

RUNNING HEAD: Heavy Rescue Training

Executive Analysis of Fire Service Operations in Emergency  
Management

Options for Local Government Fire Departments in San Bernardino  
County to Provide Heavy Rescue Training

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*Appendices Not Included. Please visit the Learning Resource Center on the Web at <http://www.lrc.dhs.gov/> to learn how to obtain this report in its entirety through Interlibrary Loan.*

CERTIFICATION STATEMENT

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## Abstract

The problem was that the Colton Fire Department was finding it difficult to obtain the four core classes for heavy rescue (HR). The purpose of this Applied Research Project was to research cost effective options for providing the core classes for HR. The Descriptive Research Method was used to determine what costs were required to obtain and how many personnel county-wide needed the core classes for HR, what other departments were doing to obtain training, and options for training. The research revealed that there were not enough instructors to teach the core classes. It was recommended that each department provide one instructor to teach three times yearly and assist San Bernardino County Fire with securing a new joint training facility.

TABLE OF CONTENTS

Introduction..... 5

Background and Significance..... 6

Literature Review..... 16

Procedures..... 25

Results..... 35

Discussion..... 42

Recommendations..... 48

References..... 51

Appendix A, State Fire Marshal Questionnaire..... 53

Appendix B, Training Facility Questionnaires..... 58

Appendix C, Sample Training Officer's Questionnaire..... 69

## Introduction

The Colton Fire Department's (CFD) vision statement and core values note, "The Fire Department will provide comprehensive emergency services to Colton's citizens, visitors, and employees;" it goes on, "We believe in strengthening local, regional, and intergovernmental partnerships to provide services beyond our local ability..." Colton Fire Department (2006, p. 4).

Heavy Rescue (HR) is one of the comprehensive services provided to the City of Colton through its fire department. The service is also of the kind that cannot be fully implemented by Colton alone and is considered, beyond our local ability. In the early 1980s, the CFD began a meager HR program with as many rescue tools as could be placed together from throughout the department. Since its inception, the HR program, with the assistance of multiple dedicated CFD members, has gone from a quickly placed together tool cache to a completely outfitted, California Office of Emergency Services (OES) certified, Type-I HR unit. Members of the CFD have struggled to obtain mandatory HR training which includes: Rescue Systems I and II, Confined Space Operations, and Trench Rescue (core classes).

The problem is that the Colton Fire Department (CFD) along with other local government fire departments in San Bernardino County, CA (County) are finding it increasingly difficult to

obtain the core classes for HR. The purpose of this Applied Research Project (ARP) is to research cost effective options for providing the core classes for local government fire departments in the County.

The research method used will be the Descriptive Research Method. The research approach will be to determine what costs are currently required by San Bernardino County fire departments to obtain the core classes for HR, what departments are doing to obtain training now, and what options there are for training. This will be accomplished through interviews with current personnel responsible for HR training in Southern California and Training Officers in San Bernardino County, California.

The following research questions will be answered:

1. What are the time and monetary costs required to obtain the core classes for HR?
2. How are local fire departments currently obtaining the core classes?
3. How many firefighters need training in the County?
4. What are the options for providing HR training?

#### Background and Significance

The CFD was formed on November 21, 1889 to serve a city that was growing up around the railroad and several local industries in Southern California. Colton was known as the Hub

City due to its central location and two rail routes that crossed in the city. The City of Colton has always been a middle class home to the many workers of Colton's companies. From four stations, the fire department in Colton now protects a population of 50,000 people with a mix of residential homes, large industrial operations, wildland urban interface, freeways, the County's hospital, and many other operations within its boundaries.

The CFD current staffing consists of forty-seven safety and four non-safety personnel for a total of fifty-one. The department is divided in to three shifts of fifteen firefighters. Each shift has one battalion chief, four captains, four engineers, five paramedics and one firefighter. The administrative staff consists of one fire chief, one fire marshal, one administrative assistant, one fire safety specialist, one receptionist, and one disaster preparedness coordinator.

HR is a level of training for response as part of Urban Search and Rescue (USAR). According to the California Office of Emergency Services (OES) (2004),

USAR involves the location, rescue (extrication), and initial medical stabilization of victims trapped in confined spaces. Structural collapse is most often the

cause of victims being trapped, but victims may also be trapped in transportation accidents, mines and collapsed trenches.

In the early 1980's, the CFD made a decision to enter into HR operations due to the following threats: earthquake, transportation incidents involving the railroads and freeways, heavy industrial operations, and trench rescues (Captain Dana DeAntonio, personal interview, November 1, 2007). At the beginning of the program, several department personnel completed formal Rescue Systems I and II training and brought the information back to the fire department. At that time there were no formal policies to govern the team and no specific team organization. Responses of equipment were dictated by the number of on-duty personnel who had been formally or informally trained in equipment use.

In 1991, the CFD acquired a 1975 retired beverage delivery truck. The truck was painted and was officially called R213. Over time, as the budget would allow, HR tools were purchased and placed on R213. Some equipment acquired was retired from neighboring fire departments and then given to Colton. Due to the method of acquisition, the tool cache was not complete or thorough. In 2001, the CFD made the decision to apply for the Assistance to Firefighters Grant from FEMA. The CFD was awarded

the \$62,000 grant in 2002 and the purchase of a full complement of Type-I HR tools was made.

