Trunked Mobile Radio Training

**Department of Internal Services
Public Safety and Field Communications**

NOVA SCOTIA

To Be Covered

- TMR2 Video Overview
- Radio features and button functions
- Proper use of mic
- TMR2 sounds
- Time out timer
- Status symbols
- Interoperability – Mutual Aid & Simplex
- Batteries
- Fleetmap review
- Site Trunking

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Video Overview

Please click on the image to play the video.

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
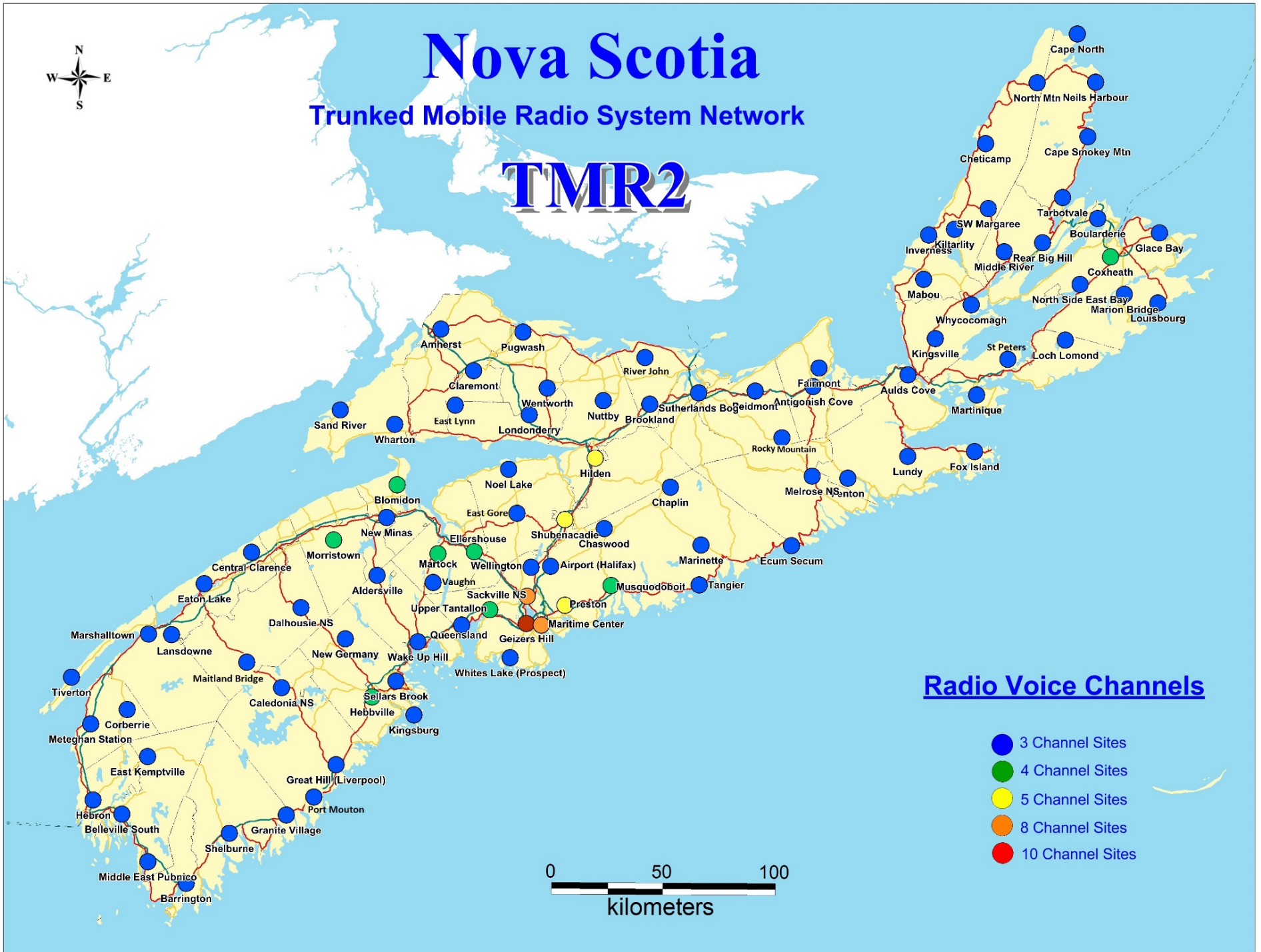
- Simplex

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So how does TMR 2 work?

