

Fire Engineering

MAYDAYS, RAPID INTERVENTION OPERATIONS IN STRUCTURAL FIREFIGHTING and NFPA 1407

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By now departments throughout the United States should be familiar with the need for rapid intervention and the extreme importance of its presence on the fireground. The relationship between rapid intervention policies, rapid intervention crews(RIC's), rapid intervention training and understanding the relationships between officers, RIC leaders and chief officers can be overwhelming as well as meeting the standards of NFPA 1407. Not only is the review of NFPA 1407 necessary but also the correlations to other important standards mentioning the need for rapid intervention.

Rapid Intervention Crews and firefighter survival go hand in hand especially when training and preparing a solid rapid intervention presence on the fireground. A fire chief or incident commander's worst nightmare at structural fires is a Mayday on the fireground. Just in gaining control of such an incident can be daunting for some departments as well as establishing the presence of a RIC at their structural fires. In order to survive the fireground a rapid intervention presence cannot be questioned and should be provided for no matter what size team you can muster. One of the most important steps is understanding the need for proactive training well before an incident occurs involves three prominent areas:

- **Firefighter Self Survival**
- **Firefighter Rescue**
- **Firefighter Rapid Intervention Crew Coordination**

Training must incorporate these three areas for a distressed firefighter and his rescue in order to have a favorable chance of his rescue and survival. All three areas require specific techniques and maneuvers that range from an individual firefighter's actions to those actions of the rapid intervention team, team leaders and chief officers. Departments should have a well written training program and well written policies regarding action plans that are not only reactive but proactive. As we know even the best training and written policies can never predict the event itself or what it may entail in saving one of our own.

While the standards of such documents like NFPA 1407 provide insight to qualified personnel to perform such rescues the techniques and the maneuvers themselves of which are many are not truly identifiable in such a document. What it does require though is that every department provides a standard operating guideline that includes the presence of a rapid intervention crew at all fireground operations, while also entailing deployments of a rapid intervention crew at incidents and a rapid intervention crew's ability in establishing an action plan from the beginning of an incident through its termination.

NFPA 1407 establishes many guidelines in attempting to provide to departments a base for success at these incidents as well as providing just some proactive behaviors in avoiding them. Departments need to start with a sound and comprehensive training program providing objectives and hands on skills that may be needed for several different presenting situations regarding firefighters in distressed and their rescues. This entails an incredible amount of proven and practiced techniques and maneuvers to all involved on the fireground. Firefighters throughout all ranks including chief officers should have a thorough understanding of rapid intervention and all that it entails. This may seem like an extreme burden for everyone but it is the only way we can provide increased safety, proactive behaviors and reactive actions that bring our members home alive after each structural fire event.

NFPA 1407 in its efforts to provide some specific requirements on training firefighters for rapid intervention correlates itself with other standards such as NFPA 1500, NFPA 1710 and 1720 as well as NFPA 1401 in establishing not only qualified instructors but also team sizes and who is qualified to lead such teams. There are only a handful of training programs and qualified instructors throughout the USA with thousands of hours of instructing in the area of rapid intervention and all it entails. These instructors and their associated programs not only meet the standards of NFPA 1407 but well exceed it in this country. Nonetheless departments should make every effort to meet the minimums by attending these programs and bringing the information back so they to can also establish a well prepared rapid intervention program as well as sound command and control presence for their chief officers. Training programs should be all encompassing when possible covering areas in risk assessments, deployments and activations of RIC's, radio communications procedures, integration of firefighter Maydays and their rescues into departmental incident command systems along with the presence of full and operable accountability systems. Such documents such as NFPA 1561(Emergency Services Incident Management System) is another relationship resource and guideline needed to be fulfilled and connected to solid rapid intervention programs. By incorporating these areas the presence of a well trained and managed RIC will provide everyone on the fireground an increased safety margin that cannot be measured for any given firefight. Solid training programs in self survival and firefighter rescue should also provide methods of evaluating not only knowledge and skills but more importantly the ability in performing proactive and reactive skills in near zero visibility environments.

Rapid intervention techniques and maneuvers involve not only numerous skills in rescuing and moving distressed firefighters to safety but a host of knowledge in specific equipment and tools and their applications. It must be realized that a well trained and equipped RIC with just the basics in equipment is a winning safety net at structural fires; but it must also be realized that an incident can demand the increased potential for technical rescue skills as well. Each Mayday scenario can present the expected as well as the unexpected to a rapid intervention team when they are deployed to a firefighter rescue operation.

