

**Rapid Intervention Crews: Standardization... A Collaborative Effort**

By: Troy Wombold  
Captain  
City of Greenville Fire Department  
Greenville, Ohio

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## CERTIFICATION STATEMENT

I hereby certify that the following statements are true:

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2. I have affirmed the use of proper spelling and grammar in this document by using the spell and grammar check functions of a word processing software program and correcting the errors as suggested by the program.

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## ABSTRACT

The purpose of this study is to develop a consistent set of standards or guidelines for training, equipment, and duties of rapid intervention crew members or teams in the Darke County fire departments. The problem is that the Darke County fire departments currently do not have any standard guidelines in place for the level of training, equipment and duties of a rapid intervention crew. This could lead to an increased risk of injury or death to a downed firefighter. The potential impact this study could have on Darke County fire departments is that it would provide a consistent and modeled method of training. These cooperative efforts between all of the departments will be motivational for current and future trainings. During my applied research I attempted to answer the following questions: *Why are rapid intervention crews needed and what are their primary functions? What factors has other city/township or county fire departments done to standardize the organization, operations, and equipment of rapid intervention crews? What elements of the rapid intervention crews' procedures and operations are able to be developed in standard operating procedures/guidelines? What type of training and equipment should be required for rapid intervention crews?* The literature review and the survey were used to answer these research questions. The research revealed that others believe there should be a standard for rapid intervention crews. This opinion was formed from the results of the survey, information obtained from trade articles and opinions of professionals in the field.

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## INTRODUCTION

### **Statement of the Problem**

The Darke County Fire Departments (DCFDs) are comprised of all volunteer departments with the exception of the City of Greenville, which is a full time career department. With the mutual aid agreements, in the county, all of the departments augment one another on a regular basis.

When a department is called upon to assist another department on an emergency scene, its duties could vary from incident to incident. One of the duties that an incoming department could be assigned to is that of rapid intervention crew (RIC). At that time, they would be solely responsible for an emergency involving a downed, lost, or trapped firefighter. *The problem this study will address is the lack of formal standardized guidelines covering the level of training, equipment, and duties of a member of the RIC.* There is a limited number of DCFDs that have purchased equipment and implemented a training program while other departments have chosen not to pursue those options at this time. The few departments that have implemented this training have little consistency among them that would be needed to interact together at an emergency scene. This should not be the case when a department is put in such a vital role on the fire ground and thus made responsible for the safety and survival of its own members.

The fire service has developed standards for the skills and training needed to be a firefighter in Ohio. These are essential to enable firefighters to carry out their duties in a safe and effective manner. A similar set of standards should be put in place for the training of rapid intervention crews.

### **Purpose of the Study**

*The purpose of this study is to develop a consistent set of standards or guidelines for training, equipment, and duties of rapid intervention crew members or teams in the Darke County fire departments. The information and findings from this study will be presented to the City of Greenville Fire Department Administration as well as the Darke County Association of Fire Chiefs.*

### **Research Questions**

*The research questions that this study will investigate are answered through descriptive research methods and are as follows:*

1. Why are rapid intervention crews needed and what are their primary functions?
2. What factors has other city/township or county fire departments done to standardize the organization, operations, and equipment of rapid intervention crews?
3. What elements of the rapid intervention crews' procedures and operations are able to be developed in standard operating procedures/guidelines?
4. What type of training and equipment should be required for rapid intervention crews?

## **BACKGROUND AND SIGNIFICANCE**

Darke County is located at the far western side of Ohio bordering Indiana. The county covers 600 square miles in size, making it the eighth largest county in Ohio, with a population of approximately 55,000 people. The demographical make-up of Darke County is mainly a rural

setting with some medium industrial businesses scattered throughout the area. The county consists of 20 townships which includes 1 city and 20 villages.

The Darke County Association of Fire Chiefs (DCAFC) is an organization that coordinates activities between departments, made-up of primarily fire chiefs, from 24 fire departments within the counties of Darke, Miami, Shelby, Mercer and Preble. There is also one department involved from the state of Indiana, which covers Randolph County. These fire departments are made-up of all volunteer departments with the exception of the City of Greenville, which is a full-time career department. With the mutual aid agreements in the association, all of the fire departments augment one another on a regular basis in the case that an emergency is beyond the capabilities of an individual department. The firefighting skills that each department provides are very proficient and organized in nature with duties being carried out at a very high degree of professionalism.

The Darke County fire departments provide fire protection, hazardous material mitigation, technical rescues, emergency medical services, and other services needed. The county has the following apparatus:

48 Engine Companies

22 Tanker / Engine Companies

6 Heavy Rescue / Hazardous Material Units

1 Ladder Company

The total number of firefighters in the county is approximately 560 personnel with seven of those being on duty each day.

The Darke County fire departments, for the year 2008, had 2,179 fire runs with 156 of them being structure fires (DCSO). When there is a reported structure fire, there are on average,

four fire departments that respond to this emergency once it progresses beyond the initial alarm. All of the departments involved in the (DCAFC) work very closely with each other. This is accomplished with multi-departmental trainings and the mutual aid agreement between agencies. The augmenting of each other leads to a variety of duties that a department could be assigned to with (RIC) being one of those assignments.

The fire service has recognized the need for training firefighters in the skills for saving other firefighters. The (DCAFC) has an understanding of this and some of the departments have implemented some training in firefighter rescue. Other departments, however, have chosen not to develop this training due to financial restraints or the misconception that the training is not needed. The departments, that have implemented this training, have developed or are working on developing guidelines or procedures for their individual departments. There is a need to develop a consistent procedure to govern the skill level, training, equipment, and duties of a (RIC). There cannot be 24 different fire departments with 24 different ideas of what a (RIC) is about and how the implementation is carried out. The lack of standard procedures and consistent county wide departmental training places firefighters, both the rescuers and the firefighter experiencing the emergency, in a situation where undue injury or death could occur. This also does not allow the incident commander to effectively manage this situation to a positive outcome.

The City of Greenville started developing its RIC in the late 1993 with minimal equipment and training. Through years of training, both in house and outside classes, the current written policy and procedures were developed. These procedures, although not all inclusive, have served as an adequate model that some of the departments have used to develop their procedures. These procedures, along with some guidance and training from select members of the City of Greenville Fire Department, have helped some of the county departments develop



their teams.

The Darke County fire services have never had a line-of-duty death (LODD) that has been attributed to being trapped in a structure fire. Some may say this is from the skills or the training that the firefighters receive, but this author believes it is only due to pure good fortune. Throughout the fire service, we all recognize the desire to send everyone home at the end of an emergency incident. We can all accomplish this by increasing our knowledge and skills which will better prepare us in the event that we are faced with a lost or trapped firefighter. These skills cannot only help save another firefighter, but can be used to keep us from getting in trouble ourselves and also to help ourselves in the event we become trapped.

The goal of this Applied Research Project (ARP) is to clearly show the need for a consistent set of standards for rapid intervention crews in the areas of skills, training, equipment, and duties for the departments of the DCAFC. *The potential impact this study could have on Darke County Fire Departments is to provide a consistent and modeled method of training. These cooperative efforts between departments will be motivational for current and future trainings.* This study will also evaluate what other city and county fire departments in Ohio have done to standardize the operations of their rapid intervention crews. Standardization is only the first phase. The attitude and mindset of the personnel must be developed to get them to recognize the need for this type of training, the implementation of this type of training, and the reasoning behind this standardization.

## **LITERATURE REVIEW**

The purpose of this literature review was to identify the need for a standard on rapid intervention crews for Darke County fire departments. Whether you refer to them as Rapid

Intervention Teams (RIT), Rescue or Rapid Assistant Teams (RAT), Firefighter Assist Search Teams (FAST), Initial Rapid Intervention Crews (IRIC) or Rapid Intervention Crews (RIC), the concept and responsibilities are the same no matter what terminology is used for them. These teams are responsible for the rescue of firefighters that have experienced an emergency or “Mayday” that does not allow them to safely exit the hazard. In this (ARP), these teams will be referred to as (IRIC) or (RIC), which follows the terminology used in the National Incident Management System (NIMS) and the National Fire Protection Association (NFPA). “A firefighter rescue is one of the most challenging situations you’ll ever face on the fire ground” (McCormack, 2003, p. 3).