Nova Scotia

Trunked Mobile Radio System Network

TMR2

Cape North

North Mtn Neils Harbour

Cheticamp
Cape Smokey Mtn

SW Margaree
Tarbotvale
Kiltarlity
Boularderie
Inverness
Rear Big Hill
Glace Bay
Middle River
Coxheath
Mabou
North Side East Bay
Whycocomagh
Marion Bridge
Louisbourg

Kingsville
St Peters
Loch Lomond

Amherst
Pugwash

River John
Fairmont
Claremont
Auids Cove
Wentworth
Sutherlands Bo Geidmont
Antigonish Cove
Martinique
East Lynn
Nuttby
Brookland
Sand River
Londonderry
Rocky Mountain
Wharton
Lundy
Fox Island
Hilden
Noel Lake
Melrose NS enton
Chaplin
East Gore
Blomidon
Shubenacadie
New Minas
Ellershouse
Chaswood
Morristown
Marinette
Ecum Secum
Martock
Wellington
Central Clarence
Vaughn
Airport (Halifax)
Tangier
Aldersville
Musquodoboit
Eaton Lake
Sackville NS
Preston
Dalhousie NS
Upper Tantallon
Marshalltown
Maritime Center
Queensland
Lansdowne
Geizers Hill
New Germany
Wake Up Hill
Maitland Bridge
Whites Lake (Prospect)
Tiverton
Caledonia NS
Sellars Brook
Hebbville
Corberrie
Kingsburg
Meteghan Station

East Kemptville
Great Hill (Liverpool)
Hébron
Port Mouton
Belleville South
Granite Village
Shelburne
Middle East Pubnico
Barrington

Radio Voice Channels

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

0   50   100
kilometers
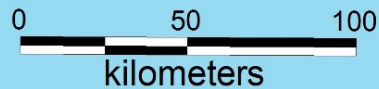
Maritime Public Safety Radio Network

