Simplex remote base

A = Autopatch

Whitehorse Area
IRLP 146.59
Echolink 146.54
APRS Digi in
Whitehorse and
Haines Junction

VY1RB-1 Igate

In Whitehorse

Yukon Linked Repeater System

Yukon Amateur Radio Repeater Network

With generous support of governments and industry YARA builds and maintains a Yukon wide network of amateur radio repeaters throughout Yukon. These repeaters enable amateur radio operators to communicate along most Yukon highways year round. This network is available for use by visitors and residents. YARA also provides support for the Yukon Marine Radio System

YARA
Yukon Frequencies & Repeaters
See website for full coverage
www.yara.ca/

YARA Repeater Listings for Specific Areas

- Beaver Creek * 146.520 VY1RHH
- Carcross 146.820 - VY1RMM
- Dawson City 146.820 - VY1RMD
- Faro 147.060 + VY1RRH
- Haines Junction 146.820 - VY1RHH
- Haines Road * 146.520 VY1RBT
- Johnson’s Crossing 147.060 + VY1RHP
- Mayo/Stewart Crossing 147.060 + VY1RFH
- Skagway Road (Fraser) 146.940 - VE7RFT
- Teslin 147.060 + VY1RHP
- Whitehorse (North) 146.940 - VY1RPT
- Whitehorse (South) ** 146.880 - VY1RCM
- Whitehorse (Riverdale) 147.180 + VY1RM
- Watson Lake 146.820 - VY1RTM
* Simplex Remote Base
** Autopatch, not linked

IRLP and Echolink connect repeaters worldwide via the Internet.

IRLP www.irlp.net/
Node ID’s http://status.irlp.net/
Whitehorse, Node ID #1268 146.580 Simplex

Echolink www.echolink.org/
Whitehorse 146.540 Simplex

APRS (GPS) www.tapr.org/aprs_information.html
Whitehorse & Haines Junction 144.390 Simplex

Marine Radio www.ypss.ca
Ch 09 – Teslin
Ch 16 – Carcross - Southern Lakes
Ch 20 – Whitehorse - Lake Laberge
Ch 23 – Haines Jct - Kluane Lake area
Appendix B
FOR RELEASE #05-158
June 14, 2005

Boating Safety Improves, New VHF Marine Distress System in Place

Whitehorse – Boaters, in an emergency or in distress, will now be able to radio for assistance from the Southern Lakes by using the VHF Marine Distress System, a new communications system that is expected to dramatically improve emergency response time.

“We’ve been working to develop a VHF Marine Distress System for the Yukon since 1992,” said Jeff Stanhope, technical advisor for the system. “It has been a challenging project, with many hurdles, trials and setbacks over the last 10 years, but I’m happy to say that this summer the system is finally up and running.”

The Yukon Amateur Radio Association has led the project and received support from Industry Canada, the Government of Yukon, the Emergency Measures Organization, Yukon Electrical Company Ltd, the Department of Fisheries and Oceans, the Yukon Power Squadron Society, and Yukon Energy. The RCMP and Daniels Electronics of Victoria also donated some radio equipment to the project.

Distressed boaters can access the system with their marine radio and contact “Whitehorse Radio”, Action Answering Limited, from late May through to early October, 24 hours a day, seven days a week. Upon receiving a call for assistance, Action Answering will advise the RCMP of the situation. International standard (VHF) marine radios operate on the system and may be purchased at local retail outlets.

The system operates from a series of mountain-top repeaters that are installed on strategic locations near some of the most popular boating areas in Southern Yukon. The radio service covers most lakes and waterways from Destruction Bay to Teslin.

“Of course, preventing accidents is still the boater’s responsibility,” said Shelley Huebert, manager of Yukon’s Emergency Measures Organization. “It is very important for boaters to respect rough water and weather conditions, to be prepared and know their equipment’s capabilities. However, if someone finds themselves in trouble, this radio system will improve the ability for boaters to call for assistance and emergency personnel to respond to the situation and save lives.”

A Yukon Marine Distress System description is attached to the news release at www.gov.yk.ca; for more information on the VHF Marine Distress System, visit www.ypss.ca or www.yara.ca.