The first question to be answered in this literature review is, “Why is the rapid intervention crew needed and what are their primary functions?” The National Fire Protection Association defines (RIC) in the NFPA 1500, *Standard on fire department occupational safety and health program*, section 8.8.2, which states, “ A rapid intervention crew/company (RIC) shall consist of at least two members and shall be available for rescue of a member or crew” (NFPA 1500, 2007). This is the current standard leading up to the department’s initial attack assignment. Once the Incident Commander (IC) recognizes the need for additional resources and the incident is upgraded to the next alarm, the standard for the crew changes. The use of (RIC) is further mentioned in NFPA 1710 (2004), *Standard for the organization and deployment of fire suppression, emergency medical operations and special operations to the public by career fire departments* as well as NFPA 1720 (2004), *Standard for the organization and deployment of fire suppression, emergency medical operations and special operations to the public by volunteer fire departments*. There is currently a draft for a new proposed standard on rapid intervention that has been developed by the (NFPA) Technical Committee on Fire Service Training (2008). This

proposed standard will be known as NFPA 1407 (2008), *Standard for training fire service rapid intervention crews*. There are also rulings in the Occupational Safety and Health Administration (OSHA), *Respiratory Protection Standard* 29CFR1910.134 (g)(4)(ii), which states that, once interior structural firefighting operations have begun that at least two employees are located outside the immediately dangerous to life and health (IDLH) atmosphere. Note 2 to paragraph (g): Nothing in this section is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled (OSHA, 1998). This is commonly known as the “two in/two out” rule. The rule is a minimum standard and the realization is that two members are not going to be able to safely affect a rescue of a downed firefighter. The National Institute for Occupational Safety and Health released a report stating a (RIC) should be positioned to immediately respond to a firefighter emergency and that two firefighters are inside the structure and two firefighters are outside the structure before beginning interior operations (NIOSH, 1999). The (RIC) members may be assigned nonessential duties on the fire ground such as setting up scene lighting or even operating a fire pump, as long as those duties can be abandoned immediately without putting other firefighters in jeopardy (IFSTA, 2008).

The United States Fire Administration (2002) has reported that the fire service, across America, continues to have about 100 fire related deaths and tens of thousands of injured per year, with the majority of the firefighter fatalities coming from local or municipal volunteer fire departments. These numbers are staggering in a county that is primarily made-up of volunteer fire departments. The statistics show that in 1999, there were 45,500 injuries to firefighters that occurred at the fire scene. 85% of these injuries occurred while responding to or fighting structure fires. Of these injuries 72% of them occurred at one or two family dwellings.

The need for rapid intervention crews in today’s fire service is definitely apparent.

Williams & Stambaugh (2003) stated that “Though the overall number of structure fires continues to follow a downward trend, today’s building fires are burning hotter than in the past.” It goes on to say that “Due to the declining number of structure fires, firefighters on the whole have less fire ground experience than their predecessors had a generation ago.” These could be valid reasons for the sustained injuries and deaths in the fire service every year. The need for rapid intervention crews is there, so why do some fire departments continually disregard the need for them? The lack of commitment to training for this important function can result in the general attitude that being prepared for a (RIT) deployment does not add very much value to firefighter safety on the fire-ground (Gray, 2007). He goes on to say that a sense of complacency among some firefighters has resulted from the belief that “If we haven’t needed one up to now, we probably never will.”

The second question in this literature review to be answered is to determine “What factors have other city/township or county fire departments standardized the organization, operations, and equipment of rapid intervention crews?” Throughout this author’s review of (RIC), there have been many written procedures found in fire departments. The most comprehensive procedures reviewed have come from Phoenix, AZ. Fire Department (PFD) and Cincinnati, OH. Fire Department (CFD).

The Phoenix Fire Department’s procedures were developed after the tragic death of Firefighter Brett Tarver. Firefighter Tarver was killed on March 3, 2001 in a fire at the Southwest Supermarket. This fire, along with the ensuing investigation, led to many changes on how the (PFD) prepared and responded to firefighter emergencies. From the first mayday transmission until Firefighter Tarver was able to be removed was 53 minutes and during the rescue efforts, there were more than 12 maydays called from rescuers (Kreis, 2003). Immediately

afterward the Phoenix Fire Department reviewed its standard operating procedures and fire ground operational activities at the strategic, tactical and task levels of the entire organization. This was in an attempt to prevent such a tragic event from ever happening again in their organization. The investigation, conducted by the Phoenix Fire Department and the National Institute of Occupational Safety and Health ( NIOSH ), examined:

- The Incident Command System
- Standard operating procedures, training and checklists
- Rapid-intervention teams
- Progress reports
- Air consumption
- Accountability systems
- Concealed spaces
- Deep-penetration fire operations

The Phoenix Fire Department also conducted a study in the rescuing of a firefighter from large square footage buildings. This study was performed by over 200 Phoenix firefighters under similar conditions that Firefighter Tarver experienced. This study revealed that it required 12 firefighters to rescue a single downed firefighter and 1 in every 5 of the rescuers got into trouble themselves. This study also revealed the average time to search and extract the firefighter from the building was 21 minutes. The investigation and study prompted some changes in the ways that maydays and rapid interventions are approached and handled. They took the results and created a recovery plan that described changes needed in training, procedures, equipment and more. This recovery plan implemented multiple changes, improved training and purchased new

or appropriate equipment (Gray, 2007). The operational approach to rapid intervention changed in three procedural ways: increased suppression units assigned to rapid intervention crews, increased in command officers, and considering a two part rapid intervention crew process (Burlington County Fire Chiefs Association, n.d.).

The Cincinnati Fire Department has had a big impact on other cities and counties in their development of (RIC) procedures. The (CFD) undertook a huge overhauling of their procedures and policies after the death of Firefighter Oscar Armstrong III on March 21, 2003. Firefighter Armstrong was killed at a residential structure fire when he became trapped in a flashover. These changes developed the procedures currently used by (CFD) today (Laidlaw Investigative Committee, 2003). These current procedures have been instrumental in the development of the current Hamilton, OH. Fire Departments, *Rapid Assistance Team Training Manual* (Hamilton Fire Department, 2007). This very detailed manual discusses training and procedures used by the Hamilton Fire Department's rapid assistance teams. There were many more city fire departments' policies and procedures reviewed for this (ARP). The size of the departments varied, as well as the details of the procedures, but the one common thread was the fact that they all had written procedures.

The review of county-wide policies and procedures for rapid intervention showed to be significantly fewer than those of the cities. The most detailed guidelines reviewed were from Hamilton County (Hamilton County Fire Chiefs' Association, n.d.) and Midwest Hamilton County (Colerain Fire & EMS) located in Ohio, Indianapolis (Marion County Fire Department, n.d.) in Indiana, and Prince George's County, Maryland (Prince George's County Fire & EMS, 2001).

The third question in this literature review is “What elements of the rapid intervention crew’s procedures and operations are able to be developed into standard operating procedures/guidelines?” Many fire departments are forced to consider the “risk versus the benefits” of establishing rapid intervention capabilities. They must alter their standard operating procedures or rely on other fire departments to help them establish the capability. Other fire departments that have the manpower and apparatus available may have specific procedures that assign incoming units to perform (RIC) (Delmar Cengage Learning, n.d.). “Rapid intervention is the only alternative we have for enabling us to get out of a structure if things go bad and rapid intervention isn’t rapid” (Kreis, 2003). This is echoed by (Gray, 2007) when he referred to a (RIC) deployment as a challenge because of “friction of operations” or time delays. If rapid intervention isn’t rapid, then it must be efficient. To be efficient, there should be procedures that are followed for the operations of the (RIC). Some of the elements are stated in (NFPA 1407 (2008). Chapter 1, *Administration*, states the following:

- 1.1.1 This standard specifies basic evolutions that can be adapted to local conditions and serves as a standard mechanism for the evaluation of minimum acceptable performance during training for rapid intervention activities.
- 1.2 Purpose. The purpose of this standard is to specify a training program that is designed to create a highly disciplined operational capability to rescue fire fighter(s) who become lost, injured, trapped, incapacitated, or disoriented in the course of an emergency scene or training operation.

This standard goes on to describe the elements of the written procedures in Chapter 4, *Rapid Intervention Training Policy and Procedures*, which references:

- 4.1 General. A rapid intervention crew training program shall be developed for the safety of all fire suppression personnel.
- 4.2 The authority having jurisdiction (AHJ) shall establish written policies for rapid intervention training that meet the requirements of this standard.
- 4.3 Rapid intervention operations shall be guided by written operational policies or guidelines and reinforced through a comprehensive training program.
- 4.4 The training policy shall be consistent with the department operational procedures, including automatic aid and mutual aid departments.
- 4.5 Rapid intervention training shall be developed and conducted to provide a constant, sustainable rapid intervention capability at the emergency scene utilizing a minimum crew size as required by (NFPA 1710 or 1720).
- 4.6 The (RIC) training program shall train firefighters to use individual (RIC) skills as part of a crew.
- 4.7 The policy shall address the entry level requirements for crew members, the training objectives, basic skills, equipment and training evolutions contained in this standard.

