MONTCLAIR SAFETY & IMPROVEMENT COUNCIL
Making A Difference-Together

Montclair Organized Neighborhood (MON) Radio Communications Recommendations

Last Updated: April 5, 2007

The following recommendations for radio usage and channel/frequency selection are made by the Montclair Safety and Improvement Council (MSIC) for emergency communications within and in-between our Montclair Organized Neighborhoods (MONs).

Note that these are recommendations and guidelines only, and that during an actual emergency we will need to be flexible, and may need to alter our channel/frequency usage as appropriate. Therefore it is always a good idea to know how to setup and configure your particular radio, and to understand what frequencies each channel corresponds to.

Radio Types and Usage

Within Organized Neighborhoods (FRS):

The low-power (1/2 watt) FRS radios, including the ICOM IC-4088A FRS-only radio provided by CORE and consumer FRS-only or FRS/GMRS radios (Radio Shack, Midland, Motorola, etc.), should be used for communicating within organized neighborhoods. For example for Damage Assessment, Search & Recovery, etc. teams to communicate with their Incident Command Center. Using the limited range, low-power FRS radio channels will lessen the chance of one neighborhood interfering with another neighborhood, as long as channels are coordinated appropriately (see below).

Typical FRS and FRS/GMRS radios for use within organized neighborhoods:

ICOM IC-4088A

Motorola FRS


Motorola FRS/GMRS


Midland FRS/GMRS

Between Neighborhoods/Fire Stations/Ham Radio Operators (GMRS):

The higher-power (4 or 5 watt) GMRS radios, such as the ICOM IC-F21GM GMRS-only radio provided by CORE, should be used for communicating between organized neighborhoods and with the local Fire Stations and Ham Radio operators. Consumer FRS/GMRS radios (Radio Shack, Midland, Motorola, etc.) may also be used (see below). Using the higher-power GMRS channels will give the best range and won't interfere with the FRS channels used within each organized neighborhood.

Typical GMRS and FRS/GMRS radios for use between organized neighborhoods and Fire Stations/Ham Radio operators:

ICOM IC-F21GM

Motorola FRS/GMRS

Midland FRS/GMRS

Uniden FRS/GMRS

Standardizing Radio Channels

Within Organized Neighborhoods (FRS):

Each organized neighborhood should select its own internal-use FRS channel, from 8 - 14 (467.5625 - 467.7125 MHz). The MSIC will coordinate all Montclair Organized Neighborhood FRS channels so that, if possible, no adjacent neighborhoods are using the same channel. All selected and approved neighborhood channels will be noted in the MON Leaders Roster. For example, the following organized neighborhoods have selected their channels/frequencies:

Holyrood Dr/Manor:	FRS Channel 8 (467.5625 MHz)
Skyline/Moon Gate:	FRS Channel 9 (467.5875 MHz)
Upper Ascot:	FRS Channel 10 (467.6125 MHz)
Mastlands/Larry Ln:	FRS Channel 11 (467.6375 MHz)

Note that the ICOM IC-4088A FRS-only radios being supplied by CORE, as well as some older FRS-only radios (i.e. Motorola TalkAbout series) provide for 14 low-power FRS channels (1 - 14). However, it is still recommended that each organized

neighborhood select one of the FRS channels 8 - 14 (467.5625 - 467.7125 MHz) for its own internal use, in order to prevent interference with the overlapping GMRS channels.

Between Neighborhoods/Fire Stations/Ham Radio Operators (GMRS):

Standard GMRS channels will be specified for organizations such as the MSIC and Piedmont Pines, and for each local Fire Station or Ham Radio site. This will allow neighborhoods to communicate with their local Fire Station or Ham Radio operator, or for example to listen in to the MSIC channel to hear Montclair area information.

The ICOM IC-F21GM GMRS-only radio provided by CORE is (at this time) the primary radio used for this type of communication. The channels available on this radio are 1 - 15 (462.5500 - 462.7125 MHz). The following GMRS channels/ frequencies have been selected and standardized for the Montclair area:

Fire Station 6:	GMRS Channels 1, 2, 3 (462.5500, 462.5750, 462.6000 MHz)
Fire Station 24:	GMRS Channels 4, 5, 6 (462.6250, 462.6500, 462.6750 MHz)
Fire Station 25:	GMRS Channels 7, 8, 9 (462.7000, 462.7250, 462.5625 MHz)
PPNA:	GMRS Channel 14 (462.6875 MHz)
MSIC:	GMRS Channel 15 (462.7125 MHz)

Note that consumer FRS/GMRS radios (Radio Shack, Midland, Motorola, etc.) can also be used for this type of communication when set on their higher-power GMRS channels. However, consumer FRS/GMRS radios typically have different channel/frequency relationships than the ICOM IC-F21GM GMRS-only radios. If you want to use a consumer FRS/GMRS radio then you must refer to the cross-reference table below to set your consumer FRS/GMRS radio channel to match that of the ICOM IC-F21GM channel. For example, to listen to the MSIC channel 15 (462.7125 MHz) you must set your consumer FRS/GMRS radio to channel 7.

