

# RIC OPERATIONS

Approved and Adopted by the  
Office of the State Fire Marshal



Recommended for adoption by the  
Statewide Training and Education Advisory  
Committee and the State Board of Fire Services



## INSTRUCTOR and STUDENT GUIDE

December 2011



# RIC OPERATIONS

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## INSTRUCTOR AND STUDENT GUIDE

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# RIC OPERATIONS



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State Fire Training



## State Fire Training

### Fire Service Training and Education Program

The Fire Service Training and Education Program (FSTEP) was established to provide specific training needs of local fire agencies in California. State Fire Training coordinates the delivery of this training using approved curricula and registered instructors.

The FSTEP series provides both the volunteer and career firefighter with hands-on training in specialized areas such as firefighting, extrication, rescue, and pump operations. Registered instructors deliver FSTEP courses and can tailor by the class to meet a department's specific need. Upon successful completion of an approved FSTEP course, participants will receive an Office of State Fire Marshal course completion certificate.

### Acknowledgments

State Fire Training coordinated the development of the material contained in this guide. Before its publication, the Statewide Training and Education Advisory Committee (STEAC) and the State Board of Fire Services (SBFS) recommended this guide for adoption by the State Fire Marshal (SFM). This guide is appropriate for fire service personnel and for personnel in related occupations.

<b>Ken Pimlott</b> Director, CAL FIRE	
<b>Tonya Hoover</b> Acting State Fire Marshal	<b>Vacant</b> Assistant State Fire Marshal
<b>Mike Richwine</b> Chief, State Fire Training	<b>Ronny J. Coleman</b> Chair, STEAC

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<b>Alicia Hamilton</b> Fire Service Training Specialist III (Retired)
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State Fire Training

<b>Tilden Billiter</b> Sacramento Fire Department	<b>Dru Odil</b> Riverside Fire Department
<b>Jim Hudson, Cadre Leader</b> CAL FIRE/ Nevada-Yuba-Placer Unit	<b>Jake Pelk</b> Central County Fire Department
<b>Matt Loughran</b> Fremont Fire Department	<b>Gerald Pera</b> Redwood City Fire Department
<b>Jeff Martinez</b> West Sacramento Fire Department	<b>Jeff Seaton</b> San Jose Fire Department
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*"We gratefully acknowledge the hard work and accomplishments of those before us who built the solid foundation on which this program continues to grow."*



# RIC OPERATIONS



## Course Outline

### Course Outline

**Course Objectives:** To provide the student with...

- a) Rapid intervention crew terminology
- b) Firefighter fatality case study recommendations to enhance rapid intervention crew training to handle firefighter emergencies on the fireground
- c) Techniques and training in developing the "RIC mindset" and steps taken before a RIC deployment occurs (predeployment) to increase the chances of a successful outcome
- d) Techniques and training in conducting a RIC deployment, including search operations and thermal imaging
- e) Techniques and training in conducting rescue operations once a downed firefighter is located, including assessment and extrication from the structure

<b>Course Content</b> .....	<b>24:00</b>
1. Orientation And Administration.....	1:00
2. The RIC Mindset .....	0:45
3. Predeployment Concepts .....	0:45
4. Deployment Concepts .....	0:45
5. Rescue Operations .....	0:45
6. RIC Operations Skills .....	12:00
▪ #1: Size-up and Assemble A Mobile Tool Cache	
▪ #2: Downed Firefighter Assessment	
▪ #3: RIC Air Delivery	
▪ #4: Search Line Deployment	
▪ #5: Dragging A Downed Firefighter, One Rescuer	
▪ #6: Dragging A Downed Firefighter	
▪ #7: Packaging And Moving A Downed Firefighter Utilizing Rescue Loops	
▪ #8: Packaging And Moving A Downed Firefighter Utilizing A Drag Sled	
▪ #9: Packaging And Moving A Downed Firefighter Utilizing A Mast	
▪ #10: Dragging A Downed Firefighter Down Stairs	
▪ #11: Dragging A Downed Firefighter Up Stairs	
▪ #12: Feet-first Ladder Carry	
▪ #13: Seated Ladder Carry With SCBA Removal	
▪ #14: Head-first Ladder Carry	
▪ #15: Rescue From A Confined Area	
▪ #16: Rescuing A Conscious and Uninjured Firefighter Through The Floor – Hose Method	
▪ #17: Rescuing A Conscious And Injured Firefighter Through the Floor – Hose Method	
▪ #18: Rescuing An Unconscious Firefighter Through the Floor – Hose Method	
▪ #19: Rescuing A Downed Firefighter Through The Floor – Rope Method	



# RIC OPERATIONS



## Course Outline

7. RIC Operations Evolutions ..... 8:00
- #1: Pittsburg Evolution
  - #2: Tarver Evolution
  - #3 and #4: Scenario-based Site-specific Evolutions

## Texts and References

- ☐ Building Construction for the Fire Service, Francis L. Brannigan and Glenn P. Corbet
- ☐ Collapse of Burning Buildings, Vincent Dunn, 1988
- ☐ Confined Space claims the life of a Denver Firefighter in a tragic building fire, Fire Engineering Magazine, April 1993
- ☐ Firefighter Fatalities in the United States, U.S. Fire Administration, September 2009
- ☐ <http://www.firefighterclosecalls.com/>
- ☐ ICS 910: Firefighter Incident Safety and Accountability Guidelines, FIREScope, July 2008
- ☐ NFPA 101: Life Safety Code, 2009 Edition
- ☐ NFPA 1404: Standard For Fire Service Respiratory Protection, 2006 Edition
- ☐ NFPA 1407: Standard For Training Fire Service Rapid Intervention Crews, 2010 edition
- ☐ NFPA 1500: Standard On Fire Department Occupational Safety And Health Program, 2007 Edition
- ☐ NFPA 1584: Standard On The Rehabilitation Process For Members During Emergency Operations And Training Exercises, 2008 Edition
- ☐ NFPA 1670: Standard On Operations And Training For Technical Search And Rescue Incidents, 2009 Edition
- ☐ NFPA 1710: Standard For The Organization And Deployment Of Fire Suppression Operations, Emergency Medical Operations, And Special Operations To The Public By Career Fire Departments, 2010 Edition
- ☐ NFPA 1852: Standard On Selection, Care, And Maintenance Of Open-Circuit Self-Contained Breathing Apparatus (SCBA), 2008 Edition
- ☐ NFPA 1971: Standard On Protective Ensembles For Structural Firefighting And Proximity Firefighting, 2007 Edition
- ☐ NFPA 1981: Standard On Open-Circuit Self-Contained Breathing Apparatus (SCBA) For Emergency Services, 2007 Edition
- ☐ NFPA 1982: Standard On Personal Alert Safety Systems (PASS), 2007 Edition
- ☐ NFPA 1983, Standard On Life Safety Rope And Equipment For Emergency
- ☐ NIOSH #20000349: Commercial Structure Fire Claims The Life Of One Firefighter – California  
<http://www.cdc.gov/niosh/fire/reports/face9807.html>



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## Course Outline

- ☐ NIOSH #20022921: Supermarket Fire Claims The Life Of One Career Firefighter And Critically Injures Another Career Firefighter – Arizona  
<http://www.cdc.gov/niosh/fire/reports/face200113.html>
- ☐ NIOSH #20029424: Career Captain Dies After Running Out Of Air At A Residential Structure Fire – Michigan  
<http://www.cdc.gov/niosh/fire/reports/face200505.html>
- ☐ NIOSH #20035012: Nine Career Firefighters Die In Rapid Fire Progression At Commercial Furniture Showroom – South Carolina  
<http://www.cdc.gov/niosh/fire/reports/face200718.html>
- ☐ NIOSH #20035173: A Career Captain And An Engineer Die While Conducting A Primary Search At A Residential Structure Fire – California  
<http://www.cdc.gov/niosh/fire/reports/face200728.html>
- ☐ NIOSH Publication No. 2005-102: Preventing Deaths And Injuries To Firefighters During Live-Fire Training In Acquired Structures, November 2004
- ☐ NIOSH Publication No. 2005-132: Preventing Injuries And Deaths Of Firefighters Due To Truss System Failures, May 2005
- ☐ NIOSH Publication No. 2007-133: Preventing Firefighter Fatalities Due To Heart Attacks And Other Sudden Cardiovascular Events, June 2007
- ☐ NIOSH Publication No. 2007-154: The NIOSH Firefighter Fatality Investigation And Prevention Program, August 2007
- ☐ NIOSH Publication No. 2009-100: Firefighter Fatality Investigation And Prevention Program: Leading Recommendations For Preventing Firefighter Fatalities, 1998–2005, November 2008
- ☐ NIOSH Publication No. 2009-100: Firefighter Fatality Investigation And Prevention Program: Leading Recommendations For Preventing Firefighter Fatalities, 1998–2005, November 2008
- ☐ NIOSH Publication No. 2009-114: Preventing Deaths And Injuries Of Firefighters Working Above Fire-Damaged Floors, February 2009
- ☐ OSHA-Occupational Safety & Health Administration Services, 2006 Edition
- ☐ The Art of Reading Smoke, David W. Dodson (DVD), 2007
- ☐ The Murder of John Nance, Columbus Monthly Magazine, December 1987
- ☐ Too Little Too Late, Fire Chief Magazine, September 2005
- ☐ Wood I-Joist Awareness Guide: American Forest and Paper Association, 2006  
<http://www.woodaware.com>





# RIC OPERATIONS



## Topic 1: Orientation and Administration

### Topic 1: Orientation and Administration

Terminal Learning Objective (TLO): At the end of this topic, the student will be aware of the course goals, and the requirements for successfully completing the course.

Enabling Learning Objectives (ELO):

1. Describe the course objectives.
2. Define the intent of the RIC Operations course.
3. Describe student's safety recommendations and personal protective equipment.
4. Describe the student evaluation process.

### Course Objectives

The Rapid Intervention Crew Operations course trains firefighters to rescue a downed firefighter in an immediately dangerous to life and health (IDLH) environment in the continuing effort to reduce the number of firefighter injuries and deaths that occur regularly. Tragedies suffered by fellow firefighters from departments across the country are the basis for the training evolutions and scenarios. We will show you how to use these LODD studies as training and prevention tools throughout your career.

The course focuses on the three phases of a RIC operation: 1) predeployment, 2) deployment, and 3) rescue. During the class, you will also gain a greater understanding of RIC operations terminology and the RIC mindset.

It is a 24-hour class delivered in a three-day format. You must effectively complete the class in its entirety to receive a course completion certificate.

### Student Evaluations

You must successfully perform all RIC operations skills and evolutions in order to pass the class.

- ☐ #1: Size-up and Assemble A Mobile Tool Cache
- ☐ #2: Downed Firefighter Assessment
- ☐ #3: RIC Air Delivery
- ☐ #4: Search Line Deployment
- ☐ #5: Dragging A Downed Firefighter, One Rescuer
- ☐ #6: Dragging A Downed Firefighter
- ☐ #7: Packaging And Moving A Downed Firefighter Utilizing Rescue Loops
- ☐ #8: Packaging And Moving A Downed Firefighter Utilizing A Drag Sled
- ☐ #9: Packaging And Moving A Downed Firefighter Utilizing A Mast
- ☐ #10: Dragging A Downed Firefighter Down Stairs
- ☐ #11: Dragging A Downed Firefighter Up Stairs
- ☐ #12: Feet-first Ladder Carry
- ☐ #13: Seated Ladder Carry With SCBA Removal
- ☐ #14: Head-first Ladder Carry
- ☐ #15: Rescue From A Confined Area (Denver Drill)
- ☐ #16: Rescuing A Conscious and Uninjured Firefighter Through The Floor – Hose Method





# RIC OPERATIONS



## Topic 1: Orientation and Administration

- ☐ #17: Rescuing A Conscious And Injured Firefighter Through the Floor – Hose Method
- ☐ #18: Rescuing An Unconscious Firefighter Through the Floor – Hose Method (Nance Drill)
- ☐ #19: Rescuing A Downed Firefighter Through The Floor – Rope Method
- ☐ Evolution #1: Pittsburg Evolution
- ☐ Evolution #2: Tarver Evolution
- ☐ Evolutions #3 and #4: Scenario-Based Site-specific Evolutions

The skill sheets in this manual will serve as a guide to both the students and instructors in documenting proficiency. You will be working as an active and proficient crewmember, with effective teamwork and communication as essential factors in the success of the RIC.

### Safety/Injury Reporting

Safety is of paramount importance in any training evolution. Firefighter emergency escape methods are in accordance with the NFPA 101: Life Safety Code, 2009 Edition and Cal/OSHA Title 8, Section 1670. Notify your instructor if you have any condition or limitation that may affect your participation in a training evolution. In addition, notify your instructor immediately if you sustain an injury during the class.

### Sample Calendar of Events

DAY	TOPIC	TITLE	TIME	ACTIVITY
Day 1	1	Orientation And Administration	4:00	
	2	The RIC Mindset		
	3	Predeployment Concepts		
	4	Deployment Concepts		
	5	Rescue Operations		
	Skills	Size-up and Assemble A Mobile Tool Cache	4:00	Skill #1
		Downed Firefighter Assessment		Skill #2
		RIC Air Delivery		Skill #3
		Dragging A Downed Firefighter, One Rescuer Method		Skill #5
		Dragging A Downed Firefighter		Skill #6
		Packaging And Moving A Downed Firefighter Utilizing Rescue Loops		Skill #7
		Packaging And Moving A Downed Firefighter Utilizing A Drag Sled		Skill #8
		Packaging And Moving A Downed Firefighter Utilizing A Mast		Skill #9
		Dragging A Downed Firefighter Down Stairs		Skill #10
		Dragging A Downed Firefighter Up Stairs		Skill #11
	Day 1 Total		8:00	
Day	Skills	Search Line Deployment	8:00	Skill #4

# RIC OPERATIONS

## Topic 1: Orientation and Administration

DAY	TOPIC	TITLE	TIME	ACTIVITY
2		Feet-first Ladder Carry		Skill #12
		Seated Ladder Carry With SCBA Removal		Skill #13
		Head-first Ladder Carry		Skill #14
		Rescue From A Confined Area		Skill #15
		Rescuing A Conscious and Uninjured Firefighter Through The Floor – Hose Method		Skill #16
		Rescuing A Conscious And Injured Firefighter Through the Floor – Hose Method		Skill #17
		Rescuing An Unconscious Firefighter Through the Floor – Hose Method		Skill #18
		Rescuing A Downed Firefighter Through The Floor – Rope Method		Skill #19
	Day 2 Total		8:00	
Day 3	Evolutions	RIC Operations Evolutions	8:00	
		Pittsburg Evolution		Evolution #1
		Tarver Evolution		Evolution #2
		Scenario-based Evolutions		Evolutions #3-#4
	Day 3 Total		8:00	
Course Total		24:00		

**Minimum course hours = 24:00.**

Add adequate time and materials if conducting additional skills or evolutions.

## Topic 2: The RIC Mindset

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe the importance of having the proper mindset and attitude to successfully complete the rescue of a downed firefighter.

Enabling Learning Objectives (ELO):

1. Describe the importance of developing the RIC mindset.
2. Describe the steps taken before being assigned to RIC in developing a RIC mindset.
3. Describe the magnitude of being a proactive RIC.
4. Describe the value of learning from past RIC deployments and fireground tragedies.
5. Describe the significance of not becoming part of the RIC emergency.

Far too often, we have seen companies standing in front of a structure unhappy they are assigned as a RIC; maybe you have even felt this way yourself. Firefighters want to fight fire, and we know that is not going to happen for the rapid intervention crew. When this happens on the fireground, it becomes too easy to lose motivation and focus. ***This type of unhappy mindset can never be displayed by the RIC.*** Though it is not always the glamorous assignment on the fireground, and thankfully is rarely deployed, the RIC is tasked with one of the most important jobs in the fire service – ***saving our own!*** Displaying the necessary frame of mind and determination is the first step in becoming a successful rapid intervention crew.

***"The price of success is hard work, dedication to the job at hand, and the determination that win or lose, we have applied the best of ourselves to the task at hand." Vince Lombardi***

### Developing the RIC Mindset

Developing the RIC mindset begins well before any incident; it begins your first day on the job when you join your fire service family. Your company and coworkers are no more than an extension of your immediate family, and nothing can be more tragic than harm coming to a family member. Developing the proper mindset continues with ongoing training and the desire to constantly improve your own knowledge, skill, and ability (KSAs).

< **KNOWLEDGE** >      < **SKILL** >      < **ABILITY** >

### Training

Not only are your own KSAs paramount, but also those of your crew. To be an effective RIC, the entire crew must be trained to the highest level possible. Put yourself in the shoes of a downed firefighter. Wouldn't you expect the RIC who is coming to rescue you to be highly proficient and motivated? Be that firefighter who motivates the crew to train, train, and then train again. Equally important to RIC operations training, is firefighter skills training. When a firefighter calls a firefighter emergency on the third floor, now is not the time to remember how to throw a ladder. A strong foundation in fireground skills is one of the first steps in RIC operations.

### Physical Fitness

Some of the most physically demanding tasks on the fireground are that of the RIC. Maintaining a high level of physical fitness is critical. When a firefighter emergency is called, it is time to go to work as rapidly as possible, into a hostile environment with a task that will require every ounce of energy you have. If you are not physically fit, you will be ineffective if you have nothing left when you reach a downed firefighter. Worse yet, you never reach the downed firefighter because you ran out of air yourself and exited the structure.

### Learn from the Past

Developing the RIC mindset also means learning from the past. Though tragic, reviewing incidents in which firefighters have been injured or lost their lives on the fireground is invaluable information. Learn from the past.

- ☐ How can we prevent these tragedies from happening again?
- ☐ How can a RIC effectively mitigate these situations if they occur again?

Utilize case studies and NIOSH reports as learning tools. They may help you save a fellow firefighter someday.

***"Problems cannot be solved with same level of awareness  
that created them." Albert Einstein***

### Proactively-Reactive

There is no way to know when and where a firefighter emergency may occur. It is the job of the rapid intervention crew to react at a moment's notice. This does not mean, however, waiting on the A-side of the structure with your hands in your pockets.

The RIC needs to be proactive and reactive at the same time. We do not know who will need help or where they will be when they need help, but we can take steps to rapidly and efficiently rescue them if the need arises. The goal of the RIC should be to make their reaction as efficient as possible. The mindset is the system for success. The moment your crew is assigned as the RIC, your mindset should be to learn everything possible about the structure, fire conditions, crews inside, and hazards or obstacles that may hinder rescue operations.

Once this information has been obtained, take steps to mitigate any problems. For example:

- ☐ If crews are working on upper floors, place ladders to support them
- ☐ Know where crews are working and locate ingress and egress to support the operation
- ☐ Where the structure poses access issues, soften the structure
- ☐ If there are multiple crews inside a large or complex structure, consider requesting multiple RICs
- ☐ Continuously monitor radio traffic

The list is endless and the situation will dictate your preparation. However, the goal is the same every time you are assigned as the RIC. Be proactive and reactive at the same time. Be dynamic, not static. The RIC with their hands in their pockets are not displaying the right mindset.

### Don't Compound the Problem

The fire service has always displayed a "can-do" attitude. This is an excellent mindset to have. However, it can also be downfall for a rapid intervention crew. The RIC must understand that if they become part of the problem at hand they are reducing the chance of saving a fellow firefighter. Studies conducted by the Phoenix Fire Department showed that it typically takes 12 firefighters to rescue one downed firefighter and one out of every five would-be rescuers become distressed at some point. (See Appendix C)

So what does this mean for the RIC? It means that they must begin their deployment knowing in the back of their minds that they may not be the ones that bring that downed firefighter out. There is nothing wrong with this. Steps taken by the initial RIC can be as equally as important as removing the downed firefighter from the structure.

For example, your RIC may locate the downed firefighter and place them on-air, but then you may have to exit the structure due to low air levels. This will understandably be hard to do even though that downed firefighter has a greater chance of survival due to being located and having air to breath. A subsequent RIC can now rapidly deploy to the downed firefighter your RIC located and remove them from the structure. If your RIC stays, expends all their air, and becomes overcome by carbon monoxide, you still will not be able to complete the rescue and you have compounded the problem. Have the mindset that you may require help in completing the rescue, and then call for it early.

### Summary

At all times, a rapid intervention crew must engage the proper mindset in order to have a greater chance of success in the event of a deployment. Developing the proper mindset begins well before the incident with training, physical fitness, learning from the past, and most importantly being proactive. Gone are the days of being assigned to RIC and being unprepared and unmotivated. The fire service is still losing approximately 100 firefighters a year. Why is this? We have better equipment, new technology, and more formalized training. We are fighting industry as well as ourselves. Current construction practices do not withstand fire as well as in the past. We also need to consider all materials and furnishings as "fuel." Many items that were made of Class A combustibles are now made of plastics and other synthetic materials, which burn hotter and facilitate early flashover. With newer PPE and equipment, we get deeper into structures faster and put ourselves into more hostile environments that we cannot always get out of. As taught in the Firefighter Survival course, situational awareness is not a "buzz word." You need to develop true situational awareness. We are in harm's way more than ever. Developing the proper mindset and understanding the enemy may be the difference between a RIC being effective or failing.

### Topic 3: Predeployment Concepts

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe the importance of conducting the necessary steps leading up to a RIC deployment.

Enabling Learning Objectives (ELO):

1. Understand the importance of and procedures for of conducting a RIC size-up.
2. Identify the importance of assembling a functional RIC tool cache.
3. Identify the importance of softening a structure.
4. Describe predeployment concepts and procedures.

#### Size-up

In any fire department emergency, a thorough and ongoing size-up is necessary to ensure firefighter safety and strategically coordinated efforts. In a RIC emergency, size-up also applies and includes further steps and investigation to allow the RIC to be effective in the event of deployment.

On every fire, you should take in to account three main aspects when conducting a size-up:

- ☐ The interior of the structure
- ☐ The exterior of the structure
- ☐ Their own situation

The RIC must account for all these factors to maintain their own safety as well monitoring the situations of the crews engaged in fire suppression. By monitoring the situations encountered by companies involved in fire suppression, the RIC can be better prepared, have the right tools, be in the right position, and deploy in rapid fashion.

#### Critical Information

The RIC size-up begins the moment a company is assigned to the incident. It is important that the RIC Leader obtain information that will help influence later decisions in the event of a RIC deployment.

- ☐ What fireground radio channels are being used?
- ☐ What is the RIC radio identifier?
  - Truck 3 RIC, Engine 2 RIC, etc.
- ☐ Are there other RICs assigned to the incident?
- ☐ What are the landmarks?
  - A-side, B-side, C-side, D-side, Divisions
- ☐ How many companies are inside the structure?
- ☐ Where did the interior crews enter the structure?
  - This may assist the RIC in deciding where to make entry
- ☐ How long has the fire been burning?
  - Potential for collapse

- ☐ In the event of a large-scale RIC emergency, will the RIC have enough personnel?
- ☐ Where are fire suppression companies currently assigned on the incident?
  - This will give the RIC a general idea of where a distressed firefighter may be in the event of a firefighter emergency

### Exterior Size-up

After obtaining this information, the RIC should conduct a walk-around of the structure's exterior. This allows the RIC to identify critical factors that will influence the RIC's tactics in the event of a deployment.

- ☐ Consider using a TIC
- ☐ Type of construction
  - Potential for collapse
  - Required tools
- ☐ Ingress and egress
- ☐ Potential exits
  - Go over, around, and through if necessary
  - Consider using portable lights as indicators for interior crews
- ☐ Openings requiring softening
  - Remove obstacles
- ☐ Hazards
- ☐ Approximate square footage
- ☐ How many meters, mailboxes?

### Interior Size-up

After the exterior size up, it is also important the RIC size-up the interior of the structure. This will identify what the RIC will encounter in the event of a RIC deployment. Conducting an interior size-up can be difficult depending on fire conditions.

- ☐ Interior lay out
  - Large open areas
  - Compartmentalized
  - Type of search required
- ☐ Type of occupancy
  - Residential
  - Hazardous
  - Fabrication
  - Storage

- ☐ Fire conditions
  - Heat
  - Visibility
  - Recognition of critical fire behavior
- ☐ Smoke
  - Volume
  - Velocity
  - Density
  - Color
- ☐ Potential hazards
  - High-piled storage
  - Haz Mat 704
  - Pack-rat syndrome

The RIC can use other means to assist with the both the exterior and interior size-up, such as preincident plans, building plans, and on-site representatives.

### Interior Crew Size-up

It is also crucial that RIC size-up the situation of the crews inside the structure. The RIC must continuously monitor the radio and gather information on what is going on inside the structure. The more the RIC knows, the quicker and more efficient they will be.

- ☐ Where are the interior crews located?
  - Identify how the RIC will get to them
  - How the RIC get them out
  - What will be the travel time to get to them
- ☐ What is their air situation?
  - Listen to PARs and CAN reports
  - When did they make entry, have a mental clock
  - If they are low on air, will the RIC have enough air to complete the task?
- ☐ Where are they going to exit in the event of an emergency?
  - Can the RIC get to where they are trying to go?
- ☐ What kind of conditions are they encountering?
  - What kind of situation will the RIC be encountering?

It is crucial to remember that the RIC size-up is the first step of good predeployment practices. The size-up must be ongoing and thorough. The situation may change, but the RIC must be able to react at a moment's notice. **Be prepared, listen to the radio traffic, have a plan, understand the structure, and understand the situation.**

Utilizing a RIC Tactical Worksheet can be advantageous. This allows the RIC Leader to paint a picture of the incident and structure before a RIC deployment occurs, and then brief the RIC members. A common acronym utilized on a tactical sheet is RECON.



### RIC RECON / SIZE-UP / 360° SURVEY

RIC Group Supervisor ID: \_\_\_\_\_ CMD Channel: \_\_\_\_\_ TAC Channel: \_\_\_\_\_

#### Rescue of Firefighters

Identify Locations of Companies/Firefighters

Identify Potential Entrapments, Hazards, and Problems

#### Egress for Firefighters

Security Bars or Doors – Remove as needed

Ground or Aerial Ladders as needed

#### Construction Type

Construction Type: \_\_\_\_\_

Lightweight/Truss Type: \_\_\_\_\_

#### Outside Survey

Approximate Dimensions: \_\_\_\_\_

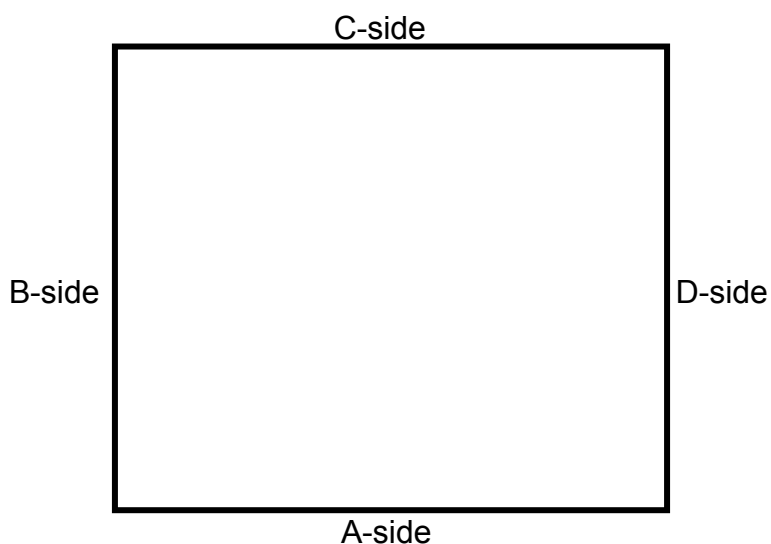
Irregular Shape/Basement: \_\_\_\_\_

#### Nasty Hazards

Haz Mat/Placards: \_\_\_\_\_

Electrical/Gas: \_\_\_\_\_

Other: \_\_\_\_\_



## RIC TAC SHEET

### **Arrival**

- ☐ Face-to-face with the IC
- ☐ Confirm which crews are on-scene and their assignments
- ☐ Confirm radio channels to use
- ☐ Advise IC of RIC's staging location
- ☐ Brief RIC with information from IC

### **Size-up**

- ☐ 360° of the structure including use of TIC
- ☐ Occupancy and type
- ☐ Building construction
- ☐ Structural triage
- ☐ Note any additions or remodels
- ☐ Note any other hazards or fire conditions present or changing
- ☐ Complete multiple size-ups as the incident progresses

### **Soften the Structure** (communicate this with Operations and Command)

- ☐ Remove security bars and doors
- ☐ Forcible entry on doors and windows
- ☐ Place a box light, turned on, in the openings to denote an exit
- ☐ Throw additional ladders to the roof (minimum two ladders at all times)
- ☐ Places ladders to all floors of the operation

Any other tasks to assist in exiting the structure

### **Minimum Equipment**

- Appropriate EMS equipment
- Chainsaw
- Flat-head axe
- Halligan
- Pick-head axe
- Pike pole
- Radios
- Rescue saw with metal blade
- RIC pack
- Search rope pack
- Sledge hammer
- Thermal imaging camera (on)

### **Other Equipment Based on Incident**

- Air bags
- Atmospheric monitor
- Cribbing
- Hoseline
- Hydraulic tools
- Ladders
- Portable lights/generator
- Pry bars
- Reciprocating saw
- Rescue litter
- Spare SCBA bottles (full)

## Tools and Equipment

In the event of a RIC deployment, it is essential to have the correct tools and equipment for the job at hand. Typically, the required tools and equipment will be dictated by the complexity of the RIC emergency. Unfortunately, oftentimes the true complexity of the RIC emergency is not known until the downed firefighter is located. This is why it is essential to assemble a fully functional and adequate tool cache every time your company is assigned to a RIC.

