

ILLINOIS FIRE SERVICE INSTITUTE  
University of Illinois at Urbana-Champaign  
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**CORNERSTONE  
TRAINING**

FIRE GROUND COMMUNICATIONS

Fire Ground Communications

What is Communication?

Exchanging of information by speaking, writing, or some other means.

Interpersonal

Communicator, Receiver, Perceptual Screens, Message

How do we communicate?

Radio Communication

(Verbal)

Face to Face

(Verbal)

Body Language, gestures, appearance

(Non-Verbal)

## Why do we communicate?

To achieve a mutual understanding

To reach a desired outcome

Public Alerting Systems

Telephone

The most commonly used method of reporting emergencies

Radio

Most likely to come from an emergency responder who happens upon an emergency

Telephone Fire Alarm Box

First used in Boston in 1852. Some are still in use today. Transmit the location of the alarm box, not necessarily the location of the emergency.

Public Alerting Systems

Radio Fire Alarm box

Self-contained units that can be found along highways or streets

Local Alarm Box

Pull station

Walk-ins

Periodically emergencies are reported directly to the fire department

Alerting firefighters by...

Voice Alarm

House bell or gong

House light

Telephone from telecommunicator

Radio/Pagers

Radio with tone alert

Whistles, Sirens, or Air horns  
Typically for unstaffed stations

Cell Phones – Text Messaging  
Unstaffed stations

## **Roll Call**

Usually occurs at start of shift

Ensures accountability of personnel

Review of SOP/SOG's and quick drill

Determine daily assignments

Assign riding positions

Review any changes to equipment

Define expectations for the shift

How can volunteers accomplish a roll call?

Technology

Can you do these tasks at the start of drill night?

## **Riding Assignments**

Receiving an Alarm

Follow SOPs

Identify department/company and yourself

Control the conversation

Gather accurate information

Type of emergency

Location

Number of people involved

Receiving an alarm

Exact location of victims

Building

Vehicle

Creek/River

Be prepared to take messages

Post/Deliver messages promptly

Always hang up last

## Mutual Aid vs. Automatic Aid

### Mutual Aid

Reciprocal assistance from one fire/emergency agency to another during an emergency

Prearranged and upon the request of the receiving department

### Automatic Aid

Written agreement between agencies

Automatically dispatches based upon emergency and location

## **MABAS**

Established in the late 1960's

Statewide, non-discriminatory Mutual Aid Response System for Fire, EMS, and Specialized Incident Operational Teams.

Example of routine MABAS activation:

City of Chicago's LaSalle Bank Building Fire

22 Suburban Fire Agencies filled in at City of Chicago Fire Stations to maintain continuity of emergency service to Chicago.

## **The NIOSH 5**

The National Institute for Occupational Safety and Health has identified the top five factors of Firefighter deaths on the Fire Ground:

1. Improper risk assessment (poor size-up)
2. Lack of incident command
3. Lack of accountability
4. Inadequate communications
5. Lack of SOG's or failure to follow established SOG's

## **Fire Ground Communications**

NIOSH references physiological causes of death such as asphyxiation, trauma, and heart attacks.

Incident Commanders must focus on the operational trends that lead up to asphyxiation and trauma

The majority of LODD's are attributed to command issues

Incident Command and Fire Ground Communications that take the NIOSH 5 into account will reduce the number of incidents of Firefighters in trouble, the number of injuries, and the number of LODDs.

If your Department has a proactive approach safe, effective, efficient, and consistent operations will be achieved

## **SOG/SOP's**

### **Fire Ground Communications**

Standard Operating Procedures/Guidelines are essential for your Department to move forward

The ICS organizes the Fire Ground

No ICS worksheet ever put out a fire but using the ICS daily is critical to achieving operational effectiveness.

### **Fire Ground Communications**

No SOG can possibly predict or be totally equipped to handle every possible situation a fire officer may face.

The key is training. The SOG is a guideline.