California OES (2004) defines the Type-I HR operational level as,

...the minimum capability to conduct safe and effective search and rescue operations at structure collapse incidents involving the collapse or failure of Heavy Wall Construction, Pre-cast Concrete and Steel Frame Construction. This level is also capable of conducting high angle rope rescue (including highline systems), confined space rescue (permit required), and mass transportation rescue. (p. 15)

The purchase of these tools was a major turning point in the HR program within the CFD. The Type-I tool cache brought about new capabilities for rescue operations in addition to a new burden to have properly trained personnel of sufficient quantity to respond.

With the purchase of the tools for HR, the CFD could now be officially typed by California OES. Before typing by OES, the CFD had to provide nine members with documentation of completing the four core classes. One problem that was immediately recognized was that CFD did not have the nine trained members needed and would have to form a joint rescue team with

neighboring Loma Linda Fire Department (LLFD). In June 2003 California OES officially recognized CFD as having a Type-I HR; the unit was now made available as a state-wide resource subject to mutual aid requests within California.

After all nine members from CFD and LLFD were documented; it then became obvious that the nine members were spread between three work shifts and two fire departments. There was now no way to have the nine members on-duty at any one time. If a request for the HR was made, some personnel would have to respond from home and combine with personnel on-duty to form the team. This method did not take into account personnel unavailable due to vacation or sick leave. The odds of all nine members being available at any one time were very slim (Captain Dana DeAntonio, personal interview, November 1, 2007).

Upon the realization that personnel would likely not be available for deployment, the CFD decided to begin to pursue training four personnel per year in the four core classes (Fire Chief Tom Hendrix, personal interview, November 6, 2007). CFD Captain DeAntonio began researching training locations and began signing interested personnel up for the four core classes but quickly determined that there were not many slots available locally or within the region. Many other fire departments also needed to train personnel and the demand for classes went up.

While the demand went up, the number of classes remained the same. Even though the CFD had money and personnel to send to training there were now not enough available slots.

The CFD is part of the San Bernardino County Fire Chief's Association (SBCFCA). The SBCFCA has several groups within the Association that oversee fire service specialties; the USAR Committee is one such group that the CFD participates in. In August of 2007, the USAR Committee noted that there was increased difficulty obtaining classes by most members (San Bernardino County Fire Chief's USAR Committee, 2007). Many departments were being placed on waiting lists to get training slots. This situation made it difficult to get personnel to commit to classes due to the difficulty in planning.

In San Bernardino County, there is only one venue that provides the four core classes; San Bernardino County Fire (County Fire). County Fire, the largest department in the county, generally provides the four core classes once per year (Captain Jim Pearson, personal meeting, November 12, 2007). County Fire has found it increasingly difficult to obtain enough instructors to offer training more than currently provided; therefore, there is a need for some other arrangement to provide training for the local government fire departments.

The past impact on the CFD of not being able to obtain the four core classes has been that the HR team would have difficulty mobilizing due to a lack of sufficiently trained personnel. Additionally, the department has had only six of forty-seven personnel that are familiar with the complicated equipment cache. The following is an example of some of the equipment not normally used by firefighters: MSA Multi-Gas Detector, concrete chainsaw, snake camera, nail guns, Redhead fasteners, air shores, to name a few. Much of the equipment on the R213 is of a specialized type that must be checked, calibrated, and tested on a regular basis. By having only six trained personnel, the task of equipment checks alone has been difficult to perform.

One of the present impacts of not obtaining the four core classes has been that refresher training of team members has had to occur on a single day each month. By providing training on a single day versus training on each of the three shifts, the CFD must pay overtime to off-duty personnel to attend in addition to the scheduling difficulties. It has become more difficult to find a mutually agreeable day that all members could attend. Many times HR team members would miss several months of training within a year due to scheduling conflicts. This situation

becomes dangerous when one considers that many of the skill sets needed in HR are high-risk and low-frequency.

In addition to difficulties scheduling training, the ability to keep team members motivated has been increasingly difficult. Some members have expressed that they have felt that HR has not been a priority in the CFD. Personnel have implied that the leaders of the HR team are the only personnel familiar with the team and equipment and when those personnel are off-duty, the HR team ceases to exist for the CFD (Captain DeAntonio, personal interview, November 1, 2007). This author believes that as more department personnel are trained in the four core classes, the skill set of HR will become a regular part of a firefighter's skill set. When the CFD trained its first paramedics in 1975, there was some resistance to the new skills and tools. Presently, the majority of CFD personnel are or formally were paramedics; advanced life support is now part of the firefighter's skill set.

Future impacts of the difficulty in obtaining the four core classes are: the continued burden of equipment checks and maintenance and lack of interested department members willing to participate in the HR team.

As previously noted, the sheer volume of equipment checks being performed by a small number of CFD personnel is not

conducive to high quality and proper care of these tools. As an example, self contained breathing apparatus (SCBA) are specialized protective equipment that each firefighter is trained to use and maintain. Firefighters are familiar with the use of SCBAs and these devices get checked daily by all personnel. There is not a specific, single person who checks SCBAs daily; it is a skill set adopted by each CFD member. Similarly, as more personnel are trained in the four core classes, they will be familiar with the specialized tools in the HR tool cache and can then assist in checking equipment when needed thus reducing the burden of equipment checks presently felt. In addition to relieving the burden of equipment checks, personnel will become more familiar with the specialized tools and will have a more comprehensive understanding of their use and capabilities.

