NDUSTRIAL FIRE BRIGADE TRAINING

Leading Community Risk Reduction

Industrial Fire Brigade Training at the Mississippi State Fire Academy Based on the NFPA 1081 Standard

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Abstract

The Mississippi Fire Academy has developed an industrial fire training program based on the NFPA 1081 standard, but does not know which components of the program would be utilized by industries in Mississippi. The purpose of this research was to determine which sections, if any, of the program would be utilized by Mississippi industries. This research reviewed the standard and identified other organizations that provide industrial fire training. Descriptive research methods were used to identify Mississippi industries that had conducted fire training. Research procedures were used that determined interest among industries in the training program. It was determined that there is a demand for components of this program, but more research is needed regarding the certification of this program.
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Introduction

Industries may pose a significant fire threat for their community. To mitigate this threat, some industries organize an industrial fire brigade to provide fire protection. According to the Mississippi Development Authority, Mississippi has 3,046 manufacturers located in it (L. McKay, personal communication, December 1, 2004). To assist industries, the Mississippi State Fire Academy (MSFA) provides industrial fire training through its Special/Industrial Division (MSFA, 2005 Training Course Catalog).

The National Fire Protection Association adopted NFPA 1081, Standard for Industrial Fire Brigade Member Professional Qualifications, in 2001. To address this standard, an industrial fire brigade training program based on NFPA 1081 has been developed by a member of the Special/Industrial Division of the MSFA. However, the Special/Industrial Division of the MSFA, currently, provides industrial fire brigade training exclusively on a contractual basis. Industrial fire brigade training programs are not provided through open catalog enrollment. The problem is that the Special/Industrial Division of the MSFA does not know if industries in Mississippi, that have fire brigades, would utilize a program or selected components of a program based on the NFPA 1081 standard, 2001 edition (personal knowledge).

The purpose of this research is to determine which sections, if any, of a NFPA 1081 fire brigade training program would be utilized by Mississippi industries that use the MSFA for fire brigade training. This research will address the following four questions:

1. What is the NFPA 1081 standard, and what type of industrial fire training does it address?
2. What other fire training organizations provide a NFPA 1081 program?
3. How many, if any, industrial fire brigades from Mississippi used the MSFA for fire training since the adoption of the NFPA standard four years ago?

4. Which sections of the Mississippi State Fire Academy’s NFPA 1081 fire brigade training program, if any, would be utilized by industries from Mississippi that have used the MSFA for fire brigade training in the last four years?

Background and Significance

The Mississippi State Fire Academy has adopted a mission statement for its operation. The mission statement of the MSFA is:

to serve the Mississippi Fire Service Community through continuously improving quality fire protection by using effective education and technology programs that include a wide range of specialized fire service courses. Fire safety and fire investigation courses are also delivered statewide. Our belief is that each municipal, county, and industrial fire protection individual is essential to the successful functioning of their team. Technical support is provided for fire departments, and public fire safety education is provided through fire departments for the citizens of our state (MSFA, 2005 Training Course Catalog, inside cover).

Therefore, considering the MSFA mission statement, industrial fire brigade training is an essential element of community fire protection. This fire protection is designed to reduce fire risks in the community.

Current industrial fire brigade training programs provided by the Special/Industrial Division of the Mississippi State Fire Academy, generally, address industrial incipient firefighting. However, technical rescue and hazardous materials response is also provided by the Special/Industrial division of MSFA upon industrial request. These training programs are
provided for industries located in Mississippi as well as industries located outside of Mississippi (personal knowledge).

Current industrial fire training, provided by the Special/Industrial Division of MSFA, is “generated through a negotiated, contractual agreement which clearly stipulates what service is to be provided” (MSFA, 2005 Training Course Catalog, page 31). This training is, generally, formatted around the subject of incipient firefighting. These courses, normally, vary in length from 8-40 hours, based on the negotiated contract. This training is designed to meet the needs of the organization and fulfill its contract (MSFA, 2005 Training Course Catalog). As a result, the MSFA does not currently provide an industrial fire brigade training program that addresses fire brigade member professional qualifications as outlined in national standards (personal knowledge).

In 2001, the National Fire Protection Association adopted a standard that addresses Industrial Fire Brigade Member Professional Qualifications. This standard is known as NFPA 1081. In response to this standard, an industrial fire-training program, based on NFPA 1081, was developed in the Mississippi State Fire Academy’s Special/Industrial Division. However, since its development in 2003, the program has not been offered for delivery at MSFA. The problem is that the MSFA’s Special/Industrial Division does not know if industries in Mississippi with fire brigades would utilize a program or selected components of a program based on the NFPA 1081 Standard.

The Mississippi State Fire Academy is a division of the state’s Department of Insurance. As discussed, part of the academy’s mission “is to serve the Mississippi Fire Service Community through continuously improving quality fire protection by using effective education and technology programs that include a wide range of specialized fire service courses” (MSFA 2005
Training Course Catalog, inside cover). However, since the adoption of the NFPA 1081 standard in 2001, the MSFA has not offered an industrial fire brigade training program based on the professional qualifications outlined in the standard. This problem may have delayed the delivery of a fire education program that may have been effective in assisting the state’s industrial community reduce fire risk (personal knowledge).

Community risk is defined as “a product of community hazards and the vulnerability to the community from the hazards” in the Federal Emergency Management Agency (FEMA) *Leading Community Risk Reduction* (LCRR) student manual (n.d., p. SM 1-6). This manual also provides a community fire protection tool box that consists of five components. These components are identified as the five-E’s. The E’s are identified as emergency response, education, engineering, enforcement, and economic incentives (LCRR, 2003).

Using the five-E’s of the community fire protection toolbox, a training program that develops professional qualifications among industrial fire brigade members will utilize at least three of the five E’s of the community fire protection toolbox. An industrial fire brigade training program based on the NFPA 1081 standard would address education, economic incentive, and emergency response. Education, provided by the training program, would improve emergency response capabilities by industrial fire brigades in Mississippi. Improved emergency response capabilities would also create an economic incentive in the community by reducing loss due to fire in the community and the state.