### Five Considerations

When assembling a tool cache, five main considerations must be addressed:

- ❶ Ingress/Egress
- ❷ Search
- ❸ Air delivery
- ❹ Gaining access to a downed firefighter
- ❺ Packaging a downed firefighter

The proper tools and equipment must be part of the RIC tool cache to address these five areas on every RIC deployment. The exact tools and equipment may vary from department to department, but the important thing to remember is that the RIC has the proper tools for the job. An ongoing and thorough size-up of the structure will also dictate any other tools or equipment that may be required. For example:

- ☐ Saw type
  - Based on construction
- ☐ Heavy lifting
  - Firefighter states they are trapped under a heavy object
- ☐ Entanglement
  - T-bar/drop ceiling, wires, etc.
- ☐ Extended operations
  - Extra SCBA bottles
  - RIC packs

These are only a few examples, but the important concept is to BE PREPARED!

### Placement of the Tool Cache

Along with selecting the proper tools and equipment for the RIC deployment, placement of the RIC tool cache is also of the utmost importance. The A-side of the structure near the main entrance is not always the best place for the RIC to stage their equipment. The point of



entry of the Interior Attack Team is also not always the best place. It is impossible to know where a firefighter emergency may occur. Consider staging at the corner of the structure to monitor two sides at the same time. It is also important to remember, that structural collapse or extreme fire behavior collapse may have cutoff the egress of firefighters leading to the firefighter emergency. It is important that the RIC be able to rapidly deploy to any area of the structure with their tool cache. This can be accomplished by using a mobile tool cache. A mobile tool cache also allows the RIC to stay dynamic on the fireground.

Another key concept to remember is the ***RIC tool cache belongs to the RIC***. Do not allow other resources to remove any items from your cache. The tools and equipment used by the RIC could mean the difference between life and death for a downed firefighter. The RIC tool cache needs to be fully equipped and ready to be deployed at all times. When a fellow firefighter goes down, that is not the time to be looking for the tools and equipment to get them out.

### Ingress and Egress Tools

- ☐ Irons (flathead axe and Halligan)
  - Forcible entry
  - Creating an opening
- ☐ Chain saw
  - Removing doors
  - Enlarging openings
  - Creating an opening
- ☐ Circular saw
  - Removing bars
  - Removing metal doors
  - Removing locks
  - Enlarging openings on masonry/metal buildings
  - Creating openings on masonry/metal buildings
- ☐ Reciprocating saw
  - Removing bars
  - Removing locks
  - Enlarging openings
  - Creating an opening
- ☐ Cutting torch
  - Removing bars
  - Removing rebar
  - Removing locks

- ☐ Through the lock tools
  - Removing locks and hardware
- ☐ Bolt cutters
  - Removing chains
  - Removing pad locks

### Search Tools

- ☐ Handled tools
  - Allows further reach from anchor points
  - Allows for greater person-to-person reach
- ☐ Standard rope
  - Provides an anchor in a rapid search
- ☐ Search lines
  - Provides an anchor for a rapid search
  - Provides a reference of depth into the structure
  - Provides directional reference for the RIC once inside the structure
  - Provides multiple anchor points for the RIC once inside the structure
- ☐ Webbing
  - Allows further reach from anchor points
  - Allows for greater person-to-person reach
- ☐ Thermal imager
  - Allows for greater visibility within the structure during search
  - Allows the RIC to identify hazards, exits, and firefighters within the structure
  - Allows the RIC to identify temperatures within the structure



### Air Delivery Tools

- ☐ Spare SCBA
  - Equipped with spare mask
  - Allows for regulator or mask changeover
- ☐ RIC air
  - Equipped with spare mask
  - Equipped with a universal air connector (UAC)
    - Identify whether your department and neighboring departments comply with NFPA 1981: Standard On Open-Circuit Self-Contained Breathing Apparatus For

Emergency Services, 2007 Edition, stating that all new SCBAs will have a standard universal air connection (UAC) regardless of the manufacturer

- Equipped with an additional mask mounted regulator (MMR)
- Allows downed firefighters to have their own air to breath
- ☐ Trans fill lines
  - Utilized for SCBAs with UAC
- ☐ Buddy breathing system
  - Present on many newer SCBAs
  - Downed firefighter is now utilizing the same air as a RIC member
- ☐ Plastic tubing
  - Can be used as a mask-to-mask buddy breathing system if no other air delivery equipment is available



### Access Tools

- ☐ Wire cutters
  - Retrieval of an entangled firefighter
  - Spring loaded
- ☐ Pneumatic lifting tools
  - Heavy lifting in an entrapment situation
- ☐ Hydraulic lifting tools
  - Heavy lifting in an entrapment situation
- ☐ Pry bars
  - Heavy lifting in an entrapment situation
- ☐ Saw (chain, circular, or reciprocating)
  - Removal of debris from around a downed firefighter

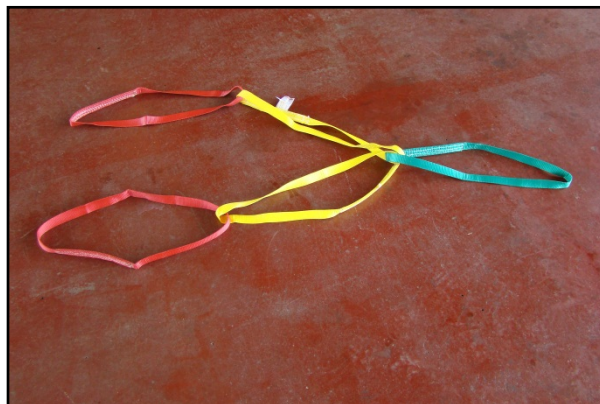
It is important to understand that much of the equipment used to remove heavy debris off a trapped firefighter is heavy and cumbersome. In many instances, the RIC is not fully aware of the extent of the rescue at hand. It is not suggested that a RIC conduct a search with these heavy items as it will slow progress and cause fatigue. The equipment should be staged at a strategic point for rapid deployment when needed.

### Packaging

- ☐ Tubular webbing
  - Lightweight and versatile
  - Can be used as a harness
  - Can be used as a drag handle



- ☐ Rescue loops
  - Lightweight and versatile
  - Rapidly deployed
  - Provides drag and lifting handles
- ☐ Drag devices
  - Typically lightweight and versatile
  - Rapidly deployed
  - Protects the downed firefighter from any further entanglement by encapsulating them

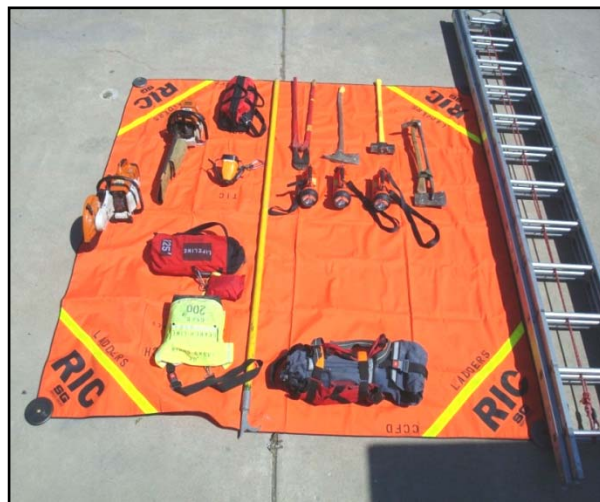


- ☐ Rescue litter
  - Strong and sturdy
  - Large and cumbersome
  - Securing the downed firefighter in the basket can be difficult in a limited visibility environment
  - Provides a means to move tools and equipment
- ☐ SKED
  - Slides well on most surfaces
  - Lightweight but bulky
  - Provides multiple drag and carrying handles
  - Can be difficult to deploy and secure a downed firefighter in a low visibility environment
  - Protects the downed firefighter from any further entanglement by encapsulating them

### Tool Cache Placement

Once the RIC tool cache has been assembled, it is important that it be placed in a strategic and advantageous location. A RIC deployment may need to commence from any point around a structure. There is no way to know where the RIC emergency may occur, and the

key is to be prepared when it does. In many cases, it may be necessary to stage a RIC tool cache on multiple sides of the structure, typically the A- and C-sides. Corners also provide an excellent option for staging. On multiple alarm incidents, it may be advantageous to have multiple RICs with their own tool cache staged on multiple sides of the structure. Many departments are utilizing RIC tarps that may be staged where needed and identify the tools and equipment that will be utilized in the RIC tool cache. This identifies that the tools and equipment are for use by the RIC only and ensures that no equipment is left out of the cache.



### Staying Mobile (Staying Rapid)

Having the correct tools and equipment in the RIC tool cache is of little use if they are not ready to be deployed in a rapid fashion at any point in and around the structure.

In many cases, it is important that the RIC be able to stay mobile and deploy the RIC tool cache where needed at any point around the structure. For example, the initial RIC assigned to the incident. Again, there is no way of knowing exactly when or where a RIC deployment may be necessary. The key is to be ready when it does occur and get there rapidly. The front door is not always the best access and the RIC does not always have to follow the hose in. The best access may be directly on the other side of the building from your location. The RIC can deploy from any point around the structure. By utilizing a mobile tool cache, the RIC can have all of the necessary tools and equipment with them at all times, and get to where they need to go in a rapid fashion.



### Staying Rapid inside the Structure

It is essential that the RIC does not overload themselves with tools and equipment. They need to be able to search and move in a rapid fashion. Numerous tools and equipment make up the tool cache and need to be ready for deployment, but they each have a different role.



For example, saws that are used to soften the structure and create ingress and egress may not be needed inside the structure. By creating a RIC pack, a RIC can cover two main areas that must be addressed when involved in a RIC deployment. These two areas are air delivery and downed firefighter packaging.

- ☐ Air delivery
  - RIC air
  - Spare SCBA
  - Trans fill lines
- ☐ Packaging
  - Webbing
  - Drag devices
  - Rescue loops



Though the equipment options may vary by department, the goal is always the same - the ability to deliver air and package the downed firefighter for extrication. To accomplish this, the RIC pack needs to be set up appropriately. The equipment is relatively lightweight and can be moved quickly by one RIC member. This allows the other RIC members to conduct a thorough search using thermal imagers and search lines. The RIC emergency may become more complex as a RIC locates a downed firefighter and assesses the situation. The downed firefighter may be entrapped or entangled requiring heavy lifting or cutting tools. By earlier staging the RIC tool cache in a strategic location, any other required equipment is also ready for rapid deployment when needed.

### Tools and Equipment Summary

The tools and equipment used in a RIC deployment will vary by department. The important concept to remember when assembling the RIC tool cache is to make sure that the five main considerations are covered on every RIC deployment: 1) ingress and egress, 2) search, 3) air delivery, 4) gaining access to a trapped firefighter, and 5) packaging. It also of the utmost importance that RIC tool caches are staged in strategic locations around the structure, or set up in a fashion that allows for mobility and rapid deployment. Set up your equipment in a manner that does not impede your mobility and slow your RIC down. It is also important to remember that having the equipment on your apparatus is only the first step. Train and know how to use the tools and equipment in your RIC tool cache. During the RIC deployment is not the time to learn how to use a piece of equipment.

### Softening the Building

After conducting a thorough and ongoing size-up of the situation and assembling the RIC tool cache, the next step in the predeployment phase of RIC operations is softening the structure. Softening the structure is a term used to describe the steps taken to create ingress and

egress for the RIC, as well as other firefighters inside the structure. Too often during fire-fighting efforts, firefighters rely solely on one point of egress, typically the way they entered. In many cases, this might be the worst route of egress in an emergency. By softening the structure, the RIC can identify multiple points of egress, create points of egress, and remove any obstacles impeding egress. By softening the structure, the RIC is reducing the reflex time it will take to get a downed firefighter out of a situation, increasing the chance of survival in a RIC emergency. The goal is to make sure the structure does not beat us.

## Existing Points of Ingress and Egress

During the RIC size-up and while conducting a thorough walk-around of the structure, it is important to identify every door and window. It is also necessary to identify what type of doors and windows are in place. This will allow the RIC to identify the complexity of the situation and what tools will be necessary.

### ☐ Doors

- Type
  - Wood
  - Metal
  - Electric
  - Double doors/French doors
  - Rollup
- Construction
  - Solid core
  - Hollow core
  - Panelized
  - Pressed metal
  - Slat style
- Locking mechanism
  - Dead bolt
  - Mortis lock
  - Rim lock
  - Chained
  - Panic hardware
- Hinges, exposed and unexposed
- Security Bars



## ☐ Windows

- Glass type
  - Paned
  - Tempered
  - Security
- Height
  - Feasible for rescue
- Width
  - Feasible for rescue
  - Security bars



Again, by identifying the type of existing ingress egress point during the size-up process, the RIC will be aware of challenges they may face in softening the structure and utilize the necessary tools for the job.

**Exterior crews must always coordinate with interior crews to assure they do not change the fire behavior and endanger personnel engaged in fire attack.**

## *Softening Existing Ingress and Egress Points*

After identifying the existing points of ingress and egress, the RIC must now remove any obstacles that will hinder rapid deployment into the structure. This can range from basic forcible entry techniques using irons to complex cutting operations using power saws and cutting torches. The structure will dictate the complexity of the softening operations.

## ☐ Methods of softening doors

- Through the lock
  - Can be effective when dealing with metal and heavy solid core doors with no hinge access or security plates
- Forcible entry with irons
- Removing hinge pins
- Cutting hinges
- Cutting the locking mechanism
- Breaching exterior walls to gain access to the lock
  - Effective on wood frame construction
- Removing glass on windowed or glass paned doors
- Center cut of door
  - Can create enough flex in the door push the door of the locking mechanism

- ☐ Methods of softening rollup and garage doors
  - Cut the locking mechanism
    - Can be difficult to locate from the exterior
  - Inverted L (sheet curtain)
  - Single cut
    - Removal of slats
  - Inverted V cut
    - Effective on doors with electric lowering and raising mechanisms
    - Quick but opening is limited in size
  - Large square cut
    - Effective on doors with electric lowering and raising mechanisms
- ☐ Methods of softening windows
  - Break the glass
  - Remove window frame
    - Can be effective when dealing with security glass
  - Cut the glass
    - Can be effective when dealing with security glass
    - Reciprocating saw can be effective
- ☐ Methods of removing security bars and gates
  - Remove the pad lock if utilized
  - Remove any hardware holding the bars or gates in place
  - Cut with circular saw
  - Cut with reciprocating saw
  - Cut with a cutting torch
    - Effective on case hardened locks and other hard metals

### *Creating Ingress and Egress Points*

In some cases, using existing ingress and egress points may not be an option. It may be necessary to soften the structure in a manner that creates ingress and egress points. For example, in a large structure with minimal doors and windows it will be necessary for the RIC to create openings. This can be accomplished easily on wood frame and lightweight metal construction by cutting from the exterior using hand tools and power saws. When undertaking these operations, it is important to minimize any further structural compromise. Just like in vertical ventilation operations, identify the structural members before making cuts and minimize any further damage to the structural integrity. Keep in mind that structures will typically be the strongest at the corners.



Many types of structures will present challenges and create lengthy operations when creating ingress and egress points. For example, when dealing with masonry, concrete tilt-up, and thick metal exterior walls it is important that the RIC have the right tools for the job. In addition, it is equally important that the RIC place the ingress and egress points in strategic locations around the structure. Unlike lightweight construction in which an opening can be created in a matter of minutes, cutting through thick concrete, masonry, and metal can be very time consuming.

## *Enlarging Openings*

It may be necessary for the RIC to enlarge existing ingress and egress points to allow for more efficient and rapid operations. Like on the highway, more cars can travel through an area faster when there are four lanes versus one lane. Why have a bottleneck when there can be a freeway? The goal of the RIC is to get in and get a downed firefighter out as quickly as possible. This can be hampered if RIC tries to fit through tight areas with all their equipment to move a downed firefighter. By enlarging openings, the RIC can help reduce lost time.

Strategic areas of a structure that the RIC can utilize to enlarge an opening include existing doors and windows. When dealing with doors and windows, half of the work has already been completed. Typically, an enlarged opening can be made rapidly with only 2-3 cuts with a power saw.

Softening the structure can be the difference between life and death for a downed firefighter. Do not let the structure beat the RIC or the firefighter who you have been assigned to rescue. When a firefighter emergency is called, is not the time to force doors or windows, seconds count.



## Predeployment Summary

By using good predeployment practices, the RIC can be adequately prepared and ready to deploy in a rapid and efficient fashion. Without performing a thorough and ongoing size-up, assembling the appropriate tools for the deployment, and softening the building, the RIC is not setting up for success. Remember, that the success of a rapid intervention crew is measured on everyone going home at the end of the day.

## Topic 4: Deployment

Terminal Learning Objective (TLO): At the end of this topic, the student will be aware of the importance of deployment procedures and the techniques utilized during a RIC deployment.

Enabling Learning Objectives (ELO):

1. Describe the concepts of a RIC deployment.
2. Describe the different search techniques.
3. Describe search line techniques.
4. Describe point-to-point search techniques.
5. Describe specific search area techniques.
6. Describe the advantages and disadvantages of using a hoseline during a search.
7. Describe RIC air management procedures.

Deployment is the phase of RIC operations that encompasses the search and rescue of a downed firefighter. In the event that a RIC is deployed, they must locate the downed firefighter, potentially package, and then extricate the firefighter from the structure. Remember that, based on the event, more than one RIC could be deployed into the structure to complete the RIC operation and extricate the downed firefighter. In some instances, the location of the downed firefighter may not be known.

For this reason, fire departments need to have established standardized search procedures for RIC deployments. These procedures must be adhered to anytime a RIC is deployed to locate a downed firefighter. During the search for a downed firefighter, the RIC could use a search line system. A search line system identifies the entrance and location of a RIC, and provides a known path to the downed firefighter and an exit for RIC personnel.

Once deployed, speed and time become essential. In order to expedite this process, crewmembers should have predetermined roles and responsibilities. The initial RIC assigned to search and locate the downed firefighter should consist of a minimum of three members. Companies assigned to assist in the packaging and removal of the downed firefighter may utilize the number of members available to them.

It is recommended that all RICs work with a minimum of three personnel. Each member should have a radio, and should carry the equipment listed below. Any additional RIC entering the structure may require additional equipment based upon the level of entrapment of the downed firefighter.

### RIC Search Procedures

Prior to entry, the RIC Leader confirms the entry point that will allow the RIC to enter closest to the downed firefighter's location, allowing for the quickest deployment possible. This is based on either the downed firefighter's LUNAR/NUCAN report or last known location based on information from other companies operating on the fireground. The RIC Leader also ensures that all RIC personnel don full PPE, turn on their radios using the correct channel(s), and select and carry the correct tools.

### Following a Designated Hoseline to a Downed Firefighter

If a hoseline was deployed by a firefighter who becomes lost, trapped, or disoriented and he or she cannot get free or is better off staying in place, the RIC may use the existing hoseline as their path/anchor point to search and locate the downed firefighter. If the downed firefighter is not at the end of the hoseline, the RIC needs to determine if they have used the wrong hoseline for their search. However, if the RIC believes they are close based on the sound of a PASS device or another noise coming from the downed firefighter, then they may try to "extend" their search by advancing the hoseline they followed in an attempt to locate the downed firefighter. Another way to extend the RIC search is to use a personal rope bag. The rope should be no longer than 25 feet and anchored using a clove hitch 6-8 feet back from the nozzle. This allows the nozzle to be opened and used if needed.

#### *Advantages*

- ☐ The existing hoseline can lead the RIC directly to the firefighter who called for help
- ☐ The existing hoseline may allow the RIC to locate the downed firefighter while he or she is exiting the structure on the hoseline
- ☐ The RIC knows that the hoseline will lead them back out to a known entry location
- ☐ The RIC will have protection of the hoseline once they get to the end of the hoseline
- ☐ The RIC does not need to deploy another hoseline or search line as an anchor leading them in and out of the structure
- ☐ They have the ability to extend their search with the hoseline
- ☐ They have the ability to extend their search by using a personal rope no longer than 25 feet

#### *Disadvantages*

- ☐ Hoseline may not be in working condition
  - It may have failed due to an event (i.e., flashover) causing the firefighter emergency
- ☐ Hoseline cannot be used if it is needed for protection from fire prior to reaching the nozzle
- ☐ If more than one hoseline is deployed, the chances that the RIC selecting the correct line or staying on the correct line will diminish
- ☐ The RIC can only estimate how far they have traveled into and around the structure since the hoseline only has couplings to use as landmarks
- ☐ Poor choice for landmarking the downed firefighter once the RIC finds the downed firefighter and needs to leave
- ☐ Hoseline can travel over and/or in the area of structural compromise with limited knowledge of where the RIC is heading
  - These are extremely poor depth and directional indicators for the RIC

The only accountability report that can be communicated is a personnel, position, air, and accountability

### Deploying a Charged or Dry Hoseline

If a hoseline was deployed by a firefighter who becomes lost, trapped, or disoriented and he or she cannot get free or is better off staying in place, the RIC may use a new hoseline as their path/anchor point to assist them in searching and locating the downed firefighter. There are a few advantages but multiple disadvantages to this deployment method. It is recommended the RIC not be burdened with a hoseline. A separate crew should be assigned to provide fire control to protect the RIC and the downed firefighter, as needed.

#### *Charged Hoseline Advantages*

- ☐ A charged hoseline is a tool that firefighter's use on a daily basis and are comfortable maneuvering it through a structure
- ☐ The RIC knows that their hoseline will lead them back out to a known entry location
- ☐ The RIC will have the ability to flow water, providing protection during deployment

#### *Charged Hoseline Disadvantages*

- ☐ Maneuvering a charged hoseline is generally a cumbersome operation
  - Requires crews to split up as they advance into the structure at corners/friction/kink points
  - Takes the "rapid" out of RIC
- ☐ It is extremely impractical to advance a charged hoseline while bringing a RIC pack and the other minimal recommended tool cache into the structure
- ☐ It is more difficult landmarking a downed firefighter with a charged hoseline in comparison to a search line
- ☐ The RIC can only estimate how far they have traveled into and around the structure since the hoseline only has couplings to use as landmarks
- ☐ Extreme air consumption occurs due to the work required when moving the charged hoseline quickly
  - This equates to a shorter time period for the RIC to search for the downed firefighter
- ☐ The ability to landmark the downed firefighter using a charged hoseline is extremely problematic and impractical
- ☐ The RIC can be confused as to which charged hoseline is theirs if other hoselines are deployed in the same general location
- ☐ The downed firefighter may be in trouble because of a problem with the engine pumping the RIC's hoseline if the hoseline is charged from a separate engine or supply?
- ☐ The distance of the engine used by the RIC from their entry point can potentially extend or prolong the setup time of the RIC prior to entry
  - The more physically demanding the work that the RIC must perform outside the structure equates to a more rapid heart and respiration rate
  - This decreases the RIC's ability to operate inside the structure



The only accountability report that can be communicated is a personnel, position, air, and accountability

### *Dry Hoseline Advantages*

- ☐ The RIC knows that their hoseline will lead them back out to a known entry location
- ☐ The RIC will have the ability to call for and flow water, which provides them protection while deploying as needed

### *Dry Hoseline Disadvantages*

- ☐ Maneuvering a dry hoseline is generally only done in an open, clean environment
  - In a low visibility environment, the hoseline is not generally flaked out
  - The hoseline may get kinked or caught without the RIC's knowledge
- ☐ It is more difficult to land mark a downed firefighter with a dry hoseline
- ☐ The RIC can only estimate how far they have traveled into and around the structure since the hoseline only has couplings to use as landmarks
- ☐ The ability to landmark the downed firefighter using a dry hoseline is extremely problematic and impractical
  - Dry hoselines are flat and difficult to locate with debris all around
- ☐ The downed firefighter may be in trouble because of a problem with the engine pumping the RIC's hoseline if the hoseline is charged from a separate engine or supply?
- ☐ The distance of the engine used by the RIC from their entry point can potentially extend or prolong the setup time of the RIC prior to entry
  - The more physically demanding the work that the RIC must perform outside the structure equates to a more rapid heart and respiration rate
  - This decreases the RIC's ability to operate inside the structure

The only accountability report that can be communicated is a personnel, position, air, and accountability

### Search Line System Deployment

Search lines can be bought or made at your fire station. Typically, they consist of a rope bag filled with 200, 210, or 220 feet of  $\frac{3}{8}$ " or  $\frac{7}{16}$ " Kevlar rope. The 10-20 foot variance is based on the amount of search line that the department wants to anchor outside the building. For example, a department with 220 feet of search line would anchor the search line up to 20 feet outside the structure; allowing for 200 feet of search line for use inside the structure.

The rope will have one or more metal rings and various numbers of knots spaced evenly along the rope. Each knot represents the depth/distance that the RIC has progressed into the structure. Typically, each knot represents 20 feet of travel. For example, four knots equals 80 feet of travel inside the structure. The distance between knots may vary based on a department's preference. It is your responsibility to know your department's policy or guideline.

The rings provide the RIC with a directional reference (similar to the couplings on a hose). When progressing into the structure, the RIC member deploying the search line from the bag will contact a ring first. When exiting the structure, the crewmember will feel a knot first - hence the term, "ring out." The rings also provide the RIC a connection point to clip into if necessary.

## Tether

When a crewmember removes a tether from his or her pocket, it is going to be used to connect to the primary search line. Based on a search line with 20 feet between each ring, the tether should be 20 feet long. However, if your rings are 25 feet apart, your tether should be no longer than 25 feet. Tethers any longer than 20-25 feet make verbal or visual communication very difficult; this is another reason the ring and knots are often not more than 20 feet apart. Each tether is constructed with a slipknot and ring at one end and a snap hook or nonlocking carabiner at the other end. The slipknot is placed over the wrist or hand when being used.