Defining expectations and utilizing experience help with decision making

# ICS

## Fire Ground Communications

ICS does not take the place of strategy and tactics, SOG's or thinking officers who are able to evaluate and act upon key Fire Ground factors.

- Building Construction

- Smoke Behavior

- Fire Conditions

ICS should not be micromanaging an incident.

- ICS should be supporting the needs of the task-oriented workers

We will risk our lives a lot, in a highly calculated and controlled manner, to protect a savable human life.

We will risk our lives a little, in a highly calculated and controlled manner, to protect savable property.

We will not risk our lives at all to protect lives or property that are already lost.

When arriving on scene anticipate what the fire will or could do and allow for additional resources.

- Solid command structure must be set up before its needed

- Your job as the incident commander is to expect and prepare for the unexpected

The Company Officers' sphere of awareness at the task level is typically 3-6 feet.

- Stretching lines, cutting holes, or searching for victims in a smoke filled IDLH environment.

- This sphere of awareness through an SCBA can be reduced to zero.

The missing link on most of our structure fires is at the tactical level. This is represented by the Division/Group Supervisors.

The Division/Group Supervisors sphere of awareness is 20-50 feet.

This distance is closer than the IC and more mobile, but back away enough from the task level to see changing smoke/fire conditions, building conditions, crew location, access/egress.

Interior, A,B, C, D

The Division/Group Supervisor becomes the eyes/ears for the IC, and the guardian angel to the crews performing tasks in the hazard zone.

These Supervisors should be able to see conditions change from all sides of the building.

Three levels of the Fire Ground

IC (Cold Zone)

Division/Group Supervisor (Warm Zone)

Company Officer (Hot Zone)

The goal of incorporating Division/Group Supervisors is not to create a top-heavy bureaucratic command system.

The goal is to support the tasks being accomplished on the Fire Ground and prevent as many of the NIOSH 5 from aligning as possible

Again, don't micromanage!! Support the troops!!

ICS is more than checking boxes and creating divisions and groups. One of the most critical components is division of labor.

Division and Group Supervisors become the eyes and ears for command.

Often the IC will not see critical Fire Ground factors like changing smoke conditions, fire/building conditions, entry points of crews

These factors are quickly overlooked by crews operating at the task level who are focused on stretching lines and going inside

The first member on scene is like a quarterback on a football team.

SOG's are the playbook

Can they call an audible?

What are the response goals of the first member on scene?

Does your department have a response goal list that is short, prioritized and applicable to all responses?

The Fire Ground is vastly different from that in the past. It is ever-changing and always will be.

A very dynamic atmosphere

Building construction, fire behavior, fire loading, use of synthetics, changes in staffing, differences in personal protective equipment, and the lack of experience all contribute to the NIOSH top 5.

Fire Ground Communications that consider the NIOSH 5 will reduce the number of incidents of Firefighters in trouble, the number of injuries, and LODDs.

*Training on Fire Ground Communications will assure consistent Fire Ground Operations.*

Command and control of an incident must not impede the work being done at the task level.

It must support and enhance that work and create a well-organized Fire Ground on which communication is clear and concise.

Five things all Firefighters want:

Tell me what you want!

Show me how!

Give me tools to do it!

Please get out of my way!!!

Tell me how I did!

**Fire Chief, "I think for those who don't"**

## Communications

### Good Communications:

Major Goal: Initiate, Maintain and Control Effective Incident Communications

### Basic Guidelines:

When you go on an Ego Trip you will travel alone

If you think talking is all there is to communicating, you have not been listening

Never miss a good chance to shut up

A closed mouth gathers no foot

Whenever you open the channels of Communication, expect a little \_\_\_\_\_ to flow your way

Generally speaking, you aren't learning much when your mouth is moving

Communications is a two-way street-  
Orders / Directives flow downward,  
Information flows upward and downward

### Predictable Communication Problems:

Lack of SOPs – uniform approach (protocol)

Noise, excitement, and radio volume are usually high – radio discipline and control may be low

Organizational Problem – Communication is usually the “Fall Guy” for all problems

Equipment Problems – Poor reception, insufficient channels, not enough radios

Communication Techniques – voice levels, word choice, timing, level of excitement, degree of patience, unnecessary conversation

**The Incident Command and Tactical Level Leaders presence comes over the radio.**

People are more likely to listen to a clear, calm and rational voice.