Community risk is defined as a product of community hazards and the vulnerability to the community to the hazards. A community hazard can be any type of event that causes harm to the community. Vulnerability is the systems in the community that is affected by the hazardous event (LCRR, p. SM 1-77).
Members of an industrial fire brigade are internal stakeholders in the protection of their workplace. In addition, an industrial fire brigade member trained with fire brigade member professional qualifications may contribute to fire protection activities away from the workplace as a volunteer firefighter. Therefore, an effective industrial fire brigade training program may assist in the reduction of risk in the community (personal knowledge).

This research will determine the amount of demand, if there is any, among industries that conduct industrial fire brigade training at the Mississippi State Fire Academy for an industrial fire brigade member training program that addresses professional qualifications as outlined in the NFPA 1081 standard. This research will use descriptive research methods to determine which sections, if any, of a fire brigade training program based on the NFPA 1081 Standard would be utilized by Mississippi industries to train their fire brigade members.

Literature Review

The Mississippi State Fire Academy has developed an industrial fire brigade program based on the NFPA 1081 Standard. This program was developed be a Senior Instructor in the MSFA’s Special/Industrial Division. The Instructor developed this program as a Special Project to graduate from the University of Memphis. The projects faculty advisor from the University of Memphis was Dr. Sam Beach. The project, *An Industrial Fire Brigade Member Training Program, Based on NFPA 1081, For the Mississippi State Fire Academy*, received an A for its course grade from Dr. Beach and earned 3 hours of undergraduate credit from the university in the spring semester of 2003 (personal knowledge).

Since its development, this NFPA 1081 industrial fire brigade training program has been shelved, at the MSFA. It has not been used nor has it been marketed for use by the MSFA. In
summary, the academy has developed a program that has been evaluated, but it does not know if industries in Mississippi would utilize this type of program (personal knowledge).

The MSFA’s NFPA 1081 Industrial Fire Brigade training program addresses professional qualifications for industrial fire brigade members as outlined in NFPA 1081. Currently, however, the MSFA does not provide training that addresses professional qualifications for industrial fire brigade members. As discussed, current industrial fire brigade training in the MSFA’s Special/Industrial Division is “primarily dependant upon the needs of the organization receiving contractual training” (MSFA, 2005 Training Course Catalog, p. 31). Therefore, current industrial fire brigade training at MSFA is based hours requested by the individual industry receiving training, not on a national standard.

Other than the University of Memphis’ grade, there is no direct literature available about this particular program. However, literature has been obtained from the United States Fire Administration, *Fire Chief* Magazine, and from the Internet that contributed to this research. This literature was used to review industrial fire brigades, their characteristics, professional qualifications, and trends in private fire protection as a tool for the reduction of community risk.

After reviewing literature associated with this research, the Procedures for this research identify federal regulations that address industrial fire brigades. The Procedures of this research evaluates the requirements of the NFPA 1081 standard. The Procedures of this research identifies all of the Mississippi industries that have used the MSFA for fire training since the adoption of the NFPA 1081 standard in 2001. Upon identification, the research procedures also identify which areas of industrial fire brigade training, if any; these industries are interested in utilizing at the MSFA.
In “The Future of Fire Training”, published by the United States Fire Administration, professional qualifications for the fire service are discussed. This article states that,

Definitions aside, it is the walk down the main street in any city or town in America that demonstrates who in the community is professional. The physicians and nurses, the architects and engineers, the attorneys and accountants are among the top professions in any community (Onieal, D., n.d., p. 2).

Becoming a professional in these professions, generally, requires a testing process and continuing educational requirements. In addition, they usually have formal professional organizations. The fire service has most of these characteristics in theory, but does not necessarily practice them with a universally recognized system (Onieal).

Medical education was haphazard until 1910 in the United States. Law schools did not begin until 1875. Less than 100 years ago, midwives delivered babies at home and barbers provided dental care. Today, doctors, lawyers, attorneys, and other professionals commonly specialize in specific areas of practice (Onieal). This article answers the question, “Are the Fire and Emergency Services becoming specialized? You bet. The principal responsibility of the fire and emergency profession is the reduction of community risk – public education, fire prevention, code enforcement, and health and accident risk reduction” (Onieal, p. 4).

Performance standards for the fire and emergency services were established about thirty years ago. During the same period, colleges and universities began offering degree programs in the field. Today, the fire service has, “a body of knowledge, we have standards and we have standards and we have processes to assure competency (available through the International Fire Service Accreditation Congress (IFSAC) and the National Board of Fire Service Professional Qualifications (NBFSPQ or ProBoard)” (Onieal, p. 4). In addition to national standards, state and
local requirements have been established in certain jurisdictions. The USFA’s Future of Fire Training states that:

State training organizations generally attempt to provide training that is not available locally-ranging from basic recruit training to courses for chief fire officers, from hazardous materials awareness to firefighting strategies at petroleum facilities, and from farm rescue to wild land firefighting. State training organizations vary in their size and capacity, from a few people to a complex, university based system (Onieal, p. 5).

Therefore, the implementation of a NFPA 1081 program by the MSFA would contribute to making an industrial fire brigade member more specialized fire professional in the community. Training with an IFSAC or ProBoard certification that meets national standards would also validate the program according to national standards.

An editorial reply in Fire Chief Magazine (Jan. 26, 2004) states that, “You can walk into a city a look around and I bet that you would find well over 100 industrial businesses that could or would be affected by an incident or terrorist attack” (para. 1). The response also adds that, “many companies have budgets for donations and emergency response issues” (para. 3). The reply further indicates that municipal fire departments should evaluate industries for potential resources that can be used to assist in community risk reduction (Editorial reply).

According to their website, the Reason Public Policy Institute (RPPI) is a public policy think tank promoting choice, competition, and a dynamic market economy as the foundation for human dignity and progress (2003). According to John Blundell (2003) in an article entitled Fire Brigades Can Be Run in Better and Cheaper Ways, America has more than 24,000 public fire departments with almost 90 percent of them manned with volunteers. Therefore, just more than 10 percent of American fire departments are career departments. In these career departments, “as
much as 90 percent of a typical fire department’s budget is salary, so if it can be staffed with volunteers the savings are enormous” (Blundell, J. para. 12).

“Private, for-profit firefighting firms can be found Arizona, large parts of Tennessee, Georgia, and Oregon and many other states (Blundell, para. 13). “All known studies of private fire suppression show a similar if not better service is provided at a significantly lower cost for several reasons” (Blundell, para. 15). These reasons include lower salary, more pro-active in fire prevention, and their ability to multi-task. Most fire protection (as opposed to fire suppression) is private today. It is all about building design and maintenance coupled with alarms and sprinklers. “Provisions of ‘free’ fire suppression services can be very easily shown to over-investment in fire brigades and under-investment in fire prevention” (Blundell, para.10).

