Rapid Intervention Teams
An Introduction to
Saving One of Our Own Day 1
September 2018

Instructors
- Lead Instructor –
- Instructors
  - A
  - B

Why are we here?
- The Rapid Intervention Team is the Firefighters Safety Net
- Operating as the RIT requires additional skills and abilities beyond basic fireground training
Why are we here?

- Rapid Intervention is not just about responding for the distressed firefighters after an unforeseen event.
- Good, Proactive Rapid Intervention Teams can minimize the effects of the unforeseen event.

Objectives

- By the end of this class, you should have a clear understanding of the following:
  - Types of fireground emergencies
  - Emergency Communications
  - RIT Team functions
  - RIT specific equipment
  - PPE from a RIT perspective
  - Real world events and the RIT application

Bret Tarver
Section 2:

TYPES OF FIREGROUND EMERGENCIES
AND THE EVOLUTION OF RIT

PROJECT MAYDAY STATISTICS

Don & Bev Abbott
Dr. Vinton Bennett Dr. Jason Bebermeier
Dr. George Grant Capt/Dr. Philip Stuart

Study on MAYDAY activations between 2015 and 2018
- Funded by private grant
- Analyzed 4,219 audio files and 679 video files
- Dozens from Massachusetts
- Showed trends in staffing, conditions and types of MAYDAYS
- We can utilize that info to prepare for our emergencies
Project MAYDAY
Career Department MAYDAYS vs Staffing Levels

- 57% of the MAYDAYS were the initial company
- 55% of the MAYDAYS were Engine Companies
- 42% of the MAYDAYS involved 4 person crews
- 30% of the MAYDAYS took place with 16-22 firefighters on scene
- 56% of the time, NO RIT ESTABLISHED
The complexity of the event will be affected by the type of emergency:
- Some MAYDAY events will be quickly resolved by crews in the area.
- More complex events will require a single or multiple rapid intervention teams.

### Types of Emergencies

- 40% of MAYDAYS
  - Structural conditions deteriorating
  - Access challenges
    - How will you get to the downed firefighter?
  - Egress challenges
    - How will you get the downed firefighter out?

### Types of Fireground Emergencies

![Diagram showing types of fireground emergencies with percentages]

<table>
<thead>
<tr>
<th>Type of Emergency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Problem</td>
<td>4.3%</td>
</tr>
<tr>
<td>Lived/Survived</td>
<td>9.3%</td>
</tr>
<tr>
<td>Falls Through/Exit</td>
<td>14.8%</td>
</tr>
<tr>
<td>Falls into</td>
<td>18.8%</td>
</tr>
<tr>
<td>Structural</td>
<td>19.2%</td>
</tr>
<tr>
<td>Communication</td>
<td>19.8%</td>
</tr>
<tr>
<td>Medical</td>
<td>20.3%</td>
</tr>
<tr>
<td>Other</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

2015-2017: 4,273
**Lost / Separated**

- 19.2% of MAYDAYS
- Early MAYDAY transmission
  - Recognizing trouble and requesting help
- Delayed MAYDAY transmission
  - Failure to recognize need for help
  - Denial that there is a problem
  - Fear of being “poked fun of”

**Air Emergencies**

- 15% of MAYDAYS
- Low air
- Out of air
- Damaged SCBA

**Trapped**

- 12% of the MAYDAYs
- May require additional equipment
- Primary focus is to locate and give air
- May involve non traditional methods to access firefighter
  - Wall breach
- Someone still needs to fight the fire
Medical Emergencies

- 8% of MAYDAYS
- Conscious
  - Able to help to some extent
- Unconscious
  - Unable to help
- Witnessed/Unwitnessed
  - PASS usage

The Evolution of RIT

- After learning from our failures, RIT has evolved
- Identified the need for:
  - Dedicated crew
    - 4 is the efficient crew
  - Streamlined
    - Finding and providing air
  - More proactive teams
    - Soften the building

The Evolution of RIT in Massachusetts

Then (pre 2000)
- RIT team 2 members (2in 2 out)
- RIT Tools
  - Laundry List +
  - 2 ½” Hose line
- Stood out front with IC
- Didn’t manage the fireground or soften the building

Now
- RIT team (4 members)
- RIT Tools (Minimum)
  - 200’ Kevlar Rope
  - Irons
  - TIC
  - Air Pack (RIT Pack)
- Tasked with softening the building on arrival
  - Minimize the MAYDAY potential
Dynamics of the MAYDAY

When a MAYDAY occurs, the resulting operation may be:
- Relatively simple
  - Crews in the immediate area or the endangered firefighter manages the situation on their own
- Complex
  - A RIT Team, multiple RIT Teams, or specialized equipment required for extrication

Dynamics of the Mayday

Regardless of the cause, a MAYDAY will impact the fireground
- Suppression crews must not abandon their assignments
- Discipline can prevent an incident from spiraling out of control

RIT is RIT

- RIT Team need to coordinate with Suppression Crews
- RIT is responsible for getting to the firefighter and retrieving them under the protection of the fire suppression forces
Section 3
PPE FROM A RIT PERSPECTIVE

Mastery of PPE is Imperative

- Knowledge of the SCBA must be automatic
  - The ability to fix problems quickly in the worst of conditions
- SCBA Exercise
  - How well do you know your SCBA?

