



Firefighter Self-Survival

Los Angeles County Fire Department



What are the commonalities of firefighter near miss or fatality incidents?

Are we prepared if we are lost, trapped, or separated from our crew?

Whittier Incident

October 20, 2000

Los Angeles County Fire Department

Summary:

Captain Gary Morgan falls through floor, is trapped and is rescued by RIC Team

Whittier Incident, 2000

Lessons Learned:

- Clearly articulate tactical objectives
- Ensure regular accountability reports received (PAR)
- Emergency traffic notification never relayed to FCCF
- Use of proper terminology was inconsistent throughout the incident
- SCBA pulsating light and PASS activation directed rescue members to the actual location
- Command and tactical radios not absolute

Whittier Incident, 2000

Recommendations:

- Implement a mandatory self-survival training program

Southwest Supermarket Fire

March 14, 2001

Phoenix Fire Department

Firefighter Fatality

26,000 square foot building

Summary:

Firefighter lost in large supermarket, exhausts air supply, multiple rescue efforts futile and results in additional rescuers requiring rescue.

SW Supermarket Fire 2001

Things Done Well:

- **Initiated Mayday-** This was done early and possibly contributed to the saving of the Engineer's life

SW Supermarket Fire 2001

Recommendations/Lessons Learned:

- Turn on Right Angle Light
- Make Some Noise
- Conserve Air
- Activate PASS Device
- Stay Low
- Limit Movement

NIOSH Investigations

- February 2005 - 39 year old Fire Captain Dies Trapped By Partial Roof Collapse in a Vacant House Fire – Texas
- January 2005 - 39-year-old Captain Dies After Running Out of Air at a Residential Structure Fire – Michigan
- January 2005 - Career Fire Fighter Dies While Exiting Residential Basement Fire - New York
- December 2004 - One Probationary Career Firefighter Dies and Four Career Firefighters are Injured at a Two - Alarm Residential Structure Fire – Texas

NIOSH Investigations

Common Recommendations:

- Fire departments should train fire fighters on actions to take while waiting to be rescued if they become trapped or disoriented inside a burning structure.

NIOSH Investigations

Recommendations: (Description)

- First, they must **transmit a distress signal** while they still have the capability and sufficient air. The next step is to manually **activate their PASS** device. To **conserve air** while waiting to be rescued, fire fighters should try to **stay calm and avoid unnecessary physical activity**. If not in immediate danger, they should remain in one place to help rescuers locate them. They should survey their surroundings to get their bearings and **determine potential escape routes**; and stay in **radio contact** with the IC and other rescuers. Additionally, fire fighters can attract attention by maximizing the sound of their PASS device (e.g. by pointing it in an open direction); pointing their **flashlight toward the ceiling** or moving it around; and using a tool to **make tapping noises** on the floor or wall.

NIOSH Investigations

Common Recommendations:

- Fire departments should ensure that MAYDAY procedures are followed and refresher training is provided annually or as needed.

NIOSH Investigations

Recommendations: (Description)

- **As soon as fire fighters become lost or disoriented**, trapped or unsuccessful at finding their way out of a hazardous situation (e.g., interior of structure fire), they must recognize that fact and **initiate emergency traffic**. They should manually **activate their personal alarm safety system (PASS)** device and **announce a "MAYDAY" over the radio**. A "MAYDAY" call will receive the highest communications priority from Central Dispatch, Incident Command, and all other units. Information regarding last known location, crew assignments, and identity of the lost fire fighter provides the RIT with important clues in locating the missing/lost member. The sooner Incident Command is notified and the RIT is activated, the greater the chance of the fire fighter being rescued.

NIOSH Investigations

Common Recommendations:

- Fire departments should train firefighters on initiating emergency traffic (Mayday-Mayday) and manually activating their PASS alarm when they become lost, disoriented, or trapped.

NIOSH Investigations

Recommendations: (Description)

- As soon as firefighters become lost, disoriented, trapped, or experience difficulty finding their way out of a hazardous situation (e.g., interior of structure fire), they must recognize this and initiate emergency traffic. They should manually **activate their personal alarm safety system (PASS)** device and **announce "Mayday-Mayday" over the radio**. A "Mayday-Mayday" call would receive the highest communications priority from Central Dispatch, IC, and all other units. The sooner the IC is notified and a RIT is activated, the greater the chance that the firefighter will be rescued. Firefighters should **initiate emergency traffic** while they are still capable, and not wait until they are too weak or low on air to call for help. A transmission of the Mayday situation should be followed by the firefighter providing clues as to his last known location. The fire fighter should then try to **remain calm (conserving air)**, stay in radio contact with command and the RIT, and survey the surroundings in an attempt to gain a bearing of direction or potential escape routes. It is important that if the firefighter is not in immediate danger of fire impingement or collapse, that he **remain in the safe area and move as little as possible**. This will conserve air and possibly help the RIT find the fire fighter more quickly than if the fire fighter was constantly moving. These steps should be incorporated into the department's standard operating procedures, with the firefighters being trained on the procedures. In this incident, the victim was equipped with a radio, but did not initiate emergency traffic.