Considering this literature, private firms to train contractual industrial fire brigades could use a NFPA 1081 industrial fire brigade training program.

In Winning the Giant Coin Toss, Anton Reicher (July/Aug. 1999) reports about an industrial tank fire in New York that took twenty-eight hours to extinguish. The tank fire was the result of lightening striking “a tank containing three million gallons of gasoline” (Reicher, A., para. 1). Chief Richard Kozub, of the Middlesex County Hazardous Materials Unit, as cited by Reicher, stated in the article that, “fire resources as far as municipal services go were, I hate to say unlimited, but it was almost that” (para. 5). In contrast, Chief Kozub stated that, “industrial fire resources needed proved more difficult to come by” (para 6). Chief Kozub contributed this difficulty to downsizing and closures of industrial facilities in the area. He stated that, “A few years ago we had 13 different groups (participating in mutual aid), now we’re down to six and soon we’re going to be down to four” (para. 7). Considering Chief Kozub’s observation, it is apparent that industries are opting to use various fire prevention technologies and privatizing of
industrial fire brigades due to financial concerns. With this in mind, an industrial fire brigade training program based on the NFPA 1081 standard will be required for members of a privatized fire brigade.

Phil Welch (2003), Director of Gaston College Regional Emergency Services Training Center, wrote “Reactive Approach” in *Fire Chief* Magazine. This training center is located “in North Carolina…focusing on the design and fire detection and protection of nuclear generating facilities” (para. 3). The NFPA 1081 standard would apply to a nuclear generating facility. Welch states that:

According to the Nuclear Regulatory Commission, the continental United States has 104 nuclear generation facilities that provide 20% of the countries electricity. Nuclear power generation facilities must provide full-function fire brigades to serve as first responders and control emergency situations that have the potential for catastrophic consequences, as required by the NRC. These brigades are primarily composed of the facility operators, who are valuable asss because of their extensive knowledge of the plant (para. 1).

These operators receive extensive training for their job. In addition to this job training, “they also are cross-trained in firefighting methods and procedures that are based on NRC regulations and NFPA 600, 1001, 1081, and 1403 standards” (Welch, para. 2). Grand Gulf Nuclear Power Station (GGNS) is located in Mississippi and has an industrial fire brigade (personal knowledge). Since GGNS is a nuclear power generation facility located in Mississippi, a NFPA 1081 training program at MSFA could be used to train its fire brigade members to a level that meets its national standards and regulations.
Industrial Emergency Services, L.L.C., (IES) was established in March of 1999 to “meet the rapidly growing demand for professional, cost-effective emergency response and related safety services to the oil, chemical, and other high-hazard industries...” (About IES, 2005, para. 1). IES states that they are “committed to being the global benchmark company providing in-plant personnel, cooperative (cost shared) fire stations, training and professional consulting services to the oil, chemical, and other high-hazard industries” (para. 2). The goal of IES is to “build the greatest experiential and technical knowledge base within the industry” (para. 3).

IES provides answers to frequently asked questions in its Leadership Team section of its web site. In regards to outsourcing, IES states that, “outsourcing involves an industrial site, perhaps an oil refinery or a chemical plant, replacing or augmenting their on-site, internal fire brigade with an outside contractor” (Frequently asked questions, para. 1). IES states that, “outsourcing of aircraft rescue and firefighting (ARFF) services at both public and private airports has been underway for sometime...the privatization of industrial fire brigades seems to be most active, at the present time, in the oil refining, chemical and petrochemical industries” (para. 2). In summary of the I.E.S. literature, many specialized industrial fire brigades are using private, contractual services to provide industrial fire protection services. These specialized services include aircraft rescue and firefighting, ARFF. Currently at MSFA, IFSAC ARFF classes are currently provided through the academy’s Extension Services Division (MSFA 2005 Catalog, p. 70).

Procedures

The procedures for this research began with the review of federal regulations associated with industrial fire brigade training and the review of national standards adopted by the National Fire Protection Association that address industrial fire brigade training.
The federal government’s Occupational Safety and Health Administration (OSHA) provide Federal Regulations. These regulations may be found in the Code of Federal Regulations. Title 29 of the Code of Federal Regulations addresses Labor. Part 1910 of Title 29 addresses Occupational Safety and Health Standards (OSHS) (2004). Subpart L of this regulation addresses Fire Protection. §1910.156 addresses fire brigades.

In paragraph (a) of §1910.156, the scope and application of the regulation is provided. The scope of this section states that it “contains requirements for the organization, training, and personnel protective equipment of fire brigades whenever they are established by an employer” (OSHS, Title 29, Part 1910, Subpart L, §1910.156, para. 1). The application of this section states that:

The requirements of this section apply to fire brigades, industrial fire departments, and private contractual type fire departments. Personal protective equipment requirements apply only to members of fire brigades performing interior structural fire fighting. The requirements of this section do not apply to airport crash rescue or forest fire fighting operations. (C.F.R. §1910.156(a)).

In Section (b), Organization, of the regulation, an organizational statement is provided and personnel are addressed. The organizational statement in (b) (1) requires that:

The employer shall prepare and maintain a statement or written policy which establishes the existence of a fire brigade; the basic organizational structure; the type, amount, and frequency of training to be provided to fire brigade members; the expected number of members in the fire brigade; and the functions that the fire brigade is to perform at the workplace. The organizational statement shall be available for inspection by the Assistant Secretary and by employees or their designated representatives (C.F.R. §1910.156 (b)).
In (b) (2), personnel are addressed:

The employer shall assure that employees who are expected to do interior structural firefighting are physically capable of performing duties which may be assigned to them during emergencies. The employer shall not permit employees with known heart disease, epilepsy, or emphysema, to participate in fire brigade emergency activities unless a physician’s certificate of the employees’ fitness to participate in such activities is provided (C.F.R. §1910.156 (b)).