The lack of trained and interested HR team members within the CFD is a potential problem that will be difficult to remedy. Presently, members of the HR team are personnel who have expressed interest in HR. There is no special pay to be on the team and the CFD would have no team without the interest of present members. Since the team is voluntary, along with the training, there is a potential of the team dissolving due to lack of participation. As noted, the four core classes, when

offered on a continual basis to all personnel, will likely lead to all CFD members being trained. When all or most members are trained, the HR will be able to respond twenty-four hours per day, year round.

In the Executive Fire Officer Program student manual titled, "Executive Analysis of Fire Service Operations in Emergency Management (EAFSOEM)," it is noted in several locations the importance of training and preparation; a direct correlation to the problem of obtaining HR training for local government fire departments in San Bernardino County.

Under the a description of kinds of resources, specifically under the Incident Command System (ICS) the EAFSOEM student manual notes that resources should be properly trained, equipped, and configured. Additionally that resources should be trained to accepted standards nationally, regionally, and statewide (United States Office of Homeland Security, 2006). The training of local government HR resources in San Bernardino County will help to assure a cadre of personnel able to respond to disasters.

The student manual also details that communities are saddled with the need to plan for and devote resources to deal with risk. That planning, training and effort should be commensurate with the risk to the community (United States

Office of Homeland Security, 2006). Considering that every local government fire department in San Bernardino County lies in seismically active Southern California not to mention the myriad other potential HR events, the preparation of firefighters for HR operations is appropriate.

Of the five operational objectives of the United States Fire Administration (USFA) HR training, specifically determining options for HR training in San Bernardino County, assists fire departments in responding in a timely manner to emerging issues.

The need for and struggle to obtain HR training for firefighters in San Bernardino County are real issues. Finding solutions for training is a challenge for all fire departments within the County. The solution will require participation by all interested departments due to the future earthquakes and other HR threats that face the region.

### Literature Review

Literature relating to solutions for HR training focuses on the following areas: assessing the need for HR with regard to earthquakes, the importance of HR training as it relates to the services offered by fire departments, and a review of recommendations of innovators in government.

As noted previously, Southern California is dissected by the San Andreas Fault along with several other fault lines. In an online article Schulz and Wallace (1997) make the following notation about earthquakes in California,

Literally thousands of small earthquakes occur in California each year, providing scientists with clear indications of places where faults cut the Earth's crust. The largest historical earthquakes that occurred along the San Andreas fault were those in 1857 and 1906. The earthquake of January 9, 1857, in southern California apparently was about the same magnitude as the San Francisco earthquake of 1906.

It is important to note that Southern California has a history of quakes with the same magnitude of the San Francisco quake. The San Francisco quake is described in the following:

The San Francisco earthquake and fire of April 18, 1906, took about 700 lives and caused millions of dollars worth of damage in California from Eureka southward to Salinas and beyond. The earthquake was felt as far away as Oregon and central Nevada. The 1906 earthquake...has been estimated at a magnitude 8.3...Surface offsets occurred along a 250-mile length of the fault from San Juan Bautista north past

Point Arena and offshore to Cape Mendocino (Schulz & Wallace, 1997).

If the San Francisco quake took 700 lives in 1906 and caused millions of dollars in damage, the potential loss in Southern California will be even greater considering the increases in population numbers and density. This potentially could be offset by improvements in building codes.

Newer buildings may fare better than those of 1906, Church (1995) notes,

Progress has been made in designing earthquake-resistant - but not earthquake-proof - buildings. U.S. building codes are written to save lives, not prevent all damage. Modern structures are designed to sway and maybe even crack in a quake, but not to break apart and crush their inhabitants under falling debris.

It should be noted however, that newer buildings are not guaranteed to withstand quakes. In the same article Church (1995) records that the only way to get a full picture of how buildings react in an earthquake is to have one.

In a telling statement regarding quakes, Church (1995) says, "Few of those living around major faults really believe an

earthquake is likely to strike until it actually does - and then, of course, it is too late." This notation highlights the need for HR training of fire departments. Fire departments know of the threat, need to prepare for them, and will be expected by the public to respond with sufficient numbers and know-how.

Predicting earthquakes can be elusive; however the following prediction is of importance to note:

Along the Earth's plate boundaries, such as the San Andreas Fault, segments exist where no large earthquakes have occurred for long intervals of time. Scientists term these segments seismic gaps and, in general, have been successful in forecasting the time when some of the seismic gaps will produce large earthquakes. Geologic studies show that over the past 1,400 to 1,500 years large earthquakes have occurred at about 150-year intervals on the southern San Andreas Fault. As the last large earthquake on the southern San Andreas occurred in 1857, that section of the fault is considered a likely location for an earthquake within the next few decades. (Schulz & Wallace, 1997)

Utilizing the 150-year interval, the year 2007 would conclude 150-years from the last major quake in 1857.

Reviewing actual quakes that have occurred in San Bernardino County versus attempting to predict quakes reveals the following list of quake names, years and magnitudes on the Richter Scale (Ellsworth 1990): Hector Mine-1999-7.1, Big Bear-1992-6.2, Joshua Tree-1992-6.1, San Bernardino-1923-6.0, San Bernardino-1907-5.3, Lytle Creek-1899-5.3, Lytle Creek-1894-6.0, San Bernardino-1858-6.0, and Wrightwood-1812-7.0. The previous list is not exhaustive and does not include quakes below 5.3 or quakes in other areas of Southern California. It does show that quakes are a part of San Bernardino County's history and will be part of its future.