Contact:
Jeff Stanhope
Industry Canada
(867) 667-5102
stanhope.jeff@ic.gc.ca

Bob Melanson,
President YARA
(867) 667-2570
bobmel@northwestel.net

Doug Caldwell
Policy & Communications Analyst
Community Services
(867) 667-8065
doug.caldwell@gov.yk.ca
YUKON VHF MARINE DISTRESS SYSTEM – SYSTEM DESCRIPTION:

What is the Yukon Marine Distress System?

For several decades now, there has been a need to provide some basic marine communications for the growing number of boaters on the Yukon lakes and rivers. While this type of service has been in place for decades in many of Canada’s southern areas, some of them inland, there has never been anything in the Yukon. Although the Canadian Coast Guard is very supportive, they do not officially have a mandate to provide this service for the Yukon waterways.

This Yukon Marine Distress System was first conceived in 1992 by a consortium of community volunteers and other agencies. The main partners are the Yukon Electrical Company Ltd, the Emergency Measures Organization (EMO, Yukon government), Industry Canada, the Department of Fisheries and Oceans (DFO), the Yukon Amateur Radio Association (YARA), Action Answering Ltd, and the Canadian Power Squadron Society.

Serious work began on this project in 1994. For access points, the logical choice was to work with YARA to access some of their mountain-top radio sites (also known as “Comshels”) which were strategically located far above various lakes and waterways. Ever since, YARA has been one of the main contributors having already been involved in a number of community events and programs over the years involving “public good” type communications. YARA has also worked closely with EMO in emergency planning exercises or actual emergency events such as the large forest fires last summer.

One of the big advantages of any marine system is that the consumer grade radios, used in this service, are affordable and available in many local stores. This means that the service can be utilized by all types of boaters, which also includes people in canoes and kayaks.

Through various fund raising activities over the past 13 years, more than $90K worth of commercial marine equipment has been installed at four mountain top sites and one downtown site. Although this system has been technically operating for about one year, it could not be publicly announced until secure funding was achieved. Funding has now been secured for the system’s operating and maintenance costs.
The Mt. Decoeli site, for Marine Channel 23, is at 7,800 feet west of Haines Junction. This is the only non-Comshel type of building used in the system. Two other Comshels located here, the last one reinforced with steel ribbing, however both were lost in the previous five years due to winds which can reach over 200/KMH. Estimated winds at this site reach over 200 KPH but there is little icing.

The main radio sites are as follows:
- 7,200’ Montana Mountain (Channel 16) near Carcross;
- 6,000’ Hayes Peak (Channel 09) near Teslin;
- 6,600’ Pilot Mountain (Channel 20) near Whitehorse; and,
- 7,800’ Mount Decoeli, (Channel 23) near Haines Junction (above).

The Yukon system is unique in that the Canadian Coast Guard does not monitor the radio traffic as they do along Canada’s coast lines or on the Great Lakes. The Yukon system is ‘self-managed’ whereby users are responsible to use their radios according to the marine radio operator’s guide.

Hailing frequencies are selected channels which are reserved for calling for assistance only. Apart from other boaters who could be in the area, these channels are monitored by Action Answering, a volunteer dispatch service in downtown Whitehorse, will provide full 24/7 monitoring service.

Together, these sites span more than 500 kilometers east to west, and 250 kilometers north to south. Because of this large coverage area, the system is able to provide a direct link for distressed boaters from many lakes and then to the RCMP and/or the search and rescue (SAR) personnel. Once SAR officials are deployed, the system can be accessed directly from SAR radios to converse with the distressed boater and other responders.
ALL AREAS - CHANNEL 16
Distress & Calling ONLY - Move to another channel after contact

LAKES WITH MARINE RADIO REMOTES - For Distress Only

TESLIN LAKE - JOHNSON'S CROSSING  (most area) CHANNEL 09  Distress Only
LAKE LEBARGE, YUKON RIVER  (most area) CHANNEL 20  Distress Only
KLUANE LAKE AREA, DEZADEASH LAKE  (most area) CHANNEL 23  Distress Only
SOUTHERN LAKES, MARSH LAKE  (most area) CHANNEL 16  Distress Only

WHITEHORSE RADIO (ACTION ANSWERING) WILL MONITOR THIS SYSTEM AND CAN RELAY A DISTRESS MESSAGE TO THE RCMP

After establishing contact with other stations on Channel 16, users MUST move to a working channel such as Channel 060899 etc. to avoid tying up the entire Yukon network and causing interference to other boaters and to the US Coast Guard.