Norman (1998) commented that the four prerequisites to a successful rapid intervention operation are people, policies, tools, and techniques. People are the most important resource. The one key personnel issue that must be addressed when implementing a (RIC) policy is the attitude of the assigned members. There is no room for freelancing. He adds that another item that is essential to the success of such an operation is having a standard policy that defines the basic duties, assignments, tools, and position of a (RIC). An important part of this agreement is a stipulation as



to when the (RIC) will be employed, what the chain of command is, and when the (RIC) will be released from its duties. Smith (2002) emphasizes that, “There must be training of personnel before they are assigned as part of an (RIC). This training should be in individual skills and team drills.”

The elements of the department’s procedures/guidelines are governed by the AHJ but some elements needed for an effective (RIC) are found in (NFPA 1500 (2007) listed in Chapter 8, *Emergency Operations*:

- 8.1.2: An incident management system shall be established with written standard operating procedures applying to all members involved in emergency operations.
- 8.2.2.1: The standard operating procedure shall use “emergency traffic” as a designator to clear the radio traffic.
- 8.2.3: When a member has declared “emergency traffic,” that person shall use clear text to identify the type of emergency, change in conditions, or tactical operations.
- 8.3.1: The incident commander shall integrate risk management into the regular functions of incident command.
- 8.4.1: The fire department shall establish written standard operating procedures for a personnel accountability system.
- 8.5.4: Members operating in hazardous areas at emergency incidents shall operate in crews of two or more.
- 8.5.7: In the initial stages of the incident where only one crew is operating in the hazardous area, the “two in / two out” rule shall apply.

- 8.5.9: The standby members shall remain in radio, visual, voice, or signal line communications with the crew.
- 8.5.12: No one shall be permitted to serve as a standby member of the fire fighting crew when the other activities in which the firefighter is engaged inhibit the firefighter's ability to assist in or perform rescue, if necessary, or are of such importance that they cannot be abandoned without placing other firefighters in danger.
- 8.5.13: The standby member shall be provided with full protective clothing, protective equipment, and SCBA appropriate for the risk that might be encountered.
- 8.5.15: When only a single crew is operating in the hazardous area in the initial stages of the incident, this standby member shall be permitted to assist with, or if necessary, perform rescue for members of his crew, provided that abandoning his task does not jeopardize the safety or health of the crew.
- 8.5.16: Once a second crew is assigned or operating in the hazardous area, the incident shall no longer be considered in the "initial stage," and at least one rapid intervention crew shall be deployed.

The fourth and final question to be answered in this literature review is, "What type of training and equipment should be required for rapid intervention crews?" The training that a firefighter receives could be the difference in the survival of him/her or his/her team in an emergency situation. "A good foundation of basic firefighting skills is essential prior to a firefighter learning the idiosyncrasies of rapid intervention. A good foundation also will help prevent the firefighter from getting

into trouble on the fire ground” (Pindelski, 2006). “Seventy-five percent of training should be on prevention, or how to avoid becoming trapped, lost, or disoriented and self- survival tactics. Twenty-five percent should be on how to rapidly search and rescue those lost, trapped, or disoriented firefighters using standardized and predictable actions” (Sendelbach, n.d.).

The concept of rapid intervention is not only used in the fire service but also in the military. In an interview with Colonel Thomas McDonald (personal communication, March 12, 2009) of the United States Army Rangers, conducted at Fort Benning, Georgia stated, “The Army Rangers are allot like the rapid intervention of the fire service. If someone gets in trouble, it is usually one of our ranger teams that are sent in to get them out. The training we receive, initially, is the same as everyone else in the Army. The Rangers just build upon some of those basic elements that we have all learned. These skills, along with other disciplines, are honed to a higher and more precise level, which allows us to stay out of trouble and assist other soldiers if the need arises.”

The special report by Willams & Stambaugh (2003) stated the following:

Most skills needed by (RIC) members are not complicated or technical, but for the most part, build on the basics learned in firefighting and rescue classes. For a (RIC) to be successful, it is essential that team members receive training in special rescue, self-survival, and forcible exit techniques, as well as how to operate as a team. By no means should a (RIC) consist of inexperienced firefighters. When fire departments develop and train members that may be assigned to a (RIC), they are

taking an important step in improving firefighter safety on the fire ground or at other emergencies.

The training of a rapid intervention member is further discussed in (NFPA 1407 Chapter 7), *Rapid Intervention Operations Training Program* which states:

7.1: Rapid intervention training program shall include the following areas:

- a) Risk assessment and risk management
- b) The activation and management of rapid intervention operations
- c) Communications procedures specific to rapid intervention functions
- d) Accountability and resource management
- e) Criteria on how rapid intervention crews and resources are to be deployed to the scene
- f) How firefighter rescue operations integrate into the incident command system as specified by the (AHJ)
- g) The implementation of an incident accountability system
- h) The potential impact of (RIC) operations on the safety and welfare of rescuers and others, as well as on other activities at the incident site
- i) The distinction between rescue and recovery mode

7.4: Rapid intervention skills. The rapid intervention training program shall include the following as a minimum for personnel and crew-oriented skills training and evaluation:

- Declaring a firefighter emergency
- Search techniques
- Access and extrication

- Air supply
- Ropes
- Protecting downed firefighter(s) in place
- Moving downed firefighter(s) to safety
- Firefighter self-rescue techniques

The special report by Williams & Stambaugh (2003) states that for the (RIC) to be effective, the members must train and work together as a group. Some of the training topics that should be considered include:

- Building construction
- Incident size-up
- Fire behavior and travel
- Team search techniques and problems
- Use of thermal imagers
- SCBA changeover and use of emergency breathing support system
- Fire ground communications
- Accountability
- Methods of firefighter removal:
  - unconscious
  - conscious
- Rescue scenarios:
  - entanglement
  - floor collapse
  - confined space

- above ground
- ground level
- below ground
- Self rescue techniques
- Forcible exit
- Ladder bail out
- Rope / charged hose line slide
- Command of (RIC) operations

Pindelski (2006) related that even though there is no set standard for the level of training of rapid intervention, there are some subject areas that should be included in the basic program:

- Trouble shooting minor SCBA malfunctions
- Self survival maneuvers such as rapid escape, navigating entanglement hazards and disorientation training
- Changing over an air supply on another firefighter
- Firefighter drags and carries, including on ladders and in confined spaces
- Raising a firefighter up from an elevation difference (hole in the floor)
- Using basic mechanical advantage systems to move firefighters
- Large area search techniques
- Thermal imaging camera techniques

There are similar training suggestions in many more articles, books, and procedure manuals that touch on what were just listed and have additional listings.

The equipment needed to be an effective (RIC) has numerous listings throughout the fire service. Smith (2002) lists some of the common tools and equipment needed:

- Thermal imaging camera
- Hand light
- Portable radio
- Hand tools for prying and forcible entry
- Search rope
- Spare air cylinders and buddy breathing

Norman (1998) goes on to describe some additional equipment that is needed:

- Hydraulic entry tool
- Life saving rope and harness belt
- Spare SCBA mask for trapped firefighter
- Stokes stretcher
- Power saws, either wood or metal cutting, depending on size up of the building
- Ladders that are suitable for the building

From the reviews that have been discussed above, there are many schools of thought on the procedures, training, and equipment for rapid intervention. The one common thought throughout was the need for a rapid intervention crew at each and every incident in which a firefighter could possibly experience his/her own life threatening emergency.

## **PROCEDURES**

The purpose of this study is to develop a consistent set of standards or guidelines for training, equipment, and duties of a Rapid Intervention Crew members or teams in the Darke County Fire Departments. The following objectives were developed to accomplish this:

1. Research general information on the need for rapid intervention and their function.

2. Identify what other cities and townships have done to standardize rapid intervention.
3. Identify what elements of rapid intervention can be standardized.
4. Identify what training and equipment is needed for rapid intervention.

The first objective was to obtain general information on the need for rapid intervention crews and their functions. This was accomplished by researching of journals, books, NFPA standards, and periodicals that focused on anything to do with rapid intervention. In these publications, there were references to other resources which included other journals, books, periodicals, websites, and personal contacts.

