

Can the Philadelphia Fire Department Improve Firefighter Safety Through Increased  
Deployment of the Incident Safety Officer?

EXECUTIVE ANALYSIS of FIRE SERVICE OPERATIONS  
in EMERGENCY MANAGEMENT

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## CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: \_\_\_\_\_

## **ABSTRACT**

The Philadelphia Fire Department (PFD) was confronted with firefighter injuries and fatalities at emergency scenes. The purpose of this project was to identify strategies to reduce firefighter injuries and fatalities through an increased deployment of an Incident Safety Officer (ISO). Descriptive research methodologies were utilized to answer research questions regarding: the national problem of firefighter deaths and injuries at emergency scenes and the corresponding data in the PFD. The procedures included interviews, a questionnaire and a literature review. The results identified similarities between the national data regarding firefighter injuries and fatalities and the PFD data. It is recommended that the PFD continue reviewing data regarding firefighter injuries and fatalities and the potential positive relationship an ISO may have on the safety of PFD personnel.

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## Introduction

In recent years the Philadelphia Fire Department (PFD) in congruence with the fire service in general has placed an increased emphasis on firefighter safety. Many changes have been implemented due to this emphasis that are now accepted as standard practice in the emergency services industry, including Rapid Intervention Teams (RIT) standing by on incident scenes to enhance firefighter survivability in the event of a catastrophe. Another change has been the implementation of the Incident Safety Officer (ISO) at emergency scenes to provide a dedicated individual focused on firefighter safety and the prevention of firefighter deaths and injuries. While there is a standard, National Fire Protection Association (NFPA) 1521, *Standard for Fire Department Safety Officer*, guiding the education and training that an individual should have to function in this capacity, much is left to the “Authority Having Jurisdiction” (AHJ) when determining the method of deployment (NFPA, 1521, p.9). The implementation and standardization of the ISO function has as part of its overall objectives the goal of having “Departments identify specific goals for the prevention and elimination of accidents and occupational injuries... and fatalities” (NFPA, 1500, p.11).

National statistics reported in the United States Fire Administration (USFA) *Firefighter Fatalities Historical Overview* (2007) report; indicate that firefighter fatalities and injuries have remained somewhat consistent since 1996, averaging about 100 firefighter fatalities each year and approximately 41,450 incident scene injuries each year (p.1). The number of on duty fatalities in the City of Philadelphia has fluctuated during this same time period. However, the USFA *Firefighters Memorial Database* (2007) reports that most recently the PFD experienced three on-duty fatalities in 2004, in two separate incidents, and one on-duty fatality in 2006 (p.1).

According to the PFD *Safety Office Database* (2007), during the years 2004 through 2006 the number of incident scene injuries in the PFD averaged 140 with the most (156) occurring in 2006, and the least (123) occurring in 2005 (Costo, 2007). In response to these fatalities and injuries Fire Commissioner Lloyd Ayers called for additional “firefighter safety training, and a department-wide increased focus on overall safety” (L. Ayers, personal interview, August 2, 2007). An initial step was to implement the International Association of Fire Chiefs (IAFC) “Stand Down” program which generally had the entire Department stop routine operations for a full day to focus on a single aspect of incident scene safety for PFD personnel. The next step was to increase the level of incident scene safety training all chief officers and acting chief officers received from the Philadelphia Fire Academy. The Academy sponsored a program that was based on the National Fire Academy’s (NFA) ISO training program. This training initiative was undertaken with the idea that better trained chief officers would result in safer incident scenes for all PFD personnel (L. Ayers, personal interview, August 2, 2007).

The purpose of this research project was to assess the procedures regarding the utilization of an ISO in the PFD and in other Fire Departments to determine if the function of ISO could be implemented more frequently in Philadelphia utilizing the Department’s existing resources with minimal changes to current policies and procedures. The descriptive research methodology was used to answer the following questions:

1. What are the qualifications required for the position of ISO?
2. What role does the ISO fulfill at incident scenes in Philadelphia and in other cities?
3. How do other Departments implement the role of ISO within their department’s incident management system?

4. Can the PFD use the ISO function more frequently at incident scenes to ensure that injuries and fatalities are reduced by changing the deployment criteria?

### **Background and Significance**

The City of Philadelphia, located in southeastern Pennsylvania has a population of approximately 1.4 million people. The city measures approximately 135 square miles and is dominated by a significant number of residential neighborhoods. The city also contains the Port of Philadelphia, over 500 commercial and residential high-rise buildings, Philadelphia International Airport and a substantial urban parks system (United States-U.S. Cities, 2007). To service the needs of this diverse population the PFD is a multi-risk life safety organization providing fire and emergency medical services.

The PFD operates 90 Basic Life Support (BLS) engine and ladder companies, staffed by firefighters with at least one Emergency Medical Technician (EMT) and 45 medic units, comprised of a combination of BLS and ALS units. These units respond from 63 fire stations located throughout the city. In 2006 the PFD responded to 267,867 incidents of varying types (Williams, 2007). According to the PFD's Management Information Services (MIS) *Annual Progress Report* (2007), 1,598 responses in 2006 were to single alarms of fire most frequently residential dwellings (p.2). Most of these "routine" residential structure fires never escalated to the level of a multiple alarm fire and therefore never met the criteria for automatic response of an ISO whose primary focus is the safety of all personnel at the incident scene. In January, 2004, (1) August, 2004 (2) and again in January, 2006 (1) the PFD experienced a total of four firefighter fatalities at what were generally described as "routine" residential structure fires (H. Costo,

personal interview, August 1, 2007) . These fatalities spurred Fire Commissioner Lloyd Ayers to increase the Department's commitment to incident scene safety as well as the overall health and wellness of all PFD members.

The PFD coordinated specialized training for all Department members who could possibly be designated as the ISO at an emergency incident. Through this initiative 166 individuals (chiefs, captains and lieutenants) were seated for the NFA 2-day Incident Safety Officer course. One hundred and twenty-eight of the individuals trained received ISO certification. The remaining individuals received the same training but declined to participate in the certification testing which was optional. According to the Fire Academy, *Training Database* (2007) currently there are 161 individuals trained to function as an ISO still remaining with the department (p.3). The feedback reports submitted by the participating members regarded this training as the most useful and informative provided by the department for upper management officers in recent memory (J. Wilson, personal interview, August 6, 2007).

Additional actions that were undertaken due to information acquired from investigations into other incidents that resulted in injured members and that could have possibly resulted in fatalities, led to the Department partnering with the local electric utility company to ensure that all members received specialized training regarding energized electrical equipment, including all who had received the ISO training. This training included detailed tours of all electric substations in every area of the city. While each of these steps was implemented to improve the overall operational safety level of the Department none was regarded as more important than the ISO training (H. Costo, personal interview, August 1, 2007). The Fire Commissioner committed significant training resources and budget dollars to the ISO initiative because he believed it to be

the “best way to improve the culture of safety in the PFD in a way that would be long lasting and could positively impact on the number of fatalities and injuries that the Department might experience in the future” (L. Ayers, personal interview, August 2, 2007). Alder & Fratus (2007) write about this “culture of safety” as it exists in today’s fire service as something firefighters know they should be concerned about but take needless risks despite the training they have received (p.83).

