

Trunked Mobile Radio Training



Department of Internal Service
Public Safety and Field Communications



To Be Covered

- TMR2 Video Overview
- Radio features
- Proper use of mic
- TMR2 sounds
- Time out timer
- Status symbols
- Interoperability – Mutual Aid & Simplex
- Batteries
- TIR Fleetmaps
- Site Trunking
- Radio procedures and etiquette



Key Elements of TMR2

- Fully digital network – superior audio and signal quality
- 95 tower sites across Nova Scotia = wide coverage
- Proper placement of the mic is essential
- Interoperability – shared zone of interoperable talkgroups in all TMR2 radios
- Simplex

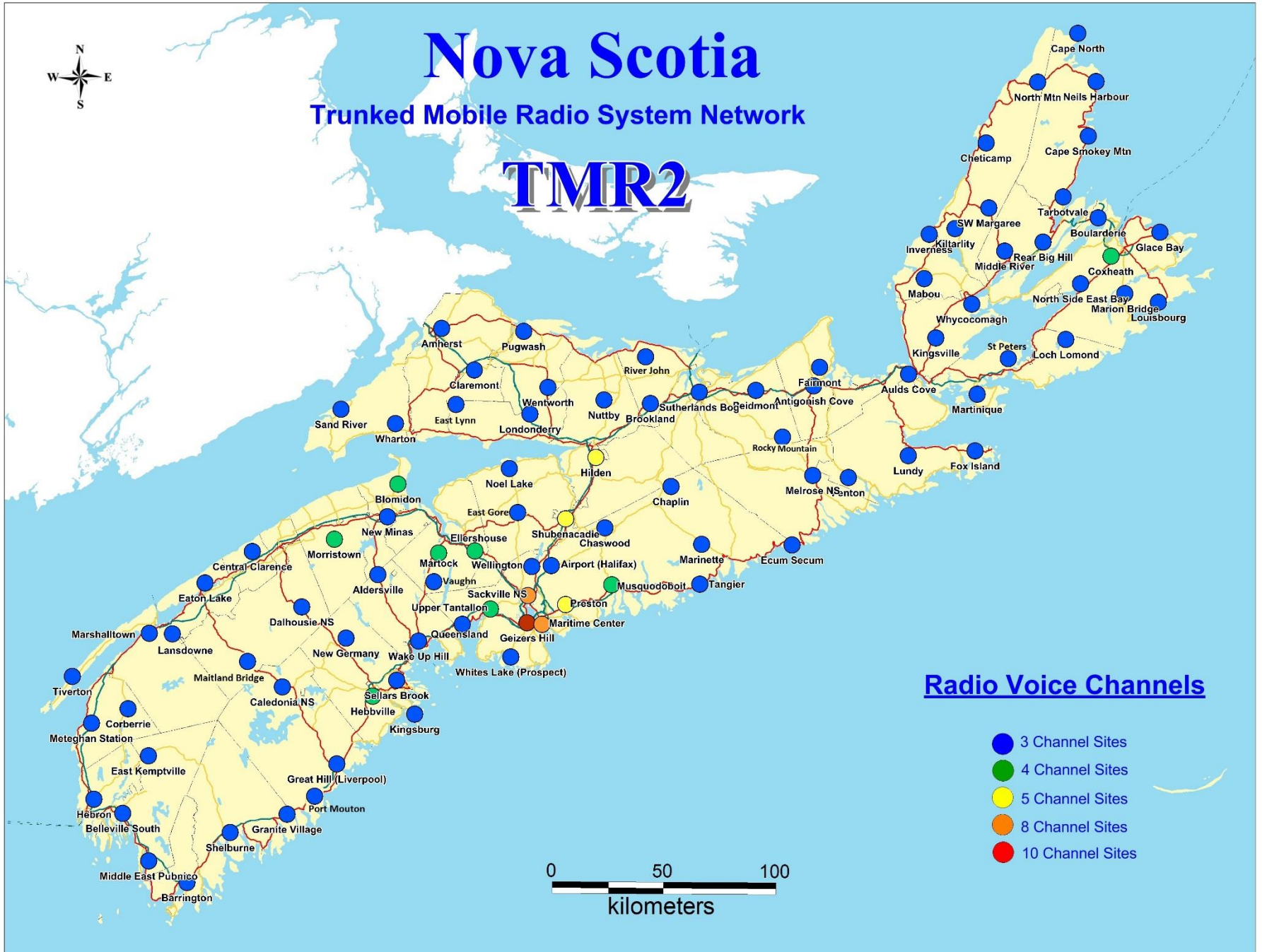




Nova Scotia

Trunked Mobile Radio System Network

TMR2

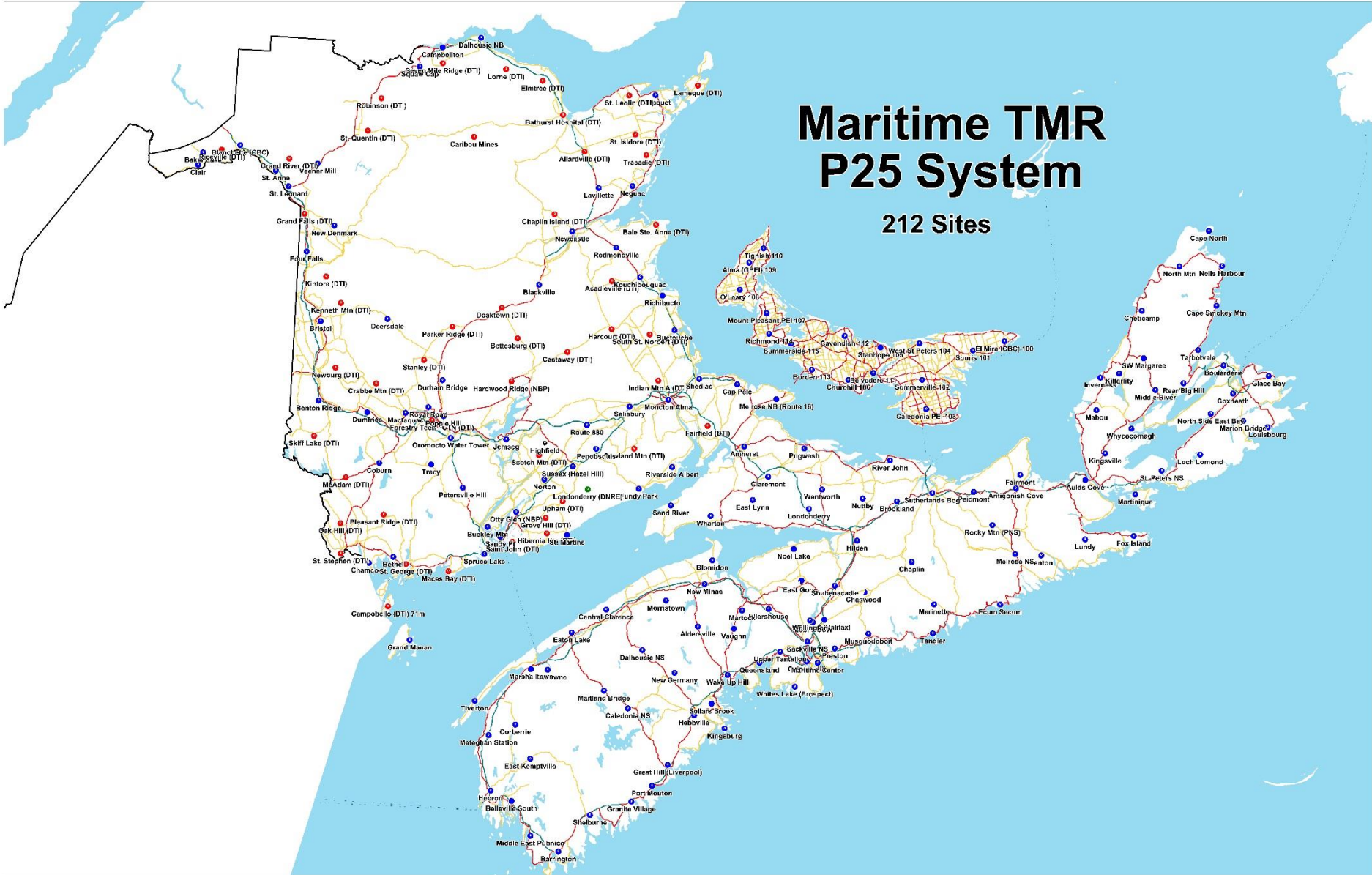


Radio Voice Channels

- 3 Channel Sites
- 4 Channel Sites
- 5 Channel Sites
- 8 Channel Sites
- 10 Channel Sites