Maritime TMR
P25 System

212 Sites

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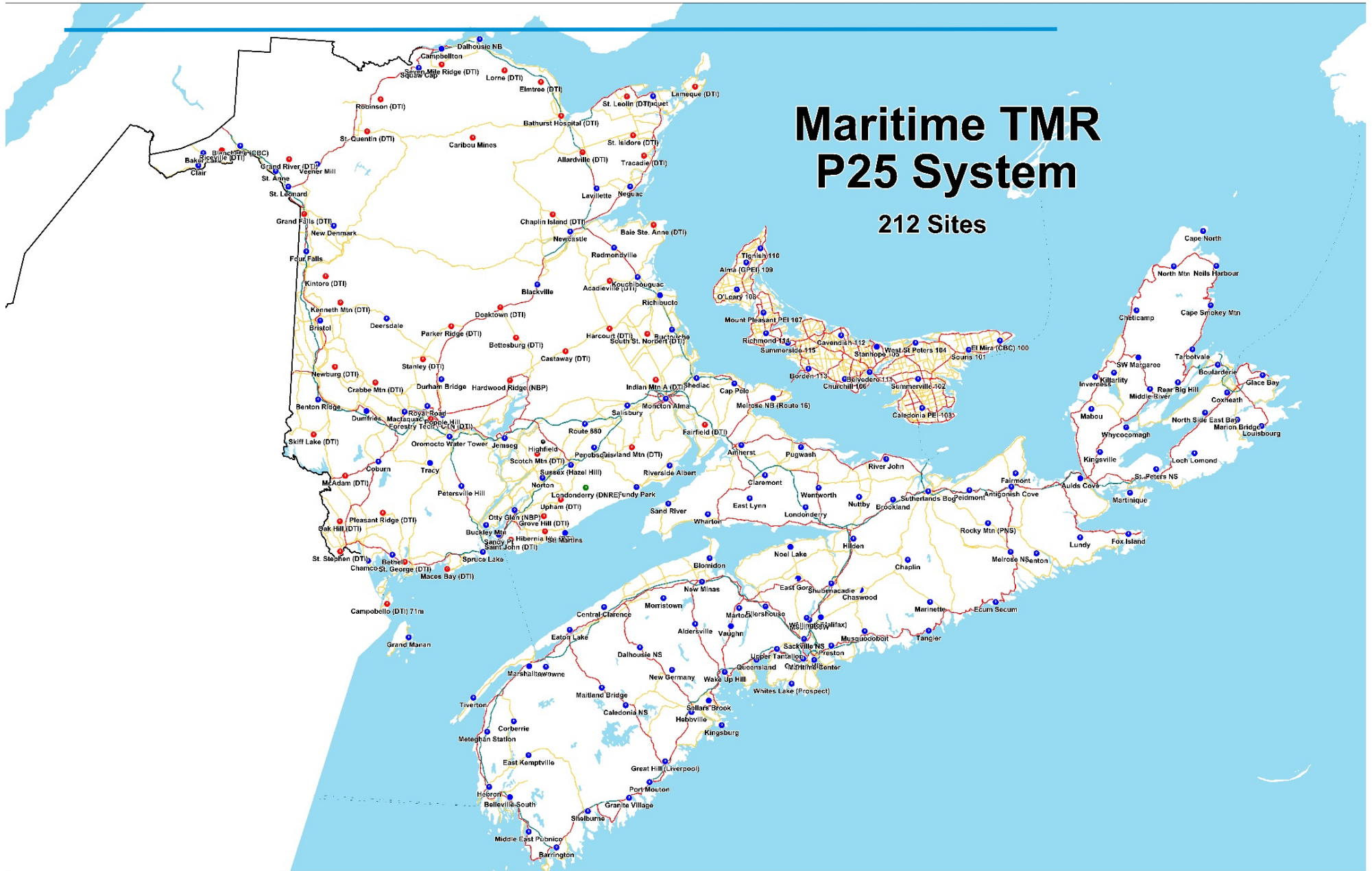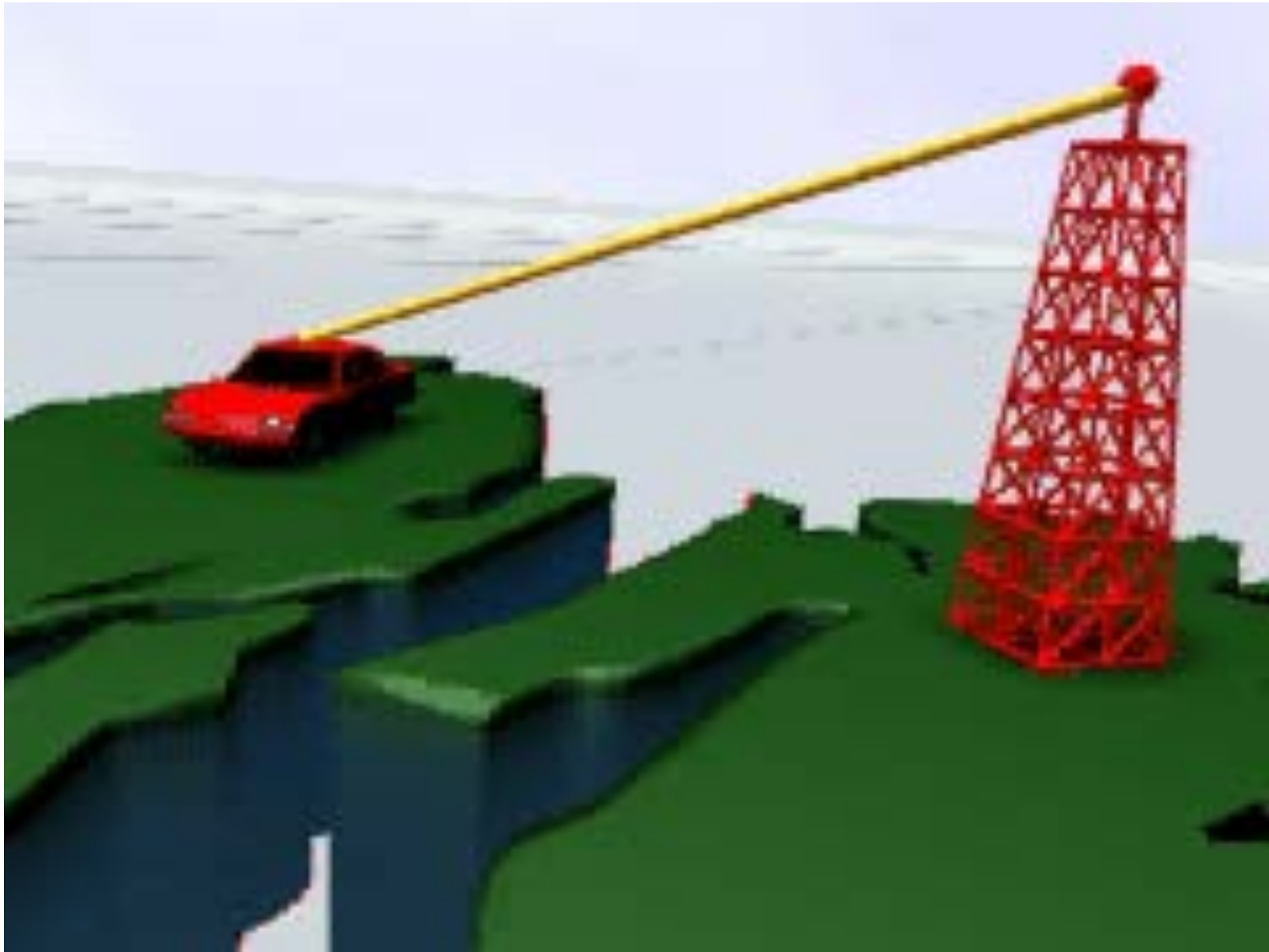
Department of Natural Resources Radio Features