How the IC or Tactical Level Leader time their talk and integrate it into what others say sends a powerful message about the way either is listening, paying attention, and connects with others.

### **Communications Tips**

As IC, capture control of the communications process.

Pay attention and always remain available to the first radio call.

The IC pretty much goes out of business if they lose control of the overall communications process.

Take your time, don't talk too loudly or too fast. Take a deep breath, relax and stay in control. Remember you did not start the fire—you are just there to put it out.

***Calm breeds calm, panic breeds panic***

Functional Communications requires discipline and practice.

People have a natural tendency to chat.

Use plain English... with emphasis on plain---leave the 204s, 301s, 917s to Barney Fife

Use common words, language and phrases---Save the poetry for the awards banquet.

Create a positive image as the incident radio superstar: Don't ever let 'em see you sweat.

Sound Cool

Be Cool

### **BENCHMARKS**

**ALL CLEAR:**

**UNDER CONTROL:**

**LOSS STOPPED:**

### **BENCHMARKS**

**ALL CLEAR:**

The Primary Search is Complete

**UNDER CONTROL:**

The Fire is under control Not Extinguished

**LOSS STOPPED:**

Environmental / Property conservation is complete

### **INITIAL ON SCENE REPORT**

Location?

What Do You Have?

What Are You Doing?

What Do You Need?

Who Is Command?

## **STATUS REPORTS**

Location?

What Do You Have?

What Are You Doing?

What Do You Need?

Who Is Command?

## **TRANSFER OF COMMAND**

Location?

What Do We Have?

What Are We Doing?

What Do We Need?

Who Is Command?

## **ON SCENE REPORT**

Your Location

Engine 1 on scene 12 Delmar Street

What Do You Have

1 Story structure heavy fire showing from multiple sides

What Are You Doing

Pulling a 2.5

What Do You Need

Water Supply

Who Is Command

Captain Wills is Command

## **RADIO TYPES**

### **APX Series**

#### **Motorola APX Series**

- Mission critical production line
  - Not standard consumer/business (HT series)
- Purpose-built for First Responders
- Future Ready Platform
- Interoperability On-Demand
  - Dual and Tri-Band models

#### **APX6000XE**

- "lightweight heavyweight"
- Small/Compact
- Extreme ergonomics
- Single-Band
  - VHF
- i.e. Firefighter/Paramedic user
- Difference between models

#### **APX7000XE**

- 6000XE plus more
- Larger overall
- Larger screen
- Dual-Band
  - VHF/UHF (Fire/CFD)
  - VHF/7-800 (Fire/Police)
  - UHF/7-800 (CFD/Police)
  - Can be dual-band and not be active
- i.e. Staff/Admin user

## Remote Speaker Microphones (RSMs)

### Head Types

- Rugged vs Non-rugged
  - Submersible
  - Intrinsically Safe (IS)
- Displays
- Channel Knobs
- Volume Control
- Lights
- Noise cancelling

### Cable Types

- Standard
- Xtreme Temp (XT)
  - Up to 500F

### Cable Comparison Temperature Rating Comparison XE RSM

- Original RSM for the APX series
- Designed for Firefighters
- XT cable
- Large buttons
- Volume Control
- Emergency Button
- Strobe Light
- 1 accessory button
- To be worn upright (orange button up)
- Noise cancelling
  - Dual microphones

## **Display RSM**

- XT cable not standard
- Display
- Volume Control
- Channel Control
- Emergency Button
- 2 accessory buttons
- PTT button sticks out
- To be worn upright (orange button up)
- No noise cancelling features