Use of “Privacy Codes”

Within Organized Neighborhoods (FRS):

It is recommended that you do not use “Privacy Codes” within organized neighborhoods, unless there is interference with another nearby neighborhood or group that is using the same channel. If a neighborhood decides to select and use a “Privacy Code” with their neighborhood FRS channel, then they should understand the caveats and implications noted below.

Between Neighborhoods/Fire Stations/Ham Radio Operators (GMRS):

“Privacy Codes” (CTCSS tones) should not be used with the GMRS channels selected for communications between Montclair neighborhoods and with Fire Stations and Ham Radio operators. Only the “base” GMRS radio channels 1 – 15 (ICOM IC-F21GM radio) with frequencies between 462.5500 - 462.7125 MHz should be utilized.

Why not use "Privacy Codes"?

"Privacy Codes" (also called Interference Eliminator Codes or CTCSS tone codes) are simply a designated frequency tone added to the transmission frequency. A corresponding radio set to the same "Privacy Code" (or to 0 or "off") will filter out that tone and then "hear" the transmission, but a radio set to a different "Privacy Code" (other than 0 or "off") squelches (ignores) the transmission. The reasons that the MSIC recommend to not use "Privacy Codes" are as follows:

- Some older FRS radios do not support "Privacy Codes", and these radios may still be in use within neighborhoods.
- The default channel setting for FRS, GMRS and FRS/GMRS radios is typically to have the "Privacy Code" turned off (or set to 0). This makes it easier to take a new radio out of the box, set the main channel appropriately, and begin using it. This is especially true with the ICOM IC-F21GM GMRS-only radios provided by CORE. However some radios, for example some Motorola consumer FRS/GMRS radios, may default to a specific "Privacy Code" setting out-of-the-box—check your radio to be sure.
- Setting of "Privacy Codes" on different brands of radios is not a standard procedure. Some are easier to set than others. The GMRS ICOM IC-F21GM radio is very user-**un**friendly to set the "Privacy Code" (CTCSS code), plus there is no way to visually see what it's been set to, and there's no way to perform a master (factory default) reset to reset all changed channel CTCSS codes back to 0.
- The 52 GMRS ICOM IC-F21GM radio CTCSS tone codes do not correspond directly with the 38 consumer FRS/GMRS radio "Privacy Codes". This further confuses the situation. And, some newer FRS/GMRS radios have over 100 "Privacy Codes", most of which aren't compatible with the older FRS/GMRS radio "Privacy Codes". This lack of consistency could cause problems in the field.

If you do decide to use "Privacy Codes" for your neighborhood FRS radio communications, then you should be aware of the following caveats and implications:

- Some residents may have older FRS radios and may not be able to effectively communicate.
- "Privacy Codes" are not really private—anyone listening on the main channel ("Privacy Code" or CTCSS code set off or to 0) can hear all conversations on all "Privacy Codes" on that particular channel/frequency.
- "Privacy Codes" give the illusion that a private "sub-channel" is available, but this is not the case. If 2 or more radios on the same channel/frequency, but on different "Privacy Codes", try to transmit at the exact same time, then they may interfere (garble each other, or the stronger signal will "win"). This is a false sense of security that could cause communication problems in the field.

Summary of MSIC Radio Types and Channel Recommendations

Within Organized Neighborhoods (FRS):

- Use FRS (or consumer FRS/GMRS) radios only.
- Select an FRS channel for your organized neighborhood in the range of 8 – 14 (467.5625 - 467.7125 MHz), and verify this selection with the MSIC.
- Refrain from using "Privacy Codes" with your selected channel unless there is interference with nearby neighborhoods (simplify).
- Test your FRS radios within your organized neighborhood in a variety of conditions (rain, fog, night, day…) and verify you can cover your area.
- Practice, practice, practice.

Between Neighborhoods/Fire Stations/Ham Radio Operators (GMRS):

- Use GMRS radios only. Ideally use the ICOM IC-F21GM GMRS-only radios provided by CORE. If you use consumer FRS/GMRS radios then refer to the cross-reference table below to set the proper FRS/GMRS channel.
- MSIC selected channels/frequencies are noted above and are kept updated in the MON Leaders Roster.
- "Privacy Codes" (CTCSS codes) should not be used (set to the default off or 0). The ICOM IC-F21GM GMRS-only radio has its CTCSS codes set to 0 ("off") by default, out-of-the-box.