This Applied Research Project (ARP) was chosen because despite the efforts undertaken by the Department, the problem remains that on most of the incidents that result in PFD personnel injuries and fatalities the Department still operates without an assigned ISO. While in the PFD an ISO is dispatched upon the striking of a second alarm and the on-call Department Safety Officer is dispatched on the striking of the third alarm, the data indicates that since 2004 most incident scene injuries and all of the firefighter fatalities that occurred in Philadelphia happened prior to the dispatch of an ISO or on incidents that never met the criteria the PFD utilizes to staff this function. While the PFD fully utilizes the Incident Command System (ICS) which assures that under this system the Incident Commander (IC) has the responsibility of filling the role of ISO until delegated, it is possible that the early automatic deployment of an individual to serve as ISO with no other responsibilities, could positively impact upon PFD personnel safety.

Fahy, LeBlanc & Molis (2007) in *Firefighter Fatalities In The United States-2006*, indicate that while the overall number of “89 on-duty firefighter deaths” that occurred in 2006 was more than the “87 on-duty firefighter fatalities” of 2005 it was the second consecutive year

that on-duty deaths totaled less than 100 (p.1). What is significant to this ARP is the fact that 38 of the 2006 fatalities occurred during fireground operations (p.3). Nationally, fifteen of the 2006 fireground firefighter fatalities, nearly 50%, occurred in residential properties (p.6). The report goes on to state that, “although many more firefighter deaths occur at residential structure fires than in any other type of structure... some non-residential structures, such as mercantile and public assembly properties are more hazardous to firefighters on average” (p.7). While this may be one conclusion of this report, the death rates do not support this assertion. This data can also be viewed as a catalyst to continue developing policies that enhance the safety of all PFD members responding on all working residential structure fires since they have been consistently identified as the location of the largest number of firefighter fatalities.

This ARP focuses on reviewing the number of firefighter injuries and fatalities both nationally and locally in recent years to assess if different deployment models of the ISO could be beneficial in reducing firefighter injuries and fatalities. This objective is relevant to the National Fire Academy’s *Executive Fire Officer Program (EFOP)*, *Executive Analysis of Fire Service Operations in Emergency Management (EAFSOEM)*, R306 course (NFA, 2006). It fulfills this requirement by addressing a tenet of the EFOP, “to reduce by 25 percent the loss of life from fire of firefighters” (FEMA, 2003, p.II-2).

This ARP also relates to one of the USFA’s operational objectives, specifically; “appropriately responding in a timely manner to emerging fire and all-hazard issues” (FEMA, 2004). While this ARP intends to focus squarely on the firefighter injury and fatality problem that exists within the City of Philadelphia it is also relevant on a national scale because the

national firefighter fatality and injury problem is without question a compilation of the statistics and conditions that exist in departments and cities throughout the country. This research identified policies and procedures promulgated on a national level that may provide strategies that the PFD and other fire departments can implement to reduce and possibly eliminate firefighter fatalities and injuries at incident scenes through increased usage of the ISO function.

### **Literature Review**

A literature review was conducted to survey previously published material regarding the circumstances of firefighter fatalities and injuries nationwide and how the implementation of an ISO could impact on this issue. Using the descriptive research methodology this project was initiated at the NFA's Learning Resource Center (LRC) and was supplemented by the PFD Fire Academy Library. Additionally, a further literature review was conducted by using search engines to explore the internet for writings pertinent to this topic including causal factors of fire service injuries and fatalities and also fire service initiated fire fatality and injury reduction programs. Academic research, government publications and related trade journals were reviewed to assess their suitability for inclusion in this ARP.

The literature utilized focused on the four specific research questions that were being investigated in this ARP: (1) What are the required qualifications for the position of ISO? (2) What role does the ISO fulfill at incident scenes in Philadelphia and in other cities? (3) How do other Fire Departments implement the function of ISO within their department's incident management system? (4) Can the PFD use the ISO function more frequently at incident scenes to ensure that injuries and fatalities are reduced by changing the deployment criteria?

Question # 1 asked; What are the required qualifications for the position of ISO? Some authors indicated that a good starting point was the qualifications listed in NFPA 1521, *Standard for Fire Department Safety Officer* (2002). In addition, other authors noted various criteria that the individual serving in this capacity needed to demonstrate. Maniscalco & Rubin, (1998) indicated it was important that the individual designated ISO be a “ranking senior member” and have a sincere commitment to firefighter safety (p.59). Shouldis, (2005) suggested that the individual should have a history of prior knowledge regarding causes of injuries and fatalities perhaps from “post incident reviews” that would trigger “lessons [that] could not be forgotten” (p.75). It was also noted by Smith (2007) that an ISO should “command the respect of supervisors, peers, and subordinates” as well as be knowledgeable in areas like “building construction, strategy, tactics, human behavior, and fire science” (p.244).

The second question asked; What role does the ISO fulfill at incident scenes in Philadelphia and in other cities? Authors who provided insight in this area, Smith (2007) indicated that a primary role of the ISO in any jurisdiction is to “observe operations and act as a risk manager.” This role can be filled as the ISO conducts a 360-degree assessment of the incident while monitoring conditions, operations and all activities that have an associated element of risk (p. 243). The PFD Standard Operational Procedure (SOP) # 40 *Incident Safety Officer* indicates that the designated ISO will “assist the Incident Commander in maintaining a safe work environment.” The SOP goes on to say that the “ISO’s full attention must be focused on the health and safety of operating personnel” (p.1). Dube (2007) indicates that all “departments know or should know that the ISO is responsible for immediate intervention to

prevent unsafe acts from becoming accidents” (p.84). It is clear that the role of the ISO is widely known and accepted throughout the fire service.

The writings of several other authors echo this language indicating that the role that an ISO played at an incident scene was not dependent on the location of the jurisdiction. The role of the ISO was unchanged by locality, Shouldis (2005) wrote, “The ISO’s responsibility is to constantly evaluate risks, hazards, and benchmarks” (p.76). According to Sachs (1989) the primary role of the ISO “is to watch for unsafe or hazardous conditions, operations or acts” (p.30). It is apparent that not much has changed in 16 years regarding the consensus on the role of the ISO at incident scenes.