PPE for the MAYDAY / RIT

- Drag Rescue Device
- SCBA
  - PASS
  - Emergency Breathing Supply System (EBSS)
  - Universal Air Connection (UAC)
  - Special Locator Devices (PackTracker)
PASS Alarms

- As of 2013, standardized tone, but not operation.
  - SCOTT-
    - Sensor mounted at hips
    - controls on line gauge right chest
  - MSA, Survivair
    - Sensor and controls on line gauge, right chest
  - Drager
    - Sensor and Controls can be routed left or right shoulder

PASS Alarms

Pre 2013 Scott 2013

Buddy Breathers (EBSS)

- Understand their operation before committing to them
- Connections vary by manufacturer and pack
- SCOTT
  - Both breathe lowest air first, then the higher pressure cylinder
- Tethers you to another person
Universal Air Connection

- Designed to provide a standardized means to transfer air from one cylinder to another
- NFPA 1981 6.4.3 Requires UAC to be within 4” of Cylinder valve
- Considerations
  - Cylinder Damage and Design Pressure
  - Age of Pack (pre 2002, no UAC)
X-3 is tucked in the same area.
UAC Connection

Manufacturers are building higher pressure systems
UAC's fit on both systems
UAC equalizes pressure in both cylinders
"Fill pressures must not exceed operating pressures" (SCOTT 2013)

System Pressures

Pack Tracker
Pack Tracker Keys

- Keep the tracker horizontal, pointing towards area you are trying to search.
- Move slowly
- Be patient
- Number displayed is serial number of transmitter unless otherwise programmed
- Pack has to have a transmitter for it to work

RIT Pack

- Pack specifically for bringing air to a downed firefighter
- Different designs for different manufacturers and years built
- Know your RIT Pack abilities and options
- Minimum 60 minutes of Air is preferred
  - New Scott Fast Attack packs have small air cylinders

RIT Packs

- MSA
- Survivair
- Dräger
SCOTT RIT Packs

• Every RIT Team enters with a RIT Pack
  - If a specifically designed RIT Pack is not available
    - Bring an SCBA with straps tightened to prevent snags
• Never abandon the RIT Pack
  - It is just as much for you as it is the firefighter you’re looking for
  - During RIT activations, many members have become low on air and needed rescue themselves

Generic Bags

RIT Pack
Suppling Air to the Downed Firefighter

- Remove and Replace the Regulator
- Remove and Replace the Face Piece
- Universal Air Connection
- Buddy Breather*
  - Some new RIT Packs have Buddy Breather Connection
  - RIT Pack to Downed Firefighter Buddy Breather

Harness Conversion

- Equipment and clothing can be pulled off an unconscious firefighter
- Relocating of the waist strap between the legs will keep the pack on the downed firefighter when you are dragging him / her and moving up stairs.
- Not a rated harness, emergency measure.

Harness Conversion

- We will be converting the harness of the downed firefighter
- Provides for both horizontal and some vertical movement
- Not a class 3 harness
Drag Rescue Device

- Intended to allow for horizontal drag of downed firefighter
- Often not properly reinstalled after wash
- Sometimes removed completely
- Not good for vertical movement

Identifying a Downed Firefighter

- Don't assume you have the right person
- Name
  - They tell you!
  - Top / Bottom of Coat
  - Shield
  - Radio Assignment

Removal of Downed Firefighter’s Gear
**Firefighter Through Floor**

- Use the tools you have
- Protect firefighter with hose line
- Send a bight down
- Pull the firefighter up

- Use a pencil ladder when possible
- Unconscious, use rope or ladder

**Through the Floor**

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**Through the floor (3 +1)**
Pulling the Firefighter Up

- All members pull at once
- Two firefighters hold while others reset
- "Ready, Ready, Pull"