XTL 1500 Mobile/XTS 2500 Model 3 Portable

General Features - Mobile

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.

Emergency Alarm and Call
Parks Base Radios Only

Emergency Button
(Push orange button on radio to show working demo)

1. Press the button to activate the emergency alarm activation. (The display begins alternating EMERGENCY with the current talk group displayed and a tone will be emitted letting you know the alarm has gone through to dispatch.)

Note: Other radios associated to the talkgroup will hear a tone and the display will indicate emergency with the ID displayed of radio transmitting the emergency signal.

2. Your mic begins to transmit (open mic) for 20 seconds. The Radio will remain on selected talkgroup. The dispatcher will hear all conversation in the 20 second time frame (If over 20 seconds, press the PTT button and continue with your message).

3. To exit from the emergency state altogether, press and hold the emergency button until a tone sounds. The alternating EMERGENCY display disappears, and the radio returns to normal operation.

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

Zone Select

On/off/volume

Talkgroup/Channel select

Battery Info

Received Signal Strength Indicator (RSSI)

Backlight
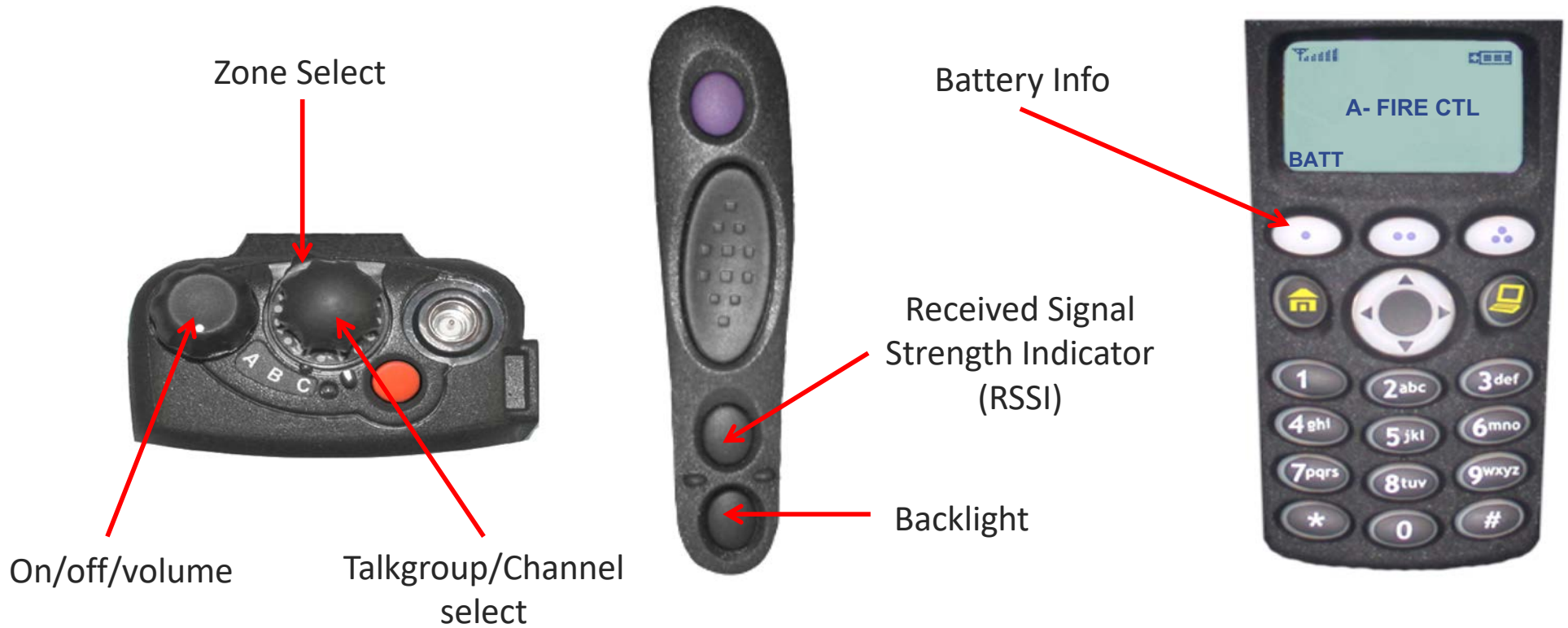
Note: Buttons not labelled are not programmed.