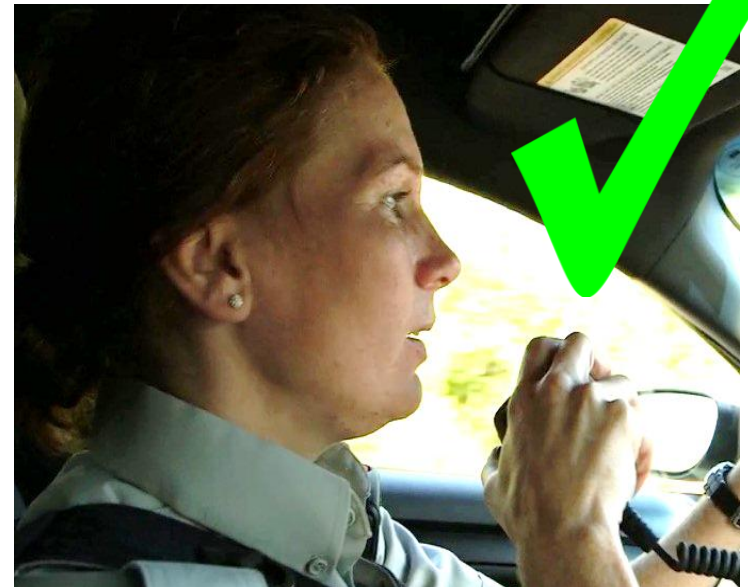
Maritime TMR P25 System

212 Sites



Proper Use of Mic

- Proper positioning of the mic when speaking is paramount.
 - DO NOT “long arm” the mic as shown below.
- It is imperative that you transmit 5-8cm (2-3”) from the mic for effective communication.





TIR Operations Radio Features

XTL 1500 Mobile/XTS 2500 Model 3 Portable/
XTS 1500 Model 1.5 Portable

General Features – Mobile/Base



Volume control

Received Signal
Strength Indicator
(RSSI)

Talkgroup/Channel
select

Change Talkgroup/Channel



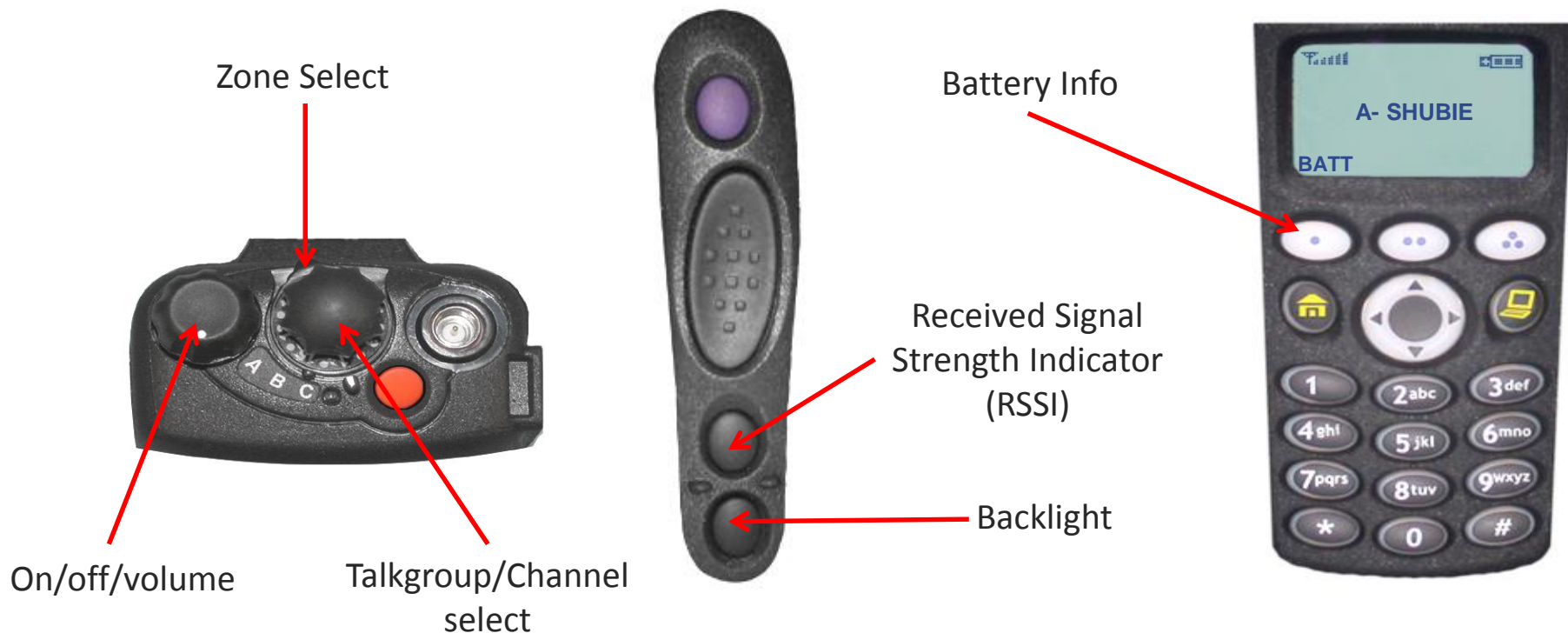
Use talkgroup selector knob to navigate to appropriate talkgroup.
All talkgroups are in a continuous loop.

RSSI / Site View/Search



1. Press the soft key below the icon RSSI momentarily. The current site number and RSSI (receive signal strength indicator) are displayed momentarily.
2. To initiate a site search, press RSSI key and hold until radio shows “scanning site.” This causes the radio to search for an alternate TMR Tower site if one is available.
3. If necessary, press the RSSI key. The radio will now display the new site (or if no alternate site is available, radio will remain on current site).