A grandfather clause is also provided in (b) (2) for employees assigned to a brigade before or after September 15, 1980. In Section (c), the following training and education requirements are provided:

(1) The employer shall provide training and education for all fire brigade members commensurate with those duties and functions that fire brigade members are expected to perform. Such training and education shall be provided to fire brigade members before they perform fire brigade and emergency activities. Fire brigade leaders and training instructors shall be provided with training and education which is more comprehensive than that provided to the general membership of the fire brigade.

(2) The employer shall assure that the training and education is conducted frequently enough to assure that each member of the fire brigade is able to perform the member’s assigned duties and functions satisfactorily and in a safe manner so as not to endanger fire brigade members or other employees. All fire brigade members shall be provided with training at least annually. In addition, fire brigade who are expected to perform interior structural fire fighting shall be provided with an education session or training at least quarterly (C.F.R. §1910.156 (c)).
Section (3) provides a reference to various fire schools in the United States, stating that “the quality of the training and education program for fire brigade members shall be similar to those conducted by such fire training schools” (C.F.R. § 1910.156). It also suggests that, when applicable, the fire training should address any unique hazards at the fire brigade members work site. Likewise, section (4) states that:

The employer shall inform fire brigade members about special hazards such as storage and use of flammable liquids and gases, toxic chemicals, radioactive sources, and water reactive substances, to which they may be exposed during fire and other emergencies. The fire brigade members shall also be advised of any changes that occur in relation to the special hazards. The employer shall develop and make available for inspection by fire brigade members, written procedures that describe the actions to be taken in situations involving the special hazards and shall include these in the training and education program (C.F.R. § 1910.156).

Section (d) addresses firefighting equipment used by a fire brigade, and section (e) addresses protective clothing for fire brigade members. Since these sections are addressed to site-management and are not related to training and education, they provided in this research.

On August 2, 2001, the National Fire Protection Association approved NFPA 1081 as an American National Standard. This 2001 edition of the NFPA 1081 provides a standard for Industrial Fire Brigade Member Professional Qualifications. In its Origin and Development section, the NFPA 1081 standard states that:

the intent is that the management of a facility utilizing the requirements of NFPA 1081 would identify those site-specific requirements applicable to the facility and incorporate them into the requirements for their industrial fire brigade members. This departure from
the traditional style of other professional qualifications documents was necessary in order to track with the NFPA 600 and OSHA requirements in 29 C.F.R. 1910.156 for fire brigades (C.F.R. § 1910.156).

The NFPA 1081 is the Standard for Industrial Fire Brigade Member Professional Qualifications. The purpose of this standard was to develop requirements for members of an organized fire brigade at specific sites or facilities. In this standard, a core set of job performance requirements and site-specific requirements were developed for each level of training addressed in the document (NFPA 1081, p.1081-1).

The NFPA 1081 standard outlines four levels of training for industrial fire brigade members. These levels are described in chapters 5 through 8 of the standard. These levels are identified as Incipient Industrial Fire Brigade Member, Advanced Exterior Industrial Fire Brigade Member, Interior Structural industrial Fire Brigade Member, and Industrial Fire Brigade Leader (NFPA 1081, p.1081-4). However, in Chapter 4 of NFPA 1081, the standard states that before a member enters training for chapters 5 through 8, “the candidate shall meet the entrance and educational requirements established by the management of the industrial fire brigade and the medical and job-related physical requirements established by NFPA 600, Standard on Industrial Fire Brigades (NFPA 1081, Chapter 4, § 4.1, p. 1081-7). NFPA 600 is the Standard on Industrial Fire Brigades.

The 2000 edition of NFPA 600 was approved as an American National Standard on February 11, 2000. This standard originated in 1902 and since has been revised many times. In 1986, it was re-designated from NFPA 27 to NFPA 600 (NFPA 600, p. 600-1).

In 1992, it “was completely revised as a standard to provide a minimum level of occupational safety and health for industrial fire brigade members consistent with the
Occupational Safety and Health Administration (OSHA)” (NFPA 600, p. 600-1). In 1996, it was revised to “include industrial fire departments, which were previously addressed in NFPA 1500, *Standard on Fire Department Occupational and Health Program*” (NFPA 600). This revision made it possible for the “authority having jurisdiction and owner/operators” (NFPA 600) to assist in determining their compliance with a standard.

Chapter 2, Requirements for All Industrial Fire Brigades, of NFPA 600 provides Job-Related Physical Performance Requirements in sections 2.5-3 through 2.5.4. This chapter requires for management to establish job-related physical requirements for fire brigade members in 2-5.3.1. It requires that members meet the physical requirements before they are assigned to the fire brigade in section 2-5.3.2. In section 2-5.3.3 it requires that the members “be evaluated annually to ensure that they continue to meet the job-related physical performance requirements” (NFPA, p. 600-9). In section 2-5.3.4, it requires that if, at any time, the member does not meet the established job-related physical requirement, and “the member shall not be permitted to continue to perform those task-specific activities” (NFPA 600). Section 2-5.4 requires the brigade member to notify the management of the team of “any changes in their physical condition that could impact their performance as an industrial fire brigade member” (NFPA 600).

In addition to the educational and physical requirements, the management of the industrial fire brigade must determine and validate the emergency medical care performance capabilities, job performance requirements, and site specific requirements for fire brigade personnel” (NFPA 1081, 1081-7).

Training organizations in the United States provide industrial fire training. In fact, C.F.R. 1910.156, Fire Brigades, addresses fire brigade training and educational programs. C.F.R. 1910.156(c)(3) states:
the quality of the training and education program for fire brigade members shall be similar to those conducted by such fire training schools as the Maryland Fire and Rescue Institute; Iowa Fire Service Extension; West Virginia Fire Service Extension; Georgia Fire Academy; New York State Department, Fire Prevention and Control; Louisiana State University Firemen Training Program, or Washington State’s Fire Service Training Commission for Vocational Education. (For example, for the oil refinery industry with its unique hazards, the training and education program for those fire brigade members shall be similar to those conducted at Texas A&M University, Lamar University, Reno Fire School, or the Delaware State Fire School) (C.F.R. §1910.156(c)(3)).

Using these training schools listed in C.F.R. 1910.156, this research will identify any, if any, of them currently provide an industrial fire brigade training program based on the NFPA 1081 standard.

Lamar University is identified in C.F.R. § 1910.156. However, Lamar University no longer operates its fire training facility. Its training facility is now operated by a private organization, Industrial Safety Training Council. To announce this acquisition, a press release was issued on July 24, 2004. A review of the training programs provided by the Industrial Safety Training Council revealed that the organization did not list an industrial fire brigade training based on the NFPA 1081 standard (id.).