Note on FCC Licensing

Note that an FCC license is required to transmit on any GMRS-only channel or to transmit on any shared FRS/GMRS channel using more than 1/2 watt in power. Check with http://www.fcc.gov/ for more information. Oakland CORE is working on obtaining licenses for registered organized neighborhoods. In the meantime you should either purchase your own FCC license for GMRS operation (FCC Form 605 or file on-line, cost is $85 for 5 years) or, as an unofficial suggestion, only use the higher-power GMRS channels for very brief tests, and only when no one else is using the channel. You can be fined by the FCC if you transmit on higher-power GMRS channels without a license. In the event of an emergency or disaster though, this may not be a primary concern…

Two-Way Radio Protocol

Unlike conventional land-line or cellular phones, two-way radios typically only work in one direction at a time. The technical term for this is single-duplex. This means only one person can speak at a time, and no one else can speak until that person has released the transmit button on his or her radio.

When transmitting on these FRS, FRS/GMRS and GMRS radios, first listen to hear if the channel is in use. If it is in use, then wait until the other conversation is finished. If the channel is open and unused then press the transmit button, wait a second or two, and announce the person you are trying to reach followed by your identifier, which generally consists of your neighborhood name and your function. For example:

“Montclair Base, this is Montclair Neighborhood Damage Assessment Team One, do you copy, over?”

“Montclair Neighborhood Damage Assessment Team One, this is Montclair Base. I copy you loud and clear. What can we do for you, over?”

Once you receive a reply to your initial request to establish a conversation, then begin each subsequent message you send with the name of the person you are calling and your own identifier, followed by the information you wish to convey, always ending each transmission with “over” (which means “over to you”). Keep all transmissions brief and to the point. Spell out numbers (i.e. one five two three, not fifteen twenty-three). For example:

“Montclair Base, this is Montclair Neighborhood Damage Assessment Team One, we have an injured person at 1 5 2 3 Oakland Drive, and request a First Aid Team. Do you copy, over?”

“Montclair Neighborhood Damage Assessment Team One, this is Montclair Base. Affirmative, I copy you. We will send a First Aid Team immediately to 1 5 2 3 Oakland Drive, over.”

When finished transmitting, say, “Out.” For example:

“Montclair Base, this is Montclair Neighborhood Damage Assessment Team One, I copy you, we will remain at 1 5 2 3 Oakland Drive and wait for the First Aid Team to arrive. Out.”

Use clear English in your communications. “Affirmative” and “Negative” are preferred over “Yes” and “No” as they are easier to understand. Do not use shortcuts like "10/4" or "Roger", as they can be easily misunderstood. Be sure to release your transmit button after saying “Over” or “Out” so others can use the channel. Do not press the transmit button unless you are transmitting.

Note: If conducting a practice exercise in preparation for an actual emergency, every message that could cause someone listening on your channel, who is not familiar with the exercise, to be confused or alarmed should include the words “exercise” and/or “test”. For example:

“Montclair Base, this is Montclair Neighborhood Damage Assessment Team One. We have a major fire at 1 5 2 0 Oakland Drive. This is an exercise/test message, over.”…

ICOM IC-F21GM GMRS Radio and Consumer FRS/GMRS Radio Channel/Frequency Cross Reference

This table cross-references the ICOM IC-F21GM GMRS radio primary channels with those of a “shrink-wrapped” consumer FRS/GMRS radio (Motorola, Midland, Radio Shack, etc.). Use this table to set your consumer FRS/GMRS radio channel to match the specified IC-F21GM GMRS channel/frequency.

IC-F21GM GMRS Channel	Consumer FRS/GMRS Channel	Channel Frequency (MHz)
1	15 (GMRS)	462.5500
2	16 (GMRS)	462.5750
3	17 (GMRS)	462.6000
4	18 (GMRS)	462.6250
5	19 (GMRS)	462.6500
6	20 (GMRS)	462.6750
7	21 (GMRS)	462.7000
8	22 (GMRS)	462.7250
9	1 (GMRS)	462.5625
10	2 (GMRS)	462.5875
11	3 (GMRS)	462.6125
12	4 (GMRS)	462.6375

IC_F21GM GMRS Channel	Consumer FRS/GMRS Channel	Channel Frequency (MHz)
13	5 (GMRS)	462.6625
14	6 (GMRS)	462.6875
15	7 (GMRS)	462.7125
16	n/a	Auto Scan
	8 (FRS)	467.5625
	9 (FRS)	467.5875
	10 (FRS)	467.6125
	11 (FRS)	467.6375
	12 (FRS)	467.6625
	13 (FRS)	467.6875
	14 (FRS)	467.7125

Note: These channels/frequencies were verified against the ICOM IC-F21GM specifications and current Motorola (T5000-T5550, T7100, T7200), Uniden (GMR1038) and Midland (GXT300/400/500/600) radio specifications. Older FRS/GMRS radio channels may not correspond to the channel list and frequencies noted in the above table. Check the specifications for your particular radio.