The internet was used quite extensively to search for publications and authors on the rapid intervention subject through various search engines. These searches were not limited to only the fire service, but the only information obtained was from fire department websites. No other sites had any information pertaining to this subject.

The second objective, to identify what other cities and townships have done to standardize rapid intervention, was accomplished by the use of the internet to obtain other department's operational procedures on rapid intervention. During the research, some personal contacts were made to gather this information. The Darke County Fire Chiefs were personally contacted and asked if they had a rapid intervention procedure. From the 14 departments in the county, six responded to my request with an answer to this question.

The third objective, to identify what elements of rapid intervention can be standardized, was accomplished by obtaining other department's standard procedures. These were compared to what was found in trade journals, books, periodicals, and other standards.

The fourth objective, to identify what training and equipment is needed for rapid intervention, was accomplished through the research of journals, books, periodicals, standards,



websites, and personal interviews.

For all of these objectives listed above, other (OFE) and (EFO) papers that pertained to this subject were utilized for information and research avenues. Current OFE Class 9 members were also contacted requesting any information that their department had pertaining to the objectives.

A survey/questionnaire was sent out to fire departments concerning rapid intervention crews. The purpose of the survey was to obtain information from these departments concerning their policies, training, equipment and use of rapid intervention crews. This survey was distributed to approximately 58 different fire departments and 22 OFE Class 9 colleagues. These fire departments are located in Darke, Mercer, Miami, and Preble counties in Ohio and Randolph county in Indiana. These comprise mainly of volunteer departments with a few paid on call and career departments. The surveys were distributed by mail or electronically to the Fire Chief, or training officer, of each department along with an explanatory cover letter and a self addressed stamped envelope. (See appendix 1 and 2) Of the 80 surveys distributed 45 of surveys were returned.

## **RESULTS**

The results of the research review answer the research questions in the introduction.

*Why are rapid intervention crews needed and what are their primary functions?*

The research of the first part of this question revealed many reasons for the need of rapid intervention crews on the fire ground. The United States Fire Administration (2002) report listed several reasons for the need of a rapid intervention crew. The report stated the following reasons:

- Hotter fires causing building components to fail

- Use of lightweight construction
- Due to the decrease in fires the experience level of firefighters is less
- Older officers are retiring and the new officers replacing them have limited experience
- Personal protective gear allows firefighters to get deeper into a structure and possibly into trouble
- Due to inexperience firefighters abilities to recognize fire conditions

The second part of this question is what the primary function of a rapid intervention crew is. This is very specifically answered in NFPA 1407 (2008), *Standard for training fire service rapid intervention crews* clearly states their function to be “to rescue fire fighters who become lost, injured, trapped, incapacitated, or disoriented in the course of an emergency scene or training operation”. This is also covered in NFPA Standard 1500 *Fire Department Occupational Safety and Health Program* which states that the “Rapid Intervention Crew is a minimum of two fully equipped personnel on site, in a ready state, for an immediate rescue of injured or trapped firefighters” (NFPA 1500, 2007). This explanation was echoed in all of the literature research that this author conducted.

*What factors has other city/township or county fire departments done to standardize the organization, operations, and equipment of rapid intervention crews?*

The research has shown that that many city/township and county fire departments have standardized the organization, operation, and equipment of their rapid intervention crews. Phoenix, AZ. Fire Department was instrumental in leading this standardization after the death of Firefighter Tarver. They not only took the recommendations from the investigation but also formed an internal review board to look into what could be changed to prevent another tragedy

of this nature. The findings found the need to standardize the organization, operations, and equipment for rapid intervention in their organization. These factors included defining the duties, training, operations and equipment of the rapid intervention crews. As Phoenix Fire Department changed so did other surrounding departments. This seems to be the case in many areas around the country. This was also found to be true when the Cincinnati, Oh. Fire Department had the death of Firefighter Armstrong. They also took the findings from the investigation and developed a standard for their teams. Their changes were instrumental in Hamilton, Oh. Fire Department developing the procedures they follow and the implementation of the *Rapid Assistance Team Training Manual* (Hamilton Fire Department, 2007).

*What elements of the rapid intervention crews' procedures and operations are able to be developed in standard operating procedures/guidelines?*

The research has shown that many elements can be developed into standard operating procedures/guidelines. This is best described by the statement "If rapid intervention isn't rapid, then it must be efficient. To be efficient, there should be procedures that are followed for the operations of the (RIC)" (Gray, 2007). These procedure and operations must be very comprehensive to allow all personnel what is expected of them. NFPA 1407 (2008) also describes some elements of the written procedures in Chapter 4, *Rapid Intervention Training Policy and Procedures*, which references:

- 4.1 General. A rapid intervention training program shall be developed for the safety of all fire suppression personnel.
- 4.2 The AHJ shall establish written policies for rapid intervention training that meet the requirements of this standard.
- 4.3 Rapid intervention operations shall be guided by written operational polices or

guidelines and reinforced through a comprehensive training program.

- 4.4 The training policy shall be consistent with the department operational procedures, including automatic aid and mutual aid departments.
- 4.5 Rapid intervention training shall be developed and conducted to provide a constant, sustainable rapid intervention capability at the emergency scene utilizing a minimum crew size as required by NFPA 1710 or 1720.
- 4.6 The RIC training program shall train fire fighters to use individual RIC skills as a part of a crew.
- 4.7 The policy shall address the entry level requirements for crew members, the training objectives, basic skills, equipment and training evolutions contained in this standard
- 4.7.2 All members assigned to a rapid intervention crew shall receive a copy of the training policy.
- 4.8 A safety briefing shall be conducted prior to RIC evolutions.  
The safety briefing may be conducted by a designated safety officer, company officer, or instructor, depending on the nature, size and complexity of the evolution.
- 4.9 The training policy shall include an annual performance evaluation of the rapid intervention crew operations and rapid intervention crew members based on the requirements of this standard.
- 4.10 Training and evaluation documentation shall be maintained as per the requirements of NFPA 1401 Recommended Practice for Fire Service Training Reports and Records.

Norman (1998) states “That it is essential to the success of such an operation to have a standard policy that defines the basic duties, assignments, tools, and position of a (RIC)”.

*What type of training and equipment should be required for rapid intervention crews?*

The research results from this section found many standards, results and opinions from a vast amount of authors. Pindelski (2006) stated that “A good foundation of basic firefighting skills is essential prior to a firefighter learning the idiosyncrasies of rapid intervention. A good foundation also will help prevent the firefighter from getting into trouble on the fire ground”. Along with the basic firefighting skills a more in depth training must take place. Some of these are described in NFPA 1407 Chapter 7, *Rapid Intervention Operations Training Program* which states:

- 7.1 Rapid intervention training program shall include the following areas
  - risk assessment and risk management
  - the activation and management of rapid intervention operations.
  - communications procedures specific to rapid intervention functions
  - accountability and resource management
  - criteria to how rapid intervention crews and resources are to be deployed to the scene
  - how firefighter rescue operations integrate into the incident command system as specified by the AHJ
  - the implementation of an incident accountability system that meets the requirements of NFPA 1561 Standard on Emergency Services Incident Management System

- the potential impact of RIC operations on the safety and welfare of rescuers and others as well as on other activities at the incident site.
  - the distinction between rescue and recovery modes
- 7.2 The AHJ shall provide for and utilize training on the implementation of an incident management system that meets the requirements of NFPA 1561 Standard on Emergency Services Incident Management System, with written standard operating procedures applying to all members involved in emergency operations.
- 7.3 Rapid intervention leaders shall be trained to ensure rotation of personnel to reduce stress and fatigue.
- 7.4 Rapid Intervention Skills. The rapid intervention training program shall include the following as a minimum for personal and crew-oriented skills training and evaluation:
  - Declaring a fire fighter emergency
  - Search techniques
  - Access and extrication
  - Air supply
  - Ropes
  - Protecting downed fire fighter(s) in place
  - Moving downed fire fighter(s) to safety
  - Fire fighter self-rescue techniques

Smith (2002) lists some common tools needed for an effective rapid intervention crew.

These are but not limited to:

- Thermal imaging camera

- Hand light
- Portable radio
- Hand tools for prying and forcible entry
- Search rope
- Spare air cylinders and buddy breathing

The survey results (Appendix 3) showed that 100 percent of the departments, that returned the survey, believed that rapid intervention crews were an essential role at an incident. This also showed that only 62.5 percent of the departments have written policies or procedures for their rapid intervention crews. 94.9 percent believe that there should be a minimum level of training and 97.5 percent believe there should be a standardized program for rapid intervention. Even though that only 76.9 percent of the departments have dedicated tools for their rapid intervention crews 95 percent of them believe there should be a standard for this equipment.