This guide shows only approximate radio signal coverage. Your coverage will vary depending on local terrain and the type of radio equipment used (for instance, a portable vs. a 25 watt mobile).

This solar and wind powered radio system is subject to unannounced outages due to unforeseen equipment failures.

For more information and coverage maps go to www.yukon.ca OR www.sea.ca

YUKON MARINE DISTRESS SYSTEM - Marine VHF Radio Guide

ALL AREAS - CHANNEL 16
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Boat Sticker and Pocket Guide
Meeting in Juneau with US Coast Guard Staff in June 2004 for frequency coordination. Left to Right: Warren J. Russell, LCDR, Chief; Communications, Technology and Security Branch; Master Chief Jones, (Warren’s boss); Jim Rackley, Communications Technologist; Jeff Stanhope (IC)

Yearly Estimated Budget:
It is estimated that each year, the operations and maintenance budget will be $17K.

Revenue
These agencies provide the O&M funding
Yukon Electric Co. Ltd.................................$5K
Fisheries and Oceans (DFO – Coast Guard) ............$5K
YTG – EMO ..............................................$5K
Yukon Energy (*In kind - helicopter time) ..............$2K
Total Revenue .............................................$17K

Estimated Expenses by category
Liability Insurance ............................................$2.5K
Training .....................................................$1K
Advertising ..................................................$2.5K
Parts/repairs ..................................................$3K
Helicopter Time ..............................................$7K*
Misc ..........................................................$1K
Total Expense ...............................................$17K

A few words of thanks to our community partners....
The Yukon Emergency Measures Organization (EMO):
EMO was an active participant in the system development and paid for the printing of the stickers and the pocket guides. EMO’s on-going role with Search and Rescue societies provides an opportunity for effective use of the radio system through their regular training program.

The Yukon Power Squadron:
The Yukon Power Squadron Society (YPSS) has been very helpful and a key partner in system planning and education. The YPSS has now integrated this system into their training courses for boaters and also has it listed on their web site, www.ypss.ca.

Action Answering Ltd:
A well respected answering service, Action Answering Ltd, has volunteered their services from when this concept was brought-up more than ten years ago. They have their staff trained by volunteers from the YPSS to help them undertake their role as marine dispatchers whereby they are contributing an enhanced level of service.

The Yukon Forest Service:
The Yukon Marine Distress System would also like to acknowledge the continuing contribution of Yukon Forestry for shared helicopter time. This was used in the summer of 2004 to service Hayes Peak and Montana Mountain.

The Department of Fisheries and Oceans (DFO):
Starting in April 2001, the National Search and Rescue Secretariat has provided, through DFO, about $83K towards the capital costs required for the initial construction of the system. In addition, DFO Pacific Region, from time to time sends what surplus electronic equipment it can spare for the system operations and maintenance.

Yukon Electrical Company Ltd (YECL):
YECL has agreed to fund this system up to $5,000 each year. In the past, YECL has also helped with site rebuilds that have been destroyed by direct lightning or when Comshels have been blown off the mountain entirely. Since 1996, only three Comshels have been lost so far.

Yukon Energy Corporation (YEC):
YEC has agreed to pay (in-kind) for a helicopter flight to the Pilot Mountain site once each year. This amounts to about $2,000/year.

The Yukon Amateur Radio Association and other Community Volunteers:
Finally, it should also be noted that this system is also supported by many other volunteer groups and individuals such as the Yukon Amateur Radio Association, who designed and built it. In addition there are various volunteer listeners on the lakes, such as the Southern Lakes Marina, who monitor the marine system and are able to help by relaying boaters’ messages.