General Features – Portable XTS2500



Note: Buttons not labelled are not programmed.

General Features – Portable XTS1500

Zone Select

Talkgroup/Channel
select

On/off/volume



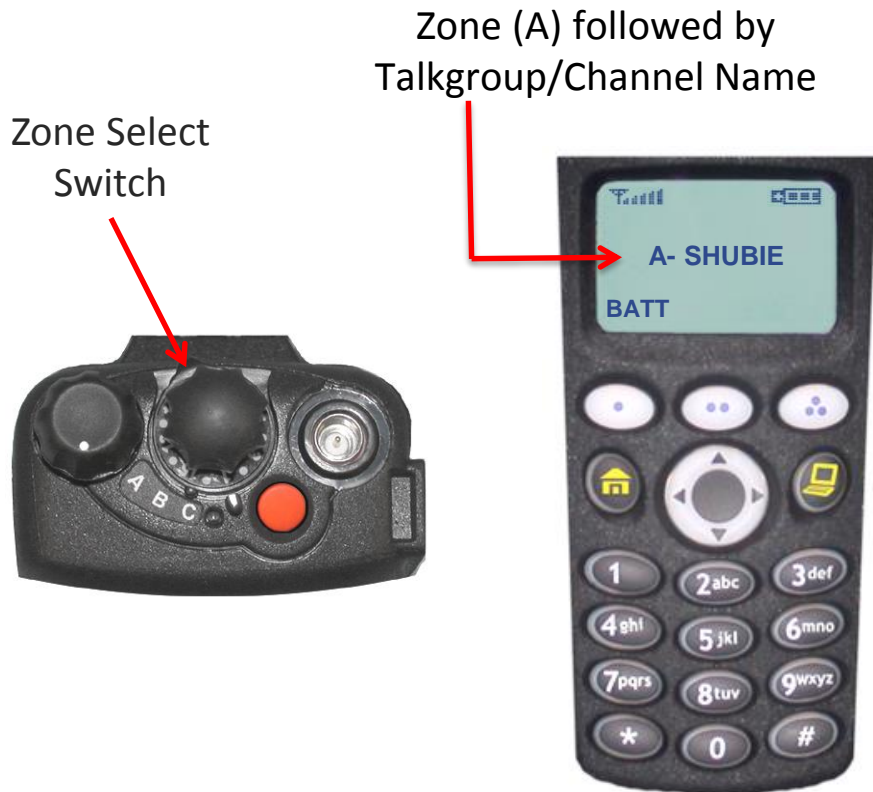
Received Signal
Strength Indicator
(RSSI)

Backlight

*Note: Buttons not labelled are not
programmed/battery information not
available on this model.*



Zone Select (both portables)



To select a zone:

The talkgroups are divided into 3 zones.

Select zone A, B, or C using the Zone Select switch on top of portable radio.

Talkgroup/Channel Select (both portables)



To select a channel/mode:

Turn the Talkgroup/Channel Select knob to the desired position.

The new name will appear on the display.

RSSI / Site View/Search (both portables)

You can view the tower number of the current site or force your radio to change to a new one.

To view the current site:

Press the Site Search button.

The display momentarily shows the tower number of the current site and its corresponding received signal strength indicator (RSSI).

OR

To change the current site:





Press and hold down the Site Search button.

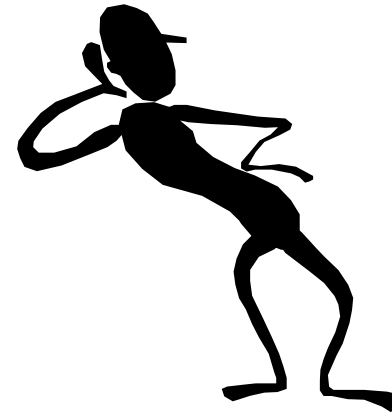
You momentarily see SCANNING SITE displayed and hear a tone. When the radio finds a site, it returns to the home display. 🔊



Site Search Button


Sounds you may hear

- Talk permit 
- Busy 
- Bonk 
- Low Battery 



Time Out Timer

***The time-out timer turns off your radio's transmitter.
The timer is set for 60 seconds.***

1. If the user holds down the PTT button longer than the programmed time of 60 seconds: 

You will hear a low-pitched warning tone, the transmission will cut off, and the LED will go out until you release the PTT.

2. Release the PTT button and the LED will re-light and the timer will reset.
3. Press the PTT button to re-transmit. The time-out timer restarts.



Status Symbols



Signal Strength

Received Signal Strength Indicator (RSSI): The received signal strength for the current site (trunking only). The more bars in the symbol, the better the signal strength.



