

USE OF STATE TACTICAL ON SCENE CHANNEL SYSTEM (STOCS)  
SEPTEMBER 22 2006

**Introduction**

The Connecticut, State Tactical On-Scene Channel System (**STOCS**). The purpose of the STOCS System is to provide an Interoperable Radio System for on scene tactical use. It is intended to allow individuals and groups of responders to communicate when working at the scene of an incident, using their existing portable radio equipment

The STOCS System consists of three (3) VHF frequencies, three (3) UHF frequencies and five (5) 800Mhz frequencies combined into five (5) interoperability channel groups as follows:

CHANNEL ID	VHF	UHF	800 MHz	Operational Area By County
STOCS-1	154.4525 MHz	458.4625 MHz	855.9875 MHz	All Counties.
STOCS-2	158.7375 MHz	458.7125 MHz	855.7125 MHz	ALL Counties except Fairfield.
STOCS-3	159.4725 MHz	458.8625 MHz	858.4625 MHz	ALL counties except Fairfield and New London.
STOCS-4	158.7375 MHz	458.7125 MHz	860.2375 MHz	ONLY in FAIRFIELD COUNTY.
STOCS-5	159.4725 MHz	458.8625 MHz	856.2625 MHz	ONLY in FAIRFIELD and NEW LONDON counties.

To insure consistency through out the State, the standard Channel Identification STOCS 1 - 5 is the only authorized identification for these channels.

The FCC License for all frequencies is held by the State of Connecticut Department of Emergency Management and Homeland Security for Tactical Radio Interoperability by Local, Fire, Law Enforcement, Emergency Medical Service, Health Departments, Public Works Departments and Emergency Management as well as appropriate State and Federal Agencies.

These frequencies may be used only in Mobile/Portable Radios with a maximum output power of 5-watts.

The power restriction is imperative, transmit powers over 5 watts will cause adjacent channel interference on other STOCS Channels, as well as render the Cross Band Repeater (CBR) inoperative.

It is the responsibility of the user to insure that equipment used on STOCS Channels complies with the power restriction of 5 watts.

To insure compatibility and maximum flexibility all five STOCS Channels shall be programmed into each portable radio.

The **CTCSS** (Continuous Tone Coded Squelch System) Tone of 156.7 (5A) will be used in conjunction with these frequencies. Use of these frequencies with any other CTCSS Tone is prohibited.

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Questions regarding the use or implementation of STOC's should be directed to the Connecticut Department of Emergency Management and Homeland Security.

**Concept of Operations**

Fire, Law Enforcement, EMS, Local, State and Federal Government Agencies in Connecticut operate two way radio systems using a variety of frequency bands. The STOCS System is designed to utilize existing portable radio equipment which these departments/agencies use daily, to communicate at an incident regardless of their frequency band.

To allow for full system capability Departments/Agencies will have to program all five STOCS Channels into their existing Portable Radios.

Immediate Tactical Radio Interoperability is critical, when different Departments/Agencies come together to work at an Incident. If the Incident Command System has to wait for a special system to arrive on the scene, the lack of Tactical Interoperability will most likely have a negative impact on the success of operations.

Ideally each municipality in Connecticut will have at least one Cross band Repeater (CBR) Unit immediately available in a regular response unit of its Fire, Police or EMS Department, perhaps carried in a Fire, Police or EMS Supervisors vehicle. Thus when and if the Incident Commander requests aid from other agencies the means for Tactical Interoperability will already be on scene.

The Incident Commander may call for additional CBR Unit(s), up to two for a **total** of three.

**General**

The STOCS System is capable of two modes of operation:

1. Total on scene Tactical Radio Interoperability using the Cross Band Repeater Unit (CBR),
2. Limited on scene Tactical Radio Interoperability with departments/agencies which share a common frequency band.

**Total on scene Tactical Radio Interoperability using the Cross Band Repeater Unit (CBR).**

The Cross Band Repeater Unit (CBR) is designed to allow for cross banding of all three frequency bands. However it, appears as a single communications channel to the radio operator.