## **DISCUSSION**

The purpose behind this Applied Research Project is to recommend a standard policy or procedure for the training, equipment, and duties for the fire departments in Darke County. The literature review affirms the need for these procedures to be standardized. This is echoed in the development of NFPA 1407 *Standard for Training Fire Service Rapid Intervention Crew*.

The survey results confirmed the need for a rapid intervention crew on an incident scene and is also expressed in all of the publications and journals this author researched. So why do some departments still not put a dedicated rapid intervention crew at a working incident. This author believes that the reason is best stated by Gray (2007) in which he states “If we haven’t needed one up to now, we probably never will”. He goes on to say that the “lack of commitment

and complacency” also play a part in the attitude towards rapid intervention crews. These attitudes play no part in today’s fire service. Even though the overall number of structure fires continues to follow a downward trend, today’s fires are burning hotter and the fire ground experience level is declining (Gray, 2007). With this being said the need for a well trained rapid intervention crew is greater than ever. Lessons should have been learned from the tragedies in Phoenix and Cincinnati Fire Departments. These departments recognized that a change was needed to a consistent set of standards and procedures.

The survey illustrated that only 62.5 percent of the departments currently have guidelines or procedures concerning rapid intervention crews. Norman (1998) states that is essential to the success of such an operation is having a standard policy that defines the basic duties, assignments, tools, and position of a (RIC). An important part of this agreement is a stipulation as to when the (RIC) will be employed, what the chain of command is, and when the (RIC) will be released from its duties. These guidelines and procedures allow everyone to know what is expected of them and the other firefighters. There is enough uncertainty at a working incident without adding to it with unclear procedures.

The type of training and equipment needed by a rapid intervention crew can and is disputed. There is an agreement that a good understanding of the basics is a minimum standard. Sendelbach (n.d.) states that “Seventy-five percent of training should be on prevention, or how to avoid becoming trapped, lost, or disoriented and self- survival tactics. Twenty-five percent should be on how to rapidly search and rescue those lost, trapped, or disoriented firefighters using standardized and predictable actions”. NFPA 1407 illustrates a training and skills program needed for an effective rapid intervention crew. Williams & Stambaugh (2003) further breaks down the needed training and skills to include:



- Building construction
- Incident size-up
- Fire behavior and travel
- Team search techniques and problems
- Use of thermal imagers
- SCBA changeover and use of emergency breathing support system
- Fire ground communications
- Accountability
- Methods of firefighter removal:
  - unconscious
  - conscious
- Rescue scenarios:
  - entanglement
  - floor collapse
  - confined space
  - above ground
  - ground level
  - below ground
- Self rescue techniques
- Forcible exit
- Ladder bail out
- Rope / charged hose line slide
- Command of (RIC) operations

The survey supported these findings of the need for a standardized training program and equipment cache.

The goal of this research project is not to find fault with any department's procedures, trainings or equipment. The goal is to make the rapid intervention crews in Darke County safer, more organized, better trained and better prepared in the event they are used on an incident to rescue a downed or trapped firefighter. Along with these trainings everyone can learn how to stay out of trouble and how to recognize situations you should avoid.

### **RECOMMENDATIONS**

This Applied Research Project addressed the problem of the Darke County fire departments not having a consistent set of standards or guidelines for the rapid intervention crews. The purpose of this research project was to identify the procedures, training, elements and equipment needed for these standards or guidelines. Operating without a set of consistent standards is an unnecessary risk if a firefighter becomes lost or trapped. The current mutual aide agreements necessitates that we all operate and train in the same manner. This agreement can put any department in the county in the role of the rapid intervention crew at any time.

The recommendation from this project is to have the Darke County Fire Chiefs Association address the need for a consistent set of standards. The first step would be to use NFPA 1407 *Standard for Training Fire Service Rapid Intervention Crew* and NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program* as the guidelines for developing this standard. Once all of the departments have studied these standards and have a thorough understanding of them a discussion should take place to develop the standards that will be followed. These standards that are agreed upon should be developed by all fire departments

and not by select individuals. This author understands the financial restraints put on fire departments but the lives of firefighters should not rest on a budget when the cost is time, training and tools that most departments currently possess.

Once these standards are implemented they should be reviewed semi-annually for the first two years for any problems that may need to be addressed. After the end of that two-year period they should be reviewed on an annual basis or when there are problems with the standards. A committee should also be formed to monitor and evaluate each department's progress.

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**APPENDIX 1 – SURVEY COVER LETTER**

Dear Colleague,

My name is Troy Wombold and I am a Captain with the City of Greenville (OH) Fire Department. I am also currently enrolled as a student in the Ohio Fire Executive program.

As part of this program, I am to complete a research project. The topic of my research project is *Rapid Intervention Crews: Standardization...A Collaborative Effort*. I am trying to gain information concerning rapid intervention crews from different departments.

Attached is a survey instrument that I ask you to complete in order to help me with my research project. Your input is very important and a vital part of this research project. I assure you that completing this survey will be quick and easy. Your responses will be completely anonymous and will be kept confidential to any person or agency related to this project.

You may choose to either return this by e-mail to [twombold@cityofgreenville.org](mailto:twombold@cityofgreenville.org), by mail to the address below, or if you choose by fax.

Thank you for taking the time to complete this survey. Feel free to contact me with any questions.

Sincerely,

Troy Wombold  
Captain  
City of Greenville Fire Department  
100 Public Square  
Greenville, Ohio 45331  
Phone: 937-459-7655      Fax: 937-548-6391

## APPENDIX 2 – SURVEY

1) What is your department's average number of personnel on a reported structure fire?

1 – 5       6 – 10    11 – 15       16 – 20       > 20

2) What is the average fire experience, in terms of years, of your personnel?

< 1 year     1 – 5 years     6 – 10 years     11 – 15 years     > 15 years

3) Do you feel that the rapid intervention crew is an essential role on an incident?

Yes                       No

4) Does your department currently have a rapid intervention crew S.O.G. / S.O.P.?

Yes                       No

5) How many firefighters make up your rapid intervention crew?

0       1       2       3       4       5 or more

6) How many hours of training does your departmental members receive for their initial rapid intervention training?

1 -5 hrs       6 – 10 hrs       11 – 15 hrs       16 – 20 hrs       > 20hrs

7) How many hours a quarter does your department spend on rapid intervention training?

0 hrs     1 – 5 hrs     6 – 10 hrs     11 – 15 hrs     > 15 hrs

8) How does your department fill the rapid intervention crew positions?

Departmental Personnel     Mutual Aide Department     Do not Fill



9) How often does your department fill the role of the rapid intervention crew at mutual aide structure fires?

Never     1% – 25%     26% - 50%     51% – 75%     76% – 100%

10) Do you believe there should be a minimum level of training to be a member of a rapid intervention crew?

Yes                       No

11) Do you believe that there should be a standardized program for rapid intervention training?

Yes                       No

12) Do you believe that personnel should be required to meet a certain amount of training hours per quarter to be a member of the rapid intervention crew?

Yes                       No

13) Do you believe that there should be a standardized program on rapid intervention equipment?

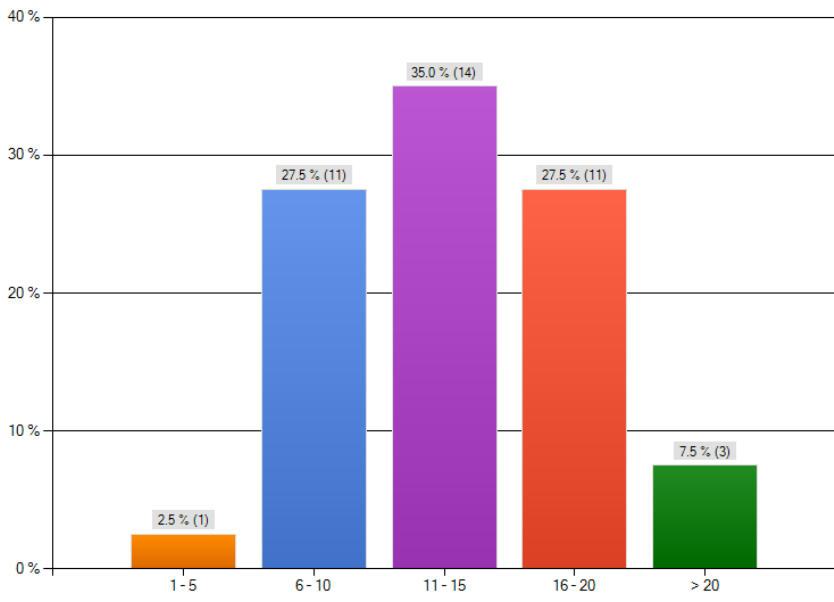
Yes                       No

14) Does your department have dedicated tools for your rapid intervention crew?