A- FIRE CTL

BATT

Zone Select

Zone Select Switch

Zone (A) followed by Talkgroup/Channel Name

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.

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Talkgroup/Channel Select

Talkgroup/Channel Name

Talk Group/Channel
Select Knob

A- FIRE CTL

BATT

To select a channel/mode:

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

The new name will appear on the display.

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RSSI / Site View/Search

Site Search Button

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 SCANING SITE displayed and hear a tone. When the radio finds a site, it returns to the home display.

Proper Use of Mic

- Proper positioning of the mic when speaking is paramount.

- DO NOT "long arm" the mic as shown below.

- It is <u>imperative</u> that you transmit 5-8cm (2-3") from the mic for effective communication.

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Sounds You May Hear

- Talk permit 🔊
- Busy 🔊
- Bonk 🔊
- Low Battery 🔊
- Button press 🔊

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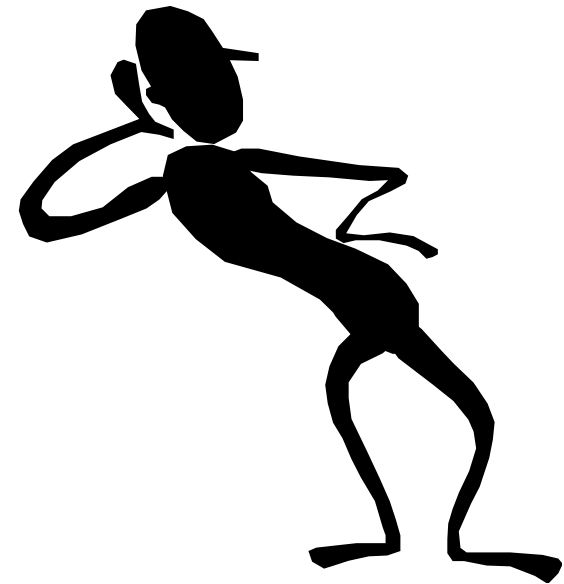
Time Out Timer

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.

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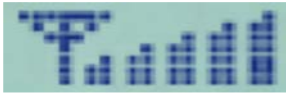
 Signal Strength — **Received Signal Strength Indicator (RSSI):** The received signal strength for the current site (trunking only). The more bars in the symbol, the better the signal strength.

 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.

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Incident Without Use of Mutual Aid Talkgroups