### ☐ Construction advantages

- Snap hook
  - Will not detach from the metal ring connection point like the nonlocking carabineer
- Nonlocking carabiner
  - Easier to connect and disconnect from the primary search line

### ☐ Construction disadvantages

- Snap hook
  - Takes longer to connect to the primary search line when deploying the tether
- Nonlocking carabiner
  - Able to detach from the metal ring if enough torque and tension are placed simultaneously on the carabiner at the connection point



"Anchoring" to a ring



Friction knot



Searching with a tether

### Company Identifier Recommendation

The recommended company identifier is a 12" x 12" weighted cloth. On the backside of the cloth is a place for the company T-card(s), Passport Accountability Tag, or Tag Accountability System. The other side of the cloth should display the company identifier labeled with reflective markings. Prior to deploying the search line, the RIC should attach their company identifier to their anchor point.

### Point-to-point Search Line Deployment (Preferred)

Prior to entry, the search line should be anchored outside the structure, at least three feet off the ground and 10–20 feet from the entry point. Ten feet is the ideal minimum anchoring distance. The search line cannot be anchored to the actual entry point.

Once activated, the RIC enters the building. The search line should be loaded into the bag so a ring comes out first, followed by a knot. As a result, the ring is situated next to the exit. Remember, "ring-out" or the rings will lead you out. If the RIC locates a knot at the threshold, they should communicate this to the RIC Group Supervisor.

Crewmembers entering the structure should hold the search line in their left hand. The search line is kept tensioned at all times during deployment. To maintain tension, it may be necessary to wrap or tie-off the search line around objects inside the structure. This step, however, will delay the deployment.

Once inside the structure, the RIC stops and listens for a PASS alarm or other sounds that could be made by the downed firefighter. The RIC moves directly toward the PASS alarm or the last known location of the downed firefighter; *this is called a point-to-point search*. The RIC Leader may use a TIC, if available, to guide the RIC to the downed firefighter's location while scanning the area for hazards and potential exits. The RIC Leader is located next to the right shoulder of Rope Deployment, utilizing the TIC to establish their point-to-point search plan. Certain situations may momentarily require the RIC Leader to be positioned slightly ahead of Rope Deployment. The third person is Air/Equipment. The third and/or fourth crewmember(s) remain on the search line unless directed otherwise by the RIC Leader.

### Three-person RIC Deployment Formation

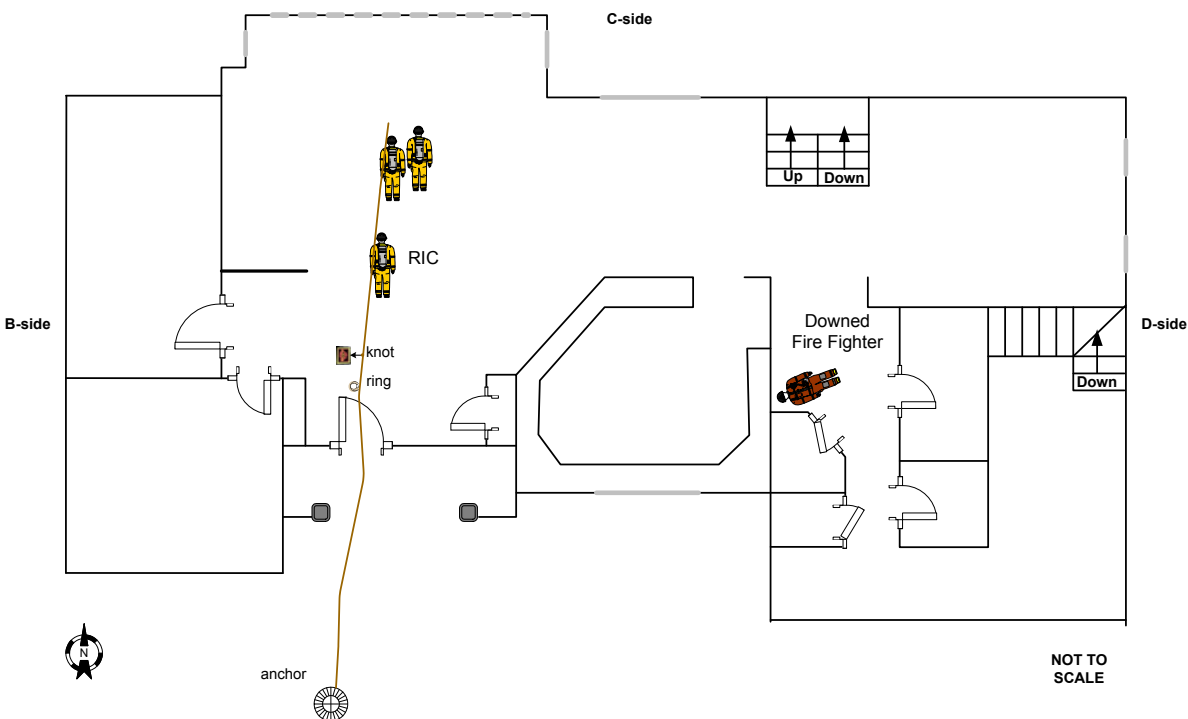
- ☐ Position #1: Rope Deployment (must have good situational awareness skills)
  - This crewmember moves in an upright position with the head up
    - Allows for better visibility, with or without using a TIC
    - Maintains better tension on the search line
    - Decreases reaction time
    - Has a sounding or sweeping tool in front at all times
  - Controls the search rope bag
  - Communicates the depth, distance, and direction of travel to the RIC at all times
  - Carries one rescue loop or webbing in a pocket
  - Carries a personal escape tool in axe belt or SCBA waist strap

## ❑ Position #2: RIC Leader

- This crewmember is located on the right shoulder of the rope deployment person for left-hand etiquette
  - Also moves in an upright position with head up
    - Allows for better visibility, with or without using a TIC
    - Maintains better tension on the search line
    - Decreases reaction time
    - Has one foot in front at all times to be used as a sounding or sweeping tool as needed
    - Allows for better accountability and communication with crewmembers
  - Carries a thermal imaging camera (TIC) with a spare battery (if available)
  - Carries one tether in a pocket
  - Carries one rescue loop or webbing in a pocket
  - Carries a personal escape tool in axe belt or SCBA waist strap
- Pick-head axe is recommended based on their six-pound weight in comparison to an eight-pound flathead

## ❑ Position #3: Air/Equipment

- Carries one rescue loop or webbing in a pocket
- Carries one tether in a pocket
- Carries a personal escape tool in axe belt or SCBA waist strap
- Carries a RIC bottle with mask and regulator and the packaging equipment



### Four-person RIC Deployment Formation

- ☐ Position #1: Rope Deployment (must have good situational awareness skills)
  - This crewmember moves in an upright position with the head up
    - Allows for better visibility, with or without using a TIC
    - Maintains better tension on the search line
    - Decreases reaction time
    - Has one foot in front at all times to be used as a sounding or sweeping tool as needed
    - Allows for better accountability and communication with crewmembers
  - Carries and controls the search rope bag
  - Communicates the depth, distance, and direction of travel to the RIC at all times
  - Carries one rescue loop or webbing in a pocket
- ☐ Position #2: RIC Leader
  - This crewmember is located on right shoulder of the rope deployment person for left-hand etiquette
  - Also moves in an upright position with head up
    - Allows for better visibility, with or without using a TIC
    - Maintains better tension on the search line
    - Decreases reaction time
    - Have a sounding or sweeping tool in front at all times
  - Carries a thermal imaging camera (TIC) with a spare battery (if available)
  - Carries one 20-foot tether in a pocket
  - Carries one rescue loop or webbing in a pocket
  - Carries a personal escape tool in axe belt or SCBA waist strap
    - Pick-head axe is recommended
- ☐ Position #3: Air/Equipment
  - Carries one rescue loop or webbing in a pocket
  - Carries one 20-foot tether in a pocket
  - Carries a personal escape tool in axe belt or SCBA waist strap
  - Carries a RIC bottle with mask and regulator and the packaging equipment
- ☐ Position #4: Equipment
  - Carries one rescue loop or webbing in a pocket
  - Carries one 20-foot tether in a pocket
  - Carries a personal escape tool in axe belt or SCBA waist strap or crawls with a Halligan in the A-frame position
  - Carries other tools as needed that still allow for a rapid deployment

### Specific Area Search

Though specific area search is not the preferred method of searching for a downed firefighter, it may be necessary because of the unknown location of the downed firefighter. The situation will dictate how the RIC accomplishes the goal of locating a downed firefighter.

- ☐ If the RIC Leader is using a TIC but cannot visually clear an area, he or she must physically go and clear that area
  - If the distance is suspected to be less than 20 feet, the RIC Leader will clip to the primary search line and extend his or her tether
  - If the distance is suspected to be more than 20 feet, the RIC Leader has Air/Equipment clip to the primary search line and extend his or her tether
    - The RIC Leader follows and clips into the Air/Equipment tether to extend their tether to reach up to 40 feet off the primary search line as needed
- ☐ It is recommended that the tools and equipment being brought in by Air/Equipment be left at the primary search line since it is cumbersome
- ☐ All crewmembers will never be further apart than the length of their tethers and will remain in voice or visual contact
- ☐ When the search is completed and they **do not find** the downed firefighter
  - Both crewmembers will return to the primary search line
- ☐ When the search is completed and **they find** the downed firefighter
  - The primary search line will be advanced towards them and tied or wrapped off

Situations may dictate that a specific area search must be conducted at a location without a ring nearby. The crewmember searching must connect the tether to the primary search line using a friction knot (two-three wraps and clip back onto the tether) prior to extending the search. The snap hook/nonlocking carabiner must never be held in the hand of another crewmember to act as a connection point for the tether. It is always clipped into a ring or wrapped around the primary search line using the tether itself.

### Air Management Procedures

Whenever a RIC is deployed, an air management tracking system should be established. Air management will ultimately be the responsibility of the RIC Group Supervisor. The air level of the RIC is as equally important as that of the downed firefighter. If a RIC member runs out of air, he or she has only compounded the problem.

When the RIC enters the IDLH atmosphere, the RIC Group Supervisor will start the clock. This is announced over the radio on the designated channel so that all personnel involved with the deployment are aware of what is occurring.

The RIC Group Supervisor will use the 1/3-1/3-1/3 rule. One third of your air is consumed to work inside the structure, one-third of your air is consumed to exit the structure, and one-third of your air is remaining as your emergency air reserve. This rule determines when to exit the structure. The RIC Group Supervisor may choose not to use this air management rule, but he

or she must understand that the potential for the RIC to run out of air is increased immensely during such operations. It is the responsibility of the RIC Leader to monitor the SCBA pressures of the RIC.

☐ 5-minute elapsed time

- RIC Group Supervisor informs the RIC Leader
- Records the lowest air pressure of the crew and the following information: personnel, position, air, and knots (PARK)

☐ 10-minute elapsed time

- RIC Group Supervisor informs the RIC Leader
- Based on the amount of air remaining, current conditions, and their location, the RIC Group Supervisor will continue to use the current RIC, order them out of the structure while deploying another RIC, or deploy another RIC to continue the deployment

### Thermal Imaging Camera Operations

A thermal imaging camera, also known as a TIC, is an invaluable tool for any rapid intervention crew. A TIC allows the RIC to see objects that are not visible to the naked eye. The RIC can scan for hazards and exits in reduced visibility in order to locate a downed firefighter.



So how does it work? A TIC is actually an imager; it is not a camera. It uses infrared energy not visible to the eye to display the temperature of an object. The TIC displays hotter objects as white and cooler objects as black. However, newer TICs can be equipped with colorization. It is up to you to understand the TIC used in your department. Without proper training, a TIC can be interpreted incorrectly and not used to its full potential.

The TIC should be carried by the RIC Leader, but he or she should not be "glued" to it since your peripheral vision is greatly reduced. Though the TIC is an invaluable tool, it does not replace your senses.

### Proper Use of a TIC during Deployment

- ☐ After entering the structure, the RIC Leader scans the area wall to wall starting at the top, moving to the middle, and ending at the floor looking for hazards, exits, and downed firefighters.
  - This will improve the safety of the RIC, identify alternate means of egress, and potentially locate the downed firefighter.
- ☐ Once the RIC Leader is satisfied with the scan, he or she shares selects a reference point that is well identified and shares the screen with Rope Deployment for room orientation and direction of travel.
- ☐ After reaching the reference point, the RIC Leader tells the RIC to stop and performs a second scan in the same manner: high to low, looking for hazards, exits, and downed firefighters.
- ☐ This process repeats until the downed firefighter is located or the RIC needs to exit the structure.

The TIC will also assist the RIC in identifying the fire environment. Most TICs are equipped with a temperature gauge and can help the RIC identify extremely hot areas. It is important to remember that the TIC cannot predict flashover or collapse and you must always use your prior training and knowledge in conjunction with the TIC. Images may become distorted and difficult to interpret when steam is created by suppression operations. It can also be misinterpreted if the downed firefighter's heat signature is close to that of the room. A good technique to practice is identifying what a SCBA cylinder looks like, as it will typically be cool if the downed firefighter is still breathing. Most importantly is to remember that a TIC is an electronic piece of equipment.

### Communicating with the Downed Firefighter

Whenever possible, the RIC and the RIC Group Supervisor should maintain constant communication with the downed firefighter. Any assistance that the downed firefighter can provide is vital information. Be cognizant of the downed firefighter's air level and keep radio traffic to necessary information to help the downed firefighter conserve air.

Well-trained firefighters begin their personal survival procedures when they experience a firefighter emergency. This will include a LUNAR/NUCAN report and any other information that may assist the RIC. The RIC should be monitoring the radio at all times on the fireground. In the event that this is the only transmission the downed firefighter can make, the RIC needs to gather all of the information provided as this will be all they have to act upon.

Communication does not always have to be over the radio. A downed firefighter should be told to activate the PASS, turn on a flashlight, and create periodic loud noises if possible to help guide the RIC. If multiple firefighters are down and in the same area of each other, they can place two portable radios close together to create radio-assisted feedback in order to guide a RIC. This procedure also helps the downed firefighters conserve air.

A downed firefighter will be under extreme emotional distress. All communication should avoid any negative comments to help reduce the anxiety level. Panic will cause the downed



firefighter to use more air and potentially cause bad decisions that can hinder the RIC's efforts. Remain cool, calm, and collective when communicating with a downed firefighter.

### Summary

In order to maintain the "rapid" in rapid intervention crew, the RIC needs to be versed in a multitude of skills that will expedite the search for a downed firefighter. Good deployment techniques can make the difference of reaching downed firefighters before they run out of air and fire conditions worsen. Deployment techniques should be second nature to a RIC when the need arises.

### Topic 5: Rescue Operations

Terminal Learning Objective (TLO): At the end of this topic, the student should be able to perform an assessment on a downed firefighter and deliver that firefighter air if necessary.

Enabling Learning Objectives (ELO):

1. Describe and demonstrate a PAC CAN assessment.
2. Describe and demonstrate the five air delivery options.
3. Describe and demonstrate "last resort" air delivery options.
4. Describe and demonstrate the different methods of removing a downed firefighter from a structure.
5. Describe and demonstrate the different techniques of rescuing a firefighter who has fallen through the floor.
6. Describe and demonstrate how to remove a downed firefighter from a confined area.
7. Describe and demonstrate how to rescue a downed firefighter from an entanglement situation.

After locating a downed firefighter, the rapid intervention crew will now begin a rescue operation. A rescue operation can be as simple as locating a lost firefighter with no injuries and escorting them out of the structure, or as complex as removing an injured firefighter from a significant structural collapse or entrapment.

It is essential the RIC assess the area for any structural compromise and fire activity. This will dictate the initial actions taken by the RIC. If the environment is unstable or there is a potential for collapse, the RIC will be inclined to "grab and go" to a more stable area where they can assess the downed firefighter or begin assessing immediately.

#### Downed Firefighter Assessment and Air Delivery

It is important that a rapid intervention crew be able to perform a rapid and complete assessment of a downed firefighter and supply that firefighter with air if necessary. By performing a PAC CAN assessment, a RIC can determine the state of distress the downed firefighter is in, as well as determine if the downed firefighter will require emergency air and how to deliver that air.

Remember, a large majority of fireground fatalities are directly related to carbon monoxide poisoning and asphyxiation. Investigations have shown that even in the events of entrapment and disorientation, firefighters are dying from lack of air before sustaining fatal burn injuries. Carbon monoxide can make a firefighter confused and possibly combative making rescue even more difficult. If there is any chance that a downed firefighter's SCBA will become low on air during rescue operations, that downed firefighter should be delivered air by the RIC.

It is equally important that the rapid intervention crew be conscious of their own air situation and continuously monitor their SCBA pressure. The rule of thirds should be used at all times, one-third to get in, one-third to get out, and one-third in reserve. The RIC has only as much air as the lowest member's SCBA pressure. At no time should the RIC compound the problem by becoming part of the emergency.

### PAC CAN

Once a downed firefighter is located, the RIC performs a PAC and delivers a CAN report. By utilizing PAC CAN procedures, the rapid intervention crew can perform a rapid assessment and report their findings and needs to the RIC Group Supervisor.

### *Pass*

Deactivate the downed firefighter's PASS device. This allows the RIC to listen for other PASS devices and reduce yelling and confusion. Yelling increases air consumption.

### *Air/Assess*

During this stage, the RIC will determine the downed firefighter's air situation, name, rank, and company identifier. Any malfunctions, damage, or accessibility problems to the downed firefighter's SCBA will dictate the way the air is supplied. The RIC should also determine if the air situation would allow them to extricate the downed firefighter from the structure effectively. Throughout the assessment, the RIC Leader must continuously assess the structure and the fire environment for any changes.

### *Conscious Firefighter*

- ☐ Check the psi while silencing the PASS device
  - If the psi is low or rescue operations will be extensive, supply the downed firefighter with air via an appropriate air supply option
- ☐ In the event that the downed firefighter experienced a fall, entrapment, or any other mechanical trauma, inspect the SCBA for damage beginning at the face piece and working down toward the bottle pressure gauge
- ☐ Maintain physical contact with the conscious firefighter until he or she is removed from the IDLH

### *Unconscious Firefighter*

- ☐ Determine if the downed firefighter is breathing, starting at the face piece
  - Listen for exhalation
  - Look for condensation in the mask
- ☐ Check for airflow to the mask by cracking the bypass valve
  - The mask seal may be broken in the event the bypass valve does not activate or is not accessible
- ☐ Check the face piece and MMR for damage and compromised integrity
- ☐ Check the hose working back towards the second stage regulator
- ☐ Check the second stage regulator gauge for psi and damage
- ☐ Check the high-pressure hose working back to the SCBA bottle
- ☐ Check the psi of the SCBA bottle pressure gauge
- ☐ Inspect the SCBA bottle for damage

### *Communicate*

The RIC communicates their findings and other critical information to the RIC Leader. These findings will assist the RIC Leader in delivering their CAN report to the RIC Group Supervisor.

### *Conditions*

The RIC Leader will report the conditions to the RIC Group Supervisor. This report should include:

- ☐ The findings of the downed firefighter assessment
  - Air situation
  - Name
  - Rank
  - Company identifier
- ☐ The environment the RIC is encountering
- ☐ The condition of the structure
- ☐ Their location inside the structure
- ☐ The RIC's air pressure (SCBA pressure of the lowest member) and PAR

### *Actions*

The RIC Leader will then report the actions the RIC will take in order to extricate the downed firefighter or stabilize in the event they will not be able to remove the firefighter on their own. This is the general plan that includes where the RIC will be going and how the RIC will do it.

### *Needs*

The RIC Leader will then report any needs the RIC has and make the necessary requests. By utilizing this process, the RIC can make a rapid and concise assessment, mitigate any SCBA or air deficiencies, and deliver a concise report to the IC communicating their plan and needs for extricating the downed firefighter.

### Air Delivery

There are several options for giving the downed firefighter air. The option you choose to use will depend on several things.

- ☐ The condition and access you have to the downed firefighter
- ☐ The make, model, and options the downed firefighter has on his or her SCBA
- ☐ The condition of the downed firefighter's SCBA equipment
- ☐ The options you have with the RIC pack you brought in with you

### Universal Air Connection (UAC)

This option should never be used if the SCBA has sustained significant damage or has a compromised bottle. The UAC is a "quick connect coupling" the downed firefighter's SCBA is equipped with and uses a male coupling to receive the female coupling from the RIC air pack.

Once connected, the two couplings will click and lock into place. This allows the downed firefighter's SCBA bottle to "cascade" with the RIC air pack bottle. After equalization is complete, remove the hose from the downed firefighter's UAC.

According to NFPA 1981: Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) For Emergency Services, 2007 Edition, the UAC will be located within six inches of the bottleneck on all SCBAs. A standardized coupling must be used by all SCBA manufacturers, making all SCBA UACs compatible.

It is important that you are aware if the SCBA used by your department was manufactured before the NFPA 1981 Standard was in place (2002), as well as the SCBAs utilized by neighboring departments.

### Emergency Breathing System

The emergency breathing system (EBS) uses a low psi hose to the downed firefighter's SCBA. This option may not be available on all SCBAs and the location does vary by manufacturer.

### Low Pressure Hose to Mask Mounted Regulator

Many mask-mounted regulators (MMRs) are equipped with a coupling to connect the low-pressure hose. With these types of SCBAs, the low-pressure hose from the RIC air pack may be connected to the downed firefighter's mask.

### Regulator Exchange

This option is typically only used when the regulator is damaged or when you can only gain access to the downed firefighter's face piece.

### Full Mask Exchange

This option should only be used when the downed firefighter's SCBA face piece has been damaged, is missing, or the difference in SCBA manufacturers does not allow for any other option. A full mask exchange can be used regardless of manufacturer.

### Last Resort Air Delivery Options

The following air delivery options should only be used in extreme situations and no other means of delivering air to a downed firefighter are available, such as a RIC air pack malfunction. The following options can also be used to prevent a firefighter emergency in the event a fellow firefighter becomes distressed in your presence.

### Vinyl/Rubber Tubing

Some firefighters are now carrying tubing as a means for buddy breathing. When belt-mounted regulators were prevalent, a firefighter who is out of air can place tubing into another firefighter's mask and use that firefighter's air supply. The firefighter supplying the air opens their bypass valve to help force air into the other firefighter's mask. This will expend air rapidly and will leave each firefighter with a compromised mask seal. It should be utilized in extreme situations.

### Shared Regulator

In an emergency, a firefighter can supply air to another firefighter by sharing the MMR. The two firefighters remain shoulder to shoulder. The firefighter supplying the air maintains possession of the MMR at all times. The firefighter who is out of air will tap the supplying firefighter on the shoulder when needing a breath. The supplying firefighter passes the MMR. The supplying firefighter signals when taking the mask back with a tap on the shoulder. Each firefighter holds their breath between cycles when they are not using the regulator. This process repeats as the two firefighters exit the structure or receive further assistance.

### Shared Face Piece

In an emergency, two firefighters can also share one mask. This poses more of a threat to both firefighters than sharing a regulator since they will be exposed to more heat and smoke. Again, the two firefighters must remain shoulder to shoulder. The firefighter supplying the air remains in control of the face piece and passes it to the firefighter in distress when signaled by a tap on the shoulder. The supplying firefighter will signal taking back the face piece with a tap on the shoulder. This process repeats as the two firefighters exit the structure or receive further assistance.

Remember, these "last resort" options are only utilized in extreme situations when the RIC is confident they will be able to extricate the downed firefighter without placing a second firefighter in distress.

### Moving a Downed Firefighter

The rapid intervention crew should be versed in numerous methods of moving a downed firefighter in variety of different situations. These methods can range from drags and carries using packaging tools to simply using the downed firefighter's SCBA as a drag device. Time, situation, and RIC staffing will dictate what method is utilized.

As well as moving a downed firefighter on level ground, the RIC needs to be proficient in moving downed firefighters in more challenging situations such as up and down stairs, narrow areas, low overhead areas, and down ladders. Firefighters train regularly on drags and carries used to rescue civilian victims, however, these operations become more challenging when faced with a downed firefighter. SCBAs, bulky PPE, and the fact that the RIC is typically faced with more complex and hostile situations create the need for all firefighters to be highly proficient in the rescue procedures used to remove a downed firefighter.

### Single Firefighter Drag

When faced with a situation when only one RIC member will be moving a downed firefighter, the following options should be utilized.

- ☐ Drag rescue device (DRD)
  - Turnout coats produced after March 1, 2007 are equipped with a built-in drag device located just below the collar and between the shoulder (NFPA 1971: Standard On Protective Ensembles For Structural Firefighting And Proximity Firefighting, 2007)

- ☐ Webbing
  - Use webbing to secure the downed firefighter's SCBA straps
  - Place the webbing just above the SCBA bottle and gather both straps
  - Use a Lark's foot to the gather the straps
- ☐ SCBA straps
- ☐ Use the SCBA straps as grab points if a DRD or webbing is not available

### Two Firefighter Drag

The recommended method for two firefighters to move a downed firefighter is the push/pull method.

### *Rescue Loops*

- ☐ Essentially long Prusik loops made of 9mm or 10mm cord
- ☐ Can be used to attach to the downed firefighter's SCBA straps and legs by creating a Lark's foot around them
- ☐ Once the Lark's foot is created, the RIC now has straps to pull or lift the downed firefighter
- ☐ Rescue loops can be used by up to four rescuers

### Multi-Application Service Tool (MAST)

A MAST device has five, color-coded sewn loops interlinked together. The color codes identify a specific use.

- ☐ Red loops are used for the legs
- ☐ Yellow loops are used for the arms and torso
- ☐ Green loops are used as a pull loop

Once the MAST device is in place, a harness is created that is used to drag, raise, or lower the downed firefighter. The MAST device is rated for technical rope rescue operations and can be used by up to four rescuers.

### Drag Tarps

Drag tarps provide another option for moving a downed firefighter. When used appropriately, drag tarps provide a rapid means of packaging, then dragging or carrying a downed firefighter. Drag tarps can be used by up to four rescuers.

### Stairs

Stairs can present a challenge to a RIC while removing a downed firefighter from a structure. When dealing with stairs, the RIC should proceed with caution. Attention should be paid to the downed firefighter's head when descending stairs. It should be cradled at all times to prevent injury or face piece damage. Gravity may assist you when descending stairs, but will create challenges when ascending. A minimum of two RIC members should be used when maneuvering stairs, utilizing one as a spotter to prevent falls.

### Ladders

Different methods can be used to remove a downed firefighter from a structure with a ground ladder. The method selected depends on multiple factors.

- ☐ The need for the downed firefighter to remain on air
- ☐ SCBA removal
- ☐ Size of the downed firefighter
- ☐ Size of the window and sill height
- ☐ Number of RIC members

### Feet-first Method

With this method, the SCBA is not removed and the downed firefighter can remain on air. The feet-first method is effective on narrow windows as the downed firefighter's profile is reduced while transitioning out the window feet first. The downed firefighter will be carried down the ladder horizontally across the beams of the ladder.

### Head-first Method

Using the headfirst method also allows the downed firefighter to remain on-air at all times. Two RIC members transition the downed firefighter to the windowsill and out the window. A single firefighter on the ladder will receive the downed firefighter and descend the ladder using the crossbeam method.

### Seated Carry Method

The SCBA is removed inside of the structure when using the seated carry method. The downed firefighter's regulator remains attached until his or her head is transitioned out the window and away from the IDLH atmosphere. The downed firefighter is lifted to the sill by two RIC members. The firefighter on the ladder receives the downed firefighter in a sitting position, legs over the shoulders, with the back against the ladder.

### Collapse

Collapse situations can range from a small-scale collapse in which a firefighter has fallen through the floor, to a large-scale collapse in which large sections of the structure have collapsed. When dealing with collapse situations, the RIC must keep in mind that a significant structural compromise is present. The dead load that the building was engineered for has been altered and further collapse is highly possible.