The Iowa Fire Service Extension conducts industrial fire training and is identified in C.F.R. § 1910.156. Contact was made with John McPhee, Coordinator of the Certification Unit of the Fire Service Training Bureau on March 1, 2005. Mr. McPhee stated, “yes, the Iowa Fire Service Extension provided industrial fire brigade training based on the NFPA 1081 Standard” (personal communication). Their NFPA 1081 industrial fire brigade training addressed the
The New York State Department of Fire Prevention and Control is identified as a training organization in C.F.R. § 1910.156. E-mails were sent to this school, inquiring about their industrial fire training programs, in December of 2004 and in February of 2005. In March of 2005, the school replied to the February e-mail. However, in the reply, the school did not address the NFPA 1081 program issue. As a result, the school’s web site was researched for a complete listing of programs at [http://www.dos.state.ny.us/fire/residential.html](http://www.dos.state.ny.us/fire/residential.html). Upon reviewing the schools programs, it was discovered that they do not have an industrial program based on the NFPA 1081 standard.

West Virginia University Fire Services Extension, according to C.F.R. §1910.156, provides industrial fire training. Mr. Jeff Simpkins was contacted from this training organization on February 28, 2005. Jeff Simpkins is the Program Leader at the West Virginia Fire Services Extension and knowledgeable about their industrial fire brigade training. According to Mr. Simpkins, their training organization does not currently have an industrial fire brigade training program based on the NFPA 1081 Standard. However, Mr. Simpkins said that they have contracted the development of a NFPA 1081 industrial fire brigade program and hopes to have it operational in the spring of 2005. He plans to have this program ProBoard certified for his clients. (Simpkins, J., personal communication, March 1, 2005)

C.F.R. §1910.156 states that the Delaware Fire School provides industrial fire training. As a result, this research contacted the Delaware Fire School about their industrial fire brigade training. According to Steven Martin, the Deputy Director of Industrial Fire Training, “the NFPA 1081 standard is the certification standard. NFPA 600 is the training standard”
(personal communication, December 29, 2004). The Delaware Fire School offers training programs based on NFPA 600, not NFPA 1081. (E-mail correspondence, December 29, 2004, Kimberly.Vitanza@state.de.us)

According to Gary Zunino at The University of Nevada, the Reno Fire Science Academy provides an industrial program that meets the NFPA 1081 standard. It is not currently accredited; however, they expect to have it accredited by Pro Board in 2005. (E-mail correspondence, December 28, 2004, zunino@unr.edu)

The Washington State Fire School conducts industrial fire brigade training. Chuck King is the Chief Deputy State Fire Marshall in Washington. According to Chief King, the Washington State Fire School provides industrial fire brigade training based on the NFPA 1081 standard. Chapters 5, 6, 7, and 8 of the NFPA 1081 standard are addressed at the Washington State Fire School (E-mail correspondence, January 7, 2005, chuck.king@wsp.wa.gov).

The Georgia Fire Academy provides fire training. As a result, they were contacted for this research. It was discovered that Rick Kiser coordinates industrial fire training for the Georgia Fire Academy. According to Mr. Kiser, the Georgia Fire Academy provides industrial fire training that complies with NFPA 1081 (E-mail correspondence, January 4, 2005, rkiser@gpstc.state.ga.us).

The International Fire Service Accreditation Congress (IFSAC) accredits fire service programs. The mission of IFSAC is:

- to increase the level of professionalism of the fire service through accreditation of those entities who work with Assemblies within the Congress, for the accreditation of fire service training and/or education, by increasing the coordination of efforts between the Assemblies of the Congress, and serve as a mechanism of arbitration of issues of debate
In reviewing IFSAC’s 2004 Certificate Assembly Action Report, there are 58 IFSAC member entities as of September 4, 2004, and 37 accredited entities.

NFPA 1081 industrial programs are provided by three IFSAC member organizations. However, only one is in the United States. All four levels addressed in the NFPA 1081 standard are provided at LSU Fireman Training with IFSAC accreditation.

The National Board on Fire Service Professional Qualifications (Pro Board) lists five fire training organizations that provide Pro Board accredited programs that address the NFPA 1081 standard. Three of them are in the United States. They are identified as Maryland, Texas A & M Emergency Services Training Institute, and College of the Rockies (http://theproboard.org/agencies.htm).

The Mississippi State Fire Academy is an accredited entity of the International Fire Service Accreditation Congress (IFSAC). While the MSFA provides many IFSAC accredited programs, the MSFA does not offer any industrial programs that are IFSAC accredited. The MSFA does not provide any Pro Board programs (personal knowledge).

The Mississippi State Fire Academy provides industrial fire brigade training. This training is provided on a contract basis with each industrial fire brigade. The MSFA does not list dates for industrial fire training classes in its 2005 catalog. Instead, the 2005 schedule states, “Available upon Organizational Request” (MSFA Catalog, pull-out training schedule poster). However, five industrial fire-training modules are advertised and described in the MSFA 2005 training catalog.

Module I, Chemistry of Fire/Portable Fire Extinguishers, trains members “to extinguish small fires either individually or as a team member utilizing portable fire extinguishers” (MSFA...
Module II, Rescue/ Self-Contained Breathing Apparatus, uses classroom presentations and practical applications to detail “the aspects of personal protective equipment, self-contained breathing apparatus, and the basics of interior search and rescue” (MSFA 2005 Catalog). Module III, Fire Equipment/ Flammable Liquids/ Foam, “is basically geared toward using the correct equipment and technique necessary to extinguish and/or control flammable liquid fires. Basic techniques to be used against a pressurized gas fire will also be covered” (MSFA 2005 Catalog). The 2005 MSFA catalog states that Module IV, Fire Protection Systems/ Interior Fire Attack:

covers some of the basics concerning sprinkler systems, their operation, basic maintenance and common system problems which might incapacitate the fire protection system. The course is complemented with outside activities such as using sprinkler stops on flowing sprinkler heads and interior fire attacks with rescue situations (2005 MSFA Catalog, p. 34).