KNOTS

Handcuff Knot

Handcuff Knot Step By Step

1. Make 2 loops with the rope
2. Overlap and pass each loop through the slits by their opposite edges
3. Pull the loops up to the desired size while holding the standing part
4. Tighten to complete the knot
We must be prepared for a RIT incident at any fireground.
RIT incidents will vary in complexity.
PPE competence is a key to a successful rescue.
Train to the worst case scenario.
Rapid Intervention Teams
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September 2017

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FF Kyle Wilson
• Rapidly changing fire conditions resulted in his separation from crew (<4 minutes from arrival)
• In spite of multiple efforts crews were unable to make the second floor to get to Kyle
• Located just inside a second floor bedroom window
Steps in Risk Management

1. Identify Hazards
2. Evaluate Hazards
3. Prioritize Hazards
4. Control Hazards
5. Monitor Hazards

(Dodson, 2007)

Risk Management and RIT

- Cause of the MAYDAY
- Location in the structure
- Conditions in the structure
- Paths of ingress and egress
- Accessibility of supporting companies
  - Protective hose lines
  - Additional equipment

Rescue vs Recovery

- We risk a lot to save a savable life.
- When conditions are not survivable, we must recognize our limitations to prevent additional losses.
RIT EQUIPMENT, ORGANIZATION, RESPONSIBILITIES AND COMMUNICATION

**Equipment**

- Radio
- Flashlight
- 200’ Kevlar rope in search bag
- Thermal Imager
- Irons
- RIT Pack (60 min)
- Stokes Basket

**Rapid Intervention**
RIT Organization

- Four Members
  - Team Leader
  - 2 Searchers
  - RIT Pack / Air

Team Responsibilities

- Size up and soften the building
- Monitor conditions and radios, supplement the safety role
- Enter at most suitable location upon activation
- Locate the firefighter
- Convert / apply air and remove

Size-up

- What’s the Alpha Side
- What’s Division 1
- Where’s the fire now and where’s it going
- Where are the crews
- Structural considerations
- Access considerations
Softening the Building

- Ground Ladders
  - All four sides
  - Throw for Rescue
    - Consider 65 degrees
  - Don’t open windows without consulting IC
    - Flow path

Softening the Building

- Doors and Windows
  - Make them accessible without affecting flow path
    - Have a plan to clear the opening
  - Remove locks or bars
  - Consider highest risk locations for interior crews

Window Security
Team Leader

- Responsible for the actions and direction of the crew
- On arrival, report to Incident Commander and continue Size Up
- Determine best actions for softening building
- Maintains accountability of the crew at all times
- Communicates completed tasks to IC / RIT Branch
- Monitor air, manage accordingly

Searchers (2)

- **Prior to activation** - assists with softening of building
- **During the Search** - Responsible for searching areas as directed by the Team Leader

Searcher - at the downed firefighter

- Silence PASS
- Assess downed firefighter
  - Need for air
  - Identification
- Convert Harness
- Move Firefighter
RIT Pack / Air Carrier

• Prior to activation, checks RIT Pack and assists with softening the building
• Applies air to downed firefighter (if necessary)
• Assists with removal of downed firefighter
• May lead the way out

Responsibilities

• The responsibilities of each member can change and will be dictated by the situation.
• Stick to your roles as much as possible
• Don’t do anything unexpected

Backup Team Responsibilities

• Rapid Size-up and briefing from IC or RIT Branch
• Stage at the entry door
• Monitor communications and conditions
• Enter when called upon to relieve primary RIT
• Reassess and remove downed firefighter
Conditions

- You're operating while the incident is not under complete control
- Everything is subject to change as the conditions dictate
- Team will have to adapt to situation

Communications

- MAYDAY vs Urgent
  - MAYDAY is immediately life threatening
  - Urgent is other immediately important fireground information
- Victim vs Downed Firefighter
  - We are looking for downed firefighters
  - Victims are civilians and will present another set of challenges

Communications

- Clear and concise
  - Completed Tasks
- Provide information so the IC doesn't call for it
- Whenever possible, change fireground to a different channel
- Always minimize unnecessary radio traffic
Communications

- As the operation develops, the RIT Branch may be established to oversee RIT Operations specifically
- Request additional resources through Command or through the RIT Branch

RIT SEARCH

- Rope search can be adapted to any structure
  - Residential
  - Commercial
  - Hallways
  - Open Areas
  - Aisles

Searches

Searches

- RIT Rope
  - 200 feet of Kevlar mix or Twaron
  - Extremely high abrasion resistance
  - High heat resistance
    - Twaron @940f
  - Tie off low, in safe location

Searches

- We are looking for a downed firefighter
- Basing a search on an active PASS Alarm
- Without a PASS Alarm your search will be slowed and more thorough