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Each CBR will be capable of providing full Tactical Radio Interoperability on one of the five STOCS channels. Output power of a CBR is restricted to 3-watts.

Each additional CBR on the scene will allow full Tactical Radio Interoperability on one of the other STOCS channels.

When the CBR is activated, the Incident Commander will advise Department/Agency units to turn to the appropriate STOCS Channel and interoperate.

**Examples:**

- Newington Fire Department operate on UHF, Farmington Fire Department operates on VHF, Hartford Fire Department, New Britain Fire Department, West Hartford Fire Department, operate on 800 MHZ. The Departments listed are operating at the same incident. By using a CBR Tactical Radio Interoperability between Firefighters of all departments is established. Now all firefighters on scene can communicate directly as they carry out their tactical assignments. Perhaps more importantly, any message given which may affect the life and safety of all the firefighters on scene will be heard by all.
- The Meriden Police Department, Wallingford Police Department, Connecticut State Police and Berlin Police Department operate on 800 MHz, The Cheshire Police Department and Hamden Police Department operate on UHF, The Middletown Police Department and Southington Police Department operate on VHF. By using a CBR, Tactical Radio Interoperability between Police Officers of all departments is established. Now all Officers on scene can communicate directly as they carry out their tactical assignments. Perhaps more importantly, any message given which may affect the life and safety of all the Police Officers on scene will be heard by all
- The Local Health Director needs to coordinate the activity of Health Department, Security, EMS and Health Care operations at a large Smallpox Immunization clinic. Using a CBR he/she is able to link Security, Health Department and EMS radios together.

**Procedure**

1. The Incident Commander determines that Tactical Radio Interoperability is required or desired.
2. The Incident Commander directs that the CBR unit be activated on an open and appropriate STOCS Channel.
3. The Incident Commander orders all on scene units required in the interoperability network to switch to the designated STOCS on their portable radios.

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4. Departments/Agencies personnel communicate on the interoperability network as required.

**Limited on scene Tactical Radio Interoperability with departments/agencies which share a common frequency band.**

The STOCS channels can be used to foster limited on scene tactical interoperability without the use of the Cross Band Repeater Unit (CBR), or until a CBR Unit(s) is available on the scene.

Departments/Agencies that operate on one of the three frequency bands have immediate simplex interoperability. Departments/Agencies must have programmed the STOCS Channels into their Portable Radio equipment with the appropriate CTCSS Tone.

In order to utilize this capability to the fullest, Departments/Agencies must be aware of the frequency of band each Department/Agency they wish to interoperate with. ***In addition it must be known if they have programmed the STOCS Channels into their portable radios.***

**Examples:**

- Hamden Fire Department and Wallingford Fire Department both operate on High Band VHF. Thus they will have immediate interoperability by switching to the same STOCS Channel.
- Hamden Police Department, New Haven Police Department, Woodbridge Police Department, Woodbridge Fire Department, and all Ambulance units in the CMED New Haven Service area operate on UHF. Thus they will have immediate interoperability by switching to the same STOCS Channel.

**Procedure**

1. The Incident Commander determines that Tactical Interoperability is required or desired.
2. Determination is made as to which responding Departments/Agencies are on a common frequency band and have STOCS Capability.
3. The Incident Commander directs all Department/Agencies required in the interoperability network to switch their portables to the appropriate channel STOCS 1 through 5.
4. Departments/Agencies personnel communicate on the interoperability network as required.

***There are also opportunities to interoperate with agencies on other bands without the***

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***Cross Band Repeater unit.***

In this case if one or more responding Departments/Agencies are operating on another band, and they have programmed the STOCS Channels into their portable radios, one of the agencies portable radios can be delivered to the Incident Commander. Thus giving him/her capability on the other band with Departments/Agencies which use that band.

The downside to this arrangement will include:

- The requirement of providing to the Incident Commander as many as two additional radios, hopefully to be supplied by one of the responding Departments/Agencies.
- It requires arranging tactical units, Task Forces, Strike Teams, etc., in such a manner that they are on a single radio band.