Smith (2002) agrees with the aforementioned authors and goes on to say that not only is the role of the ISO to “assist the Incident Commander (IC) with fire ground safety” but that above all else “the ISO is there to improve personnel safety and awareness” (p.8). That the fire service is indeed in need of a culture change was mentioned by several authors and Alder & Fratus (2007) believe that the ISO impacts on an organization’s “culture of safety” (p.83). These same authors further indicate that the implementation of an ISO at incident scenes is the most visible means of demonstrating management’s commitment to safety, ensuring that “operational safety is analyzed on a continual basis” and mandates that the ISO fulfills the role of seeing that the “safety systems being utilized are adequate and appropriate to address risk” (p. 84).

Aurnhammer (2007) indicates that one role of the ISO is to convey the idea that the department is “working safely and no longer tolerating behavior that may be potentially hazardous to members” (p.111).

Question # 3 asked; How do other Fire Departments implement the function of ISO within their department's incident management system? According to Sachs (1989), as early as 1989 Los Angeles was addressing the ISO role by having the "second-arriving battalion chief assume the role of ISO" (p.29). New York was cited as handling it differently by having on-duty safety division members available "at all times to respond to working fires" (p.29). Sachs goes on to explain that some smaller fire departments ensure that all officers are trained as ISO's and appoint one to fill the role as needed (p.29). Maniscalco & Rubin (1998) indicate that many departments utilize individuals who work as full time safety officers to staff the ISO function. They also indicate that filling this function [ISO] "ad hoc" may not be the best way to undertake this objective. They indicate that having someone of sufficient rank is also an important factor in the selection/delegation process (p.59).

Smith (2002) acknowledges that some departments are bound to staff this position as per Occupational Safety Health Administration (OSHA) laws, state administrative rules, or other consensus standards such as NFPA 1521. These diverse and divergent regulatory institutions continually proffering different guidelines ensure that there is no universal method of implementing the function of ISO. McGill (1997) indicates that different methods of staffing the ISO function will always be prevalent because "all departments are somewhat different," therefore staffing the ISO role will remain a challenge for many departments (p.4). Barr & Eversole (2003) in *The Fire Chief's Handbook* acknowledge the increasing difficulty department's have in the area of staffing, however, they also indicate that it may be more difficult explaining why the "department did not meet the nationally accepted minimal safety

policies and procedures” (p.259). Smith (2007) writes in *Strategic and Tactical Considerations on the Fireground* that the ISO should be “staffed around the clock” but goes on to explain that this is an expensive proposition and therefore departments rarely take this path. However, the role of “risk manager” must be filled by whatever means a department finds itself capable of implementing (p.231).

Dodson (1999) indicates that the whole ISO development resulted from the reality that most fire department Safety Officers (SO) could not possibly respond to all the significant events that a department handles. As a result, most departments “simply chose a person they trusted to fill the void” (p.4). IFSTA (2002) *Fire Department Safety Officer* acknowledges that the size of the department will impact on the method chosen to staff the ISO function and that the role should be filled as per that department’s SOP’s which should be guided by NFPA 1521, *Standard for Fire Department Safety Officer* (p.183). This NFPA standard indicates that each department should develop response procedures for the ISO function (p.9). Bateman (1992) wrote “In my department it is operational policy to automatically dispatch a battalion chief on all second alarms in order to activate the safety division early in the operation. Additionally, the departmental safety officer automatically responds on the third alarm” (p.25). It should be noted that Bateman’s department was the PFD and the deployment of the ISO remains unchanged from the time of his writing 15 years ago. To obtain additional insight into how other departments handle the logistics of staffing the ISO function a questionnaire was also included as part of this ARP. That information is discussed in the Procedures and Results sections.

The fourth and final research question asked; Can the PFD use the ISO function more frequently at incident scenes to ensure that injuries and fatalities are reduced by changing the

deployment criteria? NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program* (2007) clearly states that the IC shall integrate risk management into the function of incident command. The standard also directs the IC to assign an ISO at significant incidents (p.23). Gayk (2007) indicates that the judgment of what is significant varies largely by department and by IC, and because any incident has the potential to become significant a “change in the culture of structural firefighting” would be required (p.108). The increased usage of an ISO at the greatest number of structural fires possible would certainly qualify as a “cultural change” (p.109). Compton (1998) agrees that the use of an ISO makes the scene safer for the responders, he says that the ISO is “an extension of the [IC’s] eyes and ears” (p.17). Reichenbach (2007) indicates that taking the measures necessary to ensure the safety of firefighter’s lives is really just applying “common sense.” In fact the idea that we must put many “common sense” issues in writing does not speak well for our profession. Exploiting the function of the ISO is merely a way of being proactive and “implementing NFPA 1500 and the 16 life safety initiatives” (p.126).

The USFA Topical Fire Research Series Report *Firefighter Injuries in Structures* (2002) indicates that firefighter injuries in structure fires have hovered around 45,000 annually for several years. This attests to the fact that firefighting is an extremely hazardous job. The report further notes that the number of injuries while still high are on the decline, however it is not clear if the decrease in injuries can be attributed to changed safety practices such as the utilization of an ISO at more incidents. Arnold (2007) laments the fact that despite the reduced number of structure fires being fought annually we are still killing a large number of firefighters each year. The impact of an ISO can prove invaluable in reversing that trend. Crawford (2007) indicates

that often firefighters in an attempt to live up to the “hero” tag assigned to firefighters will take risks that are certainly unacceptable. This is exactly why an ISO is needed to assist the IC in keeping this behavior from becoming disastrous. Rounds (1992) indicated nearly 15 years ago that firefighter deaths at incident scenes are preventable and it is the ISO who makes this possible.

The USFA in The Provisional Report, *On-Duty Firefighter Fatalities in The United States 1/1/2007 to 7/31/2007* indicate that there have been 86 firefighter fatalities to the end of report date and that 40 fatalities (46.5%) were related to structure fires. This stark evidence indicates that a new model for the ISO utilization is called for in the fire service.

### **Procedures**

The research methodology utilized for this ARP was descriptive. It began with a literature review initially started at the National Fire Academy’s, Learning Resource Center (LRC) in March of 2007. The research was furthered at the PFD’s Fire Academy Library, the author’s personal library and the internet. The procedures used included personal interviews, a questionnaire, and an extensive literature review. All of the above listed items were reviewed and analyzed to ascertain their relativity to this ARP. The desired outcome is a clearer understanding of the relationship between the firefighter injury/fatality problem and the implementation of an ISO on the incident scene; in the fire service in general and in the City of Philadelphia in particular to develop a solution that could reduce firefighter injuries and fatalities.

### **Questionnaire**

A questionnaire was developed and circulated among fire departments throughout the United

States. The questionnaire was designed to serve two primary purposes. First, the questionnaire was designed to identify the different policies, procedures and thoughts/beliefs guiding ISO activation in various sized departments. Secondly, the questionnaire served the purpose of identifying ideas that may assist departments in preventing firefighter deaths nationally and locally through expanded usage of the ISO function. The questionnaires were mailed to over 100 departments that were chosen because they had members participating in the EFOP or they existed on file with the PFD's Research and Planning Unit's database of departments that previously exchanged surveys with the PFD.