Coinciding with the expected and the unexpected is the chief officers understanding of the capabilities of not only their rapid intervention crews but of themselves regarding their abilities in dealing with the chaotic and complex challenges presented in firefighter rescues. Getting control and mitigating such incidents require nerves of steel, resources, evaluating dynamic risk to all on the fireground during such operations which if not taken into account can lead to further risk of the rescuing firefighters possibly putting them into harms way, such as collapse and additional entrapments.

Maydays and the Survivability Profile

When Maydays occur requiring deployments of rapid intervention operations all of a departments resources, communication systems and training will be challenged determining losing or winning in saving a distressed firefighter and possibly incidents involving multiple firefighters. Anything can occur at any time on the fireground especially when it involves offensive interior firefights. The survivability profile of a Mayday or multiple Maydays requires practiced action plans that have been trained on. All fires as we know progress in different ways in a fast paced dynamic environment which lead to many kinds of possible events from just simple disorientation to structural collapse entrapping firefighters. These events also apply to those who are rescuing their fellow brothers. This is why it is so important to have adequate resources and staffing on the scene at any given firefight whether offensive or defensive. The important issues in survivability for any individual firefighter is to be able to provide a Mayday communication when one realizes that something is wrong whether it is real or perceived. Getting a Mayday out as early as possible as soon as a threat is realized whether the threat and its presence are immediate or potentially immediate as it is perceived is crucial. There are 4 prominent areas of dysfunction that influence firefighters in delaying when determining the need for a Mayday.

- **Failure To Utilize and Enact Mayday Communications**
- **Mental and Logical Confusion In Recognition**
- **Physical Injury/Entrapment/Unconscious**
- **Lack of Survival Training**

Firefighters individually must be able to realize very early on the need for transmitting Maydays in order to increase the efforts of their rescues and if physically able to begin their attempts at survival techniques while the situation is being mitigated by command and rapid intervention methods. The key is again realizing the immediacy of their situation. This realization can be focused in on as the perception of events and what is occurring in the moment. In high stress events, time and disorientation are the culprits. Firefighters need to pay strict attention to as many fireground activities going on at any given incident not only within their immediate area but digesting important radio communications that reveal what others are doing regarding efforts in fire extinguishment, ventilation, life rescue and personal accountability reports (PAR's).

The training provided to firefighters throughout the nation requires us many times to be able to solve problems both individually and as a team. This mental mindset allows us to be very successful within task assignments as well as overall fireground problem solving. It also carries with it a double edge sword when dealing with your personal distress problem on the fireground that can lead to your own Mayday. The need to rectify and beat the problem you are facing is ingrained in our determination to succeed even to the point of our own pride and embarrassment. This many times delays or puts off the need for calling a Mayday as precious time slips away because of our focused behaviors. A stressful situation brings us so focused in that we ignore or face to realize the gravity of the event unfolding before us. After being unsuccessful at rectifying the problem panic and fear begin to set in and we start to lose control and possibly forget our training which was to call that Mayday early on providing the necessary information to others to assist us in getting out alive. Mayday training procedures like all other fireground training prepare us in our skills and abilities to better prepare for the unknown events that we may be facing. Get your Mayday out until the issue becomes resolved! If you resolve the issue without further assistance then simply call off or withdraw the Mayday. Avoid letting precious time pass because of pride, embarrassment or being over focused.

NFPA 1407 provides adequate guidelines in when and how to communicate Maydays. Use these guidelines and incorporate them into your training programs and department policies. NFPA 1407 indicates that firefighters having a distress event are to communicate a Mayday between 30 to 60 seconds if able to no matter what the range of problems are which can be anything from air supply problems, entrapments and disorientation. Firefighters should also realize the need for issuing Maydays when witnessing other events within their proximity such as partial collapse, flashovers and an unconscious firefighter down. These Mayday communications are essential because they affect possible many firefighters within the areas of the event.

It is important to note that NFPA 1407 does not explicitly provide Mnemonics or Acronyms to help distressed firefighters in organizing their thoughts when under distress in order to provide adequate and proper information when communicating their Maydays. There is a host of these being utilized in and throughout the fire service. Some of them have no place in helping firefighters disseminate Mayday information because they are simply too long or don't truly relate to the letters they represent. The following two Mnemonics or Acronyms suggested here and are one of the most recognized and commonly used for firefighters in distress communicating their Mayday.