HR is one of the many services offered by most fire departments in Southern California, it is an expected staple of services; this is not so in every locality. In the Fire Chief's Handbook, the author notes some traditionalists in the fire service have decried the expansion of fire department responsibility into fields like rescue, hazardous material response, swift water rescue, regional and national disaster management, and now terrorism response. He goes on to describe that it is the public, not the fire department that determines the scope of responsibilities. Each time a citizen dials 911 the public is defining the mission of the fire department (Collins, 2003). In the City of Colton, the public and the City

Council have come to expect that when they dial 911, sufficient resources will arrive to handle their emergency; whatever that emergency is.

With relation to HR, Collins (2003) continues his thoughts on this service and its positive influence:

...the expanding awareness that rescue is a primary role of modern firefighters, the understanding that rescue cannot be separated from other fire service missions, and proof that improved personnel and citizen safety is a natural byproduct of more comprehensive rescue service delivery...In short, improving rescue has the proven effect of making better firefighters and in turn better departments.

If Collins is correct in his assumption, then providing options for HR training in the County should help to improve firefighters and their departments.

With reference to managing daily rescues and disasters, Collins (2003) states,

Clearly, the best rescue systems are those that are backed up by a wide swath of first responders...who have extensive rescue/USAR training...and those who have...attended specialized rescue courses. Fire/rescue agencies that encourage and support this level of training, knowledge, and skill among their line firefighters and officers are in

the best position to manage the full range of daily rescue emergencies and rescue-related disasters.

The CFD seeks training for all members in an attempt to be properly prepared for rescue related disasters.

In the International City Management Association book *Managing Fire and Rescue Services*, Forsman (2002) makes the following statement that is of significant influence to this research:

The aspects of training that are most expensive and difficult to develop and deliver include the training that is designed for the special operation areas...These areas include...technical rescue services...Federal, state, and local laws may mandate training in these highly technical areas. But even if training is not mandated, keeping skills and knowledge up to high levels in these high-risk and low-frequency response categories is extremely important...In many cases the instructional expertise and materials will not be resident in a department or even nearby...significant fees may be involved, and the delay may be long if demand is high. Very often personnel will have to be sent to a remote location for training, and this requirement generates travel and coverage costs.

Forsman's description of some of the difficulties in training in HR are exactly what the local government departments in San Bernardino County are experiencing.

Relating to saving money and the need for joint training, Reichenbach (2007) makes the following statement,

We need to...spend wisely. I feel that over duplication is a thing of the past and it is time to rely on each other for our resources. If we start to share resources, we will need to train together. This very idea of sharing equipment and combined training efforts is long overdue!

Local government fire departments in San Bernardino County are not different than fire departments elsewhere; providing a cost-effective service is a high priority. If sharing equipment and training is cost effective, then exploring opportunities for joint training should be pursued.

*Governing Magazine* Staff Correspondent Jonathan Walters discussed some findings regarding innovators in government. Walters (2001) suggests the following as to what he learned studying innovators in government,

For those contemplating joining the ranks of innovators, the lessons that sift out in looking at both winners and finalists come through quite clearly. When designing a program it's best to: keep it simple in concept, make it

easy to execute, shoot for quick results, be frugal, make it appealing to the widest constituency possible, and keep it apolitical.

Walters' article and recommendations will provide a framework for determining options in HR training.

Walters summarizes the following in discussing innovators in government, "It's easy to attach...all the typical adjectives: creative, persistent, even courageous. But those words are used so often they've lost a lot of their punch...what I've noticed about those who've been identified...is something a little subtler: They are restless." (Walters, 2001) This author has found that most personnel involved in HR in San Bernardino County would fit Walters' description of innovators; a beneficial trait of this group.

With reference to innovation; specifically duplicating innovations, Walters (2001) notes, "...no change-management recipe book in the world is ever going to capture the magic of innovation in the form of some immutable quasi-political or social-scientific math equation." Innovation to determine options for HR training will need to be tailored to the fire department's needs in San Bernardino County.

In summary, the referenced literature establishes several items related to HR training in San Bernardino County.

Earthquakes have been and will continue to be a part of the area. HR is an expected and beneficial service to the communities of San Bernardino County fire departments and a joint training program can be cost-effective. Recommendations from innovators in other fields of government can assist in determining options for HR training.

### Procedures

The process of conducting research into training options for the four core classes included investigating the following three areas:

1. Determination and assessment of the problem.
2. Review and assessment of the need for USAR within the fire service, Colton, San Bernardino County, and Southern California.
3. Search for examples of joint training or innovations that could be used as examples for joint USAR training.
4. Questionnaires given to Training Officers, Training Facilities, and the State Fire Marshal's Office.
5. Face-to-face interview with County Fire personnel.

This author first became aware of the difficulty in obtaining the four core classes in 2006 after the determination to offer and fund classes for CFD personnel was made.

Initially, it was thought that there was simply a scheduling hurdle to overcome; however, over time it became apparent there was a bigger problem than scheduling.

Involvement of CFD personnel on a county-wide level was paramount in assessing the size of the problem. The CFD has participated in the San Bernardino County Training Officer's Association (SBCTOA) USAR Committee for several years.

