



FIRESCOPE Radio Communications Guidelines

MACS 441-1

MULTI-AGENCY COORDINATION SYSTEM PUBLICATION

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This document contains information relative to the Incident Command System (ICS) component of the National Incident Management System (NIMS). This is the same Incident Command System developed by FIREScope.

Additional information and documentation can be obtained from the following resources:

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FIREScope RADIO COMMUNICATIONS GUIDELINES

FIREScope Radio Communications Guidelines are derived from the Cooperative Agreements for Use of Radio Frequencies between fire service agencies of California allowing for mutual use of radio channels during mutual aid efforts.

VHF Highband is the default radio frequency band utilized by the California fire service. There are eighty-four (84) VHF channels that should be pre-programmed into all VHF radios utilized by fire service agencies providing mutual aid in California (see the FIREScope STATEWIDE CHANNEL PLAN).

Fire service agencies whose normal dispatch system is on a band other than VHF Highband, should ensure that their mobile and portable radios and dispatch centers are properly licensed and programmed to operate on the UHF and 800 MHz. interoperability channels contained within the FIREScope STATEWIDE CHANNEL PLAN.

IMPORTANT COMMUNICATIONS ISSUES

Travel Channel

The **California Emergency Services Radio System (CESRS)** may be utilized as a travel channel in the simplex, direct mode only by federal, state, and local government agencies. Strike Teams or other resources in travel status should use the “CESRS Direct” talk-around channel for line-of-sight communications. Use of CESRS repeaters is currently not authorized for use as a travel net unless an executed use agreement is in place with OES Communication Centers do not monitor this channel.

Narrowbanding

ALL VHF radios used on Federal Government radio channels and some State of California radio channels should have already been re-programmed within the last four years to accommodate the transition to narrowbanding.

The National Telecommunications and Information Administration ([NTIA] the Federal Government’s frequency manager) mandated that the federal agency VHF frequencies be narrowbanded by January 1, 2005. Although the FCC rules provide that most state and local government frequencies are not required to be narrowbanded until December 31, 2012, this migration has already affected state and local government agencies. All CAL FIRE frequencies will be narrowbanded by May, 2011. All federal agency channels (including USFS, BLM, NPS and the NIFC National Incident Radio Support Cache radios) are now narrowbanded. In addition to the federal changes, certain State of California frequencies have been converted to narrowband operation.

Any non-compliant radio equipment used on narrowband channels may present a ***life-safety hazard*** for all users.

Radios that are not capable of narrowband technology shall be taken out-of-service and not placed into service by another fire service agency (e.g. donations, personal or volunteer use, etc.). Any radios returned to the vendor or disposed of as surplus should have all programming deleted or crystals removed.

For additional information, see the Narrowband Migration Plan on the Communications Specialist Group Page of the FIREScope Website (www.firescope.org).

GUIDELINES

1. While numerous radio channels/talkgroups can be pre-programmed into radios, it is important to note that in order to transmit on those channels/talkgroups (including channels listed in the FIREScope STATEWIDE CHANNEL PLAN), the user: 1) must be authorized by the FCC or NTIA to transmit on those frequencies, 2) must have a radio use agreement or Memorandum of Understanding with the agency which is licensed for the channels, or 3) must be assigned to an incident with that channel/talkgroup listed on the Incident Radio Communications Plan (ICS Form 205).
2. Any agency requesting mutual aid will advise responding agencies of an initial contact channel/talkgroup for the incident. Generally, the initial contact channel will be VFIRE21. Incident Communications Centers (ICC's) and Staging Area Managers should monitor WHITE 1, 1/VFIRE21 or another specified initial contact channel/talkgroup to assist resources arriving at the incident.
3. Local policy will dictate radio channel/talkgroup assignments for an incident until a Communications Unit Leader (COML) establishes the Incident Radio Communications Plan (ICS Form 205).
4. The Incident Commander or, if assigned, the Communications Unit Leader is responsible for managing assigned radio channels/talkgroups and must clear the use of local, state and federal frequencies with the controlling agencies prior to inclusion in an Incident Radio Communications Plan (ICS Form 205).
5. Clear text (plain English) should be used for all communications. CODES SHALL NOT BE USED. Standardized channel/talkgroup names should be stated, e.g., "VFIRE22," or "NIFC TAC 2." Channel/talkgroup numbers corresponding to how a specific radio is programmed should not be used except if published in an IAP (e.g., "Channel 1," or "Channel A14").
6. When calling another unit/ICS position, the standard is to identify who you are calling first, followed by your call sign (e.g., "Engine 2111, Battalion 2104" or "Division B, Strike Team 6412C"). Recognize that on large mutual aid incidents there may be several units with the same radio Identification. In those cases, the agency name should also be used (e.g., Oceanside Engine 2111, Oceanside Battalion 2104").
7. Data communications (i.e. automated or push button status keeping for "computer aided dispatch" [CAD] systems) SHALL NOT be used outside the local agency's normal area of operation.