The MSFA 2005 catalog states that Module V, Fire Brigade Structure/ Standards Review/ ICS: introduces students to the basics of an Incident Command System so employees may gain some insight into how they fit into their own system of emergency response. Further, it introduces the reasons training standards exist, which ones apply specifically to industry, and how their own organization might be structured to improve the overall performance of emergency response personnel (p. 35).

In addition to these five industrial fire-training modules, the MSFA provides Industrial Fire Fighter Refresher Training. This course provides industries the opportunity “to have refresher skills training on a periodic basis” (MSFA 2005 Catalog, p. 35). It is primarily a, hands-on, skill based training class (2005 MSFA Catalog).
After identifying training programs in the United States and national standards associated with this research, this research identified industries in Mississippi that had an industrial fire brigade. To begin this effort, the Mississippi Development Authority was contacted. The Mississippi Development Authority (MDA) works exclusively with industries in the state. The MDA stated that there are 3,046 manufacturers in Mississippi. However, they have no documentation or records indicating how many of these manufacturers have an industrial fire brigade (McKay, L., personal communication, December 1, 2004).

The state of Mississippi had three departments that work with the fire service and deal with fire protection issues. The Mississippi Emergency Management Agency, the Mississippi Fire Marshall’s office, and the Mississippi State Fire Academy are operated by the state of Mississippi. Each department was contacted for this research.

The Mississippi Emergency Management Agency (MEMA) was contacted regarding industrial fire brigades in Mississippi. However, MEMA indicated that they do not have records regarding the number of industrial fire brigades are in Mississippi. MEMA suggested that I contact the Fire Marshall’s Office (personal communication, December 1, 2004). Likewise, Mr. David Thornburg, Assistant State Coordinator for the Mississippi Fire Marshall’s office, indicated that the Mississippi Fire Marshall’s office does not have a record of fire brigades in the state of Mississippi. Mr. Thornburg suggested that the MSFA might have the records in question (Thornburg, D., personal communication, December 1, 2004).

The Mississippi State Fire Academy is a Division of the state’s Department of Insurance. The MSFA’s Special/Industrial Division is responsible for providing industrial fire brigade training. While the MSFA does not have records regarding all of the fire brigades in the state, it had industrial fire brigade training records. The Special/Industrial Division of the MSFA had
records of training or contracts of training for industries. These records were obtained for this research.

The NFPA 1081 standard was adopted as an American national standard in 2001. As a result, training records were obtained from the Special/Industrial Division of the MSFA for the years of 2001 – 2004. These records included the division’s course responsibility and assignments for the years of 2001, 2003, and 2004. However, the division’s records for course responsibility and assignments for 2002 were unavailable. According to Butch Lee, Division Supervisor, these records were lost due to a computer problem experienced in his division (personal communication, December 2, 2004). As a result, this research utilized the division’s training contracts recorded for year 2002. These contracts were obtained for Senior Instructor, Greg Collins in December 2004.

Upon review, these training records and training contracts revealed that the MSFA’s Special/Industrial Division provided training for 34 different industries after the adoption of NFPA 1081. These records addressed the years of 2001- 2004. During this four-year period, all of the MSFA industrial fire brigade training was contracted by the organization; none of it was scheduled on the MSFA training catalog. As a result, none of the training was available for open enrollment participation (MSFA Training/Contractual Records, 2001-2004).

According to the MSFA training records, many of the 34 industries that trained at MSFA conducted fire brigade training multiple times. However, in many cases, these fire brigades used the MSFA for such specialized rescue training as confined space, high-angle rescue, or hazardous material training. The MSFA training records indicate that 29 of the 34 industries conducted training at the MSFA facilities, while four industries conducted training at their own facility.
Twenty of the 34 industries identified in this research were from Mississippi. Of the 20 industries from Mississippi, 16 industries actually conducted fire training at the MSFA. The other four industries conducted such specialized rescue training as confined space or hazardous materials. The remaining fourteen industries that trained at the MSFA were located out-of-state. Almost 90% of these out-of-state industries were from the high-hazard petroleum industry. However, a detailed examination of the industries from Mississippi that trained at MSFA revealed that the state did not have any industries from the high-risk petroleum industry that conducted industrial fire brigade training in the years between 2001- 2004.

Using these 16 industries, the application of an industrial questionnaire was used to determine the amount of demand, if there is any, among industries that conduct industrial fire brigade training at the Mississippi State Fire Academy for an industrial fire brigade member training program that addresses professional qualifications as outlined in NFPA 1081. This research questionnaire used descriptive research methods to determine which sections, if any, of a fire brigade member professional qualification program based on the NFPA 1081 Standard would be utilized by Mississippi industries to train their fire brigade members.

The research questionnaire addressed industrial fire brigades from Mississippi that have trained at the MSFA in these four years. Specifically, it focused on the 16 industrial fire brigades that have conducted actual fire training at MSFA since the years since the adoption of the NFPA 1081 standard. Therefore, the years 2001, 2002, 2003, and 2004 was used for the research. These 16 industries will be identified as the target group for the research. They were selected because they provided the only, current, baseline of known industries in Mississippi that have industrial fire brigades that conduct fire training.
Of the 16 industries identified in this research, only three were identified as high-hazard industries. These three industries include two chemical plants, First Chemical and EKA Chemical Corporations. The other high-hazard facility was identified as the Grand Gulf Nuclear Station.

The procedure used for this research questionnaire consisted of a telephone interview and application of the questionnaire. Mr. Daniel Cross conducted the questionnaire and interviews in January 2005. Mr. Cross is a Senior Instructor in the Certification Division at the MSFA. Mr. Cross contacted each industry identified for this research. A management representative from each of the 16 industries was asked three questions from the research’s industrial questionnaire. These questions are provided on the research’s Industrial Questionnaire, attached as appendix A.

The first question confirmed that the industry had conducted fire training at the MSFA. The second question confirmed that the industry still had an organized fire brigade at their site. The third question identified industries that had an interest in utilizing an industrial fire brigade training program, based on the NFPA 1081 standard. All industrial representatives that indicated that they would be interested in utilizing an industrial fire brigade program that was based on the professional qualifications outlined in the NFPA 1081 standard for its fire brigade members were then interviewed.