## **XE500**

- Combines features of XE RSM and Display RSM
- 5 integrated microphones
  - “wear it anyway you want”
- Channel Control
- XT cable
- Large buttons
- Volume Control
- Emergency Button
- Strobe Light
- 1 accessory button

## **Mobile Radios**

### **APX Series**

### **CDM Series**

- Display Symbols
- Display Colors

## **Radio Placement**

### **Radio Pocket – Considered an Unsafe Practice**

- Radio Signal Loss
  - Testing done with Motorola Radio Engineers
  - Produced the most signal loss
  - 30dB signal loss while crawling
  - Diminishes the power of a 3-watt radio to 0.01-watts
- Portable Radio Ejection
  - 40% ejection rate
- Melting of the Remote Speaker Mic (RSM)
  - RSM is best protected from Thermal Insult when worn under the coat
  - Is your RSM (XT) rated?

## **Radio Placement**

### **Radio Use**

### **Best Practices (IAFC)**

- Use the radio for the initial distress call before manual activation of the PASS in a Mayday situation when practical
- Ensure that the microphone is placed 1 to 2 inches from the mouth or SCBA voice port with the microphone positioned directly in front of the audio source
- Speak in a loud, clear, and controlled voice to maximize audio intelligibility
  - “Hey you it’s me”
- Shield the microphone from noise sources to improve the intelligibility of the audio in high noise environments
- When practical consider using a free hand to muffle a mask mounted SCBA low air alarm when trying to transmit on a radio
- Consideration should be given to the location of radios and microphones in relation to PASS devices and other noise generating user equipment

## Emergency Activation

- Activation - Short Press
  - 500ms (.5 sec)
  - Strobe Light if applicable
  - Display glows orange
  - Audible alert tone
- Deactivation - Long Press (or power off if programmed)
  - 2000ms (2 sec)
  - Emergency Keep-Alive Feature
    - When enabled, prevents the radio from being turned off via the ON/OFF Control Knob when the radio is in the Emergency state.
    - Changing of Channels during Emergency
- For ALL Emergency transmissions, when changing channels:
  - If the new channel is also preprogrammed for Emergency, you can change channels while in Emergency operation.
    - The emergency alarm or call continues on the new channel.
  - If the new channel is NOT preprogrammed for Emergency
    - the display shows NO EMERG
    - you hear an invalid tone until you exit the Emergency state or change to a channel preprogrammed for Emergency

## Radio Procedures

- Emergency evacuation signals
  - Be familiar with departments SOPs for evacuation signals/tones
  - Broadcast evacuation order repeatedly
  - Sound audible warning devices
    - 3 long blasts of air horn
  - Evacuation Tone
  - The tone begins and is transmitted when the PTT button and the "Orange Button" are simultaneously pressed

- Once the tone begins to sound, if the orange button is released the tone continues to alarm on all radios
  - Stop when PTT button is released

### **Routine**

- Follow SOPs
- Avoid unnecessary transmissions
- Speak calmly, clearly and distinctly in a normal tone and rhythm.
- Use common language, not 10-codes

### **Emergency**

- Sometimes dispatch is more equipped to hear weak radio signals than personnel on scene.
- Dispatch should notify all units there is emergency traffic and to clear the air, and to proceed with emergency traffic.

### **MAYDAY**

- **“Mayday, Mayday, Mayday”**
- **LUNAR / LIP**

Location	Location
Unit	Identification
Name	Problem
Assignment	
Resources needed	

- Activate PASS and/or emergency signal.

## LIP Transmission

- Radio Procedures
- PAR – Personnel Accountability Report
  - Systematic way of confirming the status of any unit operating at an incident.
  - Supervisors verify the status of everyone operating under their command.
  - PAR's are requested at certain benchmarks throughout an incident.
    - Incident declared under control
    - Change in strategy (Offensive to Defensive)
    - Catastrophic event
    - Emergency evacuation
    - MAYDAY
- Accountability

## Resources

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