Annex
Standing Operations Procedures for Communications
(Short Title: ASRC COMM SOP)

1. Introduction

    a. Purpose. This annex facilitates the standardization, in accordance with the Incident Command System (ICS), of ASRC-wide, basic tactics, techniques, and procedures (TTPs) used in the planning and employment of communications in support of Search and Rescue (SAR) incidents. This annex also serves as a primer for non-ASRC groups and agencies who may work with the ASRC in future incidents.

    b. Scope. This annex is aimed at standardizing only the most basic communication TTPs while allowing member groups the flexibility necessary to operate within their own budgetary constraints.

    c. Applicability. This annex applies to all member groups of the ASRC.

    d. Recommendations. Recommended changes or suggestions from ASRC and non-ASRC groups and agencies are welcomed and may be directed to the ASRC Communication Officer at commo@asrc.org.

2. Guiding Principles. Six guiding principles outline the planning and performance standards of ASRC communication equipment and networks. These principles should be foremost in the minds of all personnel operating communication equipment during a SAR mission, but especially by Incident Commanders, ICS Staff, and Incident Command Post (ICP) Radio Operators when developing the Incident Radio Communication Plan (IRCP). These six principles can be remembered through the acronym FIRSTS.

    a. Flexibility. Communication equipment and networks should be designed and used in a manner that allows them to be rapidly reconfigured in response to changing mission requirements or environments.

    b. Interoperability. Communication equipment and networks should be designed and operated in a manner that allows for maximum interoperability between ASRC member groups as well as external agencies. Simplicity should be the basis of network design whenever possible.

    c. Reliability. Communication equipment should be kept in a constant state of readiness and should be organized and available for embarkation, deployment, and employment whenever needed. Communication networks should be designed so that they ensure maximum coverage and connectivity to enable Field Teams to focus on their SAR tasks.

d. Survivability. Communication equipment should be sufficiently ruggedized to withstand the rigors of the wilderness SAR environment. Procedures for the protection of equipment from various environmental hazards (ie. waterproofing, etc.) should be employed. Communication networks should be designed with sufficient redundancy and/or alternate methods to overcome equipment failure or the overloading of primary networks.

e. Timeliness. Communication equipment and networks should be designed and used in a manner that enables stations to exchange information rapidly enough to effectively conduct a SAR mission. Simple and standard radio operator protocol (ie. "plain text") should be employed and radio codes (ie. "Ten Codes" or "Signal Codes") will not be used. Whenever possible, networks should be designed to enable Field Teams to communicate directly with the ICP without the need to relay through other Field Teams.

f. Security. Operators of communication equipment should always be aware of the sensitivity of the information being exchanged over communication networks on a SAR mission. Operator protocol that minimizes the conveyance of sensitive information to media, minors, and family members should be used. All personnel should ensure that, when not actually being used, communication equipment is stored in a manner that protects against damage and theft. Equipment should be kept in a location occupied by ASRC personnel or in a suitable locked storage area.

3. Interoperability Standards. ASRC's nature as a conference of ten diverse wilderness SAR groups is critical to its overall strength, but all groups must operate according to certain minimum standards in order to be effectively integrated into a SAR incident. Furthermore, in the interest of effective mutual aid and interoperability planning, non-ASRC agencies must be afforded the opportunity to understand and rely on the ASRC's standard capabilities to assist in their own communication planning.

a. ASRC Standard Radio Network Characteristics. All ASRC radio networks and equipment will adhere to the standard characteristics listed in Figure 1 in order to maximize interoperability and mutual aid effectiveness during SAR incidents.

ASRC Standard Radio Network Characteristics	
Frequency Range	VHF High Band (150-174 MHz)
Channel Bandwidth	Wideband (25 kHz)
Channel Type	Half-Duplex
Modulation Type	Frequency Modulation (FM) Voice
Encoding Type	Analog
Tx/Rx Squelch Type	CSQ and CTCSS
System Type	Conventional (Non-Trunked)

Figure 1.

b. ASRC Standard Radio Equipment Characteristics. All ASRC radio equipment will have the following characteristics in order to meet or exceed a minimum performance threshold and enable standardized planning.

(1) Base Station Radio Equipment. ASRC base station radios should be capable of a minimum of 40 watts and a maximum of 100 watts of output power. This equipment must utilize 120VAC as the primary power source and should be capable of backup operation utilizing 12VDC battery power. ASRC base station antenna systems should radiate omni-directionally and be able to be installed at a minimum height of 25 feet above ground level.