Making the Decision to call a Firefighter Emergency



5 Reasons to Call a Firefighter Emergency/MAYDAY

1. Separated from Crew / "Lost"
2. SCBA Malfunction and/or Low Air
3. Injured and/or Disabled
4. Trapped, Pinned and/or Entangled in Debris
5. Any life threatening condition that cannot be resolved in 30 seconds



Separated from Crew / “Lost” Defined

1. Limited visibility, not in physical contact with hose line, lifeline and/or partner



SCBA Malfunction or Low Air Defined

2. SCBA Malfunction and/or Low air alarm activation and unable to reach exit safely



Injured and/or Disabled Defined

3. Injury or physical condition that makes you incapable of reaching exit



Trapped, Pinned and/or Entangled in Debris Defined

4. Firefighters mobility compromised due to structural collapse, debris, and/or inoperable/blocked doors/exits



Any Life Threatening Condition that Cannot be Resolved in 30 Seconds Defined

5. In each of the 5 situations, the firefighter has 30 seconds to find an exit or fix his/her SCBA prior to activating the E-trigger. The 30-second time limit serves as a reminder to the firefighter to focus on self-rescue



LACoFD Self-Survival Steps

- Step 1 – Check Air (Chest Harness Gauge)
- Step 2 – Initiate a Firefighter Emergency on TAC
- Step 3 – Activate PASS, PASS Light Visible
- Step 4 – Conserve Air, Control Breathing
- Step 5 – Stay Low (Find Cool Air Near the Floor)
- Step 6 – Shine Flashlight at 45 Degree Angle
- Step 7 – Make Noise
- Step 8 – Find an Exit
- Step 9 – Protect Airway



Making the Steps Easy to Remember

LACoFD Self-Survival Procedure

G auge

R adio

A ctivate

B reathing

L ow

I lluminate

V olume

E xit

S hield Airway



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Visual check of the chest air gauge to identify quantity of air

GAUGE (Checking Air)

Training Recommendations

- Always know how much air you have
- Anticipate how much air will be needed to complete the task
- Be prepared to report your remaining air to the rescuers

LACoFD Self-Survival Procedure

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RADIO (FF EMERGENCY)

1st Radio Attempt – Contact Immediate Supervisor

“Engine 1 Captain from Engine 1 Firefighter Jones on TAC reporting that I am separated from the crew and need assistance.”

If the supervisor fails to acknowledge the call for help, the E-trigger must be activated so a “FIREFIGHTER EMERGENCY” can be transmitted.

Performed within 30 second timeframe firefighter is attempting self-rescue

RADIO (FF Emergency)

Non-programmed Motorola XTS 5000

2nd Radio Attempt – Activating E-trigger

- Depressing the orange button located on top of the radio or on the lapel microphone for **2 seconds** activates the E-trigger

NOTE: No indicating Hi-Lo tone from initiators radio

- Initiator's radio microphone automatically opens for a period of 10 seconds
- After activating the E-trigger the distressed firefighter must also key the microphone. Keying the microphone extends the 10 seconds of open microphone so the firefighter can deliver a longer radio transmission.

RADIO (FF Emergency)

Programmed Motorola XTS 5000

2nd Radio Attempt – Activating E-trigger

- Depressing the orange button located on top of the radio or on the lapel microphone for **1 second** activates the E-trigger

NOTE: Initiators radio will emit an alert tone upon activation of the E-trigger

- Initiator's radio microphone automatically opens for a period of 10 seconds
- After activating the E-trigger the distressed firefighter must also key the microphone. Keying the microphone extends the 10 seconds of open microphone so the firefighter can deliver a longer radio transmission.

RADIO (FF Emergency)

Programmed Motorola XTS 5000

2nd Radio Attempt – Activating E-trigger

NEW FEATURE:

Distressed FF's radio will emit an alert tone (2 tones) after releasing microphone when the radio is in emergency mode. This allows the FF calling for assistance to know that he/she has successfully E-triggered. The alert tone may also assist in alerting those who have accidentally E-triggered.