Direct/Simplex

Simplex – On: direct radio to radio communications. Off: you are talking through a repeater.



Battery Status

Battery Status – the number of bars (0-3) shown indicates the charge remaining in the battery, flashes when the battery is low.

TMR System Capacity

- By just monitoring you can tie up repeaters on a trunked radio system.
- **You should only monitor talkgroups that you have a legitimate reason to.**
- You can be caught!
- Enhanced capabilities to monitor usage of TMR2.



Incident Without Use of Mutual Aid Talkgroups



Fire Talkgroup



RCMP Talkgroup



EHS talkgroup



Sheriff Talkgroup



TIR Talkgroup



Diagram shows a 3 repeater tower with 3 agencies communicating separately.

If all 3 repeaters are used, other agencies (Sheriff/TIR) would remain in a busy queue.

Radio Interoperability Tools



8 Mutual Aid Talkgroups

2 Maritime Common Talkgroups

3 Shared Simplex SX ALL Channels

Mutual Aid Talkgroups

- All TMRS radios share 8 Mutual Aid Talkgroups.
- To use a Mutual Aid Talkgroup, you must first get permission.
- This can be done by contacting Shubie Radio.
- Advise Shubie who you want notified of the talkgroup assignment (ie. Police, EHS etc.).
- Doing this early into the incident will ensure efficient and effective multi-agency communications.
- Also, this decreases the chances of getting a busy signal at your incident, as it only uses one repeater at your tower site.

Incident With Use of Mutual Aid Talkgroups



Mutual Aid 1



Mutual Aid 1



Mutual Aid 1



Sheriff talkgroup



TIR Talkgroup



Diagram shows a 3 repeater tower with 3 agencies communicating on a mutual aid talkgroup.

2 repeaters remain available allowing other users to communicate without a busy signal.

Simplex Channels

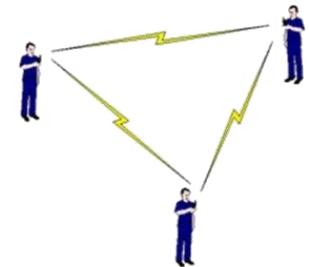
- Direct radio to radio communication.
- Provides another interoperable tool for communications.
- May be best for some communications:
 - *Removes traffic from the TMR2 network.*
 - *Can be used in poor coverage areas.*
 - *Keeps TMR2 available for long range communications.*
- There are no tones when using simplex.
- Simplex is only reliable for roughly 1 to 2 km.
 - *You will not have contact with dispatch.*

Simplex Channel Protocols

- Permission from Dispatch is not required in order to use a Simplex channel, however, good radio protocols should be followed:
 - Listen on the channel prior to communicating to ensure no conversations are currently in progress.
 - If no conversations are heard, transmit a courtesy call to see if anyone is using the channel. If no response is heard, you may proceed with using the channel.

Shared Simplex Channels

- The Nova Scotia channels SX ALL 1, 2 and 3 correspond with three nationwide interoperability simplex channels.
- These channels allow responders from across Canada to communicate with one another when communicating in other jurisdictions within Canada.
- Because these channels are used by responders across Canada, special protocols are required for accessing these channels.



Shared Simplex Channels

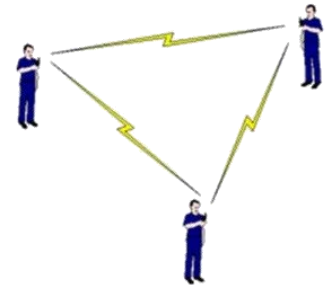
SX ALL 1 (I-CALL) – Hailing Channel

- Where an incident is operating on a Simplex channel, SX ALL 1 will be used to establish communications.
- Can be used to contact other users in the Region for the purpose of requesting incident related information and assistance.
- If communications will be of an extended nature, the calling party will be asked to move to one of the I-TAC (SX ALL 2 & 3) channels for continuing incident operations or other interoperability communication needs.

Shared Simplex Channels

SX ALL 2 & 3 (I-TAC 1 & 2)

- Primarily used for coordinating activity between different agencies in a mutual aid situation or for emergency activities of a single agency.
- Incidents requiring multi-agency participation will be coordinated over these channels by the agency controlling the incident.



Use of Simplex Frequencies Removes Busies



SX ALL 2



SX ALL 2

















SX ALL 2

TIR Simplex Channel

- TIR radios have a channel called TIR simplex.
- This is part of the group of nationwide interoperable simplex channels (I-TAC 4).
 - You are required to share the channel with other agencies as necessary.
- The use of TIR simplex is highly encouraged for traffic control and other short range communications.