Before a RIC begins operations in a collapse environment, the area should be thoroughly assessed for integrity. When dealing with large-scale collapse where extrication time will be lengthy, the RIC should be prepared to assess the downed firefighter and place on a RIC air pack while extrication takes place. The RIC should also be prepared to request equipment for cutting operations and heavy lifting (saws, torches, air bags, etc.).



### Firefighter through the Floor

When faced with a downed firefighter who has fallen through the floor, the RIC needs to be cognizant of further floor collapse because the RIC will be placing more weight on an already compromised floor. If the only means of rescue is to raise the downed firefighter back up through the floor, the RIC should consider cutting another whole in a more structurally sound area or bridging the floor with materials to distribute weight (doors, tabletops, ladders, etc.).

The two primary methods of rescuing a downed firefighter who has fallen through the floor are the rope method and the hose method.

#### Rope Method

The RIC can create a harness to lower a RIC member to the downed firefighter. To create the harness, a bight of rope is passed through the RIC member's SCBA strap, through the SCBA waste strap, and around the leg opposite the side of the SCBA strap be utilized. The remaining RIC members lower the rescuer into the hole using their bodies as friction devices.

Once the RIC member reaches the downed firefighter, he or she will create the same type of harness with a bight of rope and place it on the downed firefighter. If there is not enough remaining rope to create a second harness, the RIC member can put their harness on the downed firefighter. After the downed firefighter is rescued, the bight of rope is lowered back down to the RIC member and used to remove the RIC member.

If a second rope is not available, the RIC can tie off their search line and use the remaining rope to complete the rescue. Consider the height of the floor at all times to ensure enough rope is available. Remember that creating the bight will require twice as much rope.

#### Hose Method

Structure fires typically have a hoseline nearby. The RIC can use this hoseline to their advantage when time is of the essence. A hoseline provides the RIC a rapid means of retrieving the downed firefighter.

If uninjured, a bight of hose can be lowered to the downed firefighter who can then step into the bight or place the bight under the arms in order to be raised through the floor.

If the downed firefighter is injured and unable to perform self-rescue, a RIC member uses the hoseline as a pole and slides down to the injured firefighter. Other RIC members are used to anchor the hoseline. The RIC member secures the downed firefighter in the bight of the hoseline and calls for the RIC to raise. The bight of the hoseline is sent back down to the RIC member and used again.

### Rescue from a Confined Area

Rescuing a downed firefighter from a confined area can pose a difficult challenge to the RIC. Due to the lack of working space, tight quarters, and the weight of a downed firefighter, standard drags and carries may not be effective. The RIC should be trained in the methods of

removing a downed firefighter from confined areas on ground floors as well as multistory structures.

### "Denver Drill"

The "Denver Drill" was developed by the Denver Fire Department after the line-of-duty death of Mark Langvardt and has been a standard RIC drill for over ten years. The "Denver Drill" is often practiced on a flat ground prop outside or in a single-story structure. It is important, however, that confined area rescues also be practiced on multi-story structures.

In the case of Mark Langvardt, he was located in a confined area on an upper story. Transitioning a downed firefighter out a small window to a ladder can be accomplished by using a two-ladder system with two rescuers on the exterior of the structure. The RIC should keep in mind that in many cases the window could be enlarged by making two cuts with a chain saw. By placing a vertical cut just inside the edge of the windowsill on each side from floor to sill, the cripple wall below the window can be pulled away creating a door.

### Entanglement

The RIC should be prepared for the possibility of rescuing a downed firefighter from an entanglement situation on all types of structures. Drop ceiling suspended by wire is prevalent in commercial occupancies, as well as wiring and ducting. Residential occupancies can also present entanglement hazards from heat ducting and electrical and communication wiring. The RIC should be prepared to rescue a downed firefighter from these situations, as well as have to work through these situations while trying to locate or gain access. The RIC should be equipped with cutters capable of cutting large diameter wire and cable. On a well-equipped RIC, all members will be equipped with wire cutters. Be cautious, however, of energized wiring.

### Summary

Once a downed firefighter is located, the RIC will begin rescue operations. The RIC must be trained and capable of adapting to a multitude of situations. The techniques used by the RIC will be dictated by the situation at hand - packaging, drags and carries, removal techniques, etc. Remember that air is paramount. Supplying a downed firefighter with air may be the difference between a successful rescue and a body recovery. The RIC must also constantly monitor their surroundings to ensure they do not become part of the situation. Fire conditions and structural integrity will dictate if the RIC has time to perform detailed operations or "grab and go" to a safer location where assessment and packaging can be performed. Keep the "rapid" in rapid intervention.

It is also important to remember that once a RIC is deployed, other RICs are assembled in order to complete the rescue if necessary or in the event of another firefighter emergency.

### Topic 6: RIC Operations Skills

Terminal Learning Objective (TLO): At the end of this topic, the student should be able to overcome a variety of obstacles faced by a Rapid Intervention Crew and conduct efficient an RIC operation.

Enabling Learning Objectives (ELO):

1. Demonstrate a RIC size-up of the training structure and assembling a RIC tool cache.
2. Demonstrate RIC search techniques.
3. Demonstrate thermal imaging techniques.
4. Demonstrate a downed firefighter assessment and deliver a CAN report.
5. Demonstrate downed fire-fighter packaging, drags, and carries.
6. Demonstrate rescuing a downed firefighter who has fallen through the floor.
7. Demonstrate rescuing a downed firefighter from a confined area from single-story and multistory structures.

### Student's Eligibility to Participate

Students attending a RIC Operations class may be asked to provide the Primary Instructor verification of the following prior to participating in any skill or evolution.

- ☐ Authorization to attend the training, including a statement of insurance for the student
  - If the class will be coordinated through a community college, the college may provide additional insurance for participants and instructional staff
- ☐ Access to approved personal protective equipment including competency in donning and using the personal protective equipment
- ☐ Current fit test documentation

### Safety Briefing

- ☐ Maintain hydration
- ☐ Break often or as needed
- ☐ Remove PPE when not participating, especially on warm days

### Medical Briefing

- ☐ Students will notify the instructor if you have any condition or limitation that may affect their participation in a training evolution
- ☐ Students will notify the instructor immediately if they sustain an injury during the class
- ☐ Instructors will advise students of the location of available medical equipment

### Personal Protective Equipment, Tools, and Equipment

- ☐ Students will wear full personal protective equipment for all skills
- ☐ All student PPE will conform to NFPA 1971: Standard on Protective Ensembles for Structural Firefighting and Proximity Firefighting, 2007 Edition
- ☐ Recommended tools and equipment to be carried by each firefighter
  - Spring-loaded wire cutters
  - Extra flashlight
  - Door wedge

- Webbing

### SCBA Component

- ☐ All SCBAs will conform to NFPA 1981: Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, 2007 Edition and NFPA 1982: Standard on Personal Alert Safety Systems (PASS), 2007 Edition
- ☐ Students will be familiar with all components of their SCBA
- ☐ Students must show competency in the use of their SCBA

### Site Preparation

- ☐ The training site will be free of all hazards, i.e., glass, nails, etc.
- ☐ Instructor will perform a final safety check prior to training on each skill

### What's in your Pockets?

Ask any firefighter what is in the pockets of their gear and each one will have a different explanation for the choice of equipment they decide to carry. Think carefully when selecting the items you will carry in the pockets and consider the following:

- ☐ Portable radio
- ☐ Extra flashlight
- ☐ Wire cutters
- ☐ Webbing sling (approximately 20 feet)
- ☐ Door stops/chocks
- ☐ Vise grips

Once you make the decision on what you will carry, ask yourself where you will carry these items and why. If these items are carried in pockets that are difficult to access, they are of little use to you when you really need them. Take the time when deciding where you will carry these items. Put on your bunker gear, don your SCBA, put on your gloves, and experiment with accessing these tools. Can you easily get to your radio's emergency activation button? Can you access your wire cutters for an entanglement? Can you grab a door chock to complete a primary search? A little preplanning on what tools you will carry and where you will carry them will pay big dividends when you need to access them in the heat of battle.

### RIC Size-up

Throughout this class, the student should continuously perform a size-up on the training structure. Prior to every skill or evolution, the RIC Leader shall perform a RIC size-up. The findings of the size-up will be communicated to the RIC prior to deployment.

### PAC CAN

After completing Skill #2: Downed Firefighter Assessment, students will conduct a PAC CAN assessment on every downed firefighter they encounter for the remainder of the class.

## Fall Protection

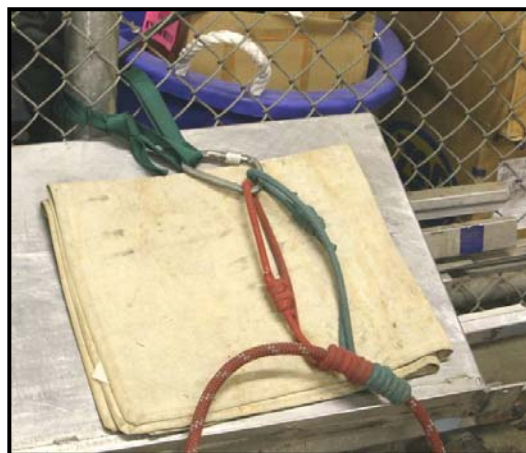
Any skill or evolution that has a potential fall hazard above 6 feet or could lead to injury requires fall protection. Instructors will ensure that students are connected to an approved fall protection system when performing skills from ladders or upper floor windows. Personnel assigned to fall protection positions will be competent in the system's operation.

### ***Materials Needed:***

All equipment should comply with NFPA 1983: Standard on Life Safety Rope and Equipment for Emergency Services

- Anchor point in compliance with Title 8, Section 1670
- Class 3 harness
- Various webbing
- ½" static kernmantle rope
- Pulley
- Two (2) prusiks
- Three (3) carabiners
- Edge protection (as needed)

1. Start with an anchor point assembled with double prusiks on the safety line to arrest any student's possible fall



2. Use a Class 3 harness that properly fits each student



# RIC OPERATIONS

## Topic 6: RIC Operations Skills

3. Establish a change of direction above and in line with the descent of the student
4. This is an example with webbing and a pulley to form a change of direction over the prop



5. Secure the student to the safety line and harness before attempting any skill



6. Monitor the student closely during the entire descent



## Skill #1: Size-up and Assemble a Mobile Tool Cache

During the predeployment phase of RIC operations, the RIC will size-up the structure and assemble their mobile tool cache based on construction type and building layout. The size-up determines many of the tools required. However, the RIC will always have search, air delivery packaging, and basic extrication equipment. By assembling a mobile tool cache, the RIC can rapidly deploy to most appropriate entry point.

<b>Time Frame:</b>	0:30
<b>Students (Minimum):</b>	Entire class
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Tools and equipment used in assembling a mobile tool cache</li> <li>▪ Ground ladder appropriate for the structure</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Ensure appropriate tools and equipment are available</li> </ol>
<b>Student Directions:</b>	

1. Select a ground ladder
  - Appropriate size for the structure
2. Bed the ladder on the ground





## Skill #1: Size-up and Assemble a Mobile Tool Cache

3. Place a salvage cover or hall runner on the ladder
  - Extend the salvage cover the full length of the ladder and rest between the rungs



4. Select and place the appropriate tools and equipment on the ladder
  - Dispersing the weight evenly



5. Pick up the ladder
  - One crewmember on each corner of the ladder
  - Using proper lifting techniques
  - If three-person RIC, crewmember at either the tip or rear of the ladder will hold both beams





### Skill #1: Size-up and Assemble a Mobile Tool Cache

6. Deploy the tool and equipment cache to the appropriate location



## Skill #2: Downed Firefighter Assessment (PAC CAN)

Once a downed firefighter is located, it is essential that the RIC performs a PAC assessment and delivers a CAN report to the exterior of the structure. At the end of this skill, the student will be able to conduct a PAC CAN and will continue to do so for the remainder of the class every time a downed firefighter is encountered.

<b>Time Frame:</b>	0:45
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Simulated downed firefighter with SCBA</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	

1. Locate the downed firefighter
2. RIC Leader monitors the fire and structural conditions



3. Deactivate the downed firefighter's PASS device



## Skill #2: Downed Firefighter Assessment (PAC CAN)

4. Assess the downed firefighter for breathing and SCBA pressure

- Beginning at the SCBA mask and working back towards the second stage regulator and cylinder gauge



5. Assess the downed firefighter

- Significant injuries
- Name
- Unit identifier
- Any entrapment issues



6. Rescuer reports the assessment findings to the RIC Leader

- Using "lens to ear" communication whenever possible



7. RIC Leader delivers a CAN report to the IC

- Conditions
- Actions
- Needs



## Skill #3: RIC Air Delivery

Supplying a downed firefighter with air can mean the difference between life and death. During this skill, the student will demonstrate the primary methods of supplying a downed firefighter with air from a RIC air pack or SCBA with a transfill line.

<b>Time Frame:</b>	0:45
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Simulated downed firefighter with SCBA</li> <li>▪ RIC air pack or SCBA with transfill line and mask</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure the site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure each student is wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	

### For Universal Air Connection (UAC)

1. Perform PAC CAN assessment
  - To determine the appropriate air delivery method to use
2. Access the downed firefighter's UAC
  - Repositioning the firefighter if necessary
3. Make the connection to the UAC
4. Complete the equalization
5. Remove the supply hose prior to movement







### For Mask-mounted Regulator (MMR) Exchange

1. Perform PAC CAN assessment
  - To determine the appropriate air delivery method to use
2. Access the downed firefighter's MMR
  - Repositioning the firefighter if necessary
3. Place one hand around the regulator where it connects to the face piece





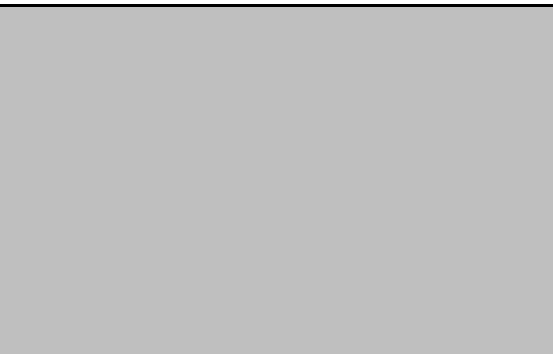
## Skill #3: RIC Air Delivery

<p>4. Leave in place</p> <ul style="list-style-type: none"> <li>▪ Allowing the RIC member to have a point of reference when making the regulator exchange</li> </ul> <p>5. Place the RIC's MMR where it is readily accessible</p> <ul style="list-style-type: none"> <li>▪ Within reach</li> <li>▪ Close to the downed firefighter's face piece</li> </ul>	
<p>6. Remove the downed firefighter's regulator</p> <ul style="list-style-type: none"> <li>▪ If the downed firefighter is conscious, advise to hold breath during the exchange</li> </ul> <p>7. Replace with the RIC's regulator</p> <ul style="list-style-type: none"> <li>▪ As quickly as possible</li> <li>▪ Reducing IDLH exposure to the downed firefighter</li> </ul> <p>8. Remove the downed firefighter's SCBA if necessary</p>	
<p><u>For the Low-pressure Hose to MMR</u></p> <p>1. Perform PAC CAN assessment</p> <ul style="list-style-type: none"> <li>▪ To determine the appropriate air delivery method to use</li> </ul> <p>2. Access the downed firefighter's low-pressure hose connection</p> <ul style="list-style-type: none"> <li>▪ Repositioning the firefighter if necessary</li> </ul>	
<p>3. Remove the downed firefighter's low pressure hose from the SCBA</p> <p>4. Simultaneously replace with the RIC air pack's low pressure hose</p>	

## Skill #3: RIC Air Delivery

### For the Full Face Piece Exchange

1. Perform PAC CAN assessment
  - To determine the appropriate air delivery method to use
2. Move the downed firefighter into a sitting position
  - RIC member is behind the downed firefighter
  - Accessing the entire SCBA mask



3. Place the RIC air pack's face piece where it is readily available.
  - Regulator attached
  - Harness and straps pulled over the front of the mask



4. Remove the downed firefighter's helmet
5. Pull the hood down
6. Loosen the downed firefighter's face piece straps

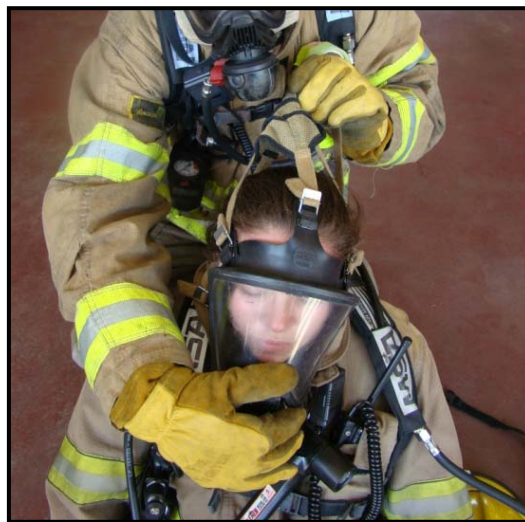


7. Remove the downed firefighter's face piece
  - Using one hand
8. Simultaneously replace with the RIC air pack's face piece
  - Using the other hand



## Skill #3: RIC Air Delivery

9. Tighten the face piece straps
10. Replace the hood and helmet
11. Remove the downed firefighter's SCBA if necessary



### All Methods - Secure the RIC air pack

1. Place the RIC air pack on the lap of the downed firefighter
2. Secure the RIC air pack to the downed firefighter
  - Clipping to the downed firefighter's waist using a carabiner
  - Ensuring it does not pull away from the downed firefighter



### Last Resort Air Delivery (Optional Skills)

The following skills are best used when a downed firefighter is ambulatory and packaging is not necessary. The skills should only be used in the event a RIC air pack is not available.



## Skill #3: RIC Air Delivery

### Vinyl/Rubber Tubing Method

1. RIC member with available air places one end of the tubing inside of his or her face piece
  - RIC member positioned directly next to the downed firefighter
2. RIC member places the other end of the tubing inside the downed firefighter's face piece
3. RIC member slightly opens bypass valve to ensure airflow
4. Keep the tubing in place while exiting the structure



### Shared Regulator Method



5. RIC member and downed firefighter position shoulder to shoulder
  - Wrapping arms around each other's shoulder
6. RIC member maintains contact with the regulator at all times
  - Downed firefighter removes his or her regulator





## Skill #4: Search Line Deployment

During this skill, the student will be introduced to the search line system. These systems provide the RIC a rapid means of searching while maintaining an anchor point with the exterior of the structure.

<b>Time Frame:</b>	0:30
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ PASS device to simulate location of downed firefighter</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	
<ol style="list-style-type: none"> <li>1. Ensure the search line is anchored appropriately outside the structure <ul style="list-style-type: none"> <li>▪ Approximately 10 feet outside and 3 feet off the ground</li> <li>▪ Exterior identifier showing at the point of entry</li> </ul> </li> </ol>	
<ol style="list-style-type: none"> <li>2. Place taglines where they will be easily accessible if needed during a RIC deployment</li> <li>3. Confirm radio channel</li> <li>4. Enter the structure</li> </ol>	

## Skill #4: Search Line Deployment

5. RIC Leader stops the crew at an ideal location to determine where the PASS device is sounding
  - Using a TIC if available



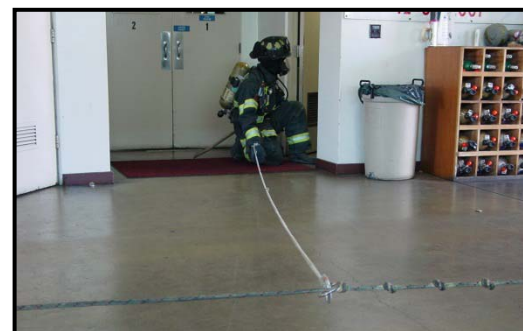
6. Deploy the search line bag
  - Ensuring the line is coming out the front of the primary search line bag
7. Exit the structure when the search is completed
  - Downed firefighter located, or
  - Lack of air



8. Wrap the tagline around the wrist or hand



9. Deploy the tagline



## Skill #4: Search Line Deployment

10. Connect the tagline to a metal ring of the primary search line if possible

- If the RIC is not located at a ring and they do not want to move forward or back to a ring, they should use a friction wrap



11. Once the downed firefighter is located, the rescuer deploying the search line moves past the downed firefighter and ties-off or wraps the search line

- 5 feet to one side if possible and past the RIC
- Keeping the search line out of the way while packaging the downed firefighter
- Ensuring any other crews deploying will not have any issues locating the downed firefighter

12. If a RIC is deploying into a structure and they know that the area they are going to be deploying in is meant for foot travel then they can allow the search line to follow them without using a change of direction point

13. If deploying into an area that may not be meant for foot travel, use solid objects as change of direction point

- Do not take time to actually wrap or tie-off
- Do not use a chair or an object that will not be moved by the search line



## Skill #5: Dragging a Downed Firefighter, One Rescuer

This method can be used if your partner goes down inside the fire building.

<b>Time Frame:</b>	0:15
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Simulated downed firefighter with SCBA</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Care should be taken to minimize damage to PPE and SCBAs</li> <li>5. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	

1. Locate the downed firefighter
2. Perform a PAC CAN assessment
3. Place the downed firefighter's SCBA waist strap between his or her legs
  - Creating a seat harness



4. Stand on the same side as the downed firefighter's SCBA air tank
  - Minimizing the chances of the downed firefighter's face mask being dislodged by the rescuer
5. Grab the shoulder strap of the SCBA
  - Strap without the low-pressure hose to the MMR




## Skill #5: Dragging a Downed Firefighter, One Rescuer

- |   |  |
|---|--|
| <p>6. Drag the downed firefighter where visibility and/or fire conditions allow</p> <ul style="list-style-type: none"><li>▪ Using the sidestep walk if needed due to fire conditions</li><li>▪ Using the sit-and-tug method if needed due to a large stature or friction complicating the drag</li></ul> <p>7. Continue to drag the downed firefighter to an area of refuge or out of the fire building</p> <ul style="list-style-type: none"><li>▪ Rescuer can also use a MAST device, rescue loops, or webbing attached to both shoulder straps of the downed firefighter</li></ul> |  |
|---|--|



## Skill #6: Dragging a Downed Firefighter

As part of a RIC, you may need to drag a downed firefighter to safety under harsh or threatening conditions.

<b>Time Frame:</b>	0:15
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Simulated downed firefighter with SCBA</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Care should be taken to minimize damage to PPE and SCBAs</li> <li>5. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	
<ol style="list-style-type: none"> <li>1. Locate the downed firefighter</li> <li>2. Perform a PAC CAN assessment</li> <li>3. Place the downed firefighter's SCBA waist strap between his or her legs <ul style="list-style-type: none"> <li>▪ Creating a seat harness</li> </ul> </li> </ol>	
<u>Pull/Pull Method for Unobstructed Clear Air and/or Visibility Areas</u> <ol style="list-style-type: none"> <li>4. Rescuers face each other at the downed firefighter's head</li> <li>5. Rescuers grab the downed firefighter's respective SCBA shoulder strap <ul style="list-style-type: none"> <li>▪ With the inside hand</li> <li>▪ Facing toward the direction of travel</li> </ul> </li> <li>6. Drag the downed firefighter toward an area of refuge or out of the fire building</li> </ol>	

## Skill #6: Dragging a Downed Firefighter

### Push/Pull Method for Poor Visibility Conditions or Narrow Passages

7. One rescuer at the downed firefighter's head
8. One rescuer at the downed firefighter's feet
9. Rescuer at the head grabs the downed firefighter's SCBA shoulder strap
  - Positioning on the air tank side
10. Rescuer at the feet lifts the downed firefighter's leg and places it over the shoulder
  - Using proper lifting techniques
  - Downed firefighter's knee is directly on the rescuer's shoulder
  - Rescuer straddling the other leg
11. Rescuer at the head gives command and pulls on the shoulder strap
  - Using the sideways crab crawl towards the egress
12. Rescuer at the legs pushes on the leg over his or her shoulder
  - Staying as low as possible to keep from pushing the leg downward

## Skill #7: Packaging and Moving a Downed Firefighter Utilizing Rescue Loops

In this skill, the student will be taught how to apply and utilize rescue loops with one to four RIC members. Rescue loops provide a rapid means of packaging a downed firefighter.

<b>Time Frame:</b>	0:30
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Rescue loops</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure each student is wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	

### One Rescuer

1. Rescuer takes position at the head of downed firefighter
2. Assess the downed firefighter
  - Delivering a PAC CAN report
3. Attach a rescue loop to one shoulder strap of the downed firefighter's SCBA
  - Using a Lark's foot to pull tension on the loop
4. Loosen and unbuckle the downed firefighter's waist strap
5. Fasten the waist strap together between the downed firefighter's legs
6. Grasp the rescue loop
7. Drag the downed firefighter 10 feet towards the exit
  - Standing or crouching





## Skill #7: Packaging and Moving a Downed Firefighter Utilizing Rescue Loops

### Two Rescuers

1. Rescuers take position at the head of downed firefighter
2. Assess the downed firefighter
  - Delivering a PAC CAN report
3. Attach a rescue loop to each shoulder strap of the downed firefighter's SCBA
  - Using a Lark's foot to pull tension on the loop
4. Loosen and unbuckle the downed firefighter's waist strap



5. Fasten the waist strap together between the downed firefighter's legs
6. Both rescuers grasp a rescue loop
7. Drag the downed firefighter 10 feet towards the exit
  - Standing or crouching



8. One rescuer reduces the length of the rescue loop when a narrow opening is encountered
  - Folding the rescue loop back on itself



9. Rescuers stagger themselves through the narrow opening



## Skill #7: Packaging and Moving a Downed Firefighter Utilizing Rescue Loops

### Three Rescuers

1. One rescuer takes position at the waist of the downed firefighter
2. Two rescuers take position at the head of downed firefighter
3. Assess the downed firefighter
  - Delivering a PAC CAN report
4. Rescuers at the head attach a rescue loop to each shoulder strap of the downed firefighter's SCBA
  - Using a Lark's foot to pull tension on the loop



5. Rescuer at the waist attaches a rescue loop around both legs of the downed firefighter
  - At the thighs
  - Using a Lark's foot to pull tension on the loop



6. All rescuers grasp a rescue loop
7. Lift and carry the downed firefighter 10 feet towards the exit



## Skill #7: Packaging and Moving a Downed Firefighter Utilizing Rescue Loops

### Four Rescuers

1. Two rescuers take position at the waist of the downed firefighter
2. Two rescuers take position at the head of downed firefighter
3. Assess the downed firefighter
  - Delivering a PAC CAN report
4. Rescuers at the head attach a rescue loop to each shoulder strap of the downed firefighter's SCBA
  - Using a Lark's foot to pull tension on the loop
5. Rescuers at the waist attach a rescue loop around both legs of the downed firefighter
  - At the thighs
  - Using a Lark's foot to pull tension on the loop
6. All rescuers grasp a rescue loop
7. Lift and carry the downed firefighter 10 feet towards the exit



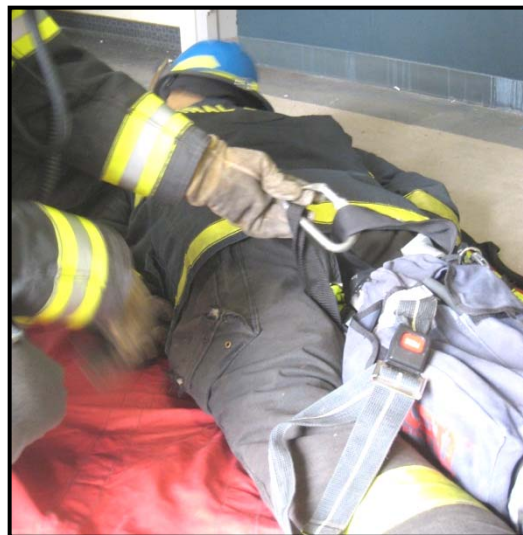
## Skill #8: Packaging and Moving a Downed Firefighter Utilizing a Drag Sled

Drag tarps provide another option for moving a downed firefighter. When used appropriately they can provide a rapid means of packaging and dragging or carrying a downed firefighter. The drag sled can be used by up to four rescuers.