Participation in the committee has allowed the CFD to remain current in events locally, county and state-wide that affect USAR. Relationships with other fire departments within the county have fostered joint training, sharing of ideas, and efficient joint operations on emergency scenes.

Through discussions, formally at meetings, and informally at training and other events, it became apparent to this author that other departments were having difficulty obtaining USAR training. Officially in August 2007, there was a discussion at the SBCTOA USAR Committee meeting that noted that there was a need to find more instructors to teach at the only local training facility in the county. Additionally, several departments were considering becoming certified training centers for some or all of the core classes (San Bernardino County Fire Chief's USAR Committee, 2007).

In order to review and assess the need for USAR in the Fire Service, several print and web based sources of information were evaluated. First, trade publications were obtained and examined. The following books were used: *The Fire Chief's Handbook*, *Managing Fire and Rescue Services*, and the student manual from the EAFSOM course at the National Fire Academy. Also, a search of the internet revealed beneficial sites from California OES, California State Fire Marshal's Office (SFM), FEMA, and Disaster Engineer.

The need for USAR in Colton was determined by meetings with the Captain in charge of HR, Captain Dana DeAntonio, and the Fire Chief. These meetings were utilized to examine the past history of USAR in Colton and the need for it in the future. Additionally, CFD's strategic plan, as previously noted, calls for comprehensive emergency services and partnerships to provide services beyond the local ability (Colton Fire Department, 2006) which includes USAR.

USAR and its need within San Bernardino County and Southern California focused on the biggest threat to the region: earthquakes. Materials relating to earthquakes in Southern California are numerous and readily available. This research utilized internet based sources from the United States Geological Survey, the California Institute of Technology, and

*Time Magazine*. Specifically, information relating to one of many fault lines in California, the San Andreas Fault, was utilized due to its potential for wide spread damage to the region.

Examples of joint HR training operations in other fire departments in printed media are difficult to find. This author found vague examples in joint training not specifically related to HR. There were however, some good examples of admonishments to form partnerships with other fire departments for generalized training opportunities. *Firehouse.com* and *Fire Engineering.com* had several examples of joint training and its benefit to departments and communities.

In an effort to branch outside of the fire service, this author examined an internet site maintained by Harvard University titled *The Government Innovators Network*. This site provided examples of innovation and specifically a study of the traits of innovators that might be duplicated in this research (Walters, 2001).

The major portion of this research was the questionnaires that were written and sent out to various agencies in San Bernardino County and the local area.

The first step was to determine the group that would be utilized for filling out questionnaires. The SBCTOA's website

was reviewed and a list of every member and their contact information was acquired. Next, the California State Fire Marshal's website was searched specifically for a list of all approved training sites for the core classes. All training sites in Orange, Riverside, San Bernardino, and San Diego Counties were contacted for this research. Lastly, the Deputy State Fire Marshal in charge of site inspections for the core classes was contacted along with the USAR coordinator with OES.

The second step in gathering research was to write the three different questionnaires.

The questionnaire for training officers consisted of the following questions:

1. Do you want your answers to remain anonymous?
2. What is your name, title, and department name?
3. How many sworn safety members are in your department?
4. Does your department have personnel trained in the four HR core classes?
5. Does your department maintain a California Office of Emergency Services typed Rescue Unit of any kind?
6. What is your current top-step hourly rate for a Firefighter/Paramedic or Firefighter if you do not have Paramedics?

7. How much does your department pay in per diem costs to firefighters while out-of-town taking training?
8. Does your department maintain constant staffing for vacant positions?
9. Does your department have a line-item in your budget for HR training?
10. Which of the following best describes your current method of obtaining the core classes for HR:
  - We do not provide department sponsored HR training in the four core classes.
  - We provide in-house, department sponsored HR training in the four core classes.
  - We pay for tuition, cover time off, and pay overtime for personnel taking the four core classes.
  - We pay for tuition and cover time off for personnel taking the four core classes.
  - We pay for tuition for the four core classes but personnel are responsible to cover their own time off.
  - We cover time off for personnel to obtain the four core classes but do not pay tuition.
  - Other
11. How many firefighters, of any rank, have obtained the four core classes in your department?

12. How many firefighters, of any rank, do you recommend your department maintain who are trained in the four core classes?

The questionnaire for training facilities consisted of the following questions:

1. Do you want your answers to remain anonymous?
2. What is your name, title, and department or institution name?
3. Does your department or institution offer the four core classes for HR?
4. What Operational Area (OA) or county do you provide training in?
5. Is your training facility approved by OES to offer the four core classes?
6. Do you offer the four core classes in one training location?
7. Was it difficult to get your facility certified; if it was, please describe the difficulties?
8. How many instructors does your department or institution have for teaching the core classes?
9. How many instructors are needed for teaching the following?
  - Rescue Systems I
  - Rescue Systems II
  - Confined Space
  - Trench Rescue

10. Has it been difficult to maintain an adequate number of instructors, and if so why?
11. How many times per year do you offer the four core classes?
12. Do you see any need for or advantages in training departments in your OA at one location?
13. What are the advantages or disadvantages to regional training?
14. What is the greatest HR training need facing your OA?
15. Is there anything else you would like to add that would assist me in my research of options for HR training?