Battery Charge Indicator Description

UNCHARGEABLE		+		FLASHING RED
WAITING TO CHARGE		+		FLASHING ORANGE
RAPID CHARGING		+		STEADY RED
CHARGED (90% CAPACITY)		+		FLASHING GREEN
FULLY CHARGED		+		STEADY GREEN
SERVICE LIFE		+		FLASHING RED/GREEN
RECONDITIONING		+		STEADY ORANGE

Important - When battery is showing steady orange, this indicates that the battery is reconditioning and may not be available for use for several hours.

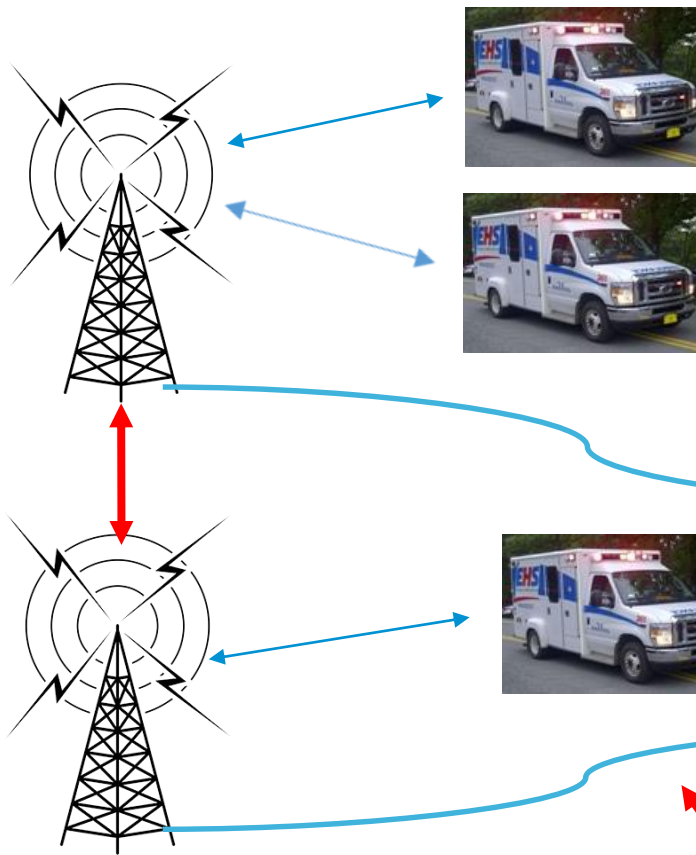
TIR Operations Fleetmap

TIR Ops Mobile

TIR Ops Portable

TIR Ops Base

Site Trunking



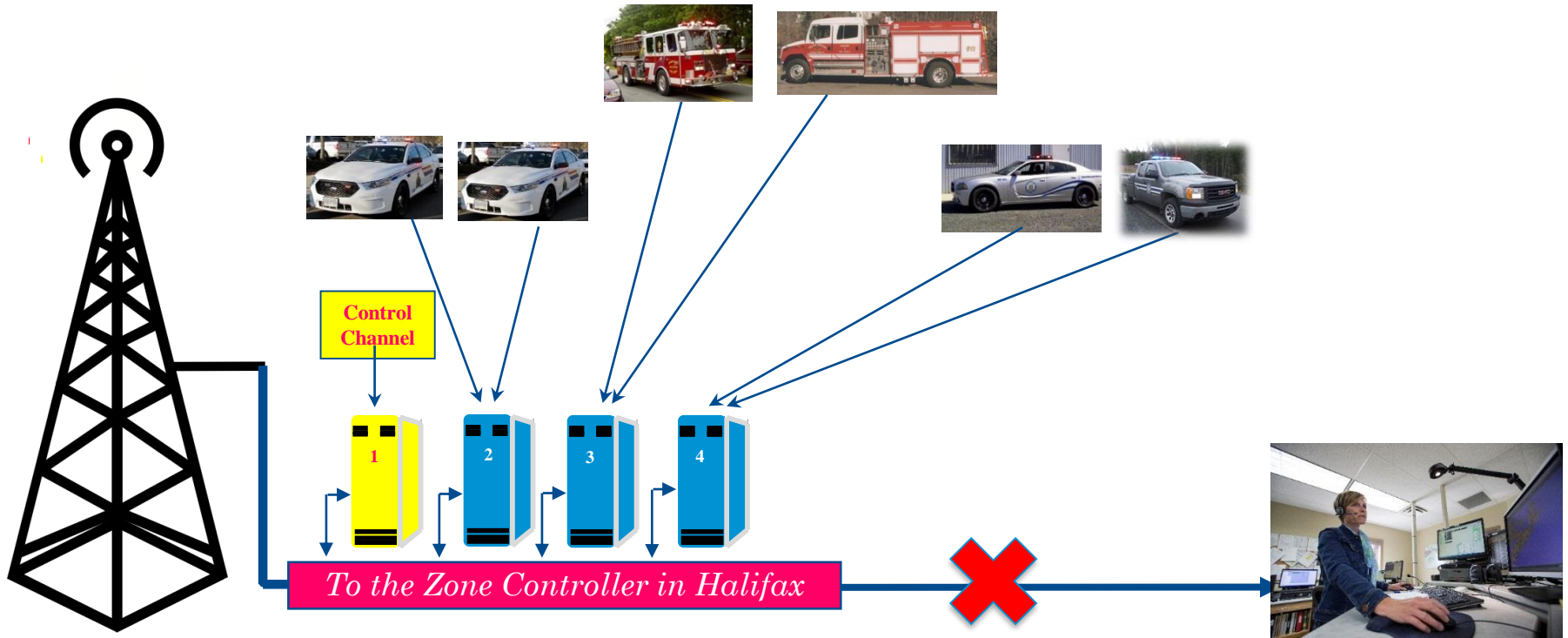
Dispatch



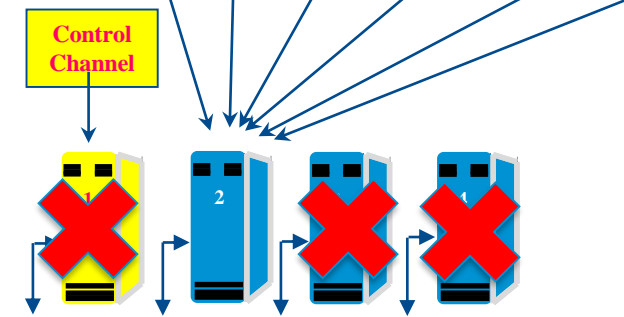
When in **Site trunking** – radios can only communicate with other radios affiliated to the same site



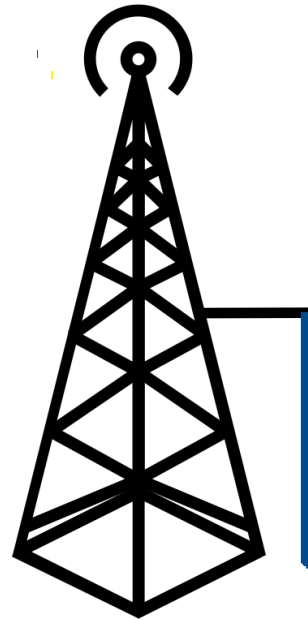
When in **Site trunking** – radios can only communicate with other radios affiliated to the same site



Site Trunking



To the Zone Controller in Halifax



Failsoft

Proper Radio Procedures

- Wait for a clear channel before calling.
- Speak all words plainly and each word clear.
- Keep rate of speech constant, not too fast, not too slow, receiver may have to write your message.
- Speak in normal voice – **DO NOT SHOUT!**



Placing a Radio Call

- Use your call sign at the first and end of a radio conversation.
- Before calling – listen for other radio traffic.
- State the call sign of the party you want.
- State the call sign of your radio unit.
- Listen for a reply – it may take a few moments.