Questionnaires were distributed on June 5, 2007 and had a requested response date of June 30, 2007. Of the 66 returned questionnaires 60 were viewed as potentially relevant to this ARP because they provided information that specifically dealt with the issue of ISO deployment in a complete and thorough manner. Six of the returned questionnaires were deemed not relevant to this ARP for various reasons including incompleteness, inappropriate language and conflicting answers. The questionnaire data is included in the Procedures and the Results sections of this ARP. A copy of the utilized questionnaire, cover letter and compiled responses are included and labeled as Appendices A through G.

### **Interviews**

A personal interview was conducted with Fire Commissioner Lloyd Ayers (personal communication, August 2, 2007) Commissioner of the Philadelphia Fire Department, 240 Spring Garden Street, Philadelphia, Pennsylvania. This interview served the purpose of opening dialogue regarding the incidence of firefighter fatalities and injuries within the City of Philadelphia and to ascertain the Chief's personal outlook on this situation in the PFD. This

information is included in the Introduction, Background and Significance and Results sections of this ARP.

A personal interview was conducted with Captain Henry Costo (personal communication, August 1, 2007) PFD Safety Officer (SO), Philadelphia Fire Department, 240 Spring Garden Street, Philadelphia, Pennsylvania. The purpose of this interview was to obtain information regarding the impact firefighter fatalities and injuries had on influencing the training PFD personnel received. This information is included in the Introduction and Background & Significance portion of this ARP.

A personal interview was conducted with Captain Jesse Wilson (personal communication, August 6, 2007) PFD Fire Training Division, Philadelphia Fire Department, 240 Spring Garden Street, Philadelphia, Pennsylvania. The purpose of this interview was to obtain information about the changes that have occurred within the PFD during and after the implementation of the ISO training. This information is included in the Introduction and Background & Significance sections of this ARP.

### **Definition of Terms**

Authority Having Jurisdiction (AHJ) The organization, office or individual responsible for approving equipment, materials, an installation, or a procedure (NFPA,2002, p.4).

Incident Commander (IC) The fire department member in overall command of an emergency incident (NFPA, 2002, P.8).

Incident Command System (ICS) An organized system of roles, responsibilities, and standard operating procedures used to manage and direct emergency operations. Such systems are often referred to as incident command system (NFPA, 2002, p.8).

Incident Safety Officer (ISO) An individual appointed to respond to or assigned at an incident by the incident commander to perform the duties and responsibilities specified in this standard. This individual can be the health and safety officer or it can be a separate function (NFPA, 2002, p.9).

Rapid Intervention Team (RIT) A team that is assigned for rescue of firefighters that become lost, incapacitated, or trapped in a building due to flashover, a backdraft, a collapse, an injury, an SCBA malfunction or a similar event. The purpose of a dedicated rescue team is to permit an immediate response to the firefighter in distress and effect a quick removal to the exterior (Smith, 2007, p.262).

### **Assumptions and Limitations**

The questionnaire utilized in this ARP made several assumptions and similarly had several limitations. The first assumption was that the participants would answer the questions in a forthright and honest manner. An additional assumption was that the respondents had a thorough knowledge of their Department's guidelines regarding the deployment of an ISO and that their subjective responses were also knowledge based. A limitation of the questionnaire was the selective manner in which participants were chosen. All respondents were selected because they either had a member of their department who had an individual actively participating in the EFOP or resided in the database of Department's that shared information with the PFD on a regular basis.

The process of working within the time constraints of the Executive Fire Officer Program (EFOP) and the required ARP also posed an additional limitation. The author believes that these

assumptions and limitations will have some impact on this ARP. Because the objective was to determine if more frequent utilization of the ISO function could prevent future firefighter fatalities and injuries, it would be a difficult task to accomplish in a limited time frame without a clear correlation mechanism.

### **Results**

As a component of this ARP, a questionnaire was sent by mail to 103 Chief's of Department throughout the United States. They were asked to have an appropriate individual complete and return the questionnaire in the enclosed self-addressed envelope in a timely fashion. Out of the 103 valid addresses used, only 66 respondents returned completed questionnaires. Of those returned responses, six were deemed not relevant because of inappropriate language or they did not follow the instructions and provided contradictory information. In addition, three personal interviews were conducted. One personal interview for this ARP was conducted with the Commissioner of the Philadelphia Fire Department. Another personal interview was conducted with the PFD's Safety Officer (SO) and the final interview was conducted with the PFD's Operations Officer, Training Division.

### **Questionnaire**

The mailed questionnaire utilized the first 12 questions to determine the characteristics of the responding department; type, size, number of personnel and the annual number of responses attended. These questions also probed for information on how the responding departments deployed the ISO function, and what requirements were the individuals serving as ISO required to have. The answers to the questionnaires provided information that related to the following

research questions: (1) qualifications required for the position of ISO? (2) role fulfilled by ISO at incident scenes? (3) implementation of ISO within IMS? Additional information garnered from the questionnaires included; when and how other Department's deployed the ISO function, whether or not their ISO's were required to be certified, and also if they complied with the NFPA 1521 standard. The questions used in the questionnaire were based on NFPA 1521, *Standard for Fire Department Safety Officer*. The responses from the various departments were categorized into five groups based upon the number of emergency responses attended annually and were compiled into an appendix for each category:

(1) less than 5,000	responses	18 respondents	Appendix C
(2) 5,001-10,000	responses	12 respondents	Appendix D
(3) 10,001-50,000	responses	14 respondents	Appendix E
(4) 50,001-100,000	responses	6 respondents	Appendix F
(5) plus 100,000	responses	10 respondents	Appendix G

The full list of responding departments are listed in Appendix H.

Questions 13 through 28 provided insight into what various departments thought was the primary role of an ISO and how could that role be more fully utilized to reduce fatalities and injuries in the fire service. These responses directly related to the last research question; how could the PFD better support the function of the ISO at incident scenes?

The information gleaned from the 60 utilized responses showed remarkable similarities in several areas irrespective of department size, type, number of employees or the number of annual responses undertaken. Question # 5 of the questionnaire asked; Does your department automatically assign an ISO at emergency scenes? Thirty-three respondents replied yes, while 27

replied no, indicating that more than half of the participants recognize the need to have criteria that accounts for the automatic activation of an ISO. Question # 8 probed the affirmative respondents for additional information by asking; What criteria does your department use to automatically assign an ISO? It was clear that on high risk/low frequency events and large commitment responses almost all of the respondents agreed that multiple alarm incidents, Haz-Mat incidents and Special Operations incidents were all assignments that prompted an automatic assignment of an ISO. Question # 9 asked; Is the automatic assignment of an ISO based on: historical injury data, tradition, injury prevention program, union contract or other, the choices provided a broad selection of options from which to choose. The responses indicated that the reasons why departments deploy an ISO automatically vary from jurisdiction to jurisdiction. However, this author found it to be revealing that neither historical injury data nor an injury prevention program were the leading reasons for deployment. This could be an indication that the fire service is still not moving forward in the area of firefighter safety based on past lessons learned. This premise is further borne out in the responses to question # 10.