Fire Talkgroup

RCMP Talkgroup

EHS talkgroup

Sheriff Talkgroup

TIR Talkgroup

Repeater 1

Repeater 2

Repeater 3
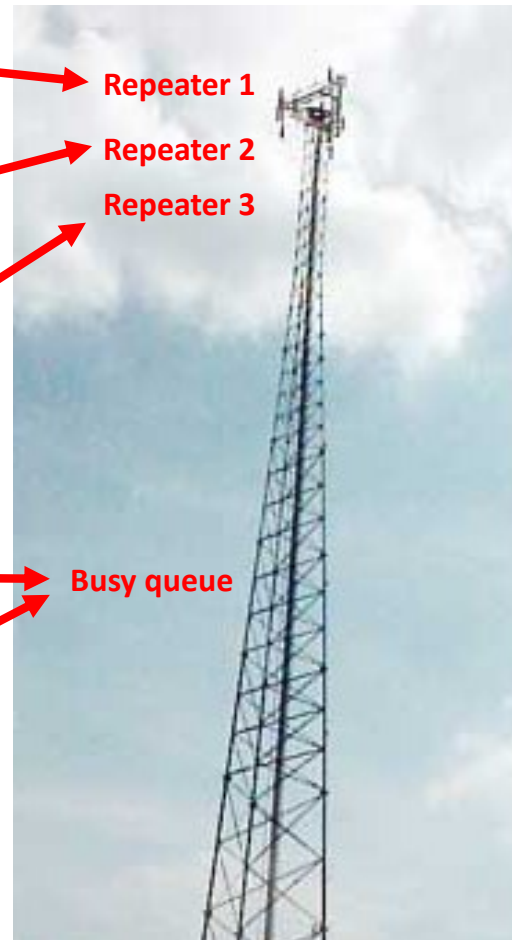
Busy queue

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.

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Radio Interoperability Tools

8 Mutual Aid Talkgroups

2 Maritime Common Talkgroups

3 Shared Simplex SX ALL Channels

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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.

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Incident With Use of Mutual Aid Talkgroups

Mutual Aid 1

Mutual Aid 1

Mutual Aid 1

Sheriff talkgroup

TIR Talkgroup

Repeater 1

Repeater 2

Repeater 3

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.

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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.*

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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.

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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.
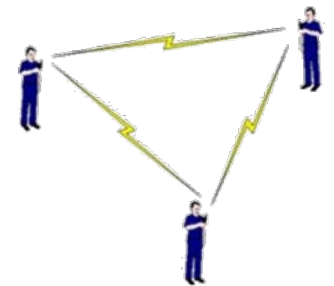
Shared Simplex Channels

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.

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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.
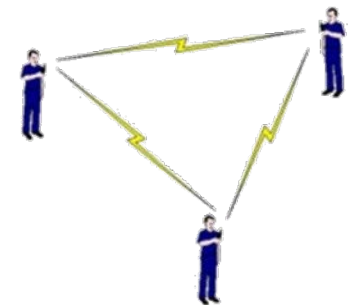
Use of Simplex Frequencies Removes Busies

SX ALL 2   **SX ALL 2**   **SX ALL 2**

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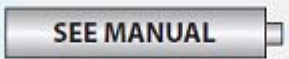
Battery Charge Indicator Description

UNCHARGEABLE	✕	✶	FLASHING RED
WAITING TO CHARGE	SEE MANUAL	✶	FLASHING ORANGE
RAPID CHARGING	→	●	STEADY RED
CHARGED (90% CAPACITY)	90% CHARGING	✶	FLASHING GREEN
FULLY CHARGED	100% 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.