(2) Handheld Radio Equipment. ASRC handheld ("portable") radios should be capable of a minimum of 5 watts of output power. This equipment may be powered by non-rechargeable or rechargeable batteries.

c. ASRC Standard Radio Channels. Standard ASRC radio channels are listed in Figure 2. All ASRC member groups are strongly recommended to have all channels programmed into their radios, but only those marked with an * are mandatory.

ASRC Standard Radio Channels					
Channel	**Description**	**Rx Freq**	**Rx Code**	**Tx Freq**	**Tx Code**
Alpha	**National SAR Common***	**155.1600 MHz**	**CSQ**	**155.1600 MHz**	**CSQ**
Charlie	**ASRC SAR (Rptr Talkaround)***	**155.2800 MHz**	**CSQ**	**155.2800 MHz**	**CSQ**
Echo	**VA Statewide EMS Common***	**155.2050 MHz**	**CSQ**	**155.2050 MHz**	**CSQ**
Foxtrot	**ASRC SAR**	**155.2200 MHz**	**CSQ**	**155.2200 MHz**	**CSQ**
Golf	**ASRC SAR**	**155.1750 MHz**	**CSQ**	**155.1750 MHz**	**CSQ**
Hotel	**ASRC SAR**	**155.2350 MHz**	**CSQ**	**155.2350 MHz**	**CSQ**
India	**ASRC SAR**	**155.2650 MHz**	**CSQ**	**155.2650 MHz**	**CSQ**
Juliet	**ASRC SAR**	**155.2950 MHz**	**CSQ**	**155.2950 MHz**	**CSQ**
Lima	**ASRC Business (Non-SAR)***	**151.6250 MHz**	**CSQ**	**151.6250 MHz**	**CSQ**
Romeo	**ASRC SAR**	**150.7750 MHz**	**CSQ**	**150.7750 MHz**	**CSQ**
Sierra	**ASRC SAR**	**150.7900 MHz**	**CSQ**	**150.7900 MHz**	**CSQ**
Repeater	**ASRC SAR (Repeater)**	**155.2800 MHz**	**CSQ**	**150.7750 MHz**	**127.3 Hz**
Notes **Alpha should be used as the Primary Incident Channel whenever possible.** **Charlie may be used for shorter range, direct communications with the ICP when the repeater channel is active.** **Echo should be reserved for communication between the Evac Team and local EMS during patient evacuation.** **Lima should be used only for training and other non-mission purposes.**					

Figure 2.

d. ASRC Standard Radio Stations. Radio stations closely mirror the structure of the mission organization. Adherence to this station structure ensures orderly mission activation as well as efficient information collection, management, and dissemination between the ICP and Field Teams.

(1) ICP Communication Center (ICPCC). ASRC radio networks require a single primary control point for the management of communications into and out of the ICP. This radio communication hub, referred to as the ICP Communication Center, serves as the Network Control Station (NCS) and is normally collocated with the ICP. Staff assigned to the ICPCC are responsible only for the orderly, efficient, and legal operation of active radio networks and the ICPCC radio equipment. ICPCC staff must be skilled in the operation and maintenance of the networks and the equipment being employed on those networks.

(2) Alternate Communication Center (ACC). ASRC radio networks should also, whenever possible, incorporate a secondary control point to provide redundancy within the network. This secondary hub, referred to as the Alternate Communication Center, serves as the Alternate Network Control Station (Alt NCS) and may take many forms depending on the mission requirements. The ACC should duplicate, as much as possible, the capabilities of the ICPCC, especially with regard to radio communication range and personnel skill levels. It may be a vehicle fitted with equipment sufficient to maintain communication with network stations or it may be a second set of comparable equipment available for installation in a fixed location. The ACC does not necessarily need to be set up and operating concurrently, but it should be ready for rapid activation when required. Depending on mission requirements, it may be set up in the same location as the ICPCC (at the ICP) or an alternate position may be considered in the interest of survivability and continuity of operations.

(3) Field Teams. ASRC radio networks all have one or more Field Teams that operate under the responsibility and authority of the ICPCC. Field Teams can take different forms depending on mission requirements and specialized capabilities and these different forms may be reflected in the Field Team callsigns (see Figure 3). Field Teams may be footmobile, vehicular, or waterborne.

