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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

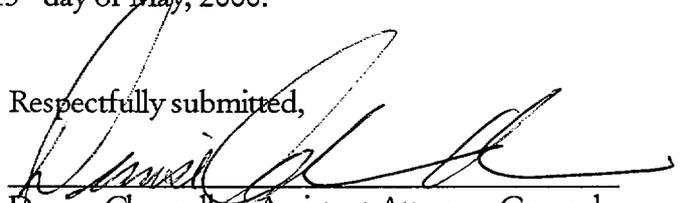
Office of
Administrative
Services

In the Matter of:)	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, LLC)	ASLBP No. 97-732-02-ISFSI
(Independent Spent Fuel Storage Installation))	May 15, 2000

**PRE FILED TESTIMONY OF GARY A. WISE
ON BEHALF OF THE STATE OF UTAH
REGARDING CONTENTION UTAH R**

State of Utah, hereby files the attached prefiled testimony of Gary A. Wise regarding State's Contention Utah R (Emergency Plan). State's exhibits to this testimony are filed separately but simultaneously with this testimony, and are numbered 1 through 10.

DATED this 15th day of May, 2000.

Respectfully submitted,


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CERTIFICATE OF SERVICE

I hereby certify that a copy of PREFILED TESTIMONY OF GARY A. WISE ON BEHALF OF THE STATE OF UTAH REGARDING CONTENTION UTAH R was served on the persons listed below by electronic mail (unless otherwise noted) with conforming copies by United States mail first class, this 15th day of May, 2000:

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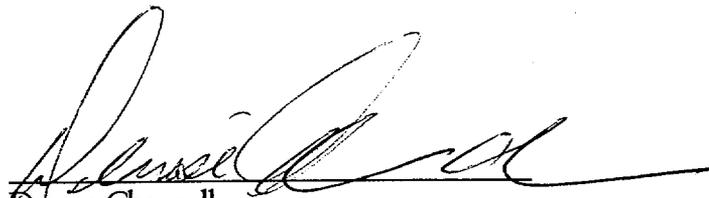
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Denise Chancellor
Assistant Attorney General
State of Utah

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:)	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, LLC)	ASLBP No. 97-732-02-ISFSI
(Independent Spent Fuel)	
Storage Installation))	May 15, 2000

**PREFILED TESTIMONY OF GARY A. WISE
ON BEHALF OF THE STATE OF UTAH
REGARDING CONTENTION UTAH R**

On behalf of the State of Utah, Gary A. Wise submits the following testimony regarding the Applicant's ability to fight fires on site at the Private Fuel Storage, LLC ("PFS") independent spent fuel storage installation ("ISFSI") site to be located on the Skull Valley Band of Goshute Indians Reservation, Utah.

Q. 1. Please state your name and qualifications.

A. 1. My name is Gary A. Wise. I am State Fire Marshal for the State of Utah, a position I have held from December 1996 to the present. A copy of my resume is attached to this testimony. The responsibilities of my office include licensing and certification of the propane industry, fireworks industry, and fire suppression industry. My office also prepares plan reviews and inspections of new construction of State-owned buildings, schools, some hospitals, nursing homes, and the like; assists the fire service in fire cause determination, and arson investigation; and provides public education in fire prevention and injury prevention.

As State Fire Marshal, I meet with Fire Chiefs around the State, many of whom are in charge of volunteer fire departments. A prime concern is to keep the Fire Chiefs apprized of current National Fire Protection Association, Inc. ("NFPA") standards and federal Occupational Safety and Health Administration ("OSHA") regulations and discuss how their departments can comply with those requirements. The State Fire Marshal's Office provides funding for the Utah Fire and Rescue Academy.

Prior to my present position, I was Chief of the Fire Division, Orem Department of Public Safety, Orem, Utah from July 1990 to December 1996. My responsibilities were to manage the Orem Fire Department, which provides the fire protection for the City of Orem,

and at the time consisted of three fire stations and 52 persons. In that position I was responsible for the Department's compliance with NFPA 1500 standards and applicable OSHA regulations. Prior to that, I was Division Commander, Support Services, Orem Department of Public Safety, from August 1988 to July 