Question # 10 asked; Did your department conduct a study to determine when the appropriate conditions exist to automatically assign an ISO? Not surprisingly, only three of the responding departments have conducted a study to determine when the appropriate conditions exist to automatically assign an ISO. Question # 11 asked; Does your department only allow assignment of an ISO at the discretion of the IC? The responses here provided a ray of hope for the fire service, while nearly half of the respondents did not provide for the automatic assignment of an ISO, those that did not left the activation of an ISO at the discretion of the IC. This is tacit

acknowledgement of the importance of this function. Question # 12 asked; What conditions must exist for an IC to assign the function of ISO? The responses here mirrored the responses to question # 8 which indicated that high risk/low frequency events almost always required the activation of an ISO.

Questions # 13 through # 23 showed the highest level of conformity of responses of all the questions posed to the various departments. Regardless of the makeup of the respondents most agreed or strongly agreed on almost all the ISO guidelines that formed the basis of the statements used in this portion of the questionnaire. Questions 17, 20, 21 and 23 produced some less than supportive responses that were most likely caused by the appearance of infringing on the authority of the IC's overall control and management of an incident.

Questions # 24 through # 28 probed for quantifiable information on the results departments have achieved with their methodology of deployment of an ISO. Question # 24 asked; Has your department changed the way it utilizes the function of ISO in the last: the majority of departments indicated that they had changed their utilization criteria within the last 10, 5 or three years. Conversely, eleven departments had indicated that no changes had been made in the last 10 years or more. Question # 25 asked; If changes occurred, what factors led to the changes? A majority of those departments indicating that changes had occurred indicated that the motivation behind the change was department safety initiatives. This provides some promise for future firefighter safety as this is a good indicator of the recognition of the need for change in the area of safety. Question # 26 asked; Have the changes resulted in measurable decreases in firefighter injuries and fatalities. A measurable number of departments (11) indicated that measurable decreases had occurred (11) indicated that no measurable decreases had occurred,

however, the largest number of respondents (27) indicated that they were not sure which could be an indication that better measurement methodologies need to be enacted within the fire service or possibly better information sharing.

Question # 27 asked; Is there data available to support the decreased injury/fatality numbers? There were eight departments that indicated they have data available to support the impact an ISO has had on their injury/fatality numbers. This data could provide the impetus for other departments looking for justification to increase the deployment of an ISO within their jurisdiction evidence to improve the safety conditions for all fire service personnel.

### **Discussion**

The results of this research provide some support to the premise under which this project was undertaken. The opportunity to automatically activate an ISO at the scenes where firefighters are most frequently injured or even killed appears to be a goal of many authors and fire departments of varying types and sizes. As most departments have demonstrated their recognition of the importance of an ISO at emergency scenes almost all decisions regarding the automatic deployment of this vital function are financially driven. It is evident from the data collected that the fire service must find ways to ensure that an adequate number of trained ISO's exist in all departments to allow for more frequent utilization of this role at more incidents.

Rounds (1992) indicates that the fact that nearly 100 firefighters die annually is frightening, however, what is even worse is that the firefighter's deaths are often preventable. It is his belief that the "ISO can contribute to the survivability of firefighters" (p.22). This would support the idea that more frequent activation of an ISO at incident scenes would have a dramatic impact on the injury and fatality statistics that have become quite predictable in the fire service.

Crawford (2007) believes that the ISO can positively impact on safety by ensuring that national standards are adhered to and that all members are made to have a regard for a safe workplace.

Arnold (2007) decries the fact that despite fighting fewer structure fires each year we are still experiencing firefighter fatalities at a rate of more than 100 annually.

Dodson (1999) emphasizes the need for departments to fully utilize the function of ISO to eliminate the negative effects of firefighter injuries and deaths on families and departments. It is clear that departments must look at the financial implications that are associated with firefighter fatalities and injuries and weigh those cost against the cost of more fully deploying an ISO at all incident scenes that have historically led to death and injuries. Gayk (2007) asserts that the fire service must move away from the model of “handling” calls with the “least amount of equipment” or assistance (p.89). He views this as a cultural problem within the fire service that must change because this gets firefighters injured and killed. Dube (2007) mentions the important role that the ISO plays in preventing unsafe acts from becoming costly tragedies and therefore provides a greater level of safety to all on the incident scene. Clearly the fire service in general and the PFD specifically must acknowledge that the act of providing an ISO at every scene would likely result positively on firefighter injuries and fatalities.

The USFA (2002) report *Firefighter Injuries in Structures* indicates that “firefighting is an extremely dangerous profession, especially in the suppression of structure fires” (para.1). The report also indicates that “residential” structures account for 73% of all structure fire injuries to firefighters. This evidence certainly indicates that the emphasis for firefighter safety must be focused in this direction if there is to be improved results achieved in the fire service

regarding fatalities and injuries to firefighters. While SOP's can be developed to assist with guiding the actions of responders, there is no substitute for having a dedicated individual focused solely on the safety of those operating at the emergency scene. Smith (2007) indicates that because of the exceedingly high cost that would be incurred, the ISO function is rarely staffed around the clock, however, the financial implications do not over ride the fact that immediate deployment of an ISO is certainly beneficial to all responders.

### **Recommendations**

It is recommended that the PFD contact the Department's that have conducted studies and request copies of that information for review. This information could be used to provide a framework for a similar study or may be used to implement a modified version as a pilot. It is further recommended that the PFD attempt to conduct a pilot program that mirrors one of the programs that is touting success in reducing firefighter injuries and deaths through increased deployment of an ISO if in fact they prove accurate. All future programs that are utilized by the PFD to combat the needless loss of life and catastrophic injury suffered by firefighters due to the ravages of residential fires must incorporate the greatest safety measures possible. This should include an incident scene being provided oversight by an ISO whenever possible.

It is further recommended that the PFD continue to compile data that provides detailed statistics about firefighters being injured and dying in fires, where they are being injured and dying in fires and what are the circumstances surrounding their injuries and deaths. It is only through maintaining a focus on where we have been that the PFD can move forward armed with the necessary tools to positively impact on the firefighters who are continuing to be injured or even killed in the performance of their duties. Utilized appropriately and more frequently the

## Improved FF safety through an ISO 28

ISO function is likely to have a positive impact on the culture of safety within the PFD and other fire departments. In closing, Alder & Fratus (2007) provide a compelling thought, they say;,  
“Things that go wrong in life are highly predictable and if predictable they are preventable. Fire service operations are not an exception to this rule” (p.88). Increasing the utilization of an ISO throughout the fire service may allow for the prediction of reduced firefighter fatalities and injuries in the future.