RADIO FEATURES

FF EMERGENCY Radio Feature	Programmed Motorola XTS 5000 (After June 2008)	Non-Programmed Motorola XTS 5000 (Prior to June 2008)
E-trigger hi/lo tone heard by receiving radios	Yes	Yes
E-trigger 2 tone alert heard by initiators radio upon E-trigger activation	Yes	No
Open microphone for 10 sec after E-trigger activation	Yes	Yes
E-trigger 2 tone alert heard on initiators radio when PTT released	Yes	No
Screen Notification	Yes EMERGENCY E1 CAPT (Post position assignment)	Yes EMERGENCY 1234 (Radio ID No.)

RADIO (FF Emergency)

After Activating E-trigger

- The first transmission should alert all personnel on the incident that there is a firefighter emergency. The alerting transmission shall be:

"MAYDAY"

"MAYDAY"

"MAYDAY"

RADIO (FF Emergency)

After EMERGENCY X3

All

Radio Traffic

Shall Cease

RADIO SILENCE

RADIO (FF Emergency)

After Radio Silence

- After radio silence is achieved the Incident Commander shall attempt to identify the unit calling the Firefighter EMERGENCY.

The IC States:

“Unit calling FF EMERGENCY
identify”

RADIO (FF Emergency)

The FF answers the IC

- The FF answers the IC using the mnemonic H-E-L-P,

H – “Handle” – Radio term for name. Name of distressed firefighter with rank.

E – “Equipment” - Assignment, or resource name.

L – “Location” - Identify where you are located.

P – “Problem” – State problem (lost, low air, trapped, etc.).

RADIO (FF Emergency)

H-E-L-P

- Example: Firefighter separated from crew and unable to find a hoseline or exit.
- Radio transmission:

This

is Firefighter Smith from Engine 1, I'm
Handle----- Equipment----

on the 2nd floor in a hall way separated
Location----- Problem-----

from my crew and need
Problem cont.-----

assistance."
Problem cont.

LACoFD Self-Survival Procedure

G auge

R adio

A ctivate

B reathing

L ow

I lluminate

V olume

E xit

S hield Airway



Activate PASS and position self
for maximum effectiveness

ACTIVATE (PASS)

Training Recommendations

- The PASS device manually activated after activating E-trigger
- Audible PASS device must remain on until rescued
- PASS should be turned off only to communicate via the radio
- Maximize strength of PASS alarm and light by positioning device so it is best heard and seen by rescuers