LUNAR

L-Location. Where are you geographically within the structure or event?

U-Unit. What company are you or were you with?

N-Name. Communicate your name, preferably your last name not your fire number.

A-Assignment and Air Supply.

R-Resources needed to help and rectify the problem. Also communicate what you are doing to rectify the problem.

LIP

L-Location. Where are you geographically within the structure or event?

I-Identification. This includes your last name, company you were with and your assignment.

P-Problem. This includes resources to assist and rectify the problem, your air supply and what you may be doing to rectify the problem.

As we can see that these two Mnemonics or Acronyms are fairly simple to remember but they must be practiced into memory in order to insure that the Mayday is a complete delivery of communication regarding your situation. The following is a recommended listing of the minimum conditions that warrant a Mayday communication seen in the guidelines of NFPA 1407. It should be realized by those creating policies and procedures as well as training requirements that other serious situations putting firefighters in distress may present themselves as well. All presenting conditions warrant Mayday communications within 30 to 60 seconds of a distressed event.

Condition Requiring Mayday Communications

- **Entanglement, entrapped or stuck.**
- **Falling into a below grade area. Through a floor or roof.**
- **Imminent flashover or caught in a flashover.**
- **Lost or disoriented.**
- **Collapse partial or full preventing egress to you directly or your company.**
- **Any and all SCBA malfunctions, specifically air pressure leaks and/or complete failure.**
- **Unable to find a way out.**
- **Activate your pass alarm after Mayday communications.**

As stated earlier rapid intervention and self survival training should go hand in hand when training programs are created in your departments as well as qualified instructors that have a thorough knowledge base in rapid intervention and self survival and all it entails. Having instructors shooting from the hip off of little experience in these areas can result in disastrous consequences either during training or on the fireground. Not only are qualified instructors necessary but those put into the position of command and control should be trained in risk assessment and management of Mayday events as well as rapid intervention crew operations. Training programs should consist of the following minimum areas.

Rapid Intervention Crew and IC Training Program Contents

- **Risk Assessment/Management/Team Members and Chief Officers**
- **Management of RIC Operations**
- **Accountability Systems and Establishing Resources**
- **Activations and Deployments of RIC operations**

The above listing should be considered as an overview of RIC operations of which all members regardless of rank should participate in. Listed below are areas within a RIC operations and self survival training program regarding a minimum of specific skills, techniques and maneuvers that are required in order to meet and exceed the suggested guidelines of NFPA 1407. The introduction of many of these skills, techniques and maneuvers should progress in performing them in near zero visibility environments in order to insure their success on a regular bases. In this way we can provide for the RIC, chief officers and team leaders a truer reality in preparedness when working on the fireground at actual events. Remember that solid training programs incorporate firefighter self survival skills, firefighter rescue skills and coordinated rapid intervention team skills.

Firefighter Self Survival and Rapid Intervention Training Program Skills

- **Mayday Communication Skills**
- **Moving Downed Firefighters Conscious and Unconscious**
- **Firefighter Self Survival and Self Rescue Skills**
- **Understanding of Specific Ropes, Knots, Webbing Use and Simple Mechanical Advantage Systems**
- **Air Supply Systems and Skill Maneuvers In Providing Air To Distressed Firefighters**
- **Rapid and Accountable Search Rope Techniques**
- **Multi Radio Channel Skills and Techniques Regarding Communications For RIC's and Chief Officers**
- **RIC Basic Equipment Training and Advanced Rescue Equipment Training**
- **Thermal Imaging**
- **Forcible Entry/Ingress and Egress Skills**

After reviewing the above training skills we can see that not only is the RIC acquiring proficiencies in these areas but also should be becoming proficient with the tools and equipment needed to carry out the techniques and maneuvers that may be required at a MAYDAY incident. It is impossible for a rapid intervention crew (RIC) to carry all the potential tools and equipment that will be needed at structural fires to cover all possible aspects of any given Mayday. In order for RIC's to better prepare for the needs regarding tools and equipment at the scene we should understand that a well trained RIC can provide a solid presence on the fireground with the very basics of equipment. In this case we will divide equipment into two areas, primary equipment that needs to be present immediately in case a deployment is required early on and secondary equipment which can be acquired from nearby fire apparatus on the scene. The following equipment needs should be with the RIC when they arrive in establishing a rapid intervention presence at the structure and preferable at or near the point of any offensive procedures such as a hose line entering a front door or possibly in the area of a VES procedure after their 360 degree size up has been completed. This type of proactive positioning should be established when the RIC is sizing up the structure and recognizing where interior crews are functioning. The following listings are the primary equipment that will be with the RIC and secondary equipment acquired by the RIC from nearby fire apparatus in order to provide a solid safety and response net if it is needed. The proper tools and equipment will allow the RIC to function proactively and reactively depending on any given situation.