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APPENDIX A

QUESTIONNAIRE: INCIDENT SAFETY OFFICER

Department Name: \_\_\_\_\_

Contact: \_\_\_\_\_  
(Name will not be used in research paper, for contact purposes only)

E-mail: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Please answer questions appropriately as they relate to your department.

1. Which of the following most accurately describes your department?  
 Career     Volunteer     Combination     Other \_\_\_\_\_
  
2. Which of the following most accurately describes your jurisdiction?  
 City     County     State     Federal
  
3. How many personnel within your department are involved in emergency response activities?  
 < 100     101 – 500     501- 1000     1001 - 1500  
 > 1500
  
4. How many emergency calls does your department respond to annually?  
 < 5,000     5,001 – 10,000     10,001- 50,000  
 50,001 - 100,000     > 100,000
  
5. Does your department automatically assign an Incident Safety Officer (ISO) at emergency scenes?

yes       no      (If yes, answer questions 6 through 10)

6. What qualifications are required of individuals who are assigned ISO duties at emergency incidents?

certification       Dept. sanctioned training       none

7. Does your department follow the NFPA 1521 standard?

yes       no       partially

8. What criteria does your department use to automatically assign an ISO?

Multiple Alarm Incident ( indicate number of alarms)

Haz-Mat Incident       Special Operations/Tech Rescue

EMS response

(Check all that apply)

9. Is the automatic assignment of an ISO based on:

Historical injury data       Tradition

Injury prevention program       Union contract agreement

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

10. Did your department conduct a study to determine when the appropriate conditions exist to automatically assign an ISO?

yes       no

11. Does your department only allow assignment of an ISO at the discretion of the Incident Commander?

yes       no      (if yes, answer # 12)

12. What conditions must exist for an IC to assign the function of ISO?

- Multiple Alarm Incident ( indicate number of alarms)
- Haz-Mat Incident             Special Operations/Tech Rescue
- EMS response                 Other \_\_\_\_\_

(Check all that apply)

Please indicate your response to each of the following statements regarding the ISO.

13. The ISO should be certified.

Strongly agree    Agree    Neutral    Disagree    Strongly Disagree

14. The ISO should have the knowledge, skills and abilities to manage incident scene safety.

Strongly agree    Agree    Neutral    Disagree    Strongly Disagree

15. The ISO should continually evaluate all safety and health hazards at specific emergency incidents.

Strongly agree    Agree    Neutral    Disagree    Strongly Disagree

16. The ISO should monitor the scene and report the status of conditions, hazards, and safety risks to the IC.

Strongly agree    Agree    Neutral    Disagree    Strongly Disagree

17. The ISO should establish safety zones, collapse zones, hot, warm and cold zones at incidents scenes.

18. The ISO should ensure that all personnel at an incident scene are wearing the appropriate PPE.

Strongly agree  Agree  Neutral  Disagree  Strongly Disagree

19. The ISO has the authority to stop an activity if an unsafe action or condition exists.

Strongly agree  Agree  Neutral  Disagree  Strongly Disagree

20. The ISO should ensure that the Fire Dept. personnel accountability system is being utilized.

Strongly agree  Agree  Neutral  Disagree  Strongly Disagree

21. The ISO shall ensure that a Rapid Intervention Team (RIT) is available and ready for deployment at the emergency scene.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

22. There should be an ISO activated at all hazardous material and/or special operations incidents.

Strongly agree  Agree  Neutral  Disagree  Strongly Disagree

23. The ISO should conduct post-incident analyses with the IC and personnel who participated in the emergency incident.

Strongly agree  Agree  Neutral  Disagree  Strongly Disagree

24. Has your department changed the way it utilizes the function of ISO in the last:

3 years  5 years  10 years  no change

25. If changes occurred, what factors led to the changes?

increased injuries  Department safety initiatives

NIMS  Other: (specify) \_\_\_\_\_

26. Have the changes resulted in measurable decreases in Firefighter injuries and fatalities?

yes                       no                       not sure

27. Is there data available to support the decreased injury/fatality numbers?

yes                       no                       not sure

28. How long has your department been staffing the function of ISO?

< 10 yrs.       < 5 yrs.       4 yrs.       3 yrs.       2 yrs       1 yr.

Please indicate your rank:

Fire Chief/Commissioner                       Asst. Chief/Commissioner

Deputy/Division Chief                       Battalion Chief

Lieutenat/Captain                       Firefighter

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

Thank you for taking the time out of your busy schedule to complete this questionnaire.

Check here if you want to receive an electronic copy of the results of this project.

E-mail address: \_\_\_\_\_

**APPENDIX B**

June 5, 2007

Dear Chief,

My name is Ernest F. Hargett Jr. and I am currently enrolled in the Executive Fire Officer Program at the National Fire Academy. As a requirement to complete the Executive Analysis of Fire Service Operations in Emergency Management course I must complete an Applied Research Project. My project topic is to assess the procedures regarding the utilization of an Incident Safety Officer (ISO) in Philadelphia and other cities to determine if the function of an ISO should be implemented differently in Philadelphia.

I would greatly appreciate if you would have the appropriate individual complete the attached survey and return it in the enclosed addressed and stamped envelope by June 30, 2007.

While overall results may be published as part of the research project, I will adhere to strict agency confidentiality.

Thank you for your assistance with this project.

Sincerely,

Ernest F. Hargett Jr.  
Deputy Fire Commissioner, Operations  
Philadelphia Fire Department  
240 Spring Garden Street  
Philadelphia, PA 19123

APPENDIX C

QUESTIONNAIRE RESPONSE: INCIDENT SAFETY OFFICER

Departments less than 5,000 annual responses 18 respondents

Question #4 removed, this was criteria used to group respondents (edited) RESPONSES:

*Please answer questions appropriately as they relate to your department.*

1. (15) Career (3) Combination
2. (17) City (1) County
3. (15) < 100 (3) 101 – 500
4. Removed
5. (5) yes (13) no (If yes, answer questions 6 through 10)
6. (1) certification (2) Dept. sanctioned training (2) none
7. (3) yes ( ) no (2) partially
8. (5) Multiple Alarm Incident ( indicate number of alarms) 2<sup>nd</sup> Alarm (3)  
(4) Haz-Mat Incident (4) Special Operations/Tech Rescue  
(1) EMS response (MVA Only)  
(Check all that apply)
9. (3) Tradition (2) Injury prevention program