LACoFD Self-Survival Procedure

G auge

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B reathing

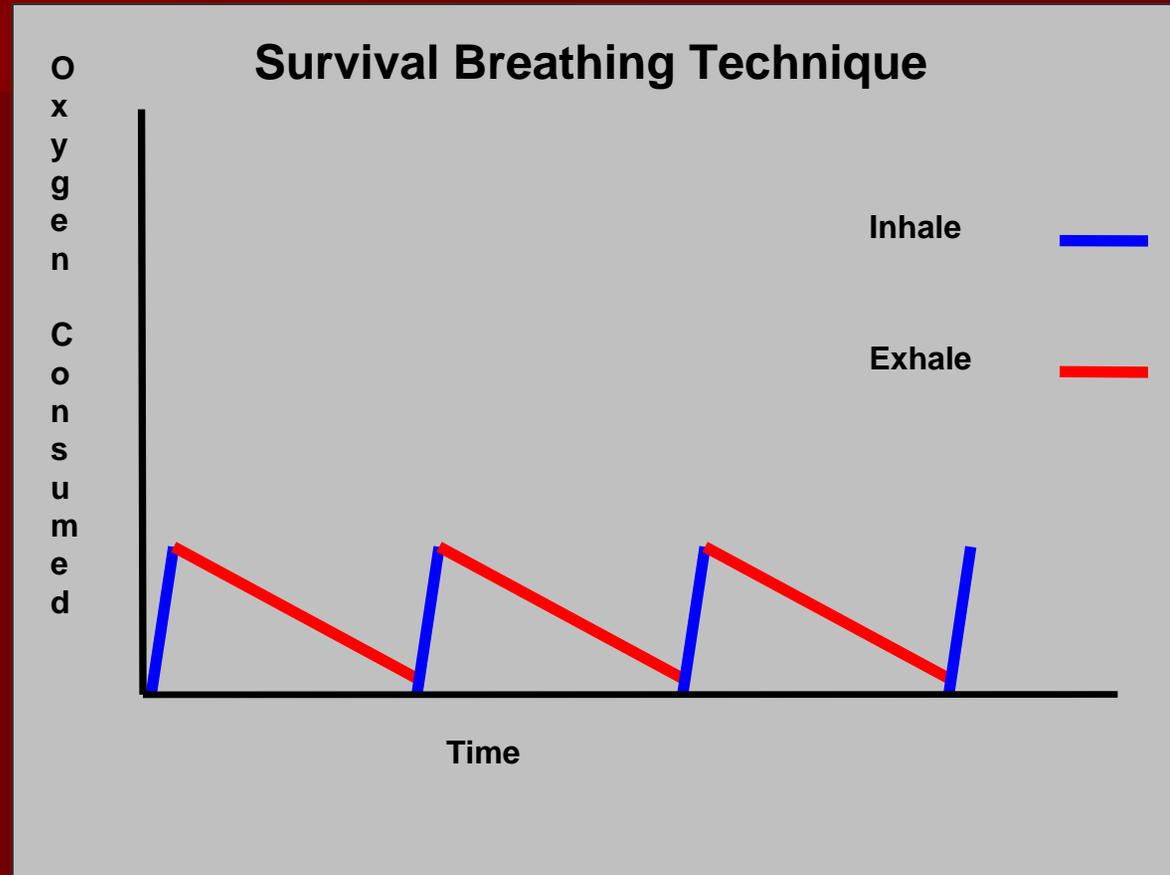
L ow

I lluminate

V olume

E xit

S hield Airway



Control Breathing – Use skip breathing or other means to conserve air

BREATHING (Control)

Training Recommendations

- Firefighters must control their breathing and conserve air anytime they don the SCBA
- Air is limited, work effort and duration unpredictable - critical firefighters control anxiety and breathe rhythmically
- Control how much air is breathed and how much physical effort is exerted

BREATHING (Control)

Training Recommendations

- Consider Rescue Breathing
 - Slower, longer exhalation periods – 2 X normal
 - Can extend air in bottle by 20 to 30 percent

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STAY LOW –Search for: Cooler Environment; Cleaner Air; Better Visibility

LOW (Stay Low)

Training Recommendations

- Firefighters must position themselves near the floor to avoid super-heated toxic air collecting at the ceiling
- Staying low also aids in visualizing the hose-line and finding an exit.

LACoFD Self-Survival Procedure

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Turn on Right Angle Flashlight
Position for maximum visibility.

ILLUMINATE (Flashlight)

Training Recommendations

- Lights must be "On" while the firefighter is working in an IDLH environment
- If the flashlight was inadvertently turned "Off", the firefighter must turn the flashlight "On"
- The firefighter shall point the light where a rescuer may find it

LACoFD Self-Survival Procedure

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Pump up the Volume!

Use your tool to make as much noise as you can, but conserve your energy and your air.

VOLUME (Make noise)

Training Recommendations

- Noise originating from the firefighter can direct rescuers to his/her location
- An axe, pike pole, rubbish hook, or any type of forcible entry tool can be used to make the noise. Be loud, be heard, be rescued.

LACoFD Self-Survival Procedure

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Look for any possible exit

- Doors
- Windows

EXIT (Find an Exit)

Training Recommendations

- Feel walls for windows and doors
- If a hose line is available, follow it out using the couplings as a guide
 - The first coupling felt should be the smooth end of the female, followed by short lugs, then the long lugs of the male coupling.



LACoFD Self-Survival Procedure

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S hield Airway



Once out of air you must quickly;

Remove your 2nd stage regulator from the Air KLIC port.

Cover the Air KLIC port with your hood.

SHIELD AIRWAY (Hood)

Training Recommendations

- When the air in SCBA is exhausted, disconnect 2nd stage regulator and cover Air Klic Port with the chin portion of hood
 - NOTE: Breathe through the low air alarm...there's still air available
- Shielding the port will prevent debris from entering the mask

GRAB LIVES

- Keep doing it throughout the rescue
- Stay in contact with the rescuers
- Be confident in RIC...they're on their way!



Self Survival Procedure

G auge	CHECK AIR GAUGE
R adio	RADIO FOR ASSISTANCE
A ctivate	ACTIVATE PASS
B reathing	CONSERVE AIR
L ow	STAY LOW
I lluminate	SHINE FLASHLIGHT
V olume (make noise)	MAKE A LOUD NOISE
E xit (find one)	FIND AN EXIT
S hield Airway	PROTECT AIRWAY

Self Survival Procedure

H andle	A. Name of Distressed Firefighter
E quipment	B. Equipment or Resource Name
L ocation	C. Your Approximate Location
P roblem	D. Nature of the problem