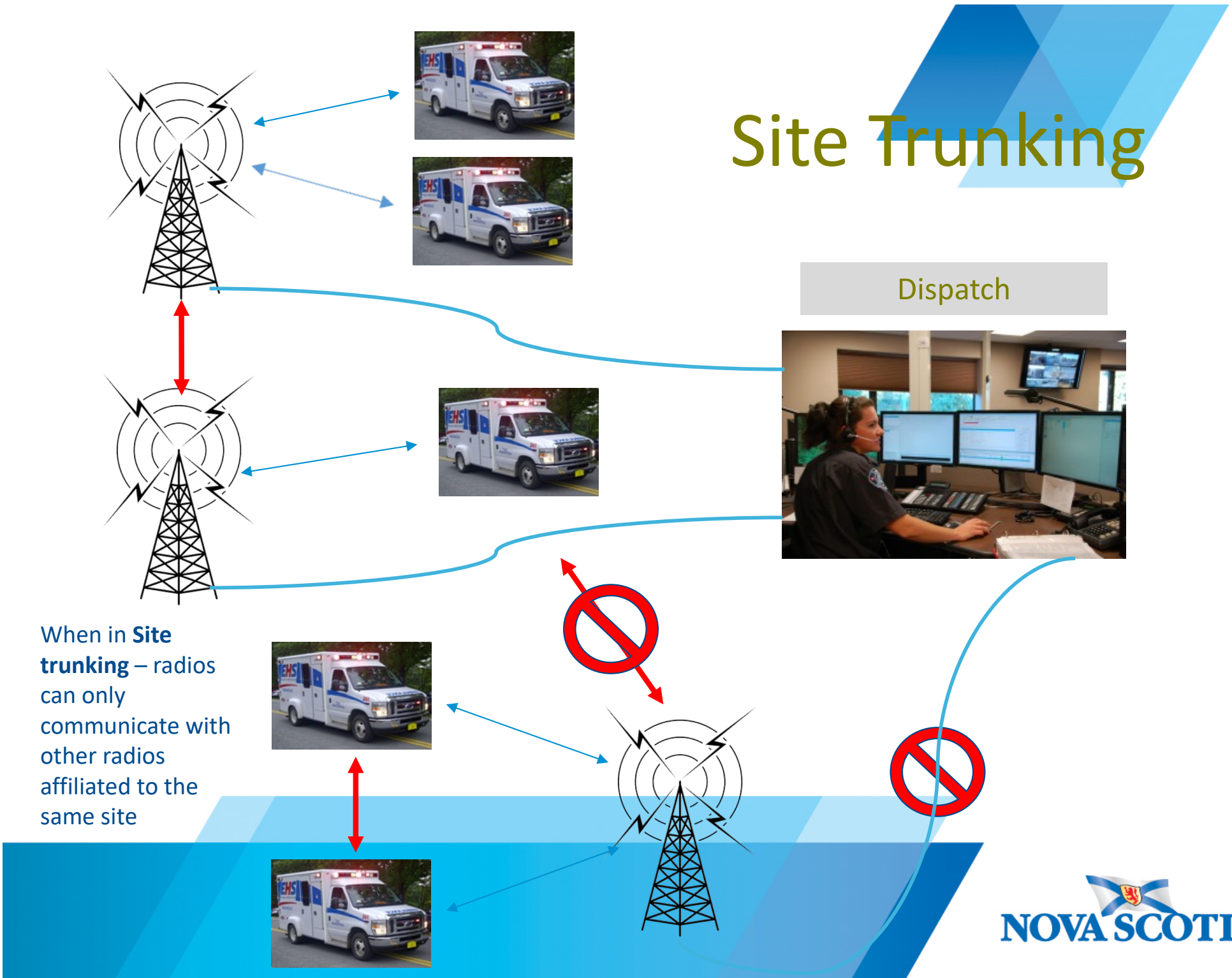NOVA SCOTIA

DNR Fleet Map

DNR Mobile

DNR Base

DNR Portable
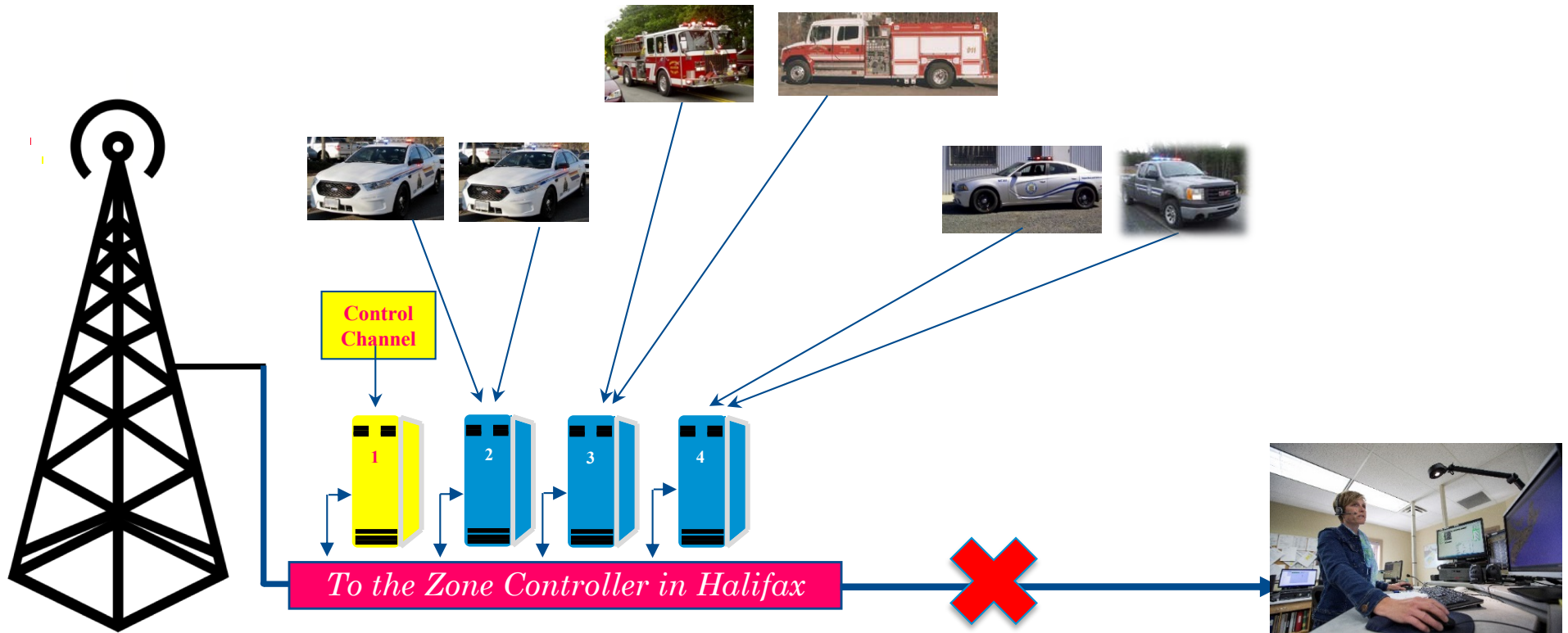
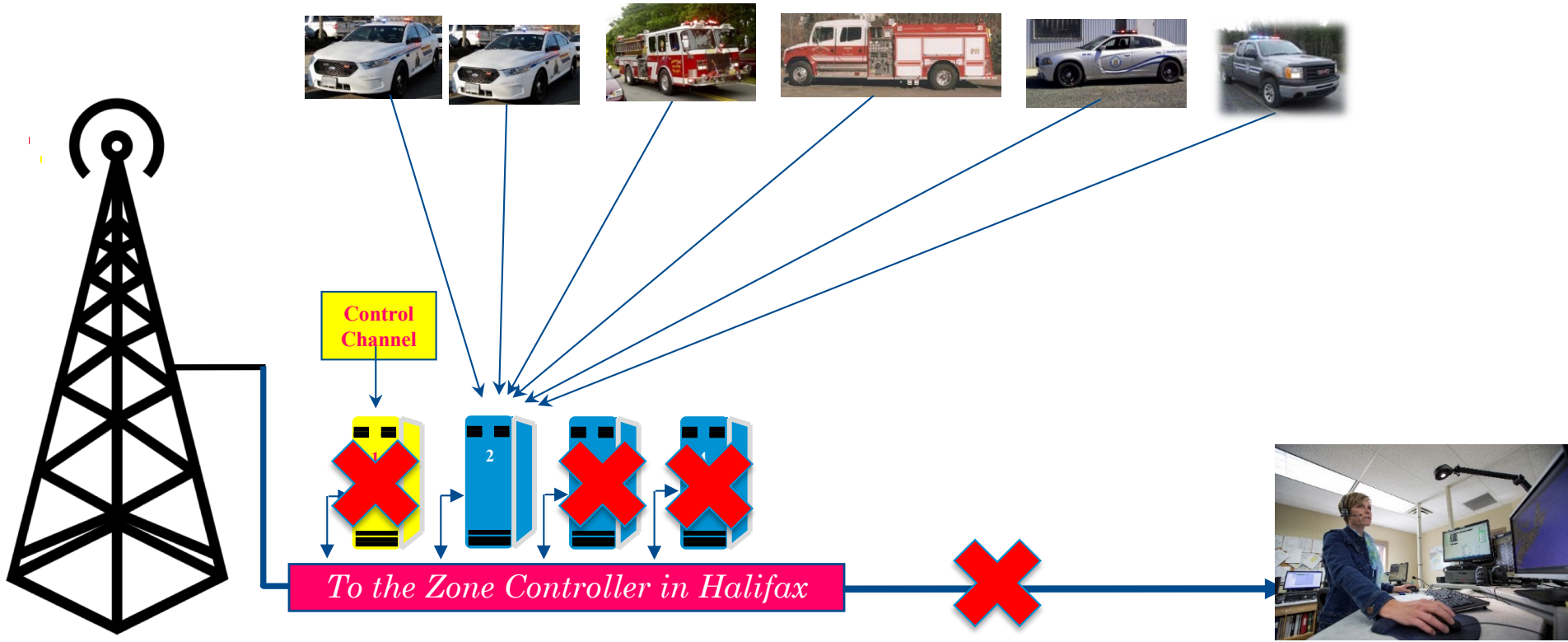NOVA SCOTIA

Site Trunking

Dispatch

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

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

Control Channel

1 2 3 4

To the Zone Controller in Halifax

Site Trunking

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Control Channel

To the Zone Controller in Halifax

Failsoft

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

Shubie Radio 1-877-293-6977