10. (0) yes (5) no
11. (9) yes (9) no (if yes answer # 12)
12. (8) Multiple Alarm Incident (2<sup>nd</sup> Alarm or greater)  
(10) Haz-Mat (12) Special Operations/Tech Rescue  
(4) EMS response
13. 6 Strongly agree 7 Agree 3 Neutral 2 Disagree
14. 15 Strongly Agree 3 Agree
15. 14 Strongly agree 4 Agree
16. 13 Strongly agree 3 Agree
17. 6 Strongly agree 7 Agree 3 Neutral 2 Disagree
18. 17 Strongly agree 1 Agree
19. 14 Strongly agree 4 Agree
20. 16 Strongly agree 2 Agree
21. 12 Strongly Agree 4 Agree 2 Neutral
22. 14 Strongly Agree 4 Agree
23. 9 Strongly agree 9 Agree
24. (5) 3 years (8) 5 years (3) 10 years (2) no change
25. (0) increased injuries (9) Department safety initiatives  
(3) NIMS (4) Other: (specify) various reasons
26. (3) yes (6) no (7) not sure
27. (2) yes (1) no

28. (5) < 10 yrs. (5) < 5 yrs. (1) 4 yrs. (3) 3 yrs. (1) 2 yrs. (1) 1 yr.

Ranks of respondents:

(12) Fire Chief/Commissioner

(4) Asst. Chief/Commissioner

\_\_\_ Deputy/Division Chief

\_\_\_ Battalion Chief

(2) Lieutenat/Captain

\_\_\_ Firefighter

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

APPENDIX D

QUESTIONNAIRE RESPONSE: INCIDENT SAFETY OFFICER

Departments with 5,001- 10,000 annual responses 12 respondents

Question #4 removed, this was criteria used to group respondents (edited) RESPONSES:

*Please answer questions appropriately as they relate to your department.*

1. (11) Career (1) Combination
2. (10) City (1) County (1) Federal (Tribal)
3. (5 ) < 100 (7 ) 101 – 500
4. Removed
5. (6 ) yes (6 ) no (If yes, answer questions 6 through 10)
6. (4 ) certification (1 ) Dept. sanctioned training  
(2 require both)
7. (3 ) yes ( ) no (3 ) partially
8. (3) Multiple Alarm Incident ( Single alarm)  
(6) Haz-Mat Incident (6 ) Special Operations/Tech Rescue  
(1) EMS response
9. (6 ) Injury prevention program

10. (0) yes (6) no
11. (6) yes (6) no (if yes answer # 12)
12. (6) Multiple Alarm Incident (2<sup>nd</sup> Alarm) 4  
(6) Haz-Mat (6) Special Operations/Tech Rescue  
(4) EMS response
13. (2) Strongly agree (10) Agree (3) Neutral (2) Disagree
14. (9) Strongly agree (3) Agree
15. (8) Strongly agree (4) Agree
16. (11) Strongly agree (1) Agree
17. (8) Strongly agree (3) Agree (1) Disagree
18. (9) Strongly agree (3) Agree
19. (10) Strongly agree (2) Agree
20. (6) Strongly agree (6) Agree
21. (6) Strongly Agree (4) Agree (2) Neutral
22. (8) Strongly Agree (4) Agree
23. (3) Strongly agree (5) Agree (4) Neutral
24. (2) 3 years (7) 5 years (1) 10 years (2) no change
25. (0) increased injuries (10) Department safety initiatives  
(2) NIMS (1) Other: (specify) personnel changes
26. (2) yes (1) no (7) not sure
27. (2) yes (2) no (6) not sure

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28. (2) < 10 yrs. (6) < 5 yrs. (0) 4 yrs. (4) 3 yrs.

Ranks of respondents:

(5) Fire Chief/Commissioner

Asst. Chief/Commissioner

(3) Deputy/Division Chief

(2) Battalion Chief

(2) Lieutenat/Captain

\_\_\_ Firefighter

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

APPENDIX E

QUESTIONNAIRE RESPONSE: INCIDENT SAFETY OFFICER

Departments with 10,001- 50,000 annual responses 14 respondents

Question #4 removed, this was criteria used to group respondents (edited) RESPONSES:

*Please answer questions appropriately as they relate to your department.*

1. (14) Career (3) Combination
2. (14) City (1) County
3. (1) < 100 (12) 101 – 500 (1) 501-1000
4. Removed
5. (11) yes (3) no (If yes, answer questions 6 through 10)
6. (5) certification (5) Dept. sanctioned training (1) none  
(1 required both)
7. (3) yes ( ) no (6) partially
8. (11) Multiple Alarm Incident (11) checked,5 indicate all single alarm incidents  
(10) Haz-Mat Incident (7) Special Operations/Tech Rescue  
(3) EMS response
9. (3) Tradition (4) Injury prevention program (5) ICS, SOP's

10. (0) yes (11) no
11. (3) yes ( ) no (if yes answer # 12)
12. (3) Multiple Alarm Incident (2<sup>nd</sup> Alarm)  
 (3) Haz-Mat (3) Special Operations/Tech Rescue  
 (0) EMS response
13. (7) Strongly agree (6) Agree (1) Neutral
14. (11) Strongly Agree (3) Agree
15. (11) Strongly agree (3) Agree
16. (11) Strongly agree (3) Agree
17. (7) Strongly agree (4) Agree (1) Neutral (2) Disagree
18. (11) Strongly agree (3) Agree
19. (12) Strongly agree (1) Agree (1) Disagree
20. (12) Strongly agree (2) Agree
21. (11) Strongly agree (3) Agree
22. (11) Strongly Agree (3) Agree
23. (6) Strongly agree (5) Agree (3) Neutral
24. (4) 3 years (4) 5 years (3) 10 years (3) no change
25. (1) increased injuries (8) Department safety initiatives  
 (2) NIMS (3) Other: (specify) various reasons
26. (2) yes (2) no (7) not sure
27. (1) yes (2) no (8) not sure

28. (9) < 10 yrs. (3) < 5 yrs. (1) 4 yrs. (0) 3 yrs. (1) 2 yrs. (0) 1 yr.