The questionnaire for the Governor's Office of Emergency Services consisted of the following questions:

1. Do you want your answers to remain anonymous?
2. What is your name and title?
3. What are your responsibilities with the Governor's Office of Emergency Services (OES)?
4. What HR priority issues is OES dealing with currently?
5. Do you feel that there are sufficient numbers of training facilities in Southern California and specifically San Bernardino County to provide the four core classes?
6. Would you recommend that individual departments teach the four core classes internally versus other options, why or why not?

7. Is there one training facility or department in Southern California that could serve as an example of a good program to offer the four core classes?
8. Are there sufficient numbers of instructors in Southern California to teach the four core classes, and if not, why?
9. Do you see any need for or advantages in training departments in their operational area versus sending members to different locations?
10. What changes in HR response, training, and preparedness would you recommend for local government fire departments?
11. Is there anything else you would like to add that would assist me in my research of options for HR training?

The questionnaire for the SFM's Office consisted of the following questions:

1. Do you want your answers to remain anonymous?
2. What is your name and title?
3. What are your responsibilities with the SFM's Office?
4. Do you feel that there are sufficient numbers of training facilities in Southern California and specifically San Bernardino County to provide the four core classes?
5. Would you recommend that individual departments teach the four core classes internally versus other options, why or why not?

6. Is there one training facility or department in Southern California that could serve as an example of a good program to offer the four core classes?
7. What is the greatest difficulty facing training institutions that offer the four core classes?
8. Are there sufficient numbers of instructors in Southern California to teach the four core classes, and if not, why?
9. What is the process of becoming a certified HR instructor?
10. Do you see any need for or advantages in training departments in their operational area versus sending members to different locations?
11. What are the advantages or disadvantages to regional training?
12. Is there anything else you would like to add that would assist me in my research of options for HR training?

Finally a face-to-face interview was conducted with Captain Jim Pearson of the San Bernardino County Fire Department on Thursday December 6, 2007 at 0800.

The limitations of this research were the scarce information available specifically for HR joint training and the return of questionnaires. Of the 23 total questionnaires sent out; 15 were sent to training officers, six to training facilities, one to the SFM's Office, and one to OES. A total of

16 questionnaires were returned. Of the 16 returned 12 were from local training officers, three from training facilities, and one from the SFM's Office. The questionnaire sent to OES was not returned.

### Results

1. What are the time and monetary costs required to obtain the core classes for HR?

Before examining costs of time and money for the core classes, it is important to note the times are divided between two delivery models: local classes with students commuting from home or work and out-of-the-area classes with students being housed. Per Diem costs (food, lodging, and incidentals) are not necessary for local classes but are necessary for out-of-the-area classes.

The time needed to complete the four core classes according the SFM's Office is 136 hours (California State Fire Training, 2007). Upon first review it would appear that the number of hours is fixed; however, every department questioned had a different procedure for back filling vacancies of firefighters attending classes. This back filling would change the costs to departments. For purposes of this research, the back filling of fire fighters will only include actual hours in class versus call-back or commuting hours.

The following data was gathered from the questionnaires regarding hourly costs and Per Diem rates for paid departments in the survey:

-Average top-step firefighter/paramedic hourly rate:

\$26.77

-Average top-step firefighter/paramedic overtime rate:

\$40.15

-Average Per Diem rate: \$46

As previously noted there are several different ways departments pay for classes. Most of the departments surveyed paid firefighters for overtime in class and also had constant staffing. Constant staffing requires that when a firefighter is absent, their position is backfilled with another firefighter. Due to the need to back fill positions the overtime hourly rate is used to calculate costs because a firefighter will be working extra hours to be in class or will have some one filling in for them that will be on overtime.

To calculate the monetary cost to send a single firefighter/paramedic to the four core classes at a local location the following was used to determine costs:

-Overtime rate \$40.15 times 136 hours plus

-\$40.15 x 136 = \$5460.40

To calculate the monetary cost to send a single firefighter/paramedic to the four core classes at an out-of-the-area location the following was used to determine costs:

-Overtime rate \$40.15 times 136 hours plus

-Per Diem rate \$46 times 17 days

$-\$40.15 \times 136 + \$46 \times 17 = \$6242.40$

Tuition costs for each of the four core classes given at the County Fire facility in San Bernardino, CA are (Jim Pearson, personal interview, December 6, 2007):

-Rescue Systems I: \$350

-Rescue Systems II: \$425

-Confined Space Operations: \$425

-Trench Rescue: \$225

Total: \$1425

For local training location, personnel costs added to tuition reveals:

-Personnel cost: \$5460.40

-Tuition: \$1425

Total: \$6885.40

For out-of-the-area training location, personnel costs added to Per Diem and finally tuition reveals:

-Personnel and Per Diem cost: \$6242.40

-Tuition: \$1425

Total: \$7667.40

The average cost for overtime and tuition for a firefighter paramedic in the San Bernardino area to obtain the four core classes at a local location is: \$6885.40 versus an out-of-the-area location: \$7667.40. The price difference between local and out-of-the-area classes minus any travel expenses is \$782.

2. How are local fire departments currently obtaining the core classes?

The following are the results from the questionnaires returned from the 12 departments relating to how they are obtaining training presently:

-None answered: We do not provide department sponsored HR training in the four core classes.

-Two answered: We provide in-house, department sponsored HR training in the four core classes.

-Five answered: We pay for tuition, cover time off, and pay overtime for personnel taking the four core classes.