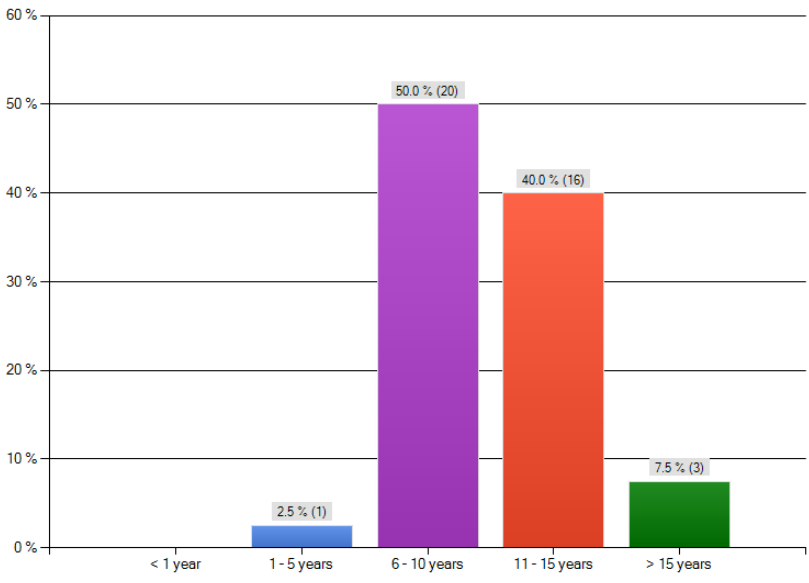
Yes                       No

### APPENDIX 3 – SURVEY RESULTS

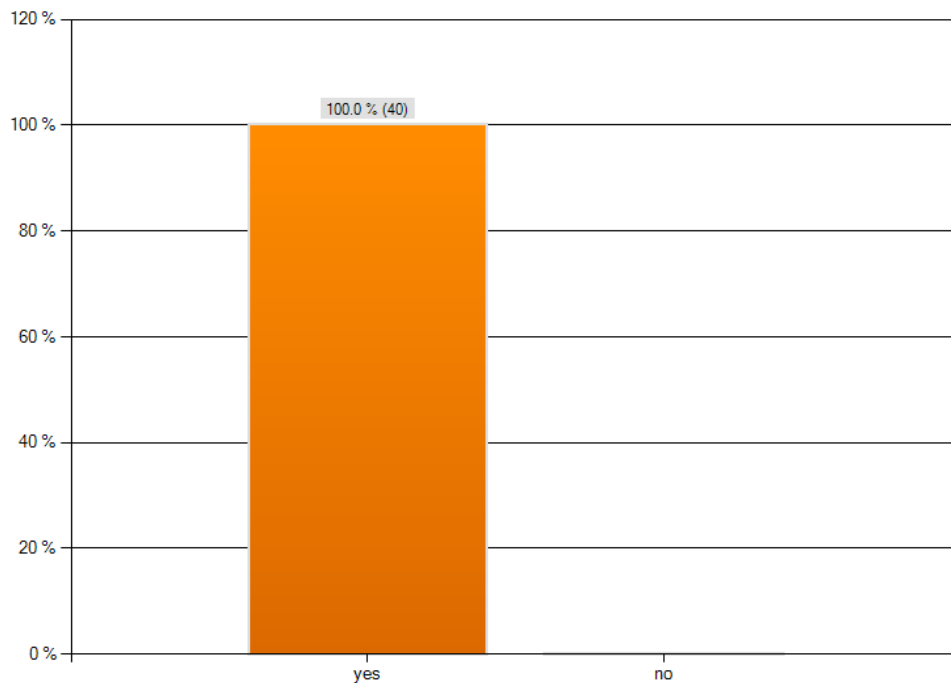
What is your department's average number of personnel on a reported structure fire?



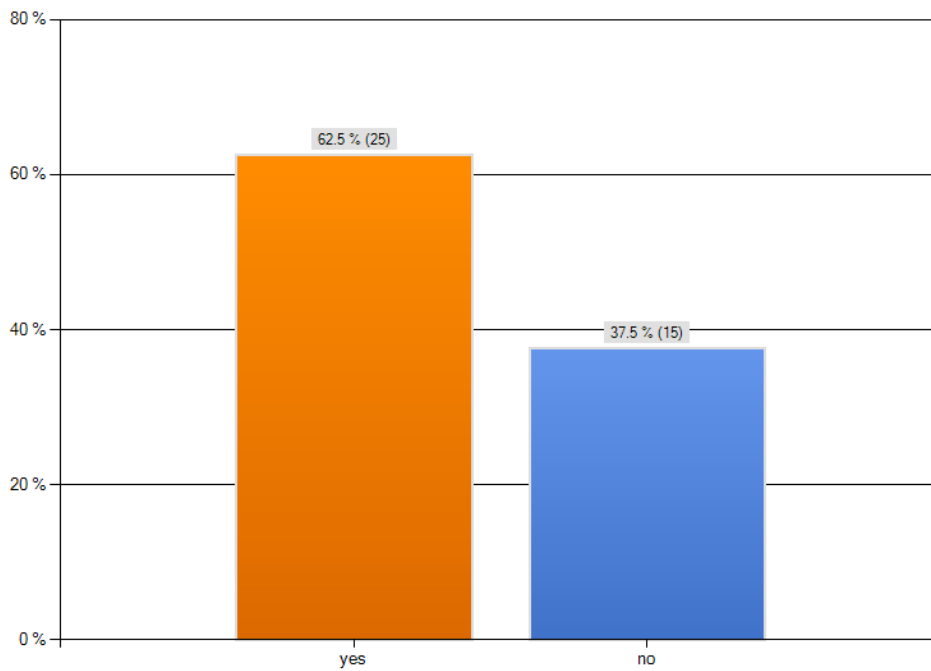
What is the average fire experience, in terms of years, of your personnel?



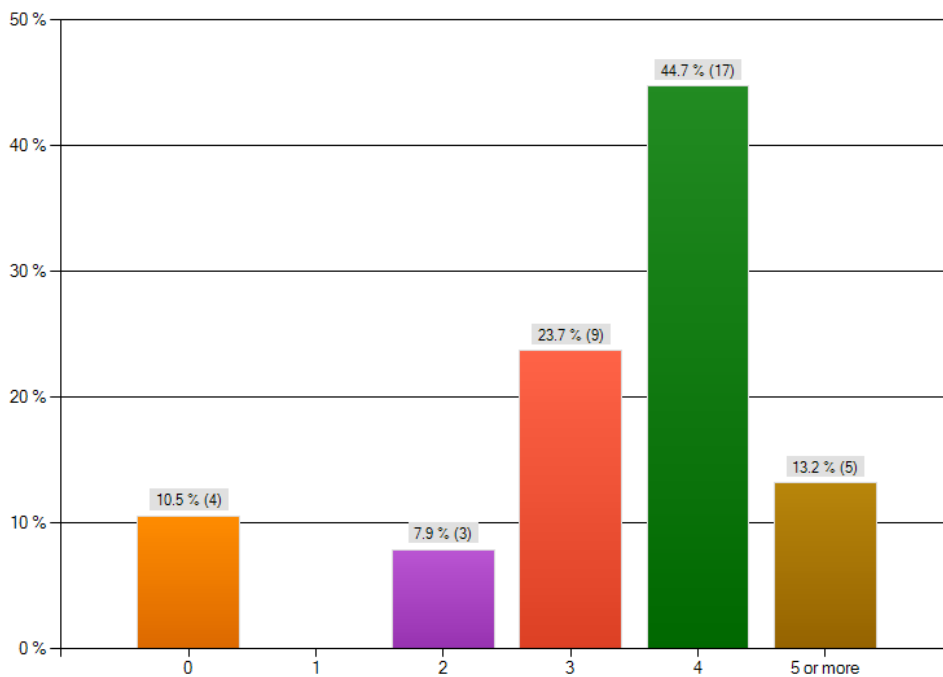
**Do you feel that the rapid intervention crew is an essential role on an incident?**