8. Radio programming that enables data signaling (e.g., MDC1200 push-to-talk identification) is prohibited on interoperability channels (e.g., WHITE 1, VFIRE22, VFIRE23, etc.).
9. Vehicular repeater systems (mobile extenders) SHALL NOT be used outside the local agency's normal area of operation.
10. The use of gateways (including portable, mobile or fixed) shall be limited to the smallest geographical area of coverage to meet the temporary needs of the incident. Gateways shall only be used on channels/talkgroups that are specifically licensed for that type of operation (e.g., temporary mobile relay) and must be specifically authorized based upon an approved Incident Radio Communications Plan (ICS Form 205) or be recognized as a fixed gateway, included in the California Statewide Communications Interoperability Plan (CalSCIP).
11. Family Radio Service (FRS) radios are prohibited from use on Federal and State of California incidents. Use of any non-public safety radio (e.g., FRS, etc.) or use of a frequency/talkgroup not identified on the Incident Radio Communications Plan (ICS Form 205) is prohibited on any incident.
12. The use of any frequency outside the agency's normal, licensed area of operation is prohibited by FCC rules and will likely cause harmful interference to other users (e.g., Strike Teams using a local channel in a distant part of the state).

FIRESCOPE STATEWIDE CHANNEL PLAN

The FIRESCOPE Statewide Channel Plan was developed to assist California Fire Service agencies in buying and programming synthesized radios so as to maximize their effectiveness for mutual aid responses.

Regardless of the radio system used on a daily basis, all California Fire Service agencies should maintain an adequate number of VHF mobile and portable radios to support mutual aid operations. In addition to the VHF interoperability channels, UHF and 800 MHz interoperability channels are also available to support mutual aid and all-risk incidents.

USAGE NOTES for ICS 217A COMMUNICATIONS RESOURCE WORKSHEETS:

1. The WHITE channels require individual agency licensing from the FCC. WHITE channel operational policies are outlined in the Governor's Office of Emergency Services (OES) Fire Operations Bulletin #28 and/or the California Statewide Communications Interoperability Plan (CalSCIP). Contact OES Fire and Rescue for information.
2. Use of CALCORD is subject to the CALCORD Plan, under an executed CALCORD agreement with OES and/or in accordance with the California Statewide Communications Interoperability Plan (CalSCIP). Contact OES Telecommunications for information.