-Three answered: We pay for tuition and cover time off for personnel taking the four core classes.

-Two answered: We pay for tuition for the four core classes but personnel are responsible to cover their own time off.

-None answered: We cover time off for personnel to obtain the four core classes but do not pay tuition.

The majority of respondents pay for tuition, cover time off, and pay overtime for personnel attend the four core classes.

3. How many firefighters need training in the County?

The answer to this question is limited to the numbers needing training in the 12 departments who responded. Of the 12 departments, three have the current number of trained personnel they believe they need for USAR. Nine of the departments questioned do not have the numbers of trained personnel they believe they need for HR.

Currently, there is a documented need for 154 personnel to obtain the four core classes in the 12 departments questioned. The three departments that have the proper number of trained personnel will still need additional personnel trained in the future due to retirements and other reasons.

4. What are the options for providing HR training?

Presently there are three options for providing HR training: local training at the County Fire facility in San Bernardino, training at other, out-of-the-area, locations in Southern California, or forming some new training facility in San Bernardino. These options were determined by reviewing questionnaires sent to training facilities and the SFM's Office.

As noted before, County Fire offers the four core classes one time per year. At their current facility, County Fire has

the ability to host additional classes but is limited by the number of instructors they have. If County Fire had sufficient numbers of certified instructors, they could provide the four core classes three times per year (Jim Pearson, personal interview, December 6, 2007).

The questionnaire from the SFM's Office along with the questionnaires from the facilities that offer the core classes also noted that it was a good idea to train in the local jurisdiction due to the benefits of having joint knowledge, skills, and abilities between rescuers.

Firefighters could also continue to be sent to other training facilities outside of San Bernardino County. The questionnaires returned from facilities outside the county noted that they too were struggling to offer enough classes to meet their own needs. As mentioned in earlier, the current method San Bernardino County departments are using to obtain classes is not working. In one survey of facilities offering training it was noted that they are having a difficult time keeping enough trained instructors.

The last option for providing training is to form some type of new training facility. The cost of purchasing the land, classrooms, and training props is not included in this research.

In a personal meeting with Captain Jim Pearson (December 6, 2007), Jim described the costs to teach each of the four core classes. The costs include instructor costs, State tuition fees, and expendable training props:

-Rescue Systems I, 40-hours, 40 students:	\$23,000
-Rescue Systems II, 40-hour, 40 students:	\$27,000
-Confined Space, 40-hour, 36 students:	\$20,000
-Trench Rescue, 24-hour, 24 students:	\$7,500

This option would require obtaining a cadre of new instructors in addition to securing the proper facility. Two of the three facility questionnaires noted that it was difficult to obtain certification of their training sites. The SFM's Office questionnaire noted that there were sufficient numbers of training facilities currently in Southern California and specifically, San Bernardino County.

One unexpected result of this research was the awareness that a common problem with the training facilities was the shortage of instructors. Noted in one questionnaire, was that there appears to be a generational change between older instructors and newer instructors. Specifically, the older instructors formerly would volunteer to teach for a period of time; the newer instructors do not have many members willing to teach for free.

Another questionnaire noted that responsibilities with working a firefighter's normal work duties and then adding instructor duties were difficult to manage. It also recognized that the requirements of the SFM's Office to become a certified HR instructor were quite in depth.

### Discussion

Determining options for HR training is not a subject with much written information of past successes or failures. Determining the need for HR was accomplished by reviewing the threat with the largest impact to the fire departments in San Bernardino County: earthquake. Additionally, the provision of HR by fire departments as part of the services normally provided was reviewed. Lastly, recommendations of innovators were utilized.

This author found that the data available relating to earthquakes in Southern California is plentiful; a situation that is encouraged by their frequency of occurrence. As noted previously by Schultz and Wallace (1997), the southern San Andreas Fault is a likely location for the next big earthquake. The attention given to HR training by all of the fire departments given questionnaires demonstrated the seriousness these organizations give to HR and the threat of earthquakes. Not one department assumed that there was not a need for some

type of HR training of their personnel. If a department did not have a HR program, they were planning for one in the future. Church (1995) noted that few people believe that a quake is likely to strike their area; this is not the case with the departments questioned in this research.

Collins' (2003) belief that rescue is a primary role of modern firefighters is also an accurate appraisal of the departments reviewed in this research effort. The SBCTOA's USAR Committee is an example of the importance that the collective fire chiefs in San Bernardino County place on HR.

In the International City Management Association book *Managing Fire and Rescue Services*, Forsman (2002) noted that training in special operation areas, specifically, technical rescue are the most expensive types of training. The research for this project showed that the expenditure is in fact quite high. The discussions with Captain Jim Pearson (personal interview, December 6, 2007) along with research gained from questionnaires confirmed that a single, 40 hour class of 40 personnel, tuition and personnel costs are as follows:

-Rescue Systems I:	\$23,000
-Labor costs per hour x 40 hours x 40 people:	\$64,240
Total:	\$87,240

Using the average hourly costs plus tuition, Rescue Systems I collectively costs local fire departments \$87,240 to train 40 personnel.

Considering the cost of one of the four core classes, Reichenbach's (2007) belief that fire departments need to spend wisely and share resources is accurate. Moreover, the research noted that all three of the facilities and the SFM's Office encouraged joint, regional training for standardization and networking of local HR resources.