(4) Relay Stations.

(5) Repeater Stations.

(6) Itinerant Stations. ASRC radio networks may be used for limited periods by stations from other agencies that provide a supporting function. These stations, referred to as Itinerant Stations, are commonly Civil Air Patrol (CAP), Medical Evacuation (MedEvac), or Law Enforcement aircraft. Field Teams from non-ASRC SAR groups are not considered Itinerant Stations.

e. ASRC Standard Radio Callsigns. All ASRC mission communications will adhere to the standard callsign conventions listed in Figure 3 in order to maximize interoperability and mutual aid effectiveness during SAR incidents.

ASRC Standard Radio Callsigns	
Station	**Callsign(s)**
ICPCC	Tactical ("Base") and FCC-Issued ("WPEZ758" or "WQEU871")
ACC	"Alternate Base"
ICS Staff (Command or General)	Functional Description (ie. "Safety", "Operations", "Logistics", etc.)
ICS Functional Areas	Functional Description (ie. "Staging", etc.)
Field Teams (Search)	Phonetic Description (ie. "Team Alpha", "Team Bravo", etc.)
Field Teams (Specialized)	Functional Description (ie. "Evac Team", "LZ Team", etc.)
Relay Stations	Geographic Description (ie. "Old Rag Relay")
Repeater Stations	Geographic Description (ie. "Knob Mountain Repeater")
Itinerant Stations	Agency Specific (ie. "CAP Flight ####", "Pegasus", "Eagle", etc.)

Figure 3.

f. ASRC Standard Phonetic Alphabet. The phonetic alphabet listed in Figure 4 is the accepted International Telecommunications Union (ITO) standard. All ASRC mission communications will use this standard.

ASRC Standard Phonetic Alphabet			
Alpha	Hotel	Oscar	Victor
Bravo	India	Papa	Whiskey
Charlie	Juliet	Quebec	X-Ray
Delta	Kilo	Romeo	Yankee
Echo	Lima	Sierra	Zulu
Foxtrot	Mike	Tango	
Golf	November	Uniform	

Figure 4.

4. Member Group Equipment Deployment Standards. In order for mission communications to be as effective and equivalent as possible throughout the ASRC response region, all ASRC member groups must possess the following equipment.

a. Base Station Radio Equipment. Each member group must possess and be prepared to deploy radio equipment that is sufficient for the installation of at least one base station radio and one base station antenna system.

b. Handheld Radio Equipment. Each member group must possess and be prepared to deploy radio equipment that is sufficient for the issue of at least one handheld radio for every six active members listed on its group roster. If non-rechargeable batteries are used, the group must be prepared to deploy with sufficient batteries for each radio. If rechargeable batteries are used, the group must be prepared to deploy with at least one fully-charged battery for each radio as well as a compatible 120VAC recharging system.

5. Mission Responsibilities. SAR mission communications have numerous operational, planning, and logistical considerations if those communications are to be effective. As SAR missions expand in terms of scope, search area, personnel, and time, these considerations may become more complicated and require more detailed staff efforts. An understanding of the general responsibilities inherent to ASRC member groups, the ICS staff, and individual radio operators is imperative for mission communications to be successful.

a. Member Groups. When required, the ASRC member group nearest to the geographic location of the SAR incident will be responsible for deploying and installing its own base station radio equipment and activating the ICPCC in preparation for the arrival of additional ICS Staff and Field Team personnel from more distant member groups. More distant member groups should, whenever possible, deploy with handheld

b. Incident Commander. Ultimate responsibility for the performance of the incident communications networks rests with the Incident Commander (IC). The IC's selection of Operations, Planning, and Logistics Section Chiefs with solid understanding of

network planning, operations, and equipment will have significant bearing on ICP efficiency and effectiveness.

    c. **ICS Staff**.

        (1) Operations Section Chief.

        (2) Planning Section Chief. Collection and consolidation of communication requirements, communication network planning, and frequency deconfliction with external agencies are the responsibility of the Planning Section Chief.

        (3) Logistics Section Chief. Communication equipment storage, issue, support, and recovery are the responsibility of the Logistics Section Chief.

When repeaters or other additional support equipment is employed, Net Control will manage its installation, operation, and maintenance.

    d. **ICPCC Radio Operators**.

    e. **Field Team Radio Operators**.