3. Federal and State of California agencies use the following sixteen standard tones for repeater access. These must be included for repeater use. These tones must be programmed on the transmit side **only** of mobile and portable radios:

1. 110.9	2. 123.0	3. 131.8	4. 136.5
5. 146.2	6. 156.7	7. 167.9	8. 103.5
9. 100.0	10. 107.2	11. 114.8	12. 127.3
13. 141.3	14. 151.4	15. 162.2	16. 192.8

4. **Important**- Some radios do not function properly on the following channels: VCALL10, VTAC12, and VTAC14. Note: Communications Unit Leaders should not assign those specific channels for incident use if it might be possible that Bendix-King EPH radios (possibly local government cache radios) might be utilized on their incident. Prior to use on an incident it is important to determine whether or not another manufacturer's radio models have VCALL10, VTAC12 or VTAC14 functioning problems.
5. Mobile transmitters are to be set to lowest available power setting on these channels "VTAC##", "UTAC##", CAL FIRE Tacticals, NIFC Commands and Tacticals, and Air-To-Ground channels.
6. Use of the NIFC Commands and NIFC Tacticals is based upon an approved Incident Radio Communications Plan (ICS Form 205). Communications Unit Leaders **must** obtain authorization for the use of these channels through the NIFC Communications Duty Officer.
7. For use based upon an approved Incident Radio Communications Plan (ICS Form 205). Communications Unit Leaders must obtain authorization for the use of these channels through the CAL FIRE Southern Region/Southern Operations GACC or Northern Region Command Center/Northern Operations GACC.
8. Specific channel usage guidelines are still being determined, and will be published in the California Statewide Communications Interoperability Plan (CalSCIP). Until the CalSCIP is finalized, these channels are for inter-agency/inter-discipline use. No single-agency, routine communications permitted. Tone 6 (156.7 Hz.) is used as the common tone (transmit side only at this time).
9. These channels are for inter-agency/inter-discipline use. No single-agency, routine communications permitted. Tone 6 (156.7 Hz.) is used as the common tone (transmit and receive).
10. Utilization as a fire and fire-based EMS single-agency or strike-team common channel is permitted. Tone 6 (156.7 Hz.) is used as the common tone (transmit and receive). Use is subject to an executed use agreement with OES until such time as the California Statewide Communications Interoperability Plan (CalSCIP) is finalized. Contact OES Telecommunications for information.

11. **Not available for use** in Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Ventura Counties.
12. AIR GUARD – 168.625 MHz. – A National Interagency Air Guard frequency for government aircraft assigned to incidents. It is used for emergency communications by aviation. A separate receiver is required to permit continuous monitoring in aircraft. Transmitters on this channel should encode a CTCSS of 110.9 Hz. All Incident Radio Communications Plans (ICS Form 205) on incidents that use federal or CAL FIRE aircraft SHALL have AIR GUARD programmed in the last available channel slot of all portable radios. Communications Unit Leaders shall place AIR GUARD in channel slot 16 (Bendix-King GPH and DPH and other manufacturers who use 16 channels in a zone/group), channel slot 16 (Bendix-King GPH and DPH and other manufacturers who use sixteen (16) channels in a zone/group), and channel slot 20 (Bendix-King GPH-CMD and DPH-CMD).

AIR GUARD is restricted to the following use:

- a. Air-to-Air emergency contact and coordination.
 - b. Ground-to-Air emergency contact.
 - c. Initial call, recall, and re-direction of aircraft when no other contact frequency is available.
13. The California Emergency Services Radio System (CESRS) may be utilized as a travel channel in the simplex, direct mode only by federal, state, and local government agencies. Strike Teams or other resources in travel status should use the “CESRS Direct” talk-around channel for line-of-sight communications. Use of CESRS repeaters is currently not authorized for use as a travel channel unless an executed use agreement is in place with OES.
 14. Users with radios that are capable of switching between direct and repeat should program the repeater channel only.
 15. Users are encouraged to program their radios with MPL (Multiple Private Lines) capability, even on the UHF and 800Mhz bands.

NOTE: For additional information concerning the appropriate usage of channels identified in the FIREScope STATEWIDE CHANNEL PLAN, contact OES Telecommunications or your respective Communications Unit Leader (COML).

The frequency list for the FIREScope Statewide Channel Plan will no longer be printed in this guide because of the dynamic nature of the Plan. The most current and accurate copy of this Plan can be found on the FIREScope Website by searching MACS 441-1 or using this web address: <http://www.firescope.org/macs-docs/MACS-441-1.pdf>.