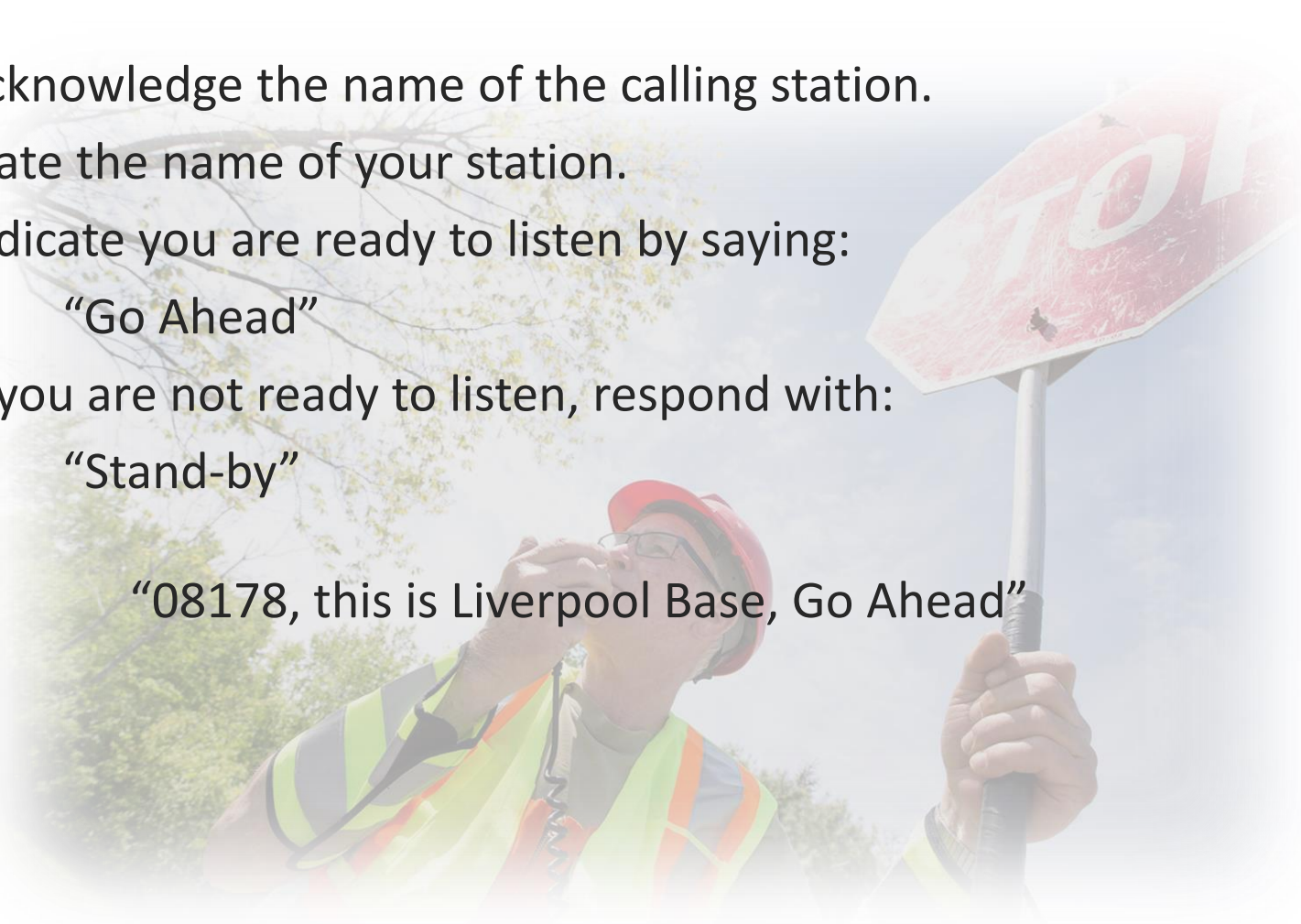


“Liverpool Base, this is 08178, over”

Replying to a Radio Call

- Acknowledge the name of the calling station.
- State the name of your station.
- Indicate you are ready to listen by saying:
“Go Ahead”
- If you are not ready to listen, respond with:
“Stand-by”

“08178, this is Liverpool Base, Go Ahead”



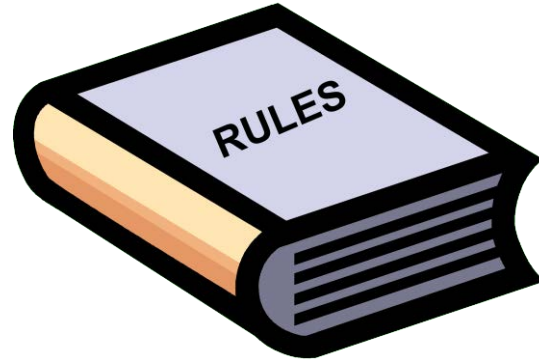
Radio Terms

- **Negative-** No, or that is not correct, or I do not agree.
- **Out or Clear-** Conversation is ended and no response is expected.
- **Over-** My transmission is ended and I expect a response from you.
- **Roger-** I have received all of your last transmission.
- **Say Again-** Repeat last transmission.
- **Stand By-** I must pause for a few seconds or minutes, please wait.

Rules for Radio!

- Keep conversations short and direct, don't tie up the radio with useless information.
- Be aware that the public and even the media can hear your conversations on scanners!
- Do not use profane or obscene language on the radio.
- Keep your radio clean, wipe off heavy accumulations of dust and dirt.
- Keep your radio dry. Rain and snow entering the cab of the vehicle, or over spray from washing can damage the radio electronics.
- Report all problems to your Dispatcher or OS for prompt attention.

Rules for Radio!



- Do not listen in on other talkgroups (other than your own) unless you have an operational reason to do so. (This ties up local repeaters that other agencies may need in an emergency.)
- Abuse of the radios can be detected in several ways.
- User your correct radio call sign – 02185.
- Hold the microphone 2-3” from your mouth.

Rules for Radio!

Etiquette and Courtesy:

- Always clear the channel for emergency calls.
- Do not play music over the air.



Rules for Radio!

Call In Checks:

- When operating during a storm situation, all vehicles should make regular check in calls to their designated Base as follows:
 - Approximately every two hours.
 - When an operator is exiting and returning to his vehicle for purposes such as putting on tire chains, etc.
 - Whenever the vehicle is entering or leaving a radio dead area.



<http://novascotia.ca/is/branch/psfc>

Shubie Radio 1-877-293-6977