**Example:**

- The Hamden Fire Department normally operates on the VHF High Band. However their Paramedic Rescue Units operate on the UHF Band as Part of CMED, thus using one of the UHF STOCS Channels. The Hamden Incident Commander can communicate with those Departments/Agencies on the UHF Band. Woodbridge Fire Department, West Haven Fire Department, East Haven Fire Department, Hamden Police Department, New Haven Police Department, etc., as well as all EMS Units on the CMED System.

**Procedure**

1. The Incident Commander determines that Tactical Radio Interoperability is required or desired.
2. Determination is made as to which responding Departments/Agencies not on a common frequency band yet has STOCS Capability.
3. The Incident Commander directs one of the Departments/Agencies not on a common frequency band with his/her Department/Agency, to deliver a portable radio to the Incident Commander.
4. The Incident Commander directs all Department/Agencies on the other frequency band required in the interoperability network to switch their portables to the appropriate STOCS Channel.
5. Departments/Agencies personnel communicate on the interoperability network as required.

**SYSTEM ADMINISTRATION**

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To insure an orderly process of implementation and accounting for users of the STOCS Channels, the following procedure will be followed.

DEMHS will designate one agency in each region to coordinate and maintain information on all users of the STOCS Channels.

Agencies so designated should be affiliated with Local Government such as a specific town or city, Regional Planning Agency, Council of Governments or Regional Communications center. Their responsibilities will include:

1. Keep an accurate inventory of all Departments and Agencies which have programmed the STOCS channels into their equipment.
2. Notify DEMHS and all user Departments and Agencies in its region of any changes additions or deletions.
3. Serve as a clearing house for any problems or difficulties experienced by or arising from use of the STOCS Channels.

**INCIDENT COMMANDERS QUICK REFERENCE GUIDE TO USE OF STOCS**

**Total on scene Tactical Radio Interoperability using the Cross Band Repeater Unit (CBR).**

1. Determine that Tactical Interoperability is required or desired.
2. Direct that the CBR unit be activated on an open and appropriate STOCS Channel. If Channel chosen is found to be in operation, any one of the other channels may be chosen. Keep in mind geographic restrictions on 800 MHZ STOCS Channels relating to Fairfield and New London Counties.
3. Order all on scene units required in the interoperability network to switch to the designated STOCS on their portable radios.
4. Establish communications with Department/Agency personnel on the interoperability network as required. It is suggested that a roll call of all units be undertaken to insure proper system operation.

**INCIDENT COMMANDERS QUICK REFERENCE GUIDE TO USE OF STOCS**

**Limited on scene Tactical Radio Interoperability with Departments/Agencies which share a common frequency band.**

1. Determine that Tactical Interoperability is required or desired.
2. Determine which responding Departments/Agencies are on a common frequency band and have STOCS Capability.
3. Choose an appropriate STOCS channel.
4. Direct all Department/Agencies required in the interoperability network to switch their portables to the appropriate STOCS channel. If Channel chosen is found to be in operation, any one of the other channels may be chosen. Keep in mind geographic restrictions on 800 MHz STOCS Channels relating to Fairfield and New London Counties.
5. Establish communications with Department/Agency personnel on the interoperability network as required. It is suggested that a roll call of all units be undertaken to insure proper system operation.

**INCIDENT COMMANDERS QUICK REFERENCE GUIDE TO USE OF STOCS**

**Limited on scene Tactical Radio Interoperability with Departments/Agencies which do not share a common frequency band**

1. Determine that Tactical Interoperability is required or desired.
2. Determine which responding Departments/Agencies are not on a common frequency band but have STOCS Capability.
3. Direct one of the Departments/Agencies not on a common frequency band with his department/agency to deliver a portable radio him/her.
4. Direct all Department/Agencies on the other frequency band required in the interoperability network to switch their portables to the appropriate STOCS channel. If Channel chosen is found to be in operation, any one of the other channels may be chosen. Keep in mind geographic restrictions on 800 MHz STOCS Channels relating to Fairfield and New London Counties.
5. Establish communications with Department/Agency personnel on the interoperability network as required. It is suggested that a roll call of all units be undertaken to insure proper system operation.