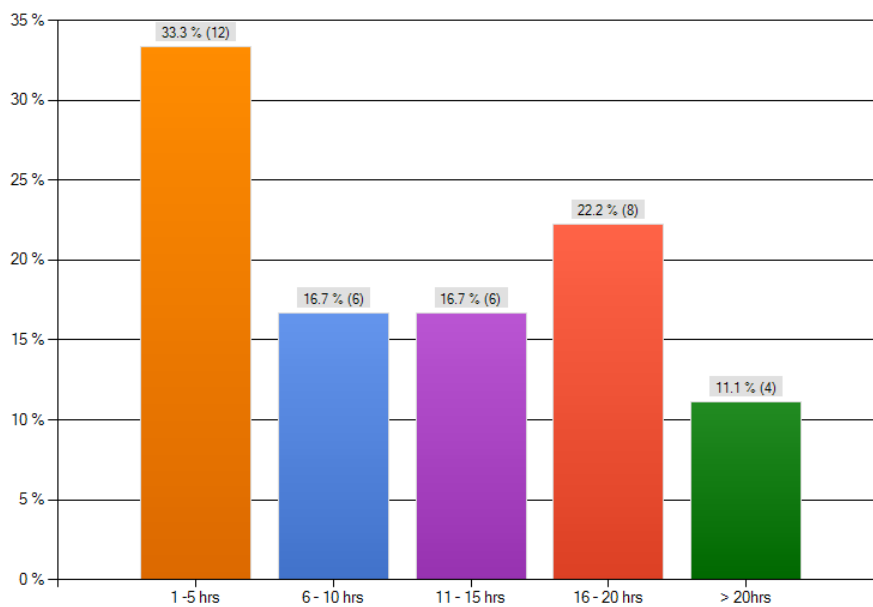
**Does your department currently have a rapid intervention crew S.O.G. / S.O.P.?**



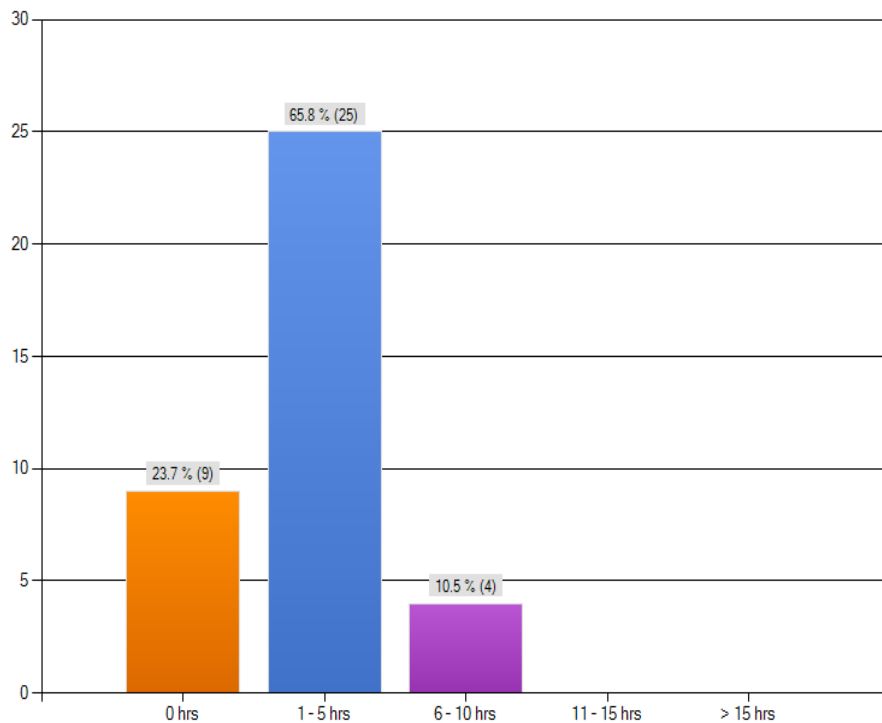
How many firefighters make up your rapid intervention crew?



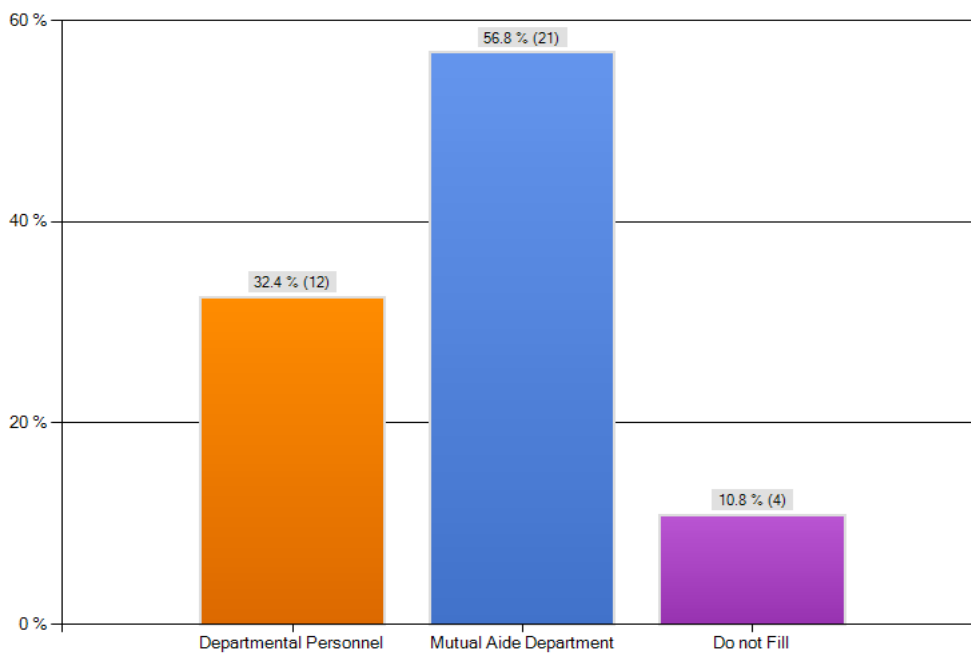
How many hours of training does your departmental members receive for their initial rapid intervention training?



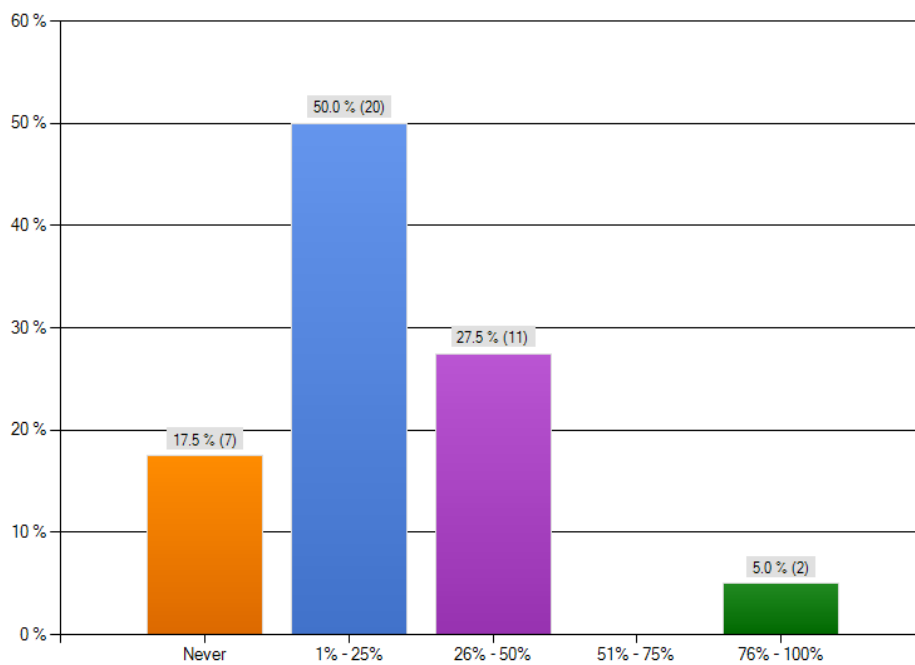
**How many hours a quarter does your department spend on rapid intervention training?**