Upon expressing interest in utilizing an industrial fire brigade training program based on the NFPA 1081 standard, industrial representatives were interviewed regarding program delivery. This interview consisted of an open-ended question regarding sections of the program. Each representative was asked to identify which section(s) of the program that they would be interested in utilizing.
All of the Mississippi industries that have conducted fire training at the MSFA since the adoption of NFPA 1081 standard were used in this research. The procedures for this research was sufficient in determining if there was any interest among these Mississippi industries in utilizing an industrial fire brigade training program that addressed the professional qualifications outlined in the NFPA 1081 standard. This research used descriptive research methods to determine which sections, if any, of a fire brigade training program based on the NFPA 1081 standard would be utilized. It provided the results necessary to make an effective recommendation for the research’s problem statement.

Results

The Procedures of this research answers the first research question; what is the NFPA 1081 standard and what types of industrial fire training does it address? By reviewing and analyzing the contents of the standard, this research discovered that this standard became an American national professional qualifications standard for industrial fire brigade members in August of 2001. It addresses four levels of training. They are identified as incipient industrial fire brigade member, advanced exterior industrial fire brigade member, interior structural industrial fire brigade member, and industrial fire brigade leader.

The Procedures of this research also identified other fire training organizations that provide industrial fire training programs. Organizations that provide IFSAC and Pro Board certifications that comply with NFPA 1081 were also identified.

A review of MSFA training records and contracts provided an answer to the research question, how many, if any, industrial fire brigades from Mississippi have used the MSFA for fire training since the adoption of the NFPA 1081 standard? This research revealed that sixteen Mississippi industries conducted fire training at the MSFA in 2001, 2002, 2003, and 2004.
To discover which sections, if any, of the Mississippi State Fire Academy’s industrial fire brigade training program would be utilized by industries from Mississippi, this research contacted all of the sixteen Mississippi industries that had conducted fire training at the MSFA since the adoption of the NFPA 1081 standard. When contacted, each industry was asked a series of questions from the research’s Industrial Questionnaire. In it, each industry was asked if they would be interested in such a program. When an industry representative expressed an interest in utilizing the program, they were asked to select which section or sections they would be interested in utilizing.

Daniel Cross, a Senior Instructor at the MSFA, administered this research’s Industrial Questionnaire. Answers to this industrial questionnaire revealed that fourteen of the sixteen industries would be interested in utilizing an industrial fire brigade training program, based on the professional qualifications outlined in the NFPA 1081 standard, for its fire brigade members. Only two of the industries indicated that they would not be interested in utilizing such a program.

As a result, more than 87 percent of the industries that conducted fire training in the last four years at MSFA indicated that they would be interested in utilizing an industrial fire brigade program based on the NFPA 1081 standard. Of the fourteen industries that indicated an interest in the program, all of them, stated that they would be interested in the incipient industrial fire brigade section. Twelve of the fourteen industries indicated that they would also be interested in utilizing the advanced exterior industrial fire brigade member and interior structural industrial fire brigade member program sections. Fifteen of the sixteen Mississippi industries indicated that they would like to utilize a program that addressed the industrial fire brigade leader section of the standard.
To follow-up on the industrial questionnaire, all fourteen of the industries that expressed an interest in utilizing the NFPA 1081 training program were interviewed regarding their expectations and/or needs for the program. A majority of the industries preferred conducting classroom portions of the program at their facility. The primary reason cited by the industries for this need was missed work time by the employee. The industries understood that many fire-related skills would require attending the MSFA, but stated that, when possible they would prefer training provided at their facility due to time and expense factors.

Discussion

An employee of the Mississippi State Fire Academy developed an industrial fire brigade training program based on the NFPA 1081, *Standard for Industrial Fire Brigade Member Professional Qualifications* (2001). This research has addressed the question; would Mississippi industries utilize a program, or selected components of a program based on the NFPA 1081 standard.

To evaluate the quality of this program, its origination was examined. This examination revealed that an employee of the Mississippi State Fire Academy developed this program as a special project at the University of Memphis. The projects faculty advisor, Dr. Sam Beach, graded the project with an A. Therefore; this research determined that the program was adequate for delivery at the Mississippi State Fire Academy.

Literature reviewed for this research revealed that there is a need for professional qualifications in the fire service (Onieal, n.d.). This need applies to industrial fire brigades in the United States. According to an editorial reviewed in this research, industries are located in almost every community in the country (Editorial reply, January 23, 2004). Many of these
industries are vital to the livelihood of their community. Likewise, their fire brigades are established to reduce risk at their facility and their community.

Due to downsizing and closures at industries, fewer of them maintain a fire brigade (Reicher, A., 1999). To provide industrial fire protection, many industries are turning to privatization of their fire protection. This approach is believed to be less expensive and more efficient than traditional methods of fire protection. “Most fire protection (as opposed to fire suppression) is today private. It is all about building design and maintenance coupled with alarms and sprinklers. Provisions of ‘free’ fire suppression services can be very easily shown to over-investment in fire brigades and under-investment in fire prevention” (Blundell, J., 2003, para. 10).

Nuclear power generation facilities must provide full-function fire brigades to serve as first responders and control emergency situations that have the potential for catastrophic consequences, as required by the Nuclear Regulatory Commission (Welch, 2003). Grand Gulf Nuclear Power Station is located near Vicksburg, Mississippi. Grand Gulf has an industrial fire brigade. In fact, the Mississippi State Fire Academy provides annual fire brigade training for the Grand Gulf fire brigade. This research revealed that the Grand Gulf Nuclear power station was interested in utilizing an industrial fire brigade program based on the NFPA 1081 standard.

The procedures for this research revealed that there are federal regulations (C.F.R. § 1910.156) and American standards (NFPA 600 and NFPA 1081) that address industrial fire brigades. Examples of training organizations that provide training were provided in C.F.R. §1910.156.

This research revealed that there are two accreditation agencies used by the fire service, IFSAC and the Pro Board. The MSFA is an accredited entity of IFSAC, however, it does not
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offer a program based on the NFPA 1081 standard for industrial fire brigades. Currently, there is only one IFSAC entity in the United States that provides an IFSAC accredited NFPA 1081 program. The Louisiana State University’s Fire Training Program provides this program.

The MSFA currently provides industrial fire brigade training through its Special/Industrial Division. The MSFA advertises five modules of fire training in its current catalog. However, a review of industrial training records for the MSFA revealed that its industrial fire training has been based on individually created contracts. These contracts create a training program based on the industry’s negotiated contract. However, the results of this research provide significant implications in establishing a need for an industrial fire brigade training program based on the NFPA 1081 standard among current industrial clients of the MSFA.