RIC Primary Tools

- **Halligan and Ax**
- **RIC Air Supply**
- **New York Hook**
- **Utility Rope Bag (150ft and 2 large carabineers)**
- **Search Rope Bag (150ft 9mm rope)**
- **Thermal Imaging Camera**
- **Personal Looped Webbing (16ft and short quick grab strap)**
- **Personal Wire Cutters**
- **Flashlights**
- **Portable Radios**

RIC Secondary Tools and Equipment (acquired from nearby fire apparatus)

- **Roof Ladder , Extension Ladder and Attic Ladder**
- **Rotary Saw Wood/Metal Blade**
- **Spare SCBA and Additional RIT Air Pack**
- **Additional Hose Line Pulled and Charged**
- **Any Additional Battery Operated Equipment (Sawzall, Cutters and Spreaders)**
- **When Necessary Cribbing and Air Bag System**
- **Stokes Basket**
- **Sledge/Mall**

Regarding the above list of secondary tools the RIC should approach acquiring these items through sizing up the activities that are occurring in and throughout the fire structure. When retrieving these items a member/s of the RIC will approach the apparatus and advise the apparatus operator if present that they are requesting the equipment for the team and the rapid intervention needs of the event. Operators of fire apparatus through policy and procedures should be instructed to relinquish the items needed if they will not be utilized by the members of that particular fire crew on that apparatus.

This helps guarantee that the equipment needed for any given incident can be gotten in a timely fashion by the RIC to be brought back and staged or utilized when needed from their location near the fire structure.

Since we now have acquired both primary and secondary tools and equipment at the ready we need to address the proactive activities of the RIC at the incident. Each incident poses potential threats of different types that can affect interior and exterior operations of our members on the fireground. The RIC is responsible through proactive behaviors in recognizing and deterring these threats through constant size-up of the structure and the fire event while being able to physically go to work on diminishing and eradicating these threats when necessary. It should be noted that NFPA 1407 while indicating where the RIC should report to and stage on the fireground it does not truly indicate what many of their proactive behaviors should entail. Listed below are those activities that a well trained RIC with a well connected team leader along with possibly a RIT commander or RIT chief should be providing its members on the fireground regarding proactive activities.

RIC and Command Staff Proactive Functions at Structural Fires

- RIC should be pre-assigned through dispatch within the 1st alarm.
- RIC should provide confirmation in route and upon arrival.
- RIC should stage at the point of any offensive procedures that reveal members operating on the interior.
- RIC will perform a complete 360 size-up when possible.
- RIC will provide communications to interior members as well as to chief officers any potential threats involving the firefight.
- RIC will provide all proactive hands-on tasks as needed to reduce and guarantee the safety of all members working on the interior and members involved in roof operations.
- Proactive tasks include but are not limited to providing ingress and egress of the structure without affecting fire conditions unless necessary.
- Proactive tasks include assisting other companies on the exterior as needed while still maintaining RIC functions.
- Providing tasks that include laddering the structure where needed.
- Providing tasks that include additional positioned hose lines for potential rescue operations.

- **Providing tasks that include barrier removals. (Burglar Bars, Blocked Exits, Gates etc.)**
- **Provide tasks that include enlarging opening when necessary without disturbing fire conditions when needed.**
- **RIC to provide all radio communications on all tasks being performed and completed.**
- **RIC to provide full radio communications and monitoring of interior crews and all crews functioning on the fireground throughout the duration of the incident or until so relieved.**

A well trained and functioning RIC on the fireground is invaluable! Its responsibilities are a serious business. RIC's provide not only protection and rescues of our brothers but they also enhance the safety of the fireground tenfold. They provide commanders and chief officers complete support in all activities occurring on the fireground that may have potential for disaster well before the potential threat of any Mayday that may develop. Solid and complete policy and procedures along with the use and review of NFPA 1407 will ensure the protection of our members and many times saving the lives of our brothers from potential tragedies.