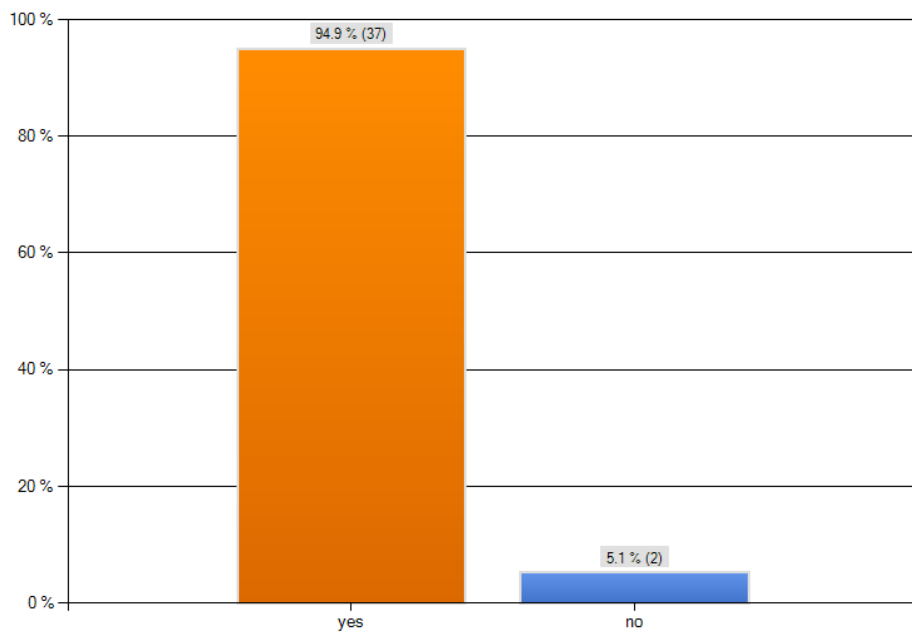
**How does your department fill the rapid intervention crew positions?**



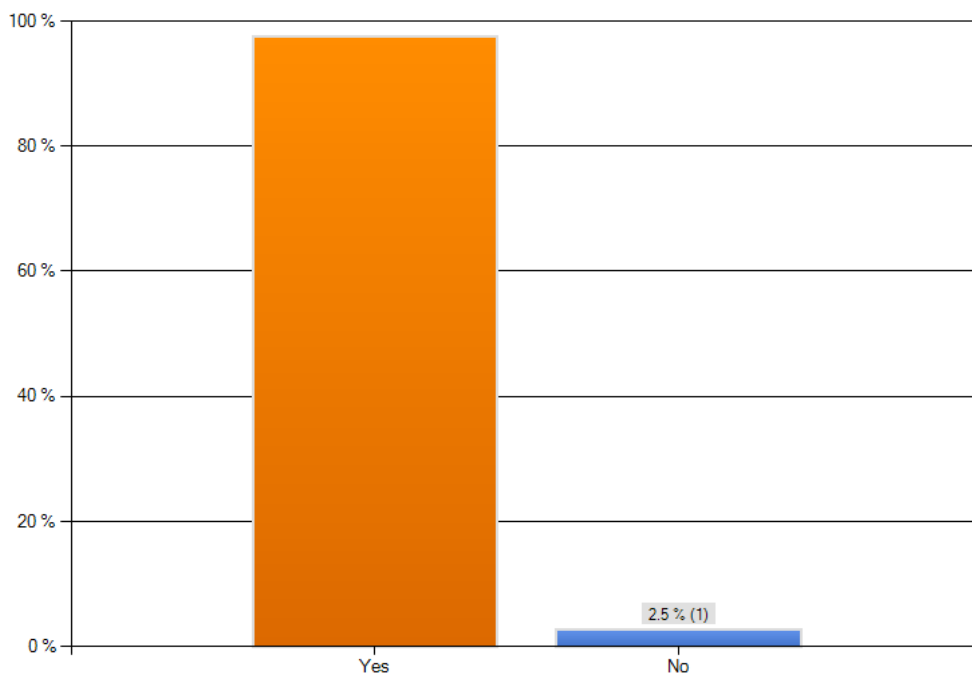
**How often does your department fill the role of the rapid intervention crew at mutual aid structure fires?**



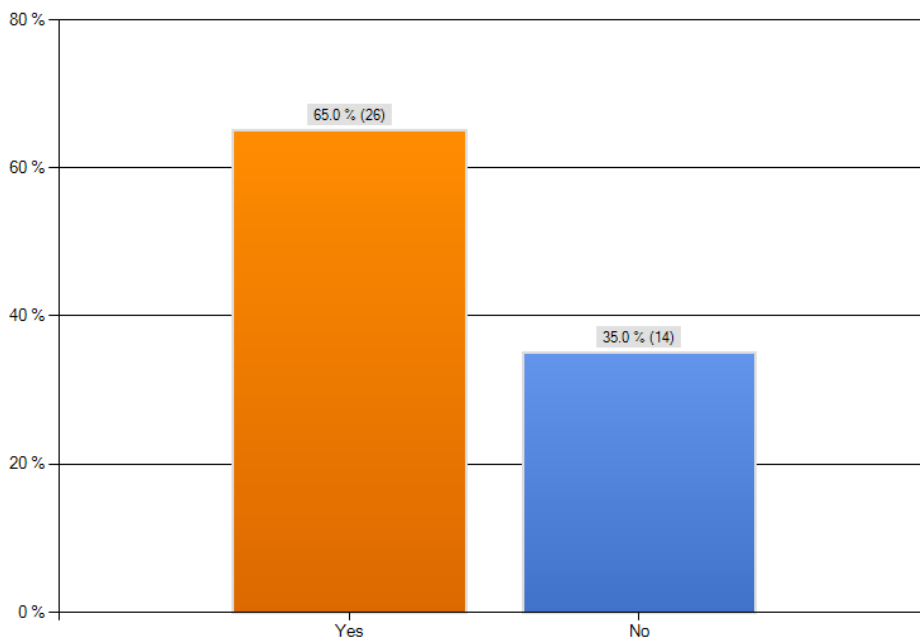
**Do you believe there should be a minimum level of training to be a member of a rapid intervention crew?**



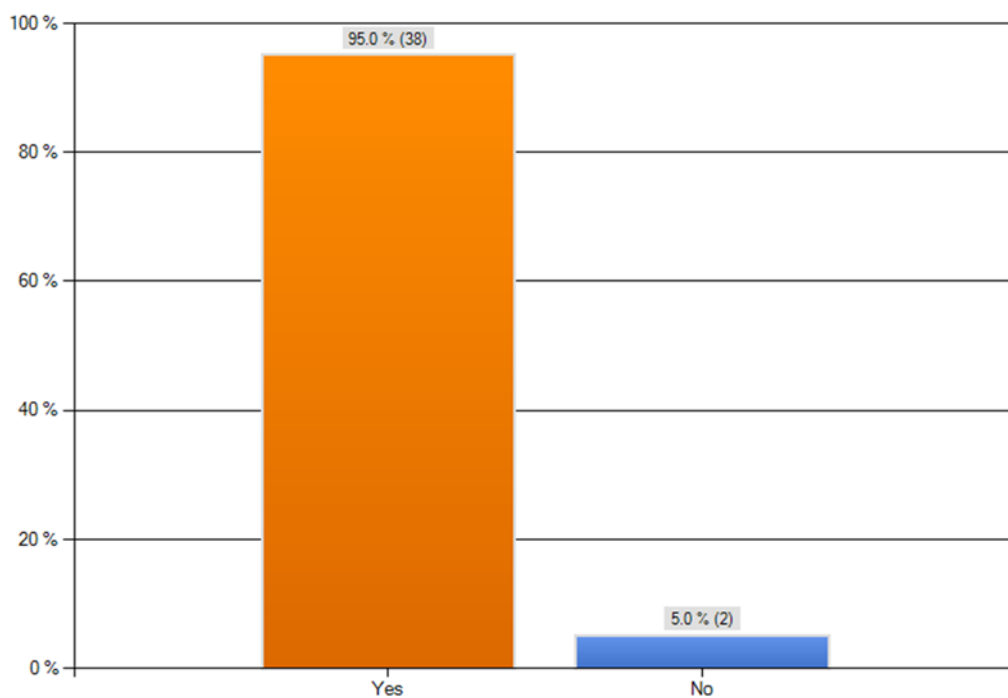
**Do you believe that there should be a standardized program for rapid intervention training?**



**Do you believe that personnel should be required to meet a certain amount of training hours per quarter to be a member of the rapid intervention crew?**



**Do you believe that there should be a standardized program on rapid intervention equipment?**



**Does your department have dedicated tools for your rapid intervention crew?**