Walters (2001) suggestion that government programs should be simple, easy to execute, quick, and frugal, to name a few, would lend itself to utilizing resources already in place for HR training. When questioned about there being sufficient numbers of training facilities, the representative from the SFM's Office, in the questionnaire, stated there were sufficient numbers in Southern California and San Bernardino County. The last option for research question four, starting some new type of HR training facility in San Bernardino County, would be a contradiction to Walters' recommendations. The facilities questionnaires revealed that all of the respondents stated or made reference to the difficulty of becoming certified training sites; in direct opposition to Walters' suggestion of keeping innovations simple.

This author's interpretation of the study results reveals that HR in San Bernardino County has the following traits: it is important to the fire departments questioned, there is not a singular direction by all departments for training personnel, nearly all departments have a need for training, with some assistance, County Fire is best suited to deliver training, and lastly, the best option for training is to utilize County Fire's facility for the HR training needs of local government departments.

As noted, out of the 15 questionnaires sent out to local fire departments, 13 were returned; an 86% return rate. The minutes from the SBCTOA's (2007) in November included an encouragement to fill out questionnaires regarding this research. The high return rate of the questionnaires along with personal interviews demonstrated that the fire departments in the San Bernardino County give substance to their respective HR programs; not merely discussion.

It was also noted, through research, that there was not a singular direction for HR training within the County. Some departments conducted training in-house, others would send personnel to local training, and still others would send them to out-of-the-area training locations. Some departments were considering certifying their own training centers. In the SFM's

Office questionnaire, it was noted that they would not recommend that individual departments teach the four core classes internally. The questionnaire went on to note that partnerships reemphasize standardized training at the local and regional level. This author concurs with the SFM's Office.

The research also showed that every department questioned had a need, some more critical than others, for HR training. Not one department noted that they did not need training.

The greatest source of research for determining options for training was the questionnaires from the facilities and the SFM's Office and the personal interviews with Captain Jim Pearson.

The option of continuing training at out-of-the-area locations is not the best option due to costs and the inability to train with neighboring fire departments. The option to start a new HR training facility is also not good due to complexity and costs.

The best option for providing HR training in San Bernardino County is to assist County Fire, in the form of providing instructors, in offering the four core classes three times per year. Captain Jim Pearson noted that County Fire has the ability to host the classes but does not have enough instructors. He went on to say that County Fire now encouraged

non-County Fire employees to be paid instructors at the facility and that the pay was comparable to other training facilities. Jim also noted that there were two other factors affecting HR training in the County; there will soon be five core classes, with the addition of Low Angle Rescue (Low Angle) required for HR instead of four and County Fire's facility will potentially need to move in a few years due to a lease expiration.

Finally, Jim discussed the recent forming of a FEMA Regional USAR Task Force (RTF) by County Fire. The new RTF would become a joint operation with local government fire departments in the County. Departments would be encouraged to participate in the RTF; however there would be mandatory training requirements for participation. One of the requirements would be that all participating agencies would have to complete Swift Water Rescue Training (Swift Water). This research revealed that participation in the RTF would entail the four core classes, plus the additional Low-Angle and Swift Water classes (Jim Pearson, personal interview, December 6, 2007). Coincidentally, County Fire currently provides all six classes needed for participation.

The move from the current County Fire training facility could offer some way of all of the members of the SBCFCA realizing an economy of scale by pooling resources and joint

grant applications to fund a potentially better HR training facility than now exists.

The organizational implications of the study results show that there is a potential for duplication of effort within the local government fire departments in San Bernardino County. If individual departments choose to begin HR training on their own, they will not be able to utilize the lessons and successes already realized by County Fire. Additionally, the problem of not having enough certified instructors will be exacerbated by thinning the potential future pool of instructors. County Fire's instructors should be experienced and could be of assistance to mentor any future instructors from other departments who could teach for them. County Fire's program would benefit from a more diversified instructor pool and a decrease in instructor burn-out. By pooling instructors and increasing the number of core classes offered annually, all local government departments would benefit.

### Recommendations

Recommendations for options for HR training in San Bernardino County are based on a pattern suggested by Walters (2001). These recommendations are: simple in concept, easy to execute, able to be started quickly, frugal, appealing to the widest constituency possible, and apolitical.

1. Working with the SBCTOA, the SBCTOA's USAR Committee and County Fire, each participating department commit to provide one trainee instructor, committed to become certified with the SFM's Office in one of the HR core classes and willing to teach at least annually at the County Fire Training facility.
2. Working with the SBCTOA, the SBCTOA's USAR Committee and County Fire commit to schedule three opportunities annually to teach the core classes for HR.
3. Before the County Fire training facility is moved, the SBCFCA implement a committee to research and pursue Federal grant opportunities for a joint use/benefit USAR facility centrally located within San Bernardino County.

In addition to these recommendations, the author recommends CFD continue and increase participation in the SBCTOA's USAR Committee and commit at least one, if not more, instructor candidates committed to participation in County Fire's HR core class training. CFD should also commit to participation in the FEMA RTF pursuing joint training on a frequent basis with other local government departments in San Bernardino County.

The author recommends that readers wishing to increase HR training in their locales meet with other local fire departments and pursue joint training, purchasing, and response. HR

knowledge, skills, and abilities are perishable and not frequently used; responses often involve neighboring fire agencies. Ongoing training is of utmost importance; joint training increases benefit and can decrease costs.

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