<b>Time Frame:</b>	0:30
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Drag sled</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review both methods of the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure each student is wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	

### One-Three Rescuers

1. Log roll downed firefighter on side
2. Lay out drag sled alongside the downed firefighter
3. Roll the downed firefighter on to the drag sled
  - Prone or supine
4. Attach a carabineer to the sled's handles between downed firefighter's legs





## Skill #8: Packaging and Moving a Downed Firefighter Utilizing a Drag Sled

### One Rescuer

5. Grasp the top handles of the drag sled
6. Drag the downed firefighter 10 feet towards the exit



### Two Rescuers

5. Log roll downed firefighter on side
6. Lay out drag sled alongside the downed firefighter
7. Roll the downed firefighter on to the drag sled
  - Prone or supine
8. Attach a carabineer to the sled's handles between downed firefighter's legs
9. Both rescuers grasp the top handle of the drag sled
10. Drag the downed firefighter 10 feet towards the exit



## Skill #8: Packaging and Moving a Downed Firefighter Utilizing a Drag Sled

### Three Rescuers

5. Two rescuers grasp the top handles of the rescue sled
6. One rescuer grasps the bottom handles
7. Lift and carry the downed firefighter 10 feet towards the exit
  - Lifting in unison



### Four Rescuers

5. Two rescuers grasp the top handles of the drag sled
6. Two rescuers grasp the bottom handles
7. Lift and carry the downed firefighter 10 feet towards the exit
  - Lifting in unison



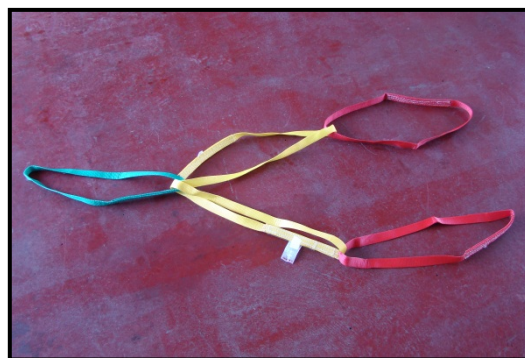
## Skill #9: Packaging and Moving a Downed Firefighter Utilizing a MAST

A MAST provides another option for packaging and moving a downed firefighter. In this skill, the student will be taught the proper application and techniques in utilizing a MAST to drag or carry a downed firefighter.

<b>Time Frame:</b>	0:30
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Multi-application service tool (MAST)</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	

### One Rescuer

1. Log roll downed firefighter on side
2. Lay out MAST loops alongside the downed firefighter
3. Attach a red loop to each of the downed firefighter's legs
4. Attach a yellow loop to each arm
5. Place a green loop over the head and behind the neck
6. Tighten loops from red to green to fit securely



## Skill #9: Packaging and Moving a Downed Firefighter Utilizing a MAST

7. Grasp the green loop
8. Drag the downed firefighter 10 feet towards the exit
  - Standing or crouching



### Two Rescuers

1. Log roll downed firefighter on side
2. Lay out MAST loops alongside the downed firefighter
3. Attach a red loop to each of the downed firefighter's legs
4. Attach a yellow loop to each arm
5. Place a green loop over the head and behind the neck
6. Tighten loops from red to green to fit securely
7. Both rescuers grasp the green loop
8. Drag the downed firefighter 10 feet towards the exit
  - Standing or crouching





## Skill #9: Packaging and Moving a Downed Firefighter Utilizing a MAST

### Three Rescuers

9. One rescuer takes position at the thighs of the downed firefighter
10. Two rescuers take position at the head
11. Log roll downed firefighter on side
12. Lay out MAST loops alongside the downed firefighter
13. Attach a red loop to each of the downed firefighter's legs
14. Attach a yellow loop to each arm
15. Place a green loop over the head and behind the neck
16. Tighten loops from red to green to fit securely
17. Two rescuers grasp the yellow loops
18. One rescuer grasps both red loops
19. Lift and carry the downed firefighter 10 feet towards the exit
  - Lifting in unison



## Skill #9: Packaging and Moving a Downed Firefighter Utilizing a MAST


### Four Rescuers

1. Two rescuers take position at the thighs of the downed firefighter
2. Two rescuers take position at the head
3. Log roll downed firefighter on side
4. Lay out MAST loops alongside the downed firefighter
5. Attach a red loop to each of the downed firefighter's legs
6. Attach a yellow loop to each arm
7. Place a green loop over the head and behind the neck
8. Tighten loops from red to green to fit securely
9. Two rescuers grasp the yellows loops
10. Two rescuers grasp the red loops
11. Lift and carry the downed firefighter 10 feet towards the exit
  - Lifting in unison



## Skill #10: Dragging a Downed Firefighter Down Stairs

In this skill, the student will be taught how properly drag a downed firefighter safely and efficiently down stairs when packaging equipment is not available.

<b>Time Frame:</b>	0:15
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	
<ol style="list-style-type: none"> <li>1. Position the downed firefighter <ul style="list-style-type: none"> <li>▪ On side</li> <li>▪ Head first</li> <li>▪ Stomach toward any anticipated inside bends</li> </ul> </li> <li>2. Rescuer #1 takes position below the downed firefighter's head <ul style="list-style-type: none"> <li>▪ Staying low</li> </ul> </li> <li>3. Rescuer #2 takes position behind Rescuer #1</li> <li>4. Rescuer #2 grasps Rescuer #1's SCBA frame or waist strap with one hand <ul style="list-style-type: none"> <li>▪ Preparing to guide down the stairs</li> </ul> </li> <li>5. Rescuer #1 grasps both SCBA shoulder straps of the downed firefighter <ul style="list-style-type: none"> <li>▪ Using a cross grasp to cradle the head</li> </ul> </li> </ol>	

### Skill #10: Dragging a Downed Firefighter Down Stairs

6. Rescuer #1 pulls the downed firefighter down the stairs

- Leaning into the downed firefighter to gain control
- Shielding from falling debris if necessary
- Using proper body mechanics

7. Rescuer #2 guides the descent

- Maintaining physical and verbal contact other RIC member
- Using proper body mechanics

## Skill #11: Dragging a Downed Firefighter Up Stairs

In this skill, the student will be taught how properly drag a downed firefighter safely and efficiently up stairs when packaging equipment is not available.

<b>Time Frame:</b>	0:45
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Rescue loop</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	

### Two Rescuers using SCBA Straps

1. Position the downed firefighter
  - Face up, head first
2. Create a seat harness for the downed firefighter
  - Placing the SCBA waist strap between the downed firefighter's legs
3. Rescuer #1 takes position at the downed firefighter's head
4. Rescuer #1 grasps both SCBA shoulder straps of the downed firefighter
5. Rescuer #2 takes position at the downed firefighter's feet
6. Rescuer #2 lifts the downed firefighter's legs over his or her shoulders
  - Standing between both legs

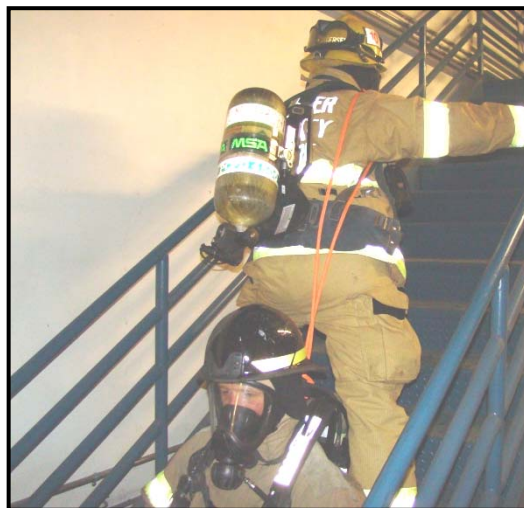




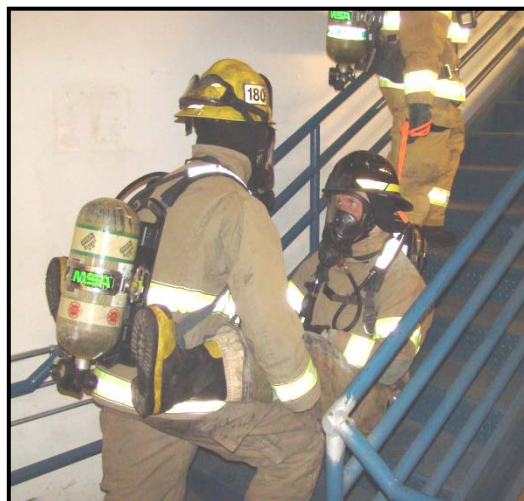
## Skill #11: Dragging a Downed Firefighter Up Stairs

### Two Rescuers utilizing a Rescue Loop or Webbing

1. Position the downed firefighter
  - Supine, head first
2. Create a seat harness for the downed firefighter
  - Placing the SCBA waist strap between the downed firefighter's legs
3. Rescuer #1 takes position at the downed firefighter's head
4. Rescuer #1 applies a rescue loop with a girth hitch around the top of both SCBA harness straps



5. Rescuer #2 takes position at the downed firefighter's feet
6. Rescuer #2 lifts the downed firefighter's legs
  - Grabbing both legs at the knees while standing between them
7. Both rescuers carry the downed firefighter



### Utilizing Rescue Loop or Webbing

8. Rescuer #2 takes position at the downed firefighter's feet
9. Rescuer #2 wrap the downed firefighter's legs above the knees
  - Using a Lark's foot and webbing, rope, or rescue loop around the legs at the knees
10. Rescuer #2 lifts the downed firefighter's legs
11. Both rescuers carry the downed firefighter



## Skill #12: Feet-first Ladder Carry

In an event that a firefighter becomes injured and/or unconscious, it may be necessary for a RIC to remove the downed firefighter. To expedite this in a multistory structure, the downed firefighter may be removed down a ladder.

<b>Time Frame:</b>	1:00
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Ladder (appropriate size for the building)</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	

1. Position the downed firefighter so the head is facing away from the window
2. Rescuer #1 grasps the downed firefighter's pant cuff and waist strap
3. Rescuer #2 grasps the downed firefighter's pant cuff and waist strap
4. Drag the downed firefighter to the window
  - Working together



## Skill #12: Feet-first Ladder Carry

5. Both rescuers place the downed firefighter's feet on to the window sill
  - Maintaining contact with the downed firefighter
6. One rescuer takes position on the ladder outside the window
  - Preparing to manage the downed firefighter



7. Rescuer #1 gives command, "Ready, Ready, Lift"
8. Both rescuers lift and place the downed firefighter's thighs on the window sill
  - Controlling the lift
9. Rescuer #1 readjusts and grasps the downed firefighter's waist strap
10. Rescuer #2 readjusts to the downed firefighter's chest and grasps Rescuer #1's hand
11. Finish lifting the downed firefighter out the window
  - Placing a leg underneath the downed firefighter to help hold the weight if necessary





## Skill #12: Feet-first Ladder Carry

12. Rescuer on the ladder performs a basic leg lock on the downed firefighter

- Moving the downed firefighter's legs to one side of his or her body
- Placing one hand between the downed firefighter's legs
- Wrapping the other hand around the opposite beam for stabilization
- Resting underneath the downed firefighter's armpit



13. Inside rescuers continue to assist the downed firefighter until completely secured on the ladder


14. Ladder rescuer and downed firefighter descend the ladder

- Controlling the decent by wrapping both hands around the beams



## Skill #13: Seated Carry with SCBA Removal

Utilizing the seated carry method, the SCBA is removed inside the structure. The downed firefighter's regulator remains attached until the head is transitioned out the window and away from the IDLH atmosphere. The downed firefighter is lifted to the windowsill by two RIC members. The firefighter on the ladder receives the downed firefighter in a sitting position, legs over the shoulders, with the back against the ladder.

<b>Time Frame:</b>	0:30
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Ladder</li> <li>▪ Fall protection system</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	
<ol style="list-style-type: none"> <li>1. Position the downed firefighter on the shoulder where the SCBA low pressure air hose is located <ul style="list-style-type: none"> <li>▪ Head facing the window (as if he/she was drug to this location)</li> </ul> </li> <li>2. Disconnect the downed firefighter's SCBA waist strap</li> <li>3. Loosen both SCBA shoulder straps</li> <li>4. Maneuver the upper arm of the downed firefighter through the SCBA shoulder strap</li> <li>5. Roll the downed firefighter face down</li> <li>6. Slide the SCBA off the opposite arm <ul style="list-style-type: none"> <li>▪ SCBA is only connected to the mask by the low air pressure hose</li> </ul> </li> </ol>	

## Skill #13: Seated Carry with SCBA Removal

7. Roll the downed firefighter face up
8. Rescuers take position on either side of the downed firefighter
9. Each rescuer grabs a shoulder and one leg of the downed firefighter
10. Both rescuers lift the legs 90 degrees
11. Rescuer on the side of the SCBA grabs the SCBA



12. Rotate the downed firefighter so the legs are facing the window
13. Push the downed firefighter until his or her buttocks is up against the wall and the legs are vertical
  - While maintaining their grip
14. Disconnect the regulator or remove the face piece
15. Place the downed firefighter's arms across his or her chest



16. One rescuer positions one hand near the buttocks and the other hand up by the collar
  - Gripping as low as possible
  - Palm facing up
17. One rescuer gives the command, "Ready, Lift"
18. Both RIC members lift and place the downed firefighter's buttocks on to the window sill
  - Lifting in unison
  - Using proper body mechanics
19. Rotate on the leg next to the window
20. Lift the other leg and put the knee under the buttocks to assist with the lift
21. Maintain control of the downed firefighter to prevent falling out the window



## Skill #13: Seated Carry with SCBA Removal

### 22. Rescuer ascends the ladder

- Stopping short of the window sill until downed firefighter is placed on the sill
- Preventing the downed firefighter's feet from hitting the RIC member

### 23. Rescuers take position on the ladder to receive the downed firefighter

- Shoulders below the window ceil
- Maintaining three-point contact, both feet and one hand



## Skill #14: Head-first Ladder Carry

In an event that a firefighter becomes injured and/or unconscious, it may be necessary for other rescuers or a RIC to remove the downed firefighter. To expedite this issue in a multistory structure, the firefighter may be removed down a ladder. This skill may require additional exterior and possibly interior assistance depending on air levels of the rescuers and the work that may be needed i.e., searching, packaging, dragging, carrying, window or door egress preparation, etc. to remove the firefighter to a safer location.

<b>Time Frame:</b>	1:00
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure with an aboveground door or window</li> <li>▪ Fall protection system</li> <li>▪ Minimum two (2) fire service ladders</li> <li>▪ Mechanical footing for each ladder used</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	<ol style="list-style-type: none"> <li>1. Ensure the site is free of all hazards</li> <li>2. Perform a final safety check prior to performing the skill</li> <li>3. Assign an instructor on the second ladder to ensure safe removal and to coach students through the operation</li> </ol>
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Review the fall protection system requirements</li> <li>3. Assign personnel to appropriate fall protection positions.</li> <li>4. Review the fall protection system with all personnel and students</li> <li>5. Ensure all students are wearing full personal protection equipment</li> <li>6. Ensure downed firefighter is wearing a full-body harness attached to a safety line in accordance to the fall protection system requirements</li> <li>7. Perform a final safety check prior to performing the skill</li> </ol>



## Skill #14: Head-first Ladder Carry

### Student Directions:

1. Package the downed firefighter
2. Move the downed firefighter to the emergency egress point
  - Dragging or carrying
3. Orient the front of the downed firefighter towards opening facing the egress point



4. Prepare egress point by removing the window
  - Ensuring the opening is as large as possible
5. Call outside for assistance
6. Direct ladder placement from exterior crews (recue position)
7. Ask for assistance from exterior firefighters



8. Position downed firefighter below the egress point
  - Sitting upright
  - Knees bent
  - Positioned as close as possible to interior wall



## Skill #14: Head-first Ladder Carry

9. Lift downed firefighter to the egress point
  10. Confirm communications between interior rescuer(s) and exterior rescuer on ladder
  11. Inside rescuers grasp the bottom of the downed firefighter's SCBA harness or turnout coat with one hand and the shoulder strap or turnout collar with the other hand
    - Using legs to lift downed firefighter to egress point/window sill
  12. Inside rescuers position downed firefighter's waist on the window sill
- 
13. Transition downed firefighter onto the ladder
    - Rotating the downed firefighter until lower armpit rests on exterior rescuer's forearm
  14. Exterior rescuer grasps the ladder beam to support upper torso of the downed firefighter
    - Firmly
  15. Rotate and bend the downed firefighter's legs to maneuver through the opening
  16. Exterior rescuer grasps the other beam of the ladder between the legs of the downed firefighter
    - Firmly
    - May need to step down one rung for leg transition
  17. Interior rescuers assist throughout the transition
    - Maintaining contact with the downed firefighter as long as possible





## Skill #14: Head-first Ladder Carry

18. Exterior rescuer lowers the downed firefighter to the ground

- Maintaining control of the downed firefighter until assisted by rescuers on the ground
- Controlling the speed of descent by pressing the downed firefighter against the ladder with your upper body
- Communicating to the interior rescuers that you have control of the downed firefighter

19. Additional personnel on the ground prepare to receive the downed firefighter and foot ladder

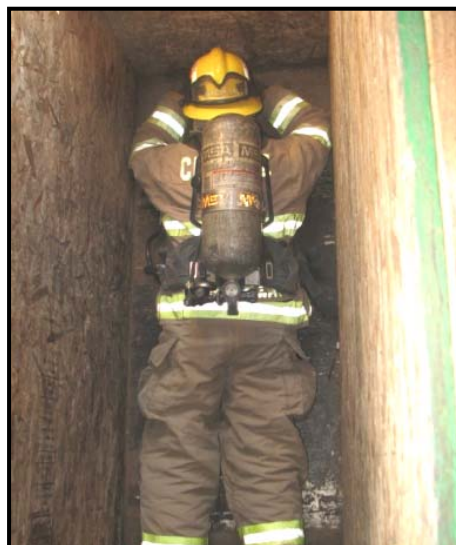


## Skill #15: Rescue from a Confined Area

In this skill, the student will be taught how to rescue a downed firefighter from a confined area as was encountered by the Denver Fire Department in the LODD of Mark Langvardt. The student will be taught removal from level ground as well as how to transition the downed firefighter to a ladder carry for multistory application.

<b>Time Frame:</b>	2:00 (1:00 ground school, 1:00 ladder operations)
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Confined area prop (Appendix B)</li> <li>▪ Three fire service ladders appropriate size for the structure</li> <li>▪ Fall protection system</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	1. Ensure that site is free of all hazards
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	

1. Position the downed firefighter
  - Head against exterior wall
  - Face down



## Skill #15: Rescue from a Confined Area

2. First rescuer enters through window
3. First rescuer moves to the downed firefighter's feet
  - Controlling the descent into the window to prevent further injury



4. First rescuer turns the downed firefighter face up



5. First rescuer moves the downed firefighter's knees toward his or her buttocks
  - Standing on the downed firefighter's feet to prevent slipping and provide leverage



## Skill #15: Rescue from a Confined Area

6. First rescuer locks knees against the downed firefighter
7. First rescuer grabs the downed firefighter's SCBA shoulder straps
  - Firm grip
8. First rescuer pulls the downed firefighter to a sitting position



9. Second rescuer enters behind downed firefighter



10. Second rescuer positions behind the downed firefighter
  - SCBA straps loosened
  - Bottle offset to corner
  - Knees close together



11. Both rescuers lift the downed firefighter in a semicircular onto the knees of the second rescuer





## Skill #15: Rescue from a Confined Area

12. First rescuer stands up and positions between the legs of the downed firefighter

- Firm grip under the thighs of the downed firefighter



13. Second rescuer places palms under the downed firefighter's SCBA bottle

- Preparing to push up



14. Exterior rescuer on the ladder reaches in to help lift the downed firefighter up and on to the window sill



## Skill #15: Rescue from a Confined Area

15. All rescuers lift the downed firefighter on to the window sill simultaneously



### Begin Ladder Operations

16. Ensure the downed firefighter's upper body is completely out of the structure

- Sitting position
- Thighs resting on the window sill



## Skill #15: Rescue from a Confined Area

17. Interior rescuer holds the downed firefighter's SCBA strap

- To maintain control

18. Exterior rescuer rotates the downed firefighter sideways

19. Exterior rescuer pulls the downed firefighter's chest into the exterior of the structure



20. Exterior rescuer at the head of the downed firefighter reaches under the arm and grabs the ladder beam

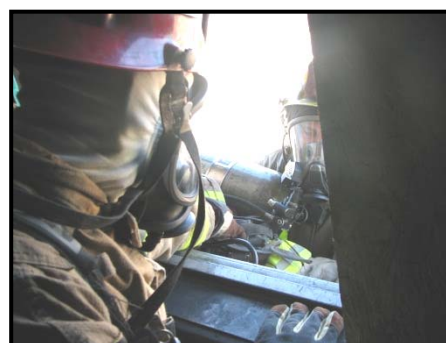
21. Exterior rescuer at the legs steps down one rung below the other rescuer

- Grabbing the beam between the downed firefighter's legs



22. Interior rescuer maintains grip on the SCBA straps and assists to lower as long as possible

23. Interior rescuer pulls the downed firefighter's chest against the beams of the ladder





## Skill #15: Rescue from a Confined Area

24. Exterior rescuers lower the downed firefighter to the ground

- Rescuer carrying the legs remaining one rung lower during the descent



25. Additional exterior rescuers assist lowering the downed firefighter to the ground



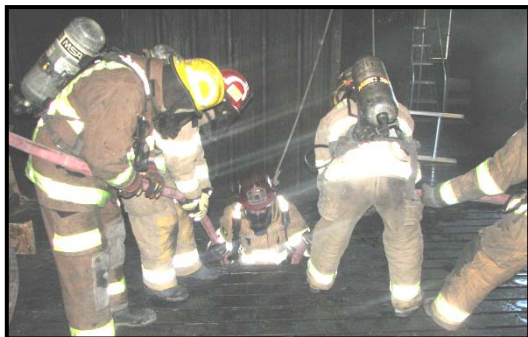


## Skill #16: Rescuing Through the Floor - Hose Method

If operating on a floor or roof and a collapse occurs, a charged hoseline may be used to get the downed firefighter out. This skill while valuable may require additional personnel and all factors must be considered as to the safety and/or stability of the floor or roof being worked on. Consideration should also be made by additional crews interior and exterior to consider any and all other options for the rescue of the firefighter involved in the collapse. This may include other egress options, such as doors or windows, breaching exterior and/or interior to gain access to the firefighter. Lifting a rescuer with a hose should be the last option after all other better options are considered.

<b>Time Frame:</b>	1:00
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Fall protection system</li> <li>▪ 1¾" charged hoseline</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	<ol style="list-style-type: none"> <li>1. Ensure that site is free of all hazards</li> <li>2. Ensure the floor is safe to work on</li> <li>3. Interior doors may be used to span floor for additional support</li> </ol>
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Assign an instructor at the downed firefighter to ensure a safe operation</li> <li>5. Perform a final safety check prior to performing the skill</li> </ol>

## Skill #16: Rescuing Through the Floor - Hose Method

<b>Student Directions:</b>	
<ol style="list-style-type: none"> <li>1. Make contact with the downed firefighter</li> <li>2. Determine status</li> <li>3. Obtain a CAN report</li> <li>4. Lower a bight of the hose into the opening <ul style="list-style-type: none"> <li>▪ Leaving enough hose on both ends for personnel to grab and pull from</li> </ul> </li> </ol>	
<ol style="list-style-type: none"> <li>5. Firefighter positions into bight of hose</li> <li>6. Topside crew directs firefighter into position over hose</li> <li>7. Step into the bight of the hose</li> <li>8. Secure feet on hose</li> <li>9. Grab and hold hose firmly against chest on each side of body</li> </ol>	
<ol style="list-style-type: none"> <li>10. Topside rescuers walk parallel to the opening <ul style="list-style-type: none"> <li>▪ Using caution to avoid spreading apart the bight</li> </ul> </li> <li>11. Front rescuer assists the downed firefighter from opening</li> </ol>	

## Skill #16: Rescuing Through the Floor - Hose Method

12. Entire crew evacuates collapse area



## Skill #17: Rescuing a Conscious/Injured Firefighter Through the Floor - Hose Method

If operating on a floor or roof and a collapse occurs, a charged hoseline may be used to get the downed firefighter out. This skill while valuable may require additional personnel and all factors must be considered as to the safety and/or stability of the floor or roof being worked on. Consideration should also be made by additional crews interior and exterior to consider any and all other options for the rescue of the firefighter involved in the collapse. This may include other egress options, such as doors or windows, breaching exterior and/or interior to gain access to the firefighter. Lifting a rescuer with a hose should be the last option after all other better options are considered.

<b>Time Frame:</b>	1:00
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Fall protection system</li> <li>▪ 1<math>\frac{3}{4}</math>" charged hoseline</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	<ol style="list-style-type: none"> <li>1. Ensure that site is free of all hazards</li> <li>2. Confirm an appropriate anchor can be constructed in accordance with fall protection system</li> <li>3. Consider an instructor at the downed firefighter to ensure a safe operation</li> </ol>
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Review fall protection system requirements</li> <li>3. Assign personnel to appropriate fall protection positions</li> <li>4. Review the fall protection system with all personnel and students</li> <li>5. Ensure all students are wearing full personal protection equipment</li> <li>6. Ensure all students are wearing a full-body harness attached to a safety line in accordance to the fall protection system requirements</li> <li>7. Perform a final safety check prior to performing the skill</li> </ol>

## Skill #17: Rescuing a Conscious/Injured Firefighter Through the Floor - Hose Method

### **Student Directions:**

1. Make contact with the downed firefighter
2. Obtain a CAN report if possible
3. Lower hose
4. Determine if you have enough hose to complete the operation
5. Lower a bight of the hose into the opening
6. Ensure that you have enough hose left topside on both ends for personnel to grab and pull from



7. Topside rescuers direct the downed firefighter into position
  - Arms and upper torso through the bight on the hose
  - Hose across front of upper torso and under the arm pits
8. Downed firefighter advises topside rescuers when in position



9. Downed firefighter secures position
  - Pressing upper arms downward against sides chest
  - Securing hose across front of chest and into arm pits
10. Topside rescuers raise downed firefighter





## Skill #17: Rescuing a Conscious/Injured Firefighter Through the Floor - Hose Method

11. Topside rescuers hold position near the opening
  - Using caution to avoid spreading the bight
12. Rear rescuer holds hoseline and assists in lift as able
13. Front rescuer assists downed firefighter from the opening
14. Entire crew evacuates collapse area as soon as possible





## Skill #18: Rescuing an Unconscious Firefighter Through the Floor - Hose Method

If operating on a floor or roof and a collapse occurs, a charged hoseline may be used to get the downed firefighter out. This skill while valuable may require additional personnel and all factors must be considered as to the safety and/or stability of the floor or roof being worked on. Consideration should also be made by additional crews interior and exterior to consider any and all other options for the rescue of the firefighter involved in the collapse. This may include other egress options, such as doors or windows, breaching exterior and/or interior to gain access to the firefighter. Lifting a rescuer with a hose should be the last option after all other better options are considered.

<b>Time Frame:</b>	1:00
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Fall protection system</li> <li>▪ 1¾" charged hoseline</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	<ol style="list-style-type: none"> <li>1. Ensure that site is free of all hazards</li> <li>2. Confirm an appropriate anchor can be constructed in accordance with fall protection system</li> <li>3. Consider an instructor at the downed firefighter to ensure a safe operation</li> </ol>
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Review fall protection system requirements</li> <li>3. Assign personnel to appropriate fall protection positions</li> <li>4. Review the fall protection system with all personnel and students</li> <li>5. Ensure all students are wearing full personal protection equipment</li> <li>6. Ensure all students are wearing a full-body harness attached to a safety line in accordance to the fall protection system requirements</li> <li>7. Perform a final safety check prior to performing the skill</li> </ol>

## Skill #18: Rescuing an Unconscious Firefighter Through the Floor - Hose Method

### ***Student Directions:***

1. Make contact with the downed firefighter
2. Obtain a CAN report if possible
3. Lower hose
4. Determine if you have enough hose to complete the operation
5. Lower a bight of the hose into the opening
6. Ensure that you have enough hose left topside on both ends for personnel to grab and pull from



7. Anchor hose for rescuing firefighter while rescuer positions over opening
8. Minimum of two rescuers firmly grasp hose to anchor hose for slide
9. Rescuer closest to hole kneels while rear rescuer sits on hose while firmly grasping with both hands
10. Rescuer sits on edge of hole and lowers legs into hole



## Skill #18: Rescuing an Unconscious Firefighter Through the Floor - Hose Method

### 11. Rescuer slides down hose

- Grasping hose firmly with both hands
- One hand above edge of hole and one hand lower than hole
- Hose between legs creating a Figure 4 Leg Lock
- One leg in front of hose
- Second leg locked behind hose pressing on opposite leg
- Squeezing hose with thighs
- Controlling descent with more or less pressure on the hose



- Hands should be a secondary safety and not the primary factor controlling descent
- Slowly transitioning upper hand past opening to avoid getting caught between edge and the hose

### 12. Slowly lower to floor and advise top side crew when at the bottom

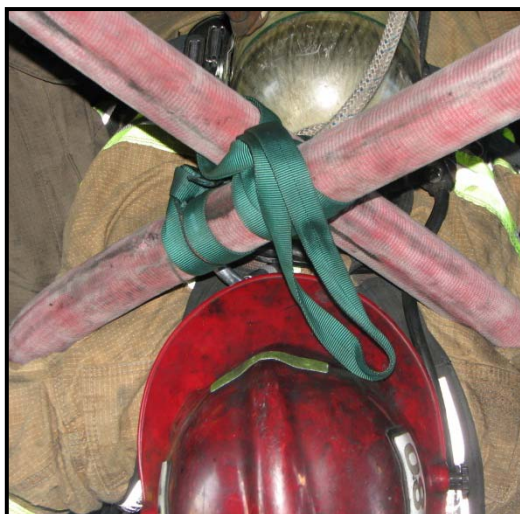


## Skill #18: Rescuing an Unconscious Firefighter Through the Floor - Hose Method

13. Locate and package downed firefighter
  - Listening for PASS device or visually search for illumination from flashlight
14. The rescuing firefighter must maintain contact with hose if downed firefighter is not directly in reach of rescuing firefighter
15. Position downed firefighter directly under hole
16. Cross hose making a loop that will go under and around downed firefighter at the chest level.
17. Manipulate loop under the downed firefighter's head and arms inside of the armpits



18. Pull hose tight at the cross section assuring all slack is out of the hose and tight against downed firefighter
19. Secure hose at the cross section with webbing or rope utilizing overhand knots and half hitches keeping hose as tight as possible against downed firefighter





## Skill #18: Rescuing an Unconscious Firefighter Through the Floor - Hose Method

20. Raise downed firefighter from hole
21. Advise top side crew when ready
22. Top side firefighters begin to lift hose (recommend 2 firefighters on each side of hose to assist with lifting)
23. Rescuer in the hole provides maximum assistance lifting and steadying downed firefighter until out of the reach of the rescuer
24. Top side firefighters may need to maneuver downed firefighter to avoid injury to head or neck and keep SCBA from being caught on edge of hole
25. It is helpful to have a fifth side top firefighter to assist maneuvering and lifting downed firefighter from hole



26. Clear downed firefighter from hole
27. When downed firefighter begins to clear hole at chest level rear firefighters on hose move to front to lift downed firefighter from hole
28. Remaining firefighters on hose securely hold hose to anchor downed firefighter in position during the transition
29. Bring rescuer out of hole
30. Lower loop back in to hole
31. Utilize the "Conscious Uninjured Firefighter" skill to remove rescuer



## Skill #19: Rescuing a Firefighter through the Floor - Rope Method

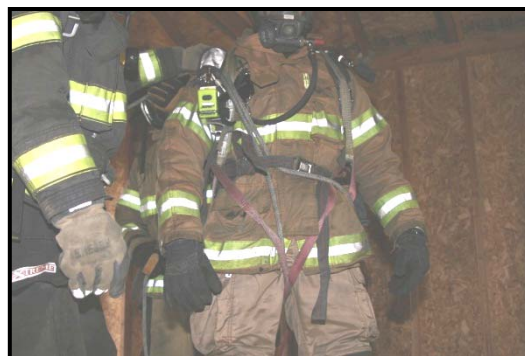
Rescuing a downed firefighter from the floor below is extremely physically and mentally challenging task. Every attempt should be made to find another avenue first. This skill utilizes four rescuers. As with everything in the fire service, the more you are prepared before the emergency the higher likelihood of you and your company being successful. Preset assignments describing roles and responsibilities during this evolution will help the successful outcome.

<b>Time Frame:</b>	1:00
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<p>All equipment used should comply with <u>NFPA 1983: Standard on Life Safety Rope and Equipment for Emergency Services</u>, 2006 Edition.</p> <ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ Fall protection system</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	<ol style="list-style-type: none"> <li>1. Ensure that site is free of all hazards</li> <li>2. Confirm an appropriate anchor can be constructed in accordance with fall protection system</li> <li>3. Consider assigning an instructor at the downed firefighter to ensure a safe operation</li> </ol>
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the skill</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>Student Directions:</b>	
1. Rescuer #2 determines the depth and approximate length of rope needed to reach the downed firefighter and communicate this to Rescuer #3	



## Skill #19: Rescuing a Firefighter through the Floor - Rope Method

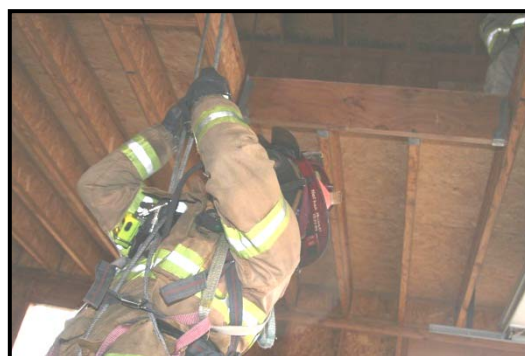
2. Rescuer #1 makes a bight in the rope and secures it
  - Under the right or left SCBA shoulder strap
  - Down and under the SCBA waist strap
  - Around the opposite leg



3. Rescuer #1 pulls the slack out of the rope
4. Rescuer #1 sits on the edge of the opening



5. When ready to be lowered, Rescuer #1 rolls to the shoulder that the rope went through
6. Remaining rescuers slowly lower Rescuer #1 into the opening
7. Allowing enough slack for Rescuer #1 to locate the downed firefighter
8. Rescuer #2 is the primary contact person for Rescuer #1
9. Rescuer #1 keeps the rope system on in case there is an immediate need to get out



10. Rescuer #1 assesses the downed firefighter
  - Delivering a PAC CAN report



## Skill #19: Rescuing a Firefighter through the Floor - Rope Method

11. Rescuer #1 drags the downed firefighter and positions directly under the opening
12. Rescuer #1 removes the rope system and secures it to the downed firefighter
13. Rescuer #1 positions the downed firefighter in a sitting position directly under the opening
14. Rescuer #1 places both hands under the SCBA bottle of the downed firefighter

15. Rescuer #1 calls "Ready"
16. When prepared to lift, rescuers above call "Ready"
17. Rescuer #1 calls "Lift"
18. Rescuer #3 directs the rescue and calls any additional lift commands

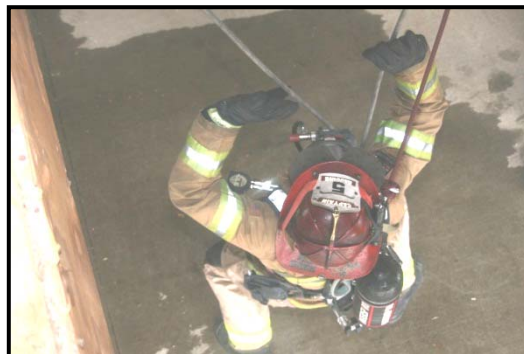
19. When the downed firefighter is safely out of the opening, Rescuer #3 calls for Rescuer #2 to release the rope and grab the downed firefighter

20. Rescuers #3 and #4 assist with the removal of the downed firefighter
21. Rescuer #4 removes the rope system from the downed firefighter and sends it down to Rescuer #1

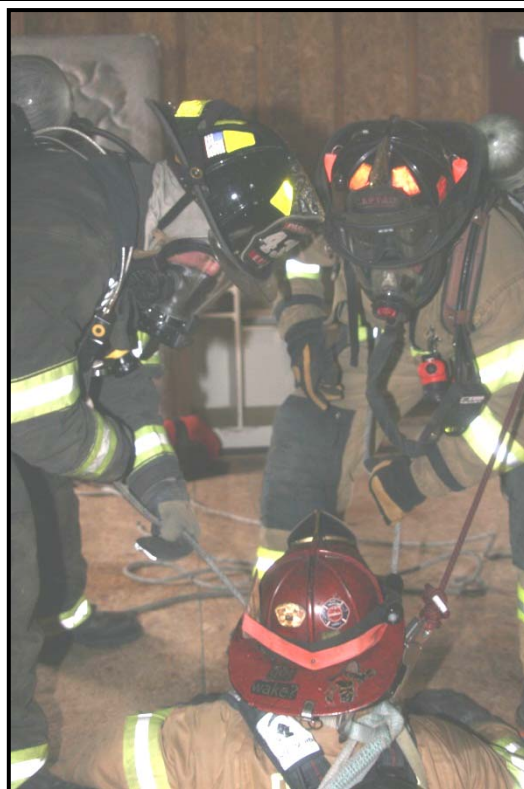


## Skill #19: Rescuing a Firefighter through the Floor - Rope Method

22. Rescuer #1 secures the rope system
23. Rescuer #1 calls "Ready"
24. When prepared to lift, rescuers above call "Ready"
25. Rescuer #1 calls "Lift"
26. Rescuer #3 directs the lift and calls any additional commands
27. When Rescuer #1 is safely out of the opening, Rescuer #3 calls for Rescuer #2 to release the rope and grab Rescuer #1



28. Rescuers #3 and #4 assist with the removal of Rescuer #1
29. Rescuer #4 removes the rope system from Rescuer #1



### Topic 7: RIC Operations Evolutions

Evolution #1: Pittsburg Evolution

Evolution #2: Tarver Evolution

Evolution #3: Scenario-based Evolutions

## Evolution #1: Pittsburgh

The "Pittsburgh Drill" was developed by the Rapid Intervention Training Associates (RITA) to teach rapid intervention crewmembers to work as a team. The importance of the Pittsburgh Drill is not in completing the course in 20 minutes or less, but rather to make the RIC work together and sharpen their rescue skills. While not an easy evolution, it is not impossible.

With face pieces covered to simulate limited visibility, each rescuer must maneuver through all three obstacles to access and return the downed firefighter while on air.

<b>Time Frame:</b>	0:20 per student
<b>Students (Minimum):</b>	One company
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure with limited visibility (or use wax paper in the mask)</li> <li>▪ One (1) 4'x8' sheet of ½" plywood or oriented strand board (OSB)</li> <li>▪ Six (6) 2"x4"x8' (used for support/legs)</li> <li>▪ Three (3) standard size shipping pallets</li> <li>▪ Three (3) 55-gallon drums or one (1) 10-20 foot plastic tube (36" diameter)</li> <li>▪ Two (2) 2"x30" flat plat stabilizers with 6" uprights</li> <li>▪ Simulated downed firefighter in full personal protective equipment</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	<ol style="list-style-type: none"> <li>1. Ensure that site is free of all hazards</li> <li>2. The course is 50 feet in length with three (3) separate obstacles (under, over, and through)</li> <li>3. The first obstacle is a low profile opening</li> <li>4. The second obstacle is an A-frame</li> <li>5. The third obstacle is a 10-12 foot tube</li> <li>6. A section of 1½" (1¾" optional) hoseline is stretched from the entrance of the course through all three obstacles to the downed firefighter at the end</li> </ol>
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the evolution and safety protection system requirements</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment and the face piece is covered to limit visibility</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>

## Evolution #1: Pittsburg

### ***Special Evaluation Instructions:***

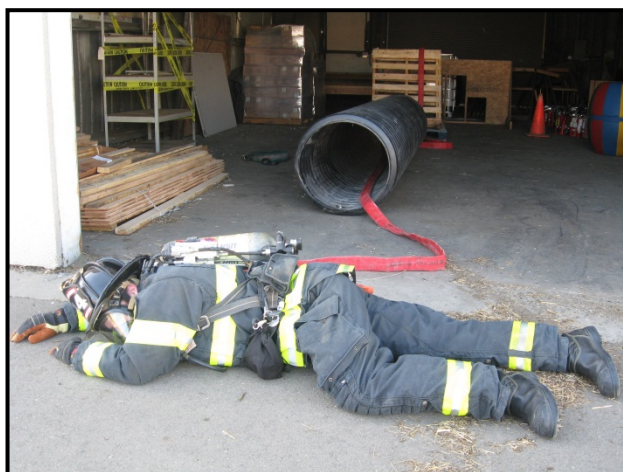
1. Downed firefighter is unconscious, but assumed to have good air supply
2. The downed firefighter's face piece must remain in place throughout obstacle course
3. If it dislodges, the evolution stops and the face piece repositioned
4. If a rescuer's low air alarm sounds, the entire crew must escort him or her outside to replace their air cylinder
5. Rescuer must change out the cylinder before going back in to assist
6. The drill terminates after 20 minutes regardless of where the downed firefighter is in the course

### ***Student Directions:***

1. Following a designated hoseline, rescuers maneuver as a company through the obstacles to access the downed firefighter and bring him or her back through the obstacle course while on air
  - Obstacle 1: Wall breach/narrow opening
  - Obstacle 2: A-frame
  - Obstacle 3: Tube
2. At the entrance to Obstacle 3 (the tube), two rescuers low-profile crawl through the tube to the downed firefighter while the remaining rescuers wait in place at the entrance of the tube
3. Once through the tube, the downed firefighter is assumed to have a good air supply but is unconscious
4. Both rescuers prepare the downed firefighter for a low-profile drag back through the tube using techniques for packaging and moving a downed firefighter
5. Both rescuers maneuver the downed firefighter back through Obstacle 3 (the tube)
6. RIC works together to maneuver the downed firefighter over Obstacle 2 (the A-frame) and through Obstacle 1 (wall breach/narrow opening)
  - Two rescuers travel through the breach/opening first to pull from the opposite side
7. Remaining rescuers position the downed firefighter into the breach/opening and push him or her through as the first two rescuers pull the downed firefighter through from the opposite side
8. Remaining rescuers profile through the breach/opening and assist getting the downed firefighter to the starting point where time will stop



### Evolution #1: Pittsburg



## Evolution #2: Tarver

Following the LODD of Bret Tarver, the Phoenix Fire Department conducted drills to determine how to more effectively complete a rescue of similar nature. The firefighter emergency will consist of two firefighters disoriented and low on air, who believe they are just off the hoseline.

<b>Time Frame:</b>	0:20 per student
<b>Students (Minimum):</b>	Two companies
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure with limited visibility (or use wax paper in the mask)</li> <li>▪ RIC tool cache</li> <li>▪ RIC air pack</li> <li>▪ Search line system (200 feet minimum)</li> <li>▪ 1¾" charged hoseline (400 feet minimum)</li> <li>▪ Two (2) portable radios</li> <li>▪ Two (2) simulated downed firefighters in full personal protective equipment</li> <li>▪ Full personal protective equipment</li> </ul>
<b>Site Preparation:</b>	<ol style="list-style-type: none"> <li>1. Ensure that site is free of all hazards</li> <li>2. The RIC will conduct a size-up of the training structure and assemble a tool cache</li> <li>3. One RIC member will assume the role of RIC Leader</li> <li>4. One RIC member will act as the IC/RIC Group Supervisor on the exterior</li> <li>5. The IC/RIC Group Supervisor will track and maintain accountability of the resources, as well as perform PAR checks</li> <li>6. First downed firefighter is just off the hoseline, alert, but low on air</li> <li>7. Second downed firefighter is approximately 40 feet off the nozzle and unconscious</li> </ol>
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the evolution</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment and the face piece is covered to limit visibility</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>

## Evolution #2: Tarver

<p><b>Special Evaluation Instructions:</b></p>	<ol style="list-style-type: none"> <li>1. The RIC may request any assistance or resources that they may require</li> <li>2. The RIC will manage their air at all times</li> <li>3. If a RIC member runs out of air, they are considered another downed firefighter</li> <li>4. The evolution ends after the RIC anchors their orientation point and communicated their PAC CAN to the RIC Group Supervisor</li> <li>5. Deployments should vary between using a search line system and a hoseline</li> </ol>
<p><b>Student Directions:</b></p>	
<ol style="list-style-type: none"> <li>1. RIC enters the structure and listens for the PASS devices</li> <li>2. Using a search line system or hoseline as a reference point, the RIC moves towards the sound of the first downed firefighter's PASS device</li> <li>3. After locating the downed firefighter near the hoseline, the RIC delivers air through an approved method</li> <li>4. RIC continues to listen for the second downed firefighter's PASS device and searches using a tether or hoseline</li> <li>5. After locating the second downed firefighter, the RIC delivers air if necessary</li> <li>6. RIC Leader performs a PAC CAN and may request a second RIC if necessary</li> <li>7. RIC packages and moves the downed firefighters using an approved method of their choice</li> <li>8. RIC removes the downed firefighters from the structure following their designated hoseline or search line system</li> <li>9. The evolution ends after the downed firefighter is extricated from the structure and all rescuers have exited the structure</li> </ol>	



### Evolution #2: Tarver



Existing Structure

Simulated Structure

## Site-specific Evolutions #3 and #4

The instructors will design these evolutions based on the training facility. Each evolution will encompass all phases of a RIC operations: predeployment, deployment, and rescue operations. The evolutions will be dynamic and incorporate 3-4 RICs. The evolutions will be conducted in reduced visibility using smoke machines, darkness, or wax paper inside of face pieces. If present, RIC Command and Control students will act as the IC/RIC Group Supervisor to successfully complete their task book. Evolutions 3 and 4 must differ and present unique challenges to the RICs.

<b>Time Frame:</b>	2:00
<b>Students (Minimum):</b>	3-4 companies
<b>Materials Needed:</b>	<ul style="list-style-type: none"> <li>▪ Appropriate training structure</li> <li>▪ 3-4 simulated downed firefighters with SCBA</li> <li>▪ Full personal protective equipment</li> <li>▪ RIC tool cache</li> <li>▪ Search line system</li> </ul>
<b>Site Preparation:</b>	<ol style="list-style-type: none"> <li>1. Ensure that site is free of all hazards</li> <li>2. Incorporate different aspects of rescue operations <ul style="list-style-type: none"> <li>▪ Multistory (ladder rescue)</li> <li>▪ Collapse</li> <li>▪ Entanglement</li> <li>▪ Fallen through the floor</li> <li>▪ Confined area</li> <li>▪ Stairs</li> </ul> </li> <li>3. Place multiple downed firefighters throughout the structure; keep separated</li> </ol>
<b>Instructor Directions:</b>	<ol style="list-style-type: none"> <li>1. Review the evolution</li> <li>2. Assign personnel to appropriate positions</li> <li>3. Ensure all students are wearing full personal protective equipment</li> <li>4. Perform a final safety check prior to performing the skill</li> </ol>
<b>RIC Leader's Predeployment Directions:</b>	<ol style="list-style-type: none"> <li>1. Conduct a RIC size-up</li> <li>2. Assemble a mobile tool cache</li> <li>3. Soften the structure if necessary</li> <li>4. Monitor radio for firefighter emergencies and listen for LUNAR/NUCAN reports</li> </ol>

# RIC OPERATIONS

## Topic 7: RIC Operations Evolutions

### Site-specific Evolutions #3 and #4

<p><b><i>RIC Deployment Directions:</i></b></p>	<ol style="list-style-type: none"> <li>1. May utilize the search technique of their choosing</li> <li>2. May utilize a TIC if available</li> <li>3. RIC Leader delivers status reports, PAR checks, and maintain crew accountability</li> <li>4. RIC Group Supervisor maintains accountability of all RICs, performs PAR checks, and communicates with the downed firefighter</li> </ol>
<p><b><i>Rescue Operations:</i></b></p>	<ol style="list-style-type: none"> <li>1. Upon locating a downed firefighter, perform a PAC CAN</li> <li>2. Deliver RIC air</li> <li>3. Remove downed firefighters from debris, collapse, and entanglement situations</li> <li>4. Package and remove the downed firefighter utilizing RIC drags and carries</li> </ol>



## Appendix A: Glossary

<b>1/3-1/3-1/3 rule</b> .....	A baseline parameter to determine working time for a RIC involved in large-area search operations. The rule implies good air management practices based upon consumption rates. One-third of a cylinder to get in, one-third of a cylinder to get out, and one-third of a cylinder remaining for safety.
<b>2-in/2-out rule</b> .....	Provision in OSHA 1910.134 that outlines deployment of first arriving fire personnel and provision of personnel available for their rescue if needed.
<b>90-degree angle collapse</b> .....	Wall collapse where a large portion or even the entire wall falls outward at a 90-degree angle.
<b>A-frame collapse</b> .....	Collapse that result when a floor separates from the exterior wall creating a void space toward the center of the structure.
<b>Backdraft</b> .....	When oxygen is introduced into an area holding superheated products of incomplete combustion resulting in an immediate ignition of the products.
<b>Balloon frame construction</b> .....	Wood-stud framing system that runs continuously from the ground level to the attic that provides channels that allow for rapid-fire spread.
<b>CAN</b> .....	Conditions-actions-needs
<b>Convected heat currents</b> .....	Heat transfer by the movement of air currents.
<b>Conventional construction</b> .....	Framing with conventional joists, rafters, and wall studs. This construction has solid structural elements that will result in a longer burn time before failing.
<b>Curtin wall collapse</b> .....	Wall collapse where a wall crumbles or collapses upon itself straight downward.
<b>Dead load</b> .....	The weight of a building an any permanent feature, including structural members and building materials such as floors, walls, HVAC systems, etc.
<b>Deployment operations</b> .....	Procedures and actions utilized by the RIC in searching for and locating a downed firefighter.
<b>Disorientation</b> .....	Mental state that a firefighter may experience if he or she becomes lost or confused while working in a hazardous atmosphere.

<b>EBS</b> .....	Emergency breathing system.
<b>Engineered I-joist</b> .....	Structural member that uses a center portion composed of wood chips held together with glue. I-beams are used to span large areas and can fail very quickly if unprotected and exposed to high heat.
<b>Emergency breathing system (EBS)</b> .....	A feature on some SCBAs that allows one user to share their air supply with another.
<b>Emergency radio traffic</b> .....	Used to signify that a priority message is to follow on the radio.
<b>Flashover</b> .....	Gases trapped at the ceiling that reaches their ignition temperature spontaneously involving the entire interior space.
<b>IDLH</b> .....	Immediately dangerous to life and health.
<b>Immediately dangerous to live and health (IDLH)</b> .....	An atmosphere that when entered could result in immediate firefighter or civilian injury or death.
<b>Lean-to collapse</b> .....	Collapse caused when the supports for the roof or floor of a building fall to one side.
<b>Lightweight truss construction</b> .....	Type of construction that obtains its strength from compression and tension of materials used in its construction as opposed to mass. Pieces of truss are held together with metal gusset plates, nails, or glue that fail under high heat conditions resulting in failure of the truss.
<b>Lightweight construction</b> .....	Type of construction in which the structural members that provide framework and support are fabricated out of composite materials made up of wood chips and glue. These materials will degrade very quickly when exposed to heat.
<b>LUNAR</b> .....	Acronym used by a lost or trapped firefighter during a firefighter emergency to relay the following pertinent information, L - last know location, U - Unit, N - Name, A - Assignment, and R - Resources Needed.
<b>Metal frame construction</b> .....	Type of construction in which the structural members that provide framework and support are fabricated out of metal components. These materials will degrade very quickly when exposed to heat.
<b>Mule kicking</b> .....	A technique performed by a distress firefighter for penetrating a wall for emergency egress from one area to another when the use of a tool is not available.

<b>NFPA</b> .....	National Fire Protection Association
<b>NIOSH</b> .....	National Institute for Occupational Safety and Health
<b>OSHA</b> .....	Occupational Safety and Health Administration
<b>OSHA 29 CFR 1910.134</b> .....	OSHA standard that covers the parameters required for a respiratory protection program. It contains the 2-in/2-out rule.
<b>Oriented search</b> .....	A systematic search technique that provides good coverage of a small or medium sized open area in place of a complete right or left-hand search.
<b>PAC-CAN</b> .....	Systematic process used by RIC personnel when they find a downed firefighter. Pass - silence alarm, Assess - firefighter to determine whom it is and what their air level is, Communicate - critical information to RIC Leader who then communicates the critical information to the RIC Group Supervisor. Followed by Conditions of fire, Actions - what is RIC going to do, Needs - what needs to be done to be successful.
<b>Pancake collapse</b> .....	Collapse that results from the failure of a structures bearing wall causing the roof and floors to collapse upon each other.
<b>PAR</b> .....	Personnel accountability report.
<b>PASS</b> .....	Personal accountability safety system.
<b>PASS Device</b> .....	Personal alarm safety system worn by each firefighter that will go into an audible alarm if the firefighter fails to move. This alarm should alert other firefighters of a possible emergency.
<b>Penciling</b> .....	Technique used during fire attack to determine heat levels within the room. Short bursts of water are directed at the ceiling to determine heat conditions. If water droplets fail to fall back down, flashover may be imminent. Effective penciling can help prevent flashovers from occurring.
<b>Personnel accountability report (PAR)</b> .....	Roll call of companies operating at an emergency incident. Commonly performed when mode of operation changes (i.e., offensive to defensive), or a significant event such as a firefighter emergency or collapse.
<b>PIA</b> .....	Post-incident analysis.

<b>Point of no return .....</b>	Refers to a firefighter's individual management of air supply. It is determined by the amount of air consumed going into a structure versus the amount of residual air needed to exit the structure.
<b>Positive pressure ventilation....</b>	Utilization of fans to force air into an enclosure or void by creating pressure differentials. This method of ventilation can affect fire behavior inside a structure; therefore, it must be coordinated closely with interior crews.
<b>Post-incident Analysis .....</b>	A recap and in-depth review of an incident or training session to seek out information to address areas that went well as well as areas that need improvement.
<b>PPPN.....</b>	Acronym used to determine a crew's Personnel accountability, Position on the incident, Progress made, and Needs to be successful.
<b>Predeployment operations .....</b>	Procedures and actions that prepare the RIC in deploying in the event a firefighter emergency occurs.
<b>Preincident planning .....</b>	A building walk-through, inspection, or survey prior to an emergency taking place that provides knowledge about the building, potential fire behavior, pre-established strategic and tactics scenarios.
<b>Radio-assisted feedback .....</b>	A procedure using two portable radios that are placed closely together and keyed to the talk position, creating a high-pitched feedback sound. This feedback sound can be heard over a downed firefighter's radio and be used to assist a RIC team in finding the downed firefighter's location.
<b>Rapid intervention crew..... (RIC)</b>	Team of specially trained firefighters who are solely responsible for the safety, search, and rescue of trapped or lost firefighters at an emergency incident. Ideally, the RIC should be made up of four firefighters.
<b>Rapid intervention crew..... operations</b>	Techniques and methods utilized by a crew of firefighters whose sole purpose is to rescue downed firefighters who are in distress or incapable of rescuing themselves.
<b>Rescue operations .....</b>	Procedures and actions utilized by the RIC to stabilize and extricate a downed firefighter from the structure.
<b>RIC .....</b>	Rapid intervention crew.

<b>Risk management process .....</b>	A method used to recognize and then reduce the risks to firefighters. The process includes situation awareness, hazard assessment, hazard control, decision point, and evaluation.
<b>Roof decking.....</b>	Materials that make up the construction of a roof before covering materials such as asphalt are applied.
<b>RPD.....</b>	Rapid prime decision-making.
<b>Sheathing .....</b>	Material applied to wood-frame structure over structural framing to which exterior material finish is applied.
<b>Skip breathing.....</b>	Technique used by a firefighter when lost or trapped that maximizes their SCBA air supply.
<b>Size-up the building .....</b>	The process of providing multiple visible structure type indicators, such as, shape and size, construction type, egress points on a structure; which may include, doors, security gates, rollup doors, barred windows, etc., fire conditions outside and inside the structure. Your own mental blueprint of the building.
<b>Support lean-to collapse.....</b>	Collapse that results from the failure of one side of a roof or floor that falls until it rests and is supported by substantial objects inside the structure.
<b>Thermal imaging camera .....</b> <b>(TIC)</b>	Device that used infrared energy technology that allows firefighters the ability to ascertain objects by shape in conditions that do not allow normal vision. Some models also monitor heat conditions.
<b>TIC.....</b>	Thermal imaging camera.
<b>Unsupported lean-to collapse ..</b>	Collapse where one side that has failed is without any support. This failed side floats freely, is very unstable, and could result in a secondary collapse.
<b>Void search .....</b>	A physical search that is conducted in a collapse environment by rescuers moving over and around debris, locating spaces created by the collapse of building materials.
<b>V-shaped collapse .....</b>	Collapse that is caused by the failure of an interior support, resulting in void spaces on both sides of the collapse toward the bearing walls.
<b>Walk-out basement.....</b>	Architectural feature in the construction of a building with an elevation difference between the grades at the front the building and the back of the building.



# RIC OPERATIONS



## Appendix A: Glossary

- Wall breach** ..... The penetration of a wall through various methods for the purposes of emergency egress by a lost or trapped firefighter or entry by RIC personnel for rescue purposes.
- Wood frame construction** ..... Type of construction in which the structural members that provide framework and support are fabricated out of wood. Most common type of construction.



## Appendix B: Props and Systems

### Confined Area Prop

Two props should be available - one for ground training and one for the multistory drill. If two props are not available, the prop should be easy to move.

<b>Required Materials:</b>	<ul style="list-style-type: none"> <li>▪ Fall protection for multistory evolution</li> </ul>
<b>Dimensions:</b>	<ul style="list-style-type: none"> <li>▪ 28" wide</li> <li>▪ 10' long</li> <li>▪ Window on one side                             <ul style="list-style-type: none"> <li>▪ 20" opening</li> <li>▪ 42" sill height</li> <li>▪ 40" window height</li> </ul> </li> </ul>



### Firefighter through the Floor Prop

#### ***Required Materials***

- Fall protection
- Multistory structure (roof may be utilized)
  - Hole in the floor (not to exceed 4'x'4' in size)
  - Floor to ceiling height not to exceed 20 feet





### Pittsburgh Drill

Multiple props may be used to increase the difficulty of the evolution. The evolution may also be modified slightly with the addition of low overhead or lean-too situations.

***Materials Needed:***

- One (1) sheet of plywood - 1/2"x4'x8'
- Six (6) support/legs - 2"x4"x8'
- Three (3) standard size shipping pallets
- Three (3) 55-gallon drums
- or
- 20-feet of plastic tubing (36" diameter)



## Appendix C: Case Studies and LODD Reports

The resources in this appendix have been selected to provide you with additional information and background on the skills and evolutions taught during this class. The information provided reinforces the necessity for regular RIC operations training.

- NIOSH #20020725: Supermarket fire claims the life of one career firefighter and critically injures another career firefighter – Arizona  
<http://www.cdc.gov/niosh/fire/reports/face200113.html>
- NIOSH #20035012: Nine Career Firefighters Die in Rapid Fire Progression at Commercial Furniture Showroom – South Carolina  
<http://www.cdc.gov/niosh/fire/pdfs/face200718.pdf>

The following articles are included with the permission. Thank you to the following:

- ☐ Columbus Monthly Magazine
- ☐ Fire Engineering Magazine
- ☐ Fire Chief Magazine

### Too Little, Too Late

By Gary Morris

Sep 1, 2005 12:00 PM

Can rapid intervention teams actually save firefighters? Two studies report that departments underestimate the resources needed for teams to do so.

One of the saddest days of my fire service career was March 14, 2001, when I was an assistant chief with the Phoenix Fire Department. A dozen maydays had been broadcast, and two rapid intervention teams had entered a burning supermarket to search for firefighters. Two additional alarms had been sounded, and additional crews were being organized into search teams. Several firefighters had been rescued or escorted out of the building; one fire captain was brought out unconscious and barely breathing. But, one firefighter remained unaccounted for.

Interior conditions had suddenly worsened from relatively modest smoke conditions to zero visibility as crews were fighting a fire in the rear stockroom. After the rescue of others, the search area was narrowed to the 2,000-square-foot stockroom. Crews worked courageously for 53 minutes to search, locate and remove Firefighter Bret Tarver after he declared a mayday, but they weren't able to make it in time.

Following the tragedy, the Phoenix Fire Department conducted one of the largest open investigations ever conducted by a fire department, followed by a recovery plan to implement changes in training, procedures, technology, and equipment. Additionally, a research effort was initiated to better understand the capabilities of rapid intervention teams. This research project involved search-and-rescue exercises in three separate large-square-footage buildings (two buildings of 5,000 square feet, and one of 7,500 square feet). In each exercise, two firefighters were lost in the building but less than 100 feet from an exit.

Four months after the tragedy, I became the fire chief of the Seattle Fire Department. Shortly after the Phoenix research project began, Seattle initiated a similar study of rapid intervention effectiveness. Seattle's exercises involved search and rescue of a first floor and basement of a 5,000-square-foot building. The scenario also had two firefighters lost in the building.

Between the two departments, more than a 100 search-and-rescue exercises were conducted, and data were carefully collected. Though separate research efforts, these studies came to nearly identical conclusions.

#### **Gross Misjudgments**

The research found that the fire service has grossly underestimated both the number of rescuers and the time required for rapid intervention teams to enter the building, and find and move each firefighter to safety. Four members of a team didn't do it; neither did six, eight or 10. The average number of firefighters required in the Seattle study to complete a rescue was 11; Phoenix determined an average of 12.

These averages included the use of a primary search team followed by an extraction team. Breathing air from SCBAs was consumed during the search, so once a lost firefighter was located, additional firefighters were needed to replace the initial crew that was running low on air. The physical efforts of moving the firefighter to an exit required additional firefighters. The extraction process was found to involve intense manual labor that rapidly exhausted rescuers and quickly depleted breathing air. In some exercises, a relay system of rotating fresh crews into the rescue effort was necessary.

Finding a lost firefighter may occur in a relatively short period of time, but removing a firefighter from the building is harder and takes longer. Phoenix was able to locate the first downed firefighter an average of 7 minutes, 27 seconds after a mayday was declared. In Seattle the average time was 6 minutes, 30 seconds. During each of the exercises, the rescue effort continued into the extraction

stage, and the time became longer, as each of the downed firefighters was moved by whatever manner possible to an exit.

And how long did it take to enter, locate, and retrieve both the downed firefighters? Seattle's research indicated an 18-minute average, and Phoenix came in with 21 minutes. (Phoenix used a larger building). Think about it. We barely get 20 minutes of work time out of the typical 30-minute SCBA bottle during routine firefighting.

The physical labor to move a downed firefighter was considerable and resulted in high consumption rates of breathing air. In the Phoenix research, it was determined that SCBA working time on a 3,000-psi bottle for rescue crews was between 16.5 and 18.5 minutes. Seattle's data was similar, with an average air consumption rate of 130 psi per minute. In other words, some rescuers will likely to be out of air before a rescue can be completed.

It's also possible for rescuers to become victims themselves. The Phoenix research indicated that one in five rescuers got into trouble, mostly low on air, out of air, or lost in the building.

### Research Results

There are a number of other lessons that can be interpreted from this research. Clearly, the first lesson is to ensure the firefighter does not get in trouble in the first place. Doing so keeps firefighters safe and eliminates a high-risk rescue operation. This, of course, requires proper equipment, training, procedures, and fireground command and accountability operations. But it also requires the personal commitment of firefighters to comply with procedures and directions, be constantly aware of their surroundings and the risk, and keep themselves and others safe. Additionally, the fire department management team must directly — and aggressively — correct violations of safety practices, especially those "hot-dog" firefighters who think they are invincible, as well as any freelancing on the fireground by members.

Procedures and fireground operations must require buddy teams for all interior operations. Crews go in together, stay together, and must come out together. When one member of the team runs low on air, the entire team exits the building. No single member should be allowed to go in or out alone, no exceptions.

Firefighters must continuously check their SCBA pressure and air supply. In the Phoenix tragedy, firefighters were caught beyond the turn-around point of SCBA air supply after conditions rapidly changed. Firefighters must constantly be aware of their SCBA pressure to ensure they have adequate air to safely exit the building. (It's also been observed that firefighters around the country are generally weak in regularly checking their air pressures).

A firefighter must never run out of air. Any firefighter who runs out of air in a fire has a high probability of dying. The toxicity of a smoke atmosphere in modern-day fires is far more lethal than it's ever been. The 6- to 7-minute time frame to initially find a firefighter learned from this research could easily be a lethal period before rescuers can trans-fill his or her SCBA. Think about it. In that period of time the firefighter could take nearly 100 breaths of a highly toxic atmosphere.

Firefighters must stay on the hoseline or a rope safety line. Clearly, once a firefighter gets off the hoseline, he or she has lost the "lifeline" and is at great risk.

### Early Deployment

If the firefighter gets lost in a large building, there is a very narrow window of survivability. Remember, the research indicates that it takes an average of 18 to 21 minutes to find and remove a downed firefighter in a large building. Firefighters must be authorized to declare a mayday as soon as they think they are in trouble. Furthermore, they must be trained in self-survival techniques that will extend survivability and aid rescuers in locating them.

It will take a dozen firefighters on the scene, organized into teams, to rapidly complete a firefighter rescue. All fire departments should have procedures in place to ensure this staffing level is on scene and available during working incidents. If more than one firefighter is lost in the building, additional



resources must be immediately available. Rapid intervention teams must be closely supervised and well organized to be effective and safe.

Rapid intervention search and rescue is also high risk. As noted in the Phoenix research, 20% rescuers got themselves in trouble — and became potential victims. If that happens, they are at high risk of death at that stage of the incident. Who will rescue the rescuers?

Further compounding the risk, experience has shown that firefighter maydays almost always happen as the incident approaches, or is already, a marginal situation. Most of these episodes appear to occur between the 20-minute and 40-minute period of fireground operations. Fire conditions are rarely improving during this period. Flashover and structural collapse are high probabilities. Such conditions require a very cautious analysis, and a tough risk-benefit decision, by the incident commander. When does the incident commander say "no" to rapid intervention because of risk?

Following this research, both the Phoenix and Seattle fire departments added fire companies to the initial dispatch to activate expanded rapid intervention teams early in the incident. Furthermore, once a working fire is declared, additional fire companies now are dispatched automatically in both cities. Once on scene, these dedicated fire companies are organized in a multi-company "Rescue Sector" in Phoenix or a "Rapid Intervention Group" in Seattle. In both cities, a minimum of two engines and a ladder company is dedicated to rapid intervention, and this resource is supervised by a chief officer. In addition, each city includes a firefighter-staffed ambulance and paramedics as part of the team resources.

### Other Observations

The search-and-rescue time frames are average times. Some rescues can be substantially longer than the 18- to 21-minute window. Waiting longer than 21 minutes to be rescued is almost certainly fatal. Will fire conditions even allow a rescue effort to continue for this period of time?

The research was conducted in test conditions. There was no fire heat, or dense smoke impeding the search efforts. Nor were there the typical debris, clutter, inches of slippery water, or other "junk" that firefighters face in real-life rescue situations. If a real mayday occurs, it's wise to assume that rapid intervention and a successful rescue will take longer. In Phoenix, it took two initial rapid intervention teams and additional rescue crews 53 minutes to retrieve Tarver in a search area of about 2,000 square feet. And if additional firefighters become lost in a building, more rescuers will be needed and it will take longer to complete a rescue, if fire conditions allow it.

So, it's back to the first lesson: We must not allow firefighters to get in trouble in the first place. Rapid intervention teams are necessary and must be implemented at all working incidents. They do save lives, but they can't be construed as a perfect parachute. There are no guarantees for rapid rescue.

The fire service has suffered tough lessons over the years from many fatal incidents. The research data obtained from the Phoenix and Seattle exercises is an additional eye-opener regarding risk in the fire service business. It further identified false assumptions of our capabilities to rescue one of our own. The lessons are there. It's time for us to take this research data and aggressively move forward to make the fireground safer.

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Gary Morris is the fire chief for the Rural-Metro Fire Department, Maricopa and Pinal County Operations, near Phoenix. He previously was the fire chief for the Seattle Fire Department, and he retired as an assistant chief with the Phoenix Fire Department after a 30-year career. Morris is the immediate past chair of the IAFC Safety Committee. He holds a master's degree in organizational management from the University of Phoenix.

### Personal Escape Systems

It was next to impossible to find a commercially made firefighter personal escape system 10 years ago. Firefighters who carried one had to put together individual components that were often bulky and not designed for the rigors of firefighting.

Today, nearly every rope-rescue and SCBA manufacturer offers some type of escape system. Technological advancements have made ropes and the associated hardware smaller, lighter, and stronger than ever.

In today's world of tight and ever-decreasing budgets, the cost of an escape system might be the determining factor on whether to purchase one. This decision must be an informed one and requires an understanding of the options available.

For simplicity, these systems can be grouped into two main categories: independent and SCBA-integrated. Each one has advantages and disadvantages. Both require some type of rope or webbing, an approved harness or escape belt, and hardware to secure to an anchor and attach oneself to the system. An independent system requires a separate Class I or II seat harness or an escape belt. An integrated system uses a converted SCBA waist strap as the harness or belt, making it all-inclusive. This may reduce weight and bulk, but it could prove to be a disadvantage. Mainly, if firefighters had to exit a smaller window that required a reduced profile, they might be forced to doff their SCBA, which would make the integrated system useless. An independent system allows for more versatility and options for deployment.

Additionally, independent systems allow for a wide variety of choices when it comes to harnesses and belts, rope and hardware. This affords the opportunity to personalize a system based on a department's or firefighter's anticipated needs. Besides having the ability to customize, the purchase of individual components in large quantity can help to reduce overall costs. To further savings, independent systems can be located in riding positions on apparatus similar to SCBA-integrated systems.

The main disadvantage is proper maintenance. Firefighters are much more likely to keep their own system in good operational condition than one that is used by firefighters on every shift. Regardless of what type of system is chosen, all components must meet the requirements outlined in NFPA 1983, Fire Service Life Safety Rope and Equipment. The 2006 revision is slated for release this fall.

### **Training Program**

Once a decision is made on the type and number of escape systems to purchase, the department must follow through with a training program. Step one is to stress prevention and teach firefighters how to avoid getting into situations that require the use of an escape system in the first place. The hands-on portion of the training must include the options and locations for deployment when the unavoidable occurs. It should also teach firefighters a variety of anchoring and bailout techniques, as no one technique will work in every situation or location. During the hands-on phase of training, it is essential that instructors use fall arrest protection to safeguard students who may lose control as they practice their escape and descent.

Firefighters should be instructed how to deploy a personal escape system not only out a window but off a flat or pitched roof as well. Advanced training includes the use of an escape system to rescue a civilian or fellow firefighter in these same locations. Through practice, a firefighter can completely clear out a double-hung window, deploy his or her system and exit a room in 30 seconds while working in reduced visibility and using an independent System. Techniques for rescuing a civilian or fellow firefighter out a window or off a roof can be executed in less than 60 seconds. Keep in mind that these times can increase when you add in the factors of heat, stress and fatigue that will likely be present in a real emergency. Experience is essential for a safe and effective operation, remembering that in demanding situations firefighters tend to fall back on their training.

The key to a rapid deployment is having a preassembled system, knowing a variety of anchoring techniques and training repetitively. The safety, speed, and efficiency of your escape will hinge on the type and location of the anchor you select. An anchoring technique that we developed dramatically reduces the time it takes for a firefighter to escape a hostile environment. This technique requires firefighters to carry a tool, ideally a flat- or pick-head axe or Halligan bar. You must be in a room where the interior sheathing adjacent to the window is lath and plaster or drywall.

When deploying the system, the firefighter pulls out the anchor end and slides a quick loop over the handle of a tool. The handle of the axe or fork end of the Halligan bar is then inserted through the sheathing of the wall approximately six inches to one side of the window frame and 12 to 18 inches above the bottom sill. When inserting an axe handle, face the blade of the tool away from the window opening. After breaching the wall, the tool is pushed up parallel to the wall, fracturing the sheathing above the breach. The firefighter slides the tool down inside the wall as deep as possible, attaches the descent control device to his or her escape belt or harness, and rappels out the window.

There are distinct advantages to this anchoring technique. First of all it is the quickest and easiest to perform, taking only seconds to establish. In addition, the anchor is installed right at the point of exit and low on the threshold of the window opening. This maximizes the length of the rappel while minimizing the amount of rope exposed to any heat or fire that may enter or involve the room.

### Anchor Strength

To evaluate the strength of this anchoring technique we performed numerous tests using various tools in both drywall and lath-and-plaster walls. In all tests the anchor easily held the weight of four firefighters without any movement of the tool. This is because the tool is wedged between the interior and exterior sheathing of the wall, locking it in place. During one training session conducted at a vacant building, a single anchor withstood over 100 rappels without once being compromised. The strength of this technique allows the option for more than one firefighter to use the same tool. Due to the force applied, the use of wood handle tools should be avoided. Instead replace the wood with fiberglass or composite handles.

Depending on building construction, the handle of the tool may breach the exterior sheathing of the wall; this requires retracting the tool to allow the handle to slide down inside the wall. On plaster walls, the lath must run at least two stud spaces (32 inches) in order for the wall to hold the tool in place. Otherwise the lath may simply pop off the studs when the tool is pulled down into the wall space. Drywall on the other hand has no space limitations.

If construction features prevent this anchoring technique, firefighters can resort to more-traditional methods, such as breaching a wall and wrapping a stud near the escape window or securing to a substantial object in the room. As a last resort, firefighters could breach the floor or place a tool in the corner of the window opening, preferably using a Halligan bar.

A personal escape system can prove to be an invaluable tool for self-rescue, but with additional training firefighters can learn to use an escape system for the rescue of a fellow firefighter or even a civilian. A firefighter's chances of survival increase proportionately with the equipment and options he or she has immediately available. The decision to provide our personnel with survival equipment becomes easier to justify when it has more than just one application.

The fire service has a long history of tragedy planning. It often takes a firefighter to be seriously injured or even killed for us to reevaluate our policies, procedures, or equipment. If we believe the safety of our personnel comes first, this after-the-fact mentality needs to change. If firefighters are expected to push the envelope to save lives, we need to give them the tools and training to do their job safely — and money should never get in the way of that. — *Lt. Dale Pekel Wauwatosa (Wis.) Fire Department*

### The Murder of John Nance

On a hot night in the middle of the summer, somebody torched the old Mithoff Building downtown. A firefighter died there—and his friends and co-workers can't shake the memory of their agonizing inability to rescue him.

By Michael Norman. Published: Tuesday, June 30, 2009 11:19 AM EDT. This story originally was published in the December 1987 issue of Columbus Monthly.

John W. Nance was a Columbus firefighter for more than 27 years. He was a dedicated public servant and a good guy. He was, just incidentally, considered one of the department's best cooks; for quite a while he had reigned as the cook for his shift at Engine House Number Two, at Fulton and Fourth, on the southern edge of downtown. Nance was 51, and planned to retire early in 1988. He was looking forward to restoring a big farmhouse where he lived with his wife in northeastern Licking County.

But while fighting a fire last July in the old Mithoff Building downtown, Nance fell through a floor into a burning basement. In darkness and thick smoke and fire, he died there. First, though, fellow firefighters tried to save him—some of them were friends, some were men who'd never met him. They tried until they were sick from heat and smoke, tried everything they could think of, tried at the risk of their own lives. But they couldn't do it. The building burned and John Nance died.

It's partly the manner of his death that keeps this one in other firefighters' minds, keeps the pain so raw. It's the fact that it seemed as though they had a chance to save him. He didn't just die suddenly, he was down there talking to them. And maybe, if they'd done something differently—maybe this, maybe that . . . It is a cruel anguish.

There is too, a hot anger. Because the fire was deliberately set; it was arson. John Nance was murdered.

Saturday, July 25, started out as a routine day for Nance and the other men of Engine House Number Two, Three Unit. They began their 24-hour tour of duty at 8 that morning, and much of the early part of their day was spent doing the routine: They ran checks on a few fire hydrants. They polished their fire engines. They cleaned up around the station house. Saturdays usually are fun days to work at a downtown fire station. The mood is more relaxed than it is during the regular workweek. Fire and squad runs are more infrequent. The thousands of downtown office workers are home in the suburbs. For the weekend, at least, their safety is the responsibility of some other fire department, or some other Columbus fire station.

This was Pizza Night at Station Two—a Saturday tradition that got started out of sympathy for Nance, the popular but overworked station-house cook. Fixing three meals a day for 21 hungry and finicky men is not an easy job, and not one that carries extra financial rewards for a shift's designated cook, although he or she does then escape other chores. Nance was a good cook; his Sunday breakfasts—Army-sized helpings of eggs, ham, sausage, hash browns, waffles, pancakes and other dishes—were legendary. On Saturday nights, though, he rested, and the men ordered out for pizza.

The pizza arrived about 9:30 pm, just as Nance and a few other men were finishing a volleyball game on a makeshift court behind the station house. Volleyball is a big deal at Station Two. The firefighters play it to keep fit and to relieve the boredom that accompanies their hurry-up-and-wait profession. The men were sweating as they walked into the kitchen and sat down at the big dining room table. It was hot and muggy that night, the temperature still well into the 80s. Assistant safety director John Morgan was visiting as dinner began. Morgan, a dedicated fire chaser, often dropped by the station house just to check out the action. The group ate and talked.

Meanwhile, on the other side of downtown, a figure moved through a dark basement in the Mithoff Building at 151 N. High St. He pushed aside empty cartons and cardboard boxes, poured out a flammable liquid and set one, maybe two, possibly three, fires. As the men from Station Two were finishing their pizza, the person who had set the fires fled the building. The flames spread up the wall to the ceiling and the wooden floor joists in the basement. Smoke appeared over High Street.

### The Alarm

The first emergency telephone call rang into the divisional Fire Alarm Office just before 10:10 pm. It was someone calling from a pay phone inside the Clock Restaurant, next door to the Mithoff Building. Smoke was pouring out of the first-floor windows, the caller told the fire dispatcher. A few seconds later, two more calls came in—one from someone at a pay phone in the YMCA, another from a street side phone on High Street. Both callers had the same report: smoke in the area of the Mithoff Building.

The fire dispatcher turned to his colleague on the alarm control board and reported the fire. The board officer pushed the alarm button and a high-pitched alarm tone echoed into the department's two downtown fire stations, Engine House Number One, on the northern edge of downtown on North Fourth Street, and Nance's Engine House Number Two. Capt. Ted Porter, the commander at Two that night, remembers hearing the tone and thinking, "Well, it's time to go to work."

The crews from Station Two boarded their fire engines and sped north on Fourth Street, sirens blaring. The caravan of green and red vehicles turned left on Long Street, going the wrong way on that one-way street, and took a right on High Street. The crews from Station One were closer. They raced west on Nationwide Boulevard, turned left at High and were in front of the Mithoff Building within seconds.

The first company to report on the scene was Engine One—at 10:12 pm. Arriving and reporting immediately after that were Engines Nine and Three. Nance was the acting lieutenant on Engine Three, which meant he was in direct command of three firefighters: engine driver Marvin Howard and hosemen Tim Cave and Don Weldon.

### The Initial Attack

The fire department uses a special battle plan to fight downtown office building fires. Firefighters and equipment from the two downtown station houses are organized into two corresponding attack forces known as Task Force One and Task Force Two. These firefighting units have the specialized equipment designed to fight fires in high-rise buildings.

Task Force One took up position in front of the Mithoff Building. Arriving firefighters saw smoke coming out of the Wall Flower Shop, which was on the ground floor in the center of the four-story, 11,500-square-foot structure. Assistant Chief Neil Mills took charge at the scene, setting up a command post on High Street. Firefighters broke the glass front door of the flower shop with an ax and advanced a one-and-a-half-inch hose line from one of the engines into the building to search for the fire.

In the meantime, personnel from Task Force Two, Nance's group, already had arrived at the rear of the building and were setting up in a staging area on Wall Alley. The firefighters saw smoke coming from the rear of the structure—in a one-story section that doubled as a storage area for Russell's Tall Girl Shoes. The smoke was fairly heavy but was hanging close to sidewalk level. That indicated they were dealing with a basement fire. Capt. Porter took command in the rear. As the firefighters put on their air masks, he looked for water connections for the hose lines. He also was responsible for assessing the danger the blaze presented to nearby buildings, including the YMCA and the Clock Restaurant.

Nance's Engine Three crew had been first on the scene in Wall Alley. It also was the first to complete suiting up. As their hose lines were charged with water, Nance, Cave and Weldon prepared to enter the shoe shop storage room. Cave used a sledgehammer to knock down the door. All three then went into the building, dragging the heavy hose line with them. Cave almost immediately had problems with his air mask and had to leave the building for a short time. By this time, however, crews from Ladder Two, commanded by Lt. Jim Welch, and Engine Two, commanded by Lt. Melvin Olney, had followed Nance's group into the storage room. About 10 men from Task Force Two were now in the building.

Their job was to find the fire. "The smoke was dense, so we crawled forward," says Don Weldon. "We were advancing the nozzle forward. The line was charged at the time, so it was hard to pull in. We were yelling back for people to feed us more hose in so we could advance more. While advancing, we were feeling the floor, testing the floor to see if it was spongy or if it was weak. And we were listening. Sometimes you can hear the fire actually popping or cracking. And we were looking for the glow."

## THE SECOND ALARM

At 10:21 pm, Assistant Chief Mills called for a standby second alarm. That meant that extra equipment was to be sent to a staging area near the fire scene so that it could be drawn upon as needed. But the fire became a full-fledged, or working, second alarm even before the equipment reached the staging area. At 10:40 pm, it was upgraded to a two-alarm fire with extra companies. Firefighters still hadn't seen any fire, but the volume of smoke was growing.

Battalion Chief Jerry Lindsay was part of the second wave of firefighters reporting to the scene. He went to the back of the building and took over command of Task Force Two. He remembers noticing that the smoke billowing from the building was starting to become thicker. He crouched in the rear doorway of the shoe shop, trying to size up the situation amid the noise and confusion of the fire scene.

As he looked into the building, he could see that the smoke seemed to be clinging to the floor of the storage room—a clear indication that there was fire in the basement.

Lindsay had fought basement fires before—they weren't that tough to put out, as long as firefighters were able to get to the seat of the fire. But for some reason Lindsay felt nervous as he watched the smoke roll across the floor. In a report he filed after the fire, he wrote that there was something particularly "ominous" about this basement fire. It made him uncomfortable—gave him an unexplainable feeling of dread.