This research revealed that, since the adoption of the NFPA 1081 standard, thirty-four industries have conducted fire training at the MSFA. Twenty of these industries were from Mississippi and sixteen of these twenty actually conducted fire training. To determine if these sixteen industries would be interested in utilizing an industrial fire brigade training program based on the NFPA 1081 program; this research administered a questionnaire to all sixteen Mississippi industries that had conducted fire training at the MSFA since 2001.

The research Industrial Questionnaire revealed that fourteen of the sixteen (about 87 percent) industries would be interested in utilizing the incipient level section of the program. Of these fourteen industries, twelve would also be interested in utilizing the advanced exterior and interior structural levels of the program. Almost 94 percent of the industries (15/16) indicated that they would be interested in utilizing the Industrial Fire Brigade Leader section of the program. The majority of these industries indicated that they would prefer conducting classroom
portions of the program at their facility and attending the MSFA for skill and/or activities associated with the program.

In addition to identifying Mississippi industries that have conducted fire training at MSFA, this research revealed that these industries represent just less than 50 percent (16/34) of the industries trained by the MSFA’s Special/Industrial Division. Almost 12 percent (4/34) of the industries trained by the MSFA were from Mississippi, but did not conduct fire training. Almost 42 percent (14/34) of the industries that the Special/Industrial Division of the MSFA trained from 2001 – 2004 were from out of the state of Mississippi.

Using information obtained in this research, it is the author’s opinion that financial issues significantly affect industrial fire brigade training in Mississippi. According to Lanny McKay of the Mississippi Development Authority, there are more than 3,000 manufacturers in the state of Mississippi. However, through the state’s Department of Insurance, this research was only able to identify sixteen Mississippi industries that actively conducted industrial fire brigade training.

A detailed examination of the industries from Mississippi that trained at MSFA revealed that the state did not have any industries from the high-risk petroleum industry that conducted industrial fire brigade training in the years between 2001-2004. In fact, only three high-hazard industries were identified in this research. These three industries consisted of two chemical plants and one nuclear station.

The MSFA has never advertised an industrial fire brigade program based on the NFPA 1081 standard. As a result, insufficient data was available for this research to determine how a marketing program would affect demand among industries for an industrial fire brigade training based on the NFPA 1081 standard. Likewise, since this research focused on in-state industries,
insufficient data was available to determine if local municipal fire departments, that provide fire protection for local industries, would be interested in utilizing this program.

Recommendations

The following recommendations are made for the Mississippi State Fire Academy regarding industrial fire brigade training based on the NFPA 1081 standard:

1. The Special/Industrial Division should continue to provide contractual fire brigade training for industrial fire brigades in Mississippi with an emphasis on the NFPA 600 Standard. According to this research, a training program based on the NFPA 1081 standard is not applicable to all industries in Mississippi. Contractual fire brigade training will continue to meet an industrial need in the state.

2. The Mississippi State Fire Academy should conduct additional research associated with the delivery of a NFPA 1081 program. This additional research should target the fourteen industries, identified in this research, that were interested in utilizing a NFPA 1081 Industrial Fire Brigade Program. The additional research should be determine how many, if any, of these industries would be interested in having the program accredited by the International Fire Service Accreditation Congress (IFSAC).

3. The Mississippi State Fire Academy should offer a non-certified NFPA 1081 program to the fourteen industries, identified in this research, that are interested in utilizing Level I (Incipient Level) of its NFPA 1081 industrial fire brigade training program in a non-certified Pilot program. Upon delivery of the program, its effectiveness should be evaluated.
4. Upon conducting a non-certified Pilot Program for the Incipient Level, the academy should conduct subsequent Pilot Programs for the Advanced Exterior, Interior Structural, and Fire Brigade Leader levels of its NFPA 1081 industrial fire brigade training program if there is any interest in a non-accredited delivery of the program.

5. After conducting Pilot Programs and researching the demand for IFSAC accreditation, the Mississippi State Fire Academy should make a determination about the need for including its current NFPA 1081 Industrial Fire Brigade Training Program in its next fiscal year’s program catalog.

6. If subsequent research indicates that industries would prefer an IFSAC accredited program, the MSFA should initiate steps to have the program IFSAC certified.

7. The Mississippi State Fire Academy should consider developing and implementing a marketing and awareness program for industries in the state that promotes the benefits of industrial fire brigades in reducing community risk. According to this research, only about one percent of the known manufacturers in Mississippi utilize the state fire academy for fire brigade training.

8. Since only about one percent of the manufacturers in the state utilize the state fire academy fire brigade training, the Mississippi State Fire Academy should seek to utilize the Mississippi Development Authority for assistance in marketing its industrial fire brigade training programs.

9. The Mississippi State Fire Academy should design a marketing campaign for its industrial fire brigade program that targets municipal and/ or volunteer fire departments in Mississippi. According to this research, the majority of the
manufacturers in the state don’t have industrial fire brigades. As a result, local fire departments, both municipal and volunteer, will need to provide industrial fire protection to reduce community risk.

10. The Mississippi State Fire Academy should consider a community risk reduction symposium that includes municipal, volunteer, and industrial fire protection representatives in the state. A symposium would be a pro-active approach in developing cooperative efforts among municipal fire departments, volunteer fire departments, and state industries to reduce community risk.
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Appendix A

INDUSTRIAL QUESTIONNAIRE

QUESTION #1

Mississippi State Fire Academy records indicate that (company name) has conducted fire brigade training at the MSFA. Is this correct?

YES  NO

QUESTION #2

Does (company name) still have an organized fire brigade?

YES  NO

QUESTION #3

If provided by the MSFA, would (company name) be interested in utilizing an industrial fire brigade program for its fire brigade members, based on the professional qualifications outlined in the NFPA 1081 standard?

YES  NO

If YES, which of the following program sections would (company name) be interested in utilizing for its fire brigade members?

A) INCIPIENT INDUSTRIAL FIRE BRIGADE MEMBER

B) ADVANCED EXTERIOR INDUSTRIAL FIRE BRIGADE MEMBER

C) INTERIOR STRUCTURAL INDUSTRIAL FIRE BRIGADE MEMBER

D) INDUSTRIAL FIRE BRIGADE LEADER