Ranks of respondents:

(3) Fire Chief/Commissioner

(5) Asst. Chief/Commissioner

(1) Deputy/Division Chief

(2) Battalion Chief

(1) Lieutenat/Captain

\_\_\_ Firefighter

(2) Other: \_\_\_\_\_

APPENDIX F

QUESTIONNAIRE RESPONSE: INCIDENT SAFETY OFFICER

Departments with 50,001-100,000 annual responses 6 respondents

Question #4 removed, this was criteria used to group respondents (edited) RESPONSES:

*Please answer questions appropriately as they relate to your department.*

1. (5) Career (1) Combination
2. (4) City (2) County
3. (3) 101 – 500 (2) 501-1000 (1) 1001-1500
4. Removed
5. (4) yes (2) no (If yes, answer questions 6 through 10)
6. (3) certification (1) Dept. sanctioned training  
(2 depts. require both)
7. (3) yes ( ) no (1) partially
8. (4) Multiple Alarm Incident ( indicate number of alarms) not indicated  
(4) Haz-Mat Incident (4) Special Operations/Tech Rescue  
(1) EMS response  
  
(Check all that apply)
9. (2) Injury prevention program (3) Other: Personnel changes, proactive

10. (1) yes (3) no
11. (2) yes (4) no (if yes answer # 12)
12. (1) Multiple Alarm Incident (2<sup>nd</sup> Alarm or greater)
- (0) Haz-Mat (1) Special Operations/Tech Rescue
- (2) Other Any Emergency Scene
- (Check all that apply)
13. 3 Strongly agree 3 Agree
14. 5 Strongly Agree 1 Agree
15. 5 Strongly agree 1 Agree
16. 6 Strongly agree
17. 4 Strongly agree 2 Agree
18. 4 Strongly agree 1 Agree 1 Disagree
19. 6 Strongly agree
20. 4 Strongly agree 2 Agree
21. 4 Strongly Agree 2 Agree
22. 5 Strongly Agree 1 Agree
23. 4 Strongly agree 2 Agree
24. (1) 3 years (3) 5 years (1) 10 years (1) no change
25. (1) increased injuries (3) Department safety initiatives
- (2) NIMS (0) Other: (specify)
26. (2) yes (0) no (3) not sure

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27 (2) yes (1) no (3) not sure

28 (4) < 10 yrs. (2) < 5 yrs.

Ranks of respondents:

\_\_\_ Fire Chief/Commissioner

\_\_\_ Asst. Chief/Commissioner

\_\_\_ Deputy/Division Chief

(4) Battalion Chief

\_\_\_ Lieutenat/Captain

\_\_\_ Firefighter

(2) Other: \_\_\_\_\_

APPENDIX G

QUESTIONNAIRE RESPONSE: INCIDENT SAFETY OFFICER  
Departments with more than 100,000 annual responses 10 respondents

Question #4 not filled in, this was criteria used to group respondents

*Please answer questions appropriately as they relate to your department.*

- 1 (9) Career (1) Combination
- 2 (9) City (1) County
- 3 (2) 501- 1000 (3) 1001 - 1500 (5) > 1500
- 4 Removed
- 5 (7) yes (3) no (If yes, answer questions 6 through 10)
- 6 (4) certification (6) Dept. sanctioned training (2) none  
3 Depts. Require both
7. (3) yes (4) partially
- 8 (7) Multiple Alarm Incident (single alarm 4) (2<sup>nd</sup> alarm 3)  
(7) Haz-Mat Incident (6) Special Operations/Tech Rescue  
(2) EMS response  
(Check all that apply)
- 9 (1) Historical injury data (1) Tradition  
(3) Injury prevention program ( ) Union contract agreement  
(2) Other: NFPA 1521, Training objectives

10 (2) yes (5) no

11 (3) yes (7) no (if yes answer # 12)

12 What conditions must exist for an IC to assign the function of ISO?

(2) Multiple Alarm Incident ( 2<sup>nd</sup> Alarm)

(3) Haz-Mat Incident (3) Special Operations/Tech Rescue

(0) EMS response ( ) Other \_\_\_\_\_

Please indicate your response to each of the following statements regarding the ISO.

13. 4 Strongly agree 5 Agree 1 Neutral

14. 6 Strongly agree 4 Agree

15. 9 Strongly agree 1 Agree

16. 9 Strongly agree 1 Agree

17. 3 Strongly agree 3 Agree 2 Neutral 2 Disagree

18. 6 Strongly agree 4 Agree

19. 6 Strongly agree 3 Agree 1 Neutral

20. 5 Strongly agree 4 Agree 1 Neutral

21. 4 Strongly Agree 4 Agree 1 Neutral 1 Disagree

22. 4 Strongly agree 5 Agree 1 Neutral

23. 4 Strongly agree 2 Agree 3 Neutral 1 Disagree

24. (4) 3 years (2) 5 years (1) 10 years (3) no change

25 (1) increased injuries(3) Department safety initiatives

0 NIMS (3) Other: (specify) changed admin, FF fatality

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26. (2) yes (2) no (3) not sure

27. (1) yes (2) no (4) not sure

28. (4) < 10yrs (1) <5yrs (1)4yrs (0)3yrs (0)2yrs (1) 1yr

Please indicate your rank:

0 Fire Chief/Commissioner \_\_\_\_\_ Asst. Chief/Commissioner

4 Deputy/Division Chief 2 Battalion Chief

2 Lieutenat/Captain \_\_\_\_\_ Firefighter

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

APPENDIX H  
Participating Fire Departments (Alphabetically listed)

Anne Arundel County Fire Department	Houston Fire Department
Arlington (Tx) Fire Department	Joliet Fire Department
Beech Grove Fire Department	Kansas City (KS) Fire Department
Bellingham Fire Department	Lee's Summit (MS) Fire Department
Brecksville Fire Department	Little Rock (AK) Fire Department
Bridgeport (Ct) Fire Department	Los Angeles Fire Department
Burlington Fire Department	Mansfield (TX) Fire Department
Chicago Fire Department	Mesquite Fire Department
Claremont (NH) Fire Department	Milwaukee Fire Department
College Station (TX) Fire Department	Morrisville Fire/Rescue Department
Colorado Springs Fire Department	Nelsonville (OH) Division of Fire
Colton (Ca) Fire Department	Newark (NJ) Fire Department
Contra Costa County Fire Protection Dist.	New Orleans Fire Department
Coon Rapids (Minn) Fire Department	Oak Park Fire Department
Cypress Creek Volunteer Fire Department	Oklahoma City Fire Department
Dallas Fire Department	Plainfield (NJ) Fire Department
Decatur Fire Rescue Department	Phoenix Fire Department
Detroit Fire Department	Prince George's County Fire Department
Elizabethtown Fire Department	Richmond (VA) Fire & Emergency Services
Garland Fire Department	Rochester Fire Department
Hartford (Ct) Fire Department	Rock Springs Fire Department

APPENDIX H

Participating Fire Departments (Alphabetically listed)

Saginaw Township Fire Department

Salt River (AZ) Fire Department

San Antonio Fire Department

San Diego Fire Rescue Department

San Francisco Fire Department

San Jose Fire Department

San Marcos Fire Rescue Department

Stow (OH) Fire Department

Stuart (FL) Fire Rescue Department

Suffolk Fire & Rescue Department

Sugarland (TX) Fire Department

Tacoma (WA) Fire Department

Utica (NY) Fire Department

Virginia Beach Fire Department

Walkertown (NC) Fire Department

Westminster Fire Department

Wheaton Fire Department

White Plains (NY) Fire Bureau