### Fire Hunting

Meanwhile, inside the smoke-filled building, the search for the fire continued—unsuccessfully, at first. The firefighters in the front and back were hampered, most of all, by the size of the building. It was more than 350 feet deep, from High Street back to Wall Alley. With all the smoke, the going was very slow. Crews had to crawl on all fours, keeping close to the walls or hose lines so they wouldn't get lost.

The firefighters in the front—in the flower shop—had poor visibility, less than three feet with lights. They also encountered a lot of obstacles: merchandise, coolers for the flowers, display counters. Nevertheless, they managed to find a stairway down into the flower shop basement. They started to take a hose line down, but soon reached a point where they couldn't advance the line any farther. Either the line was too short, or it was too heavy to carry with all the water charging through it. Their air tanks soon began to run low; they'd used a lot getting into the building and even more lugging the heavy line into the basement. So the firefighters in the front left the building, some of them running out of air before they could reach the street.

At the back of the building, Nance and his crew encountered the same visibility conditions. Even with flashlights, they could see only a few feet in front of their faces. They also felt excessive heat coming up from the floor, evidence that the fire was beneath them. They looked for an entrance to the basement, but couldn't find one. Part of the problem was that they thought that the heat they were feeling was coming from the same basement that the Task Force One group had just found in the front of the building. In fact, there were two basements, separated by partitions and hallways.

Many of the firefighters in the shoe shop storage area were now becoming exhausted by the heat and were running out of air. Numerous men, including Nance and the firefighters in his crew, left the building to change air bottles and be hosed down with water. "Warning bells on the self-contained breathing units were ringing, and men were becoming physically exhausted from the combination of the hot, muggy weather, the heavy, nonporous turn-out gear, the extra weight of the air bottles and equipment, and the increasing heat from the fire which was building below them," wrote Lindsay.

Lindsay says he saw Nance and the rest of his crew before they went into the building a second time. They were standing at the door, getting ready to make the second assault. "I talked to John," says Lindsay. "I said I wanted him to take a rope with him. I wanted him to tie off a rope, a lifeline, and take it in with him. And I remember him saying, 'Can't we just follow the hose line in?' And I said, 'No, I want you to take a rope.' Nance followed the chief's orders and took the rope into the building.



Shortly after that, Lindsay ordered several other firefighters to take power saws into the building. The idea was to open holes in the floor so that firefighters could get water onto the fire. Two power saws were brought to the storage room door. Both were started before the remaining firefighters re-entered the building.

### **Firefighter Down!**

No one knows exactly how John Nance fell into the shoe shop basement. But fire officials now believe he was searching for a place to cut a hole in the floor when he tumbled through a hole that had been burned into the floor by the fire. The hole was about 70 feet from the Wall Alley doors, just to the left of another door in the storage room's far wall, an entry to the shoe store.

Nance and his crew had reentered the building not knowing that power saws already had been ordered in to cut the floor. Cave was with him in the storage room at the time, checking the floor and looking for the fire. "I said, 'We've got a fire burning underneath us. We've got to open the floor up,' remembers Cave. "He said, 'Go ask Chief Lindsay. Get the saw and ask him where he wants it opened up.' " Cave left the building, figuring that Nance would wait close to the hose line until he got back with the saw. But when he got back inside he saw another firefighter with a ladder and a saw standing near the hose line. But no Nance. "Where's Nance?" Cave asked. "I don't know," the other firefighter replied.

While Cave was outside the back of the building, however, things were happening in the front. The crews from Task Force One had found the door from the shoe shop leading into the storage room, although they didn't know that that's where it led at the time. They thought they had reached the back of the building and the alley.

Brian Willison, the acting lieutenant on Engine 10, led the Task Force One crew. They had broken a window to get into the shoe shop, and were following the interior walls looking for the fire when they found the door. There was a lot of smoke, and they couldn't see. Willison was confident they had reached the alley. "I was thinking if we were that close to the alley maybe we could go back and assist them with the lines," he says. "So I started to go out the back, and as soon as I stepped out into the doorway I fell into the hole. As I was falling, I was grabbing for whatever. I got a hold of something and fell across the hole and I pulled myself out. And in the middle of pulling myself out I heard John screaming for help."

Willison knew Nance was in deep trouble. The heat in the hole was intense; his legs had been burned as he scrambled to pull himself to floor level. He also noticed that the hole was about 12 feet deep and clogged with thick smoke. It was going to be hard to get Nance out of there. "The only thing I could see was an orange glow," he says. "I couldn't see any flames or lights or anything. All I could see was an orange glow. Of course, there was a lot of smoke. I answered him and then I radioed out that we had a man in the basement yelling for help." Willison repeated the message three times. "Engine 10 to Command Post, we have a firefighter down! A firefighter has fallen into the basement and is trapped!"

The communications to Chief Mills, however, were garbled. He heard that a man was down, but didn't get the information on where he was trapped. Mills assumed it was one of the guys who went in with Willison in the front of the building. He started checking heads. Finally, he determined it was one of the men from Task Force Two that was trapped. He then went to the rear of the building.

One of the firefighters who clearly heard Willison's transmission was in the flower shop basement at the end of the hose line. He yelled on the radio for someone to drop a light through the hole so he could find the trapped firefighter. But that effort was futile. Nance was in a different basement.

At this point, Willison was running out of air and had a long way to go to get back to the front of the building. After he made his radio broadcast, he saw men with lights advancing through the back door. "I told John to hang on," says Willison. "That they'd be with him in a second."

One of the lights Willison saw was being carried by Tim Cave, who had reentered the storage room to tell Nance about Chief Lindsay's saw order. When he couldn't find Nance, he went ahead and followed

the hose line to where it ended. "I heard someone say 'Help!' "says Cave." I had no idea it was John. I said, 'Where are you?' He said, 'I'm right up here.' "

There's an unwritten rule in the fire department: Never leave the safety of a hose line. In a smoke filled room it's your only sure way out. But Cave had to leave the hose line to reach the source of the human voice that was calling to him. "I crawled on my stomach with my flashlight," says Cave. "I found the hole and my arm went down. I asked, 'Can you see my light?' I stuck it down there. He said, 'Yeah, I can see it.' He was very calm, like he was just standing there waiting for me to get him the hell out of there. I said, 'OK, How far down are you? Can you reach my hand?' And he reached up and grabbed my hand. He must have been standing on some stock because it was a real deep basement. I was able to reach down and I could see his blue glove meet mine. All I could make out was a hand with my light on it."

Cave tried to pull Nance out of the hole with one hand. But as he tugged, he began to feel himself slipping. "I was starting to slide into the same hole, too. Just the weight of him. I was starting to slip and I felt my shoulder starting to go. And I said, 'I can't pull you out.' And he very calmly said, 'OK,' and gave me my hand back."

"In retrospect, that's kind of the way John was," says Cave. "If I was in a hole and I was panicked and somebody stuck their hand down at me, I'd think that I'd hold on for all I got. He had enough presence of mind, knowing that he was trapped, that there was no way I could one-hand him out of there."

Cave saw lights advancing toward him from the alleyway and yelled out. Lt. Welch and several other firefighters hurried their pace and gathered with Cave around the hole.

By this time, Willison's frantic radio message had reached every firefighter on the scene at the Mithoff Building. Everyone was aware that someone was trapped, although most had no idea yet who it was. "The next few minutes bordered on pure confusion," wrote Lindsay in his report. As firefighters lunged out of the fire building, desperately low on air, Lindsay called for fresh crews to attempt a rescue.

"There was no doubt in my mind at the time that we were going to go in and get him. It was as simple as that. I just couldn't conceive of not being able to get him out of there."

Lindsay waited by the storage room door, "fully expecting at any second to see one or more firefighters dragging or carrying the firefighter from the building. I became more and more concerned as the smoke became the thicker and no rescued firefighter appeared."

## The Rescue Attempts

Inside the building, things were just as hectic and confused. Lt. Welch and firefighter Weldon and others had brought in another hose line and rope to try a rescue. The first man on the hose attempted to pour water into the hole to cool Nance off. But the hose wouldn't reach. The men then found the rope that Nance brought into the building and decided to lower it to him and pull him out. Nance grabbed the rope. "There were three of us that pulled up," says Lt. Welch. "We had a weight on the rope, but when we got up to within about three feet of the hole we just lost all the weight. It was like you got a fish on the line and then the fish fell off. I knew we needed more people to hoist the line because there was a tremendous amount of weight on there." Nance stood 5-foot-8 and weighed 162 pounds—but with his equipment he probably weighed closer to 300 pounds. Welch went outside for more help."

In the meantime, the firefighters still at the hole tried another rope rescue. This time, Weldon tied a bowline knot in the rope to give Nance something to hold on to. Nance himself tied two more knots in the rope once it was lowered to him. There were more men pulling on the rope this time. But the attempt failed. Nance, who by this time was becoming exhausted by the heat, fell off the rope about halfway up. Somebody yelled that they needed a ladder. Nance agreed. "Get me a ladder," he said. Within minutes, the firefighters had more ladders than they knew what to do with. Everyone wanted to help.

One of the ladders was lowered into the hole. But the hole was not big enough to allow a man to squeeze through it with a ladder in place. So the firefighters spent the next few frantic minutes enlarging the hole.

While they worked, the conditions in the building and especially around the hole were deteriorating. The heat in the hole was intense; the firefighters could feel it through their kneepads and gloves, which are rated to withstand temperatures of more than 1,000 degrees. Nance's protective fire gear was keeping him from being burned. But he also was running out of air; carbon monoxide from the smoke was entering his bloodstream, making him lightheaded and disoriented. Several firefighters heard him say, "I need air."

With the hole finally enlarged, the firefighters worked quickly to lower the ladder again. Nance started to climb—but he was coming up the wrong side, the underside of the ladder. He struck his head several times on the floor joists. Firefighter Tim Strominger, of Station Two, leaned into the hole and tried to help Nance get turned around. An air bottle was lowered into the hole.

"I was on my stomach, trying to reach down," says Strominger. "I shined my light down there and he started climbing up the ladder. He was climbing up the ladder, but he was climbing up the wrong side. There was no way he could get up. I reached down there to try to get him around to the other side. I had his hands, trying to turn him around. I thought he was home free... And then he fell... I could see the fire where he was, where the hole was. Then my air bottle started ringing, and I had to get out of there."

The conditions in the hole were becoming hellish. Strominger had been in the hole only a few minutes. But when he got outside, steam was rolling off his body. He couldn't move. He just fell to the ground. Strominger's hair was so hot that a fellow firefighter burned his hand lowering the exhausted firefighter's head to the ground. Later, at a hospital, his body temperature was measured at 106 degrees.

Back inside, firefighter Art Wiley tried a dramatic rescue. "Wiley started to climb down the ladder, but didn't have sufficient clearance to get down with his air bottle on," wrote Chief Lindsay of the rescue attempt. "At this point, there was a lot of heat and smoke coming up through the hole, and some fire visible from the underside of the floor. He asked to have someone cut the hole larger so that he could get down." Wiley then took a hose and again started down the ladder into the basement, taking the hose with him and trying to knock down the fire as he descended toward Nance, who by this time was unconscious at the base of the ladder. Wiley reached the bottom and grabbed hold of Nance with one hand, using the hose in his other hand to fight back the fire. He pushed and pulled for several minutes, as the flames spread around him. But he did not have the strength to pull the unconscious firefighter up the ladder. The heat was too intense. Wiley was running out of air and was becoming exhausted. Finally, when the warning bell on his air tank went off, Wiley was forced to try to save himself. He let go of Nance and struggled back up the ladder. He managed to get out of the building, but collapsed in the alley and passed out.

As Wiley was leaving the building, other firefighters could hear the warning bell ringing on Nance's air tank. A rescue was critical now. The unconscious Nance had only two minutes of air left. Firefighter John Brining, of Rescue Two, was next to go into the hole. He, too, went down the ladder with a hose line, fighting the fire as he went. "I kept stepping off trying to find him," Brining recalls. "As I went down, I thought I was close to the floor. I kept reaching out with my foot to step off to the floor. But there was no floor there. I went down another rung and it was the same thing. Finally, I got down to the floor level and stepped off. Evidently, I just stepped over top of him or he was behind the ladder. I'm not sure which. I took an inch-and-a-half hose line and I was probing around with my feet, throwing water to keep the fire down. The fire was rolling between the joists, like in slow-motion animation. I was below that. There was a bunch of cardboard boxes down there. And by this time, his bell had quit ringing. I couldn't find him. If he would have had some kind of alarm system device so I could have located where he was at, or a flashlight, it would have been a lot easier to find him."

"I think I stepped on him on my way out," Brining continues. "But my alarm bell went off. When you get low on air you've got about two minutes left when the bell starts to ring. And I knew I was deep into the building. Sometimes two minutes is not enough. By the time I got to the back of the building I was sucking the mask to my face. I was out of air."

Nance was out of air, too. The building was getting hotter and smokier by the second. Fire began to show in the upper floors. Conditions were beginning to look as though they might soon be ripe for a flashover, or perhaps even a backdraft explosion," recounted Lindsay. "I wasn't sure how many firefighters were still in the building. Chief Mills indicated to me that we'd better be thinking about ordering everyone out of the building."

"It was about this time that Victor Runkle of Rescue Two came up to me and said, 'Can I try to him?' At first I said, 'No—things are going downhill too fast—we can't risk it.' But not willing to give up at that point, Runkle persisted and I told him, 'OK, but I want a rope tied around you, and have someone else go in with you.' Gary Cox of Ladder Eight joined Runkle as they entered the building. They followed the hose lines toward the hole. But before they could reach it, the fire and smoke conditions got dramatically worse and Mills and Lindsay decided everyone had to be evacuated. Flames were clearly visible on the upper floors now. "I grabbed two fresh firefighters from the crew of Ladder 13 who had responded to the third alarm," remembers Lindsay. "I carefully instructed them: 'I want you to follow this rope and hose line into the building and tell everyone in there to get out immediately.' They did so, and in a minute or two everyone in the fire building—except acting Lieutenant John Nance—came out into the alley."

The building was now completely engulfed in flames. Still, the firefighters wanted to go back in and get Nance out. Some even tried to enter the burning building in their street clothes. "There was a guy down there," says Arson Squad Lt. Greg Lee. "We don't lose guys. We save them. We can whip fire. Fire can't whip one of us. It was just inconceivable to accept the fact that there was nothing you could do."

"The mood outside was total emptiness," adds Capt. Porter. "You are watching that building burn and you've got a friend in there. My thought was, 'What's going through his mind?' Of course, at that time he was unconscious, I'm sure. But you just look at that building and it's burning and there goes a man's life. It's a horrible feeling."

There were several last-ditch rescue attempts. Several firefighters opened manholes to see if they led into the basement. None did. Other men tried to cut a hole into an old elevator at the side of the building, in hopes that it would lead to the basement, too. It did not. "By that time it was obvious to all of us," says Porter. "We knew he was long out of air. It became a situation where we just wanted a recovery. We didn't want him to stay there. And there was that one-in-a-million shot. You just keep thinking, 'Maybe, maybe, maybe.'"

But it was not to be. The fire spread throughout the building. It went to four alarms and was finally contained at 5:07 am. Nance's body was recovered from the rubble in the basement shortly after noon on Sunday. The unused second air bottle that his comrades had lowered to him was lying beside him. The Franklin County coroner later found that the carbon monoxide level in Nance's bloodstream was 64.7 percent. A level of 6 percent is enough to cause death. The coroner said the cause of death was asphyxiation.

"Murder" is the term the police and fire departments are using. So far, they have no suspects.

Columbus fire department arson investigators are not talking about their investigation into the Mithoff Building fire. They have confirmed only that the fire was set, and that it probably started in the basement of the Wall Flower Shop.

"We cannot discuss the specifics of the origin of the fire," says investigator Jack Ward, who is working on the case with Lt. Greg Lee. "These specifics are known only to the person who set the fire and to our investigators. This is the only tool we have to discern between persons who have actual

knowledge of the fire and persons who claim to have actual knowledge of the fire." In other words, it's the only way they've got to weed out the crazies who like to confess to setting big fires.

Arson investigators are working closely with the Columbus police homicide squad on the investigation. The first few months were spent interviewing witnesses to the fire and tenants in the Mithoff Building. The federal Bureau of Alcohol, Tobacco, and Firearms also is assisting with the investigation by doing lab work on the debris taken from the fire scene.

The Mithoff Building was owned by 155 North High Ltd., a limited partnership headed by Charles J. Ruma—a major Columbus real estate developer and co-owner of Beulah Park race track. Partnership papers filed in 1982 show that Ruma was the general partner. Limited partners included Ruma's brother, Steven J. Ruma; Columbus architect Phillip T. Markwood; David C. Swaddling, vice president of Discovery Systems; and Fergus A. Theibert, an employee of the local office of NCR Corporation. The partnership purchased the four-story office building in August 1982, for \$795,000. Franklin County property tax records show that it had a current market value of about \$1.1 million: \$703,100 for the land and \$396,900 for the building.

Ruma says he has no idea who would want to burn his building. "I just don't know," he says. "I know that the arson squad has been working on an investigation for the past couple of months. I really hope they bring it to a conclusion. We had nobody in that building who was controversial with respect to us as a landlord. It was a typical downtown office building. I can't believe somebody would want to do it—that anybody would have any kind of a motive to destroy that building. This has been a very, very sad deal for me and, I'm sure, the Nances."

Ruma says the partnership had \$1 million insurance on the building. But he estimates that it would take \$2.5 million to replace. (Fire department officials set damages at \$3 million.) "When we pay off our mortgages we end up with nothing," he says. "It was just a bad deal. The worst part was a life was lost. The second worst part is that we lost our investment."

Less than half the space was rented at the time of the fire. Ruma says the first floor was occupied by the Wall Flower Shop, Russell's Tall Girl Shoes and the Central Ohio Transit Authority's customer service office. The upper floors were occupied by several businesses and organizations including the Ohio Public Interest Campaign, the Ohio Environmental Council and R.L. Polk & Company, makers of Columbus city directories.

The building was demolished after the fire.

It's a 51-mile drive from Engine House Number Two to the 82-acre farm at the bottom of the hill on Long Run Road. Even on a good day, it takes more than an hour to get there from downtown Columbus. But John Nance didn't mind the ride. He had grown up in Milo Grogan, a run-down inner-city neighborhood where barbed wire, not trees, lines the streets. He purchased the farm in 1974 because he wanted something better for his wife and three children. He bought himself a few cows, planted a little corn. The farm was his escape—from the city and from the pressures of his job. When he wasn't farming, he might be hunting or fishing. He went to so many antique shows—looking for tools and furniture he could use on the farm—that his firefighting buddies took to calling him the "Junk Collector." He enjoyed working with wood and metal and made little knickknacks which he often gave away as gifts. It was a simple life, built around his family and the farm.

By 1987, his children were grown and had their own families. For Nance, all that remained was to retire and fix up the old farmhouse. He and his wife, Linda, planned to do a little traveling—to see their daughter in Kansas City and a son in Toledo. But most of all, John Nance just wanted to ride his tractor and tend to his crops and cows.

The tractor still sits where he last parked it, next to a sheet-metal pole barn on a knoll overlooking his farmhouse. Across from the pole barn, an aging corncrib still bulges with the lumber Nance had planned to use on the house. He had cut the wood himself, from trees on the farm. There are other reminders of John Nance here—little things that show how much he loved this farm. Nailed to a post on the cattle pen is a hand painted sign that reads, "John's Girls." It was a Christmas present from one

of his wife's friends. Mrs. Nance often joked that John treated his cows more like children than animals.

Down the hill, near the back door of the farmhouse, is another Christmas present: a bell given to Nance by one of his sons. Nance had painted the bell and hung it high on a pole that sits in the shade of a 100-year-old oak tree. Linda used it to call him in from the barn when dinner was ready.

These days, the dinner bell is silent. But inside the farmhouse, there is a bustle of activity. Dozens of firefighters from Columbus and other Ohio cities have spent the past four months renovating the house—completing the work that John Nance began. It's their way of coming to grips with the death of a close friend.

Bonds are formed when men and women depend on each other for their lives. But even by fire department standards, the camaraderie that existed between John Nance and other firefighters was special. His coworkers respected and admired him. But the feelings and emotions ran deeper than that. When he died, they didn't just lose a colleague. They lost a member of the family.

"If you could pick yourself out a friend, this was just about the kind of guy you'd want to pick," explains Columbus firefighter Mike Miller, a close friend of the Nances and a leader of the remodeling project. "John was the type of guy that every time somebody else needed a hand, he was always the first one to jump in. He'd do anything for you, and you felt like you'd want to do anything for him."

And so, working on their free time and using their own money, 70 to 80 of John Nance's friends have quietly pitched in. They put up a new roof. They replaced all the windows and doors. They installed siding, poured a new cement floor for the basement, added a heating and air conditioning system, rewired the electrical systems, reworked the plumbing, put up new drywall, remodeled the bathroom and the bedrooms.

"We wanted to do something for him," says Miller. "He was a good friend."

For Linda Nance, the outpouring of help has been overwhelming and comforting. "I never expected anything like this," she says. "It was a total shock. I knew John had a lot of friends. But these guys are just something special."

Mrs. Nance—an attractive, petite woman with a touch of gray in her curly dark hair—didn't stay at the farm much in the days and weeks after her husband's death. The memories were just too painful. The fellowship and generosity of her husband's friends have been bright spots in a bleak four months.

But as she walked around the farm on a recent autumn day, her emotions jumped from gratitude to sorrow. Standing on a hill overlooking her farmhouse, she suddenly became aware that once the work was done and the firefighters were gone, she would be alone. She cried.

"I'm just trying to take it one day at a time, sometimes an hour at a time. I know I'm staying here. But as far as anything else, I just don't know."

"John was not one for prestige or recognition of any kind," Mrs. Nance added. "He did his job and he did it well. When the job was over, he wanted some peace and quiet and family around him. And I did, too."

But that was taken away from Linda Nance on July 25—by an arsonist who never knew John Nance or cared about his dreams. "I haven't had a chance to express the anger yet," says Mrs. Nance. "And maybe I won't. I hold things inside. Yet, the anger is there."

"What do you do about it?"

Michael Norman is a staff writer for Columbus Monthly.



### Appendix D: Thermal Imaging in a Live Fire Environment

*By Dave Hudson, Captain, CAL FIRE, Riverside Unit*

Thermal imaging (TI) has been available and used by the military since the 1950s. Fire Departments began using thermal imaging in the late 1980s. Early TIs were large, cumbersome, expensive, and not user friendly. Today TIs are streamlined, user friendly, cheaper, and provide a superior image.

#### How Do Thermal Imagers Work?

Thermal imaging technology is based on infrared energy. Every object above 0 degrees Kelvin emits infrared energy. Infrared energy is not visible with the naked eye. TIs require interpretation by the operator. Without proper interpretation TIs are useless.

#### Types of Infrared-Energy Emitters

☐ Passive emitters

Inanimate objects whose temp varies depending on the environment

Mass and density will have a direct effect on the amount of energy absorbed

☐ Active emitters

Objects that generate their own thermal energy

Humans and animals

Can be masked if clothing is wet

☐ Direct source emitters

Give off the most thermal energy

Fire is a direct source emitter

#### Uses for Thermal Imagers

☐ Search and rescue

☐ Fire location

☐ Exterior size-up/RIC 360

☐ Overhaul and extension

☐ Ventilation

☐ Hazardous material incidents

☐ Traffic accidents

Rollovers

Ejected patients

Vehicle seats

☐ RIC activation

TIs allow RICs to be PROACTIVE, not just REACTIVE

### Recognition When Using a Thermal Imager

Firefighters operating the TI must be able to recognize **thermal balance**. Visualizing thermal layers in a room aid in monitoring the true stage of fire conditions that might not be visible due to smoke. Firefighters must also be able to recognize **convected heat currents**. Visualizing convected heat currents helps firefighters determine the location and extent of the fire. Can also be utilized to determine effective vs. ineffective ventilation.

### Images and Shapes

Images appear in **different contrast** due to the differences in temperatures. Black indicates the object is producing or holding very little heat. White indicates the object is producing or holding a great amount of heat. A downed firefighter in a nonfire environment will appear white or the hottest. In a fire environment this will be the opposite; the firefighter will be dark grey.

The TI operator must be able to interpret shapes of objects rather than shades. The shape of the object remains constant. The shade of the object will change based on fire conditions.

### Scanning Techniques

- ☐ Scan shoulder-to-shoulder
  - Methodical, slow process
  - Avoid shuttering
  - Allows for the member to stay oriented
- ☐ Scan top (high)
  - Hazards
  - Fire conditions
  - Thermal balance location
  - Ventilation
- ☐ Scan doors (middle)
  - Potential exit points
  - Doors and windows
  - Thermal balance location
- ☐ Scan floor (low)
  - Potential victims
  - Stairs
  - Holes
- ☐ Scanning is a continuous process!

### Interior Size-up with TIs

- ☐ Enter room, then button hook the wall
- ☐ Avoid stopping in doorways

- ☐ Allow room for your crew to follow you into the fire building
- ☐ Scan high, middle, and low
- ☐ Orient yourself and begin to move to the landmark without the aid of a continuous view from the TI
- ☐ Share the view
  - Allow members to view the next landmark prior to moving to it

### Orientation

Continuous viewing through the TI while moving leads to disorientation due to lack of peripheral vision and depth perception. Always consider:

- ☐ Where you are
- ☐ Where you want to go
- ☐ What you are getting into
- ☐ How to get out

### Limitations of Thermal Imagers

TIs can result in the firefighter developing an overconfidence and dependability. Firefighters tend to stand and walk in unsafe environments. Traditional search techniques cannot be abandoned. TI use creates firefighters to concentrate on the display resulting in tunnel vision; tunnel vision leads to disorientation. Images can be misinterpreted. TIs cannot see through glass, water, and shiny objects reflect infrared energy. TIs cannot predict flashover. The fire environment must be constantly evaluated by the TI user. Water or steam may affect the ability to thermally image a scene. Condensation and fogging will distort images on the viewing screen. The display and lens must be wiped clear. The effective range of most thermal imagers to recognize a human is about 200 feet. The minimum focus distance is 3 feet away from the object. The field of view and depth perception is very limited. The TI display shows an approximate 50-degree field of view. TIs are high technology, battery powered devices that can fail. Batteries must be fully charged and a spare carried prior to entering the structure.

### Searches with Thermal Imagers

There are two search methods that can be used with TIs - directed search and landmark search. If the TI fails, the search team defaults back to traditional search techniques. Solid teamwork is always enhanced by solid communications.

#### *Directed Search*

Maintaining a left or right hand search pattern to stay oriented. The TI operator directs the search team through the area to be searched. The TI operator relays information to the team members in regard to direction of travel and obstacles. When you are directing a search, your team is in front of you at all times, providing for monitoring of the fire environment and accountability. Primarily used in residential and multiple occupant buildings with center core hallways.

### *Landmark Search*

Utilizing a search rope to stay oriented. The TI operator identifies a landmark in the structure and proceeds to that landmark. Scanning at each landmark for downed firefighters, fire conditions, and the next landmark. Share the display with other team members completing the search. Primarily used in large commercial and horizontal high-rise structures.

### Key Points of Search Operations

- ☐ Maintain crew accountability
- ☐ Always use an anchor
- ☐ Rope bag
- ☐ Hoseline
- ☐ Wall
- ☐ Plan your search and search your plan
- ☐ Carry a second battery
- ☐ Use clear communication

### Thermal Imager Care and Maintenance

- ☐ Do not point directly at the sun
- ☐ Inspect visually for wear or damage
- ☐ Keep factory sealed
  - Can be cleaned with a cloth dampened with a solution of mild soap and water
- ☐ No conditioning required for the batteries