Keys to the Rope Search

- Tie off in a safe location
  - Outside
  - Protected enclosure with direct access to exterior
  - Close to the ground
  - Won’t move
**Keys to the Rope Search**

- Team Leader leads in / follows out
- Keep the rope tight to the floor
- Rope maintains:
  - Accountability
  - Pipeline for tools and personnel in and out

**Keys to the Rope Search**

- Rope bag stays behind
- Tie search rope off in the area of the downed firefighter
  - Wall stud
  - Heavy furniture
  - Tool
  - Downed firefighter as a last resort

**Nevers of Rope Search**

- Never tie off to start a search in a location that won’t be clear when you return to it
- Never go in without an air source / RIT Pack of your own
- Never back track over line without managing it
- Never do anything unexpected
Camera Led Search

- Team leader leads in and utilizes camera to direct search
- Team leader can maintain visual contact with searchers off the line
- Used to minimize sending searchers off the line

Hallway Searches

- Searcher on right wall opens door and hears pass
- Calls out "Stop"
- Team leader comes to edge of door for sweep with TIC
- Searcher sent in
- Searcher 2 called back to door
- RIT Pack stages with Searcher 2 and Team Leader
Hallway Searches

- Searcher assesses DFF and calls for air
- RIT Pack Carrier enters to assist Searcher 1
- Searcher 2 and Team Leader Stay at Door

Hallway Searches

- Searcher assesses DFF and does not need air
- Searcher 2 enters to assist Searcher 1
- RIT Pack Carrier and Team Leader Stay at Door

Hallway Searches

- Second PASS Alarm heard
- Searcher 2 can be sent in to locate second firefighter
- If possible, move to location of first firefighter
- Consideration must be given to distance away from the search rope
Aisle Searches

- Team enters
- Team Leader see something at opposite end of aisle
- Team Leader collects team in preparation of sending searcher

Aisle Searches

- Entire team moves to opposite end of aisle
- Team leader stays away from DFF
- Sends Searcher 1 to assess

Aisle Searches

- DFF in aisle area, midpoint
- Team Leader Collects team and sends searcher
- Searcher 1 will assess and call for resources
- All members not on the firefighter should be with Team Leader
Camera Directed Searches

- Team Leader guides searchers checking area off line
- Monitors position of searchers
- Maintains visual accountability
- Operator continually maintains contact with RIT Rope
- Continually monitor conditions

Wide Area Search

- Use a Point to Point Search Method
- Searchers are always safer on the line
- When an obstruction can’t be cleared by changing perspective, send a searcher

FINDING THE DOWNED FIREFIGHTER
Responsibilities

- Silence the PASS
- Check air
  - Apply if needed
- Identify
- Convert
- Remove

Simple Tools

- All of the procedures we teach are adaptable to situations, tools for the toolbox
- You have to recognize the conditions in which they apply
  - Ex: Bad air is better than no air
  - Not when that bad air is superheated

THERMAL IMAGING FOR RAPID INTERVENTION
Thermal Imagers

- Every TIC has its limitations
  - Screen Resolution
  - Shuttering
  - Screen Size
  - Colors
  - Battery Life

Understand Your TIC

- It is a computer screen displaying relative temperatures
  - How will changes in the environment effect the image
- Know what you're looking at
- Identify shapes
- Take your time

TIC for Size-up

- Consider using the TIC from the exterior:
  - Determining construction features (trusses, balloon constr. etc.)
  - Location of fire
  - Fire extension
  - Find potential roof ventilation sites
**TIC for Size-up**

- Use the TIC as you move through the structure to maintain accountability
- Watch searchers sent off the rope
- Watch the crew package the downed firefighter

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**TIC for Accountability**

- Use the TIC as you move through the structure to maintain accountability
- Watch searchers sent off the rope
- Watch the crew package the downed firefighter

---

**TIC for Search**

- Six Sided Search
  - Top, bottom, all four sides
- Low Medium and High
- Looking for:
  - Downed firefighters
  - Holes / Obstructions
  - Fire Conditions
There is no rule book good for every RIT scenario!
Be prepared to adapt to the conditions!
If a company is trapped by fire, consider a hose over the rope!
Always have a backup plan!
Treat every IDLH incident as though it is the one where a MAYDAY will be called!

Key Considerations

RIT activations will be stressful events
Manage the stress and complete the mission
Team members must know their roles
Communication must be concise
Rope management is a key to success
RIT must be coordinated with fire suppression crews
Downed firefighters need air!

Summary
Summary

• Utilize the proper search techniques for the structure
• Manage the team for efficiency
• Use the technology that is available to you, TIC’s are required for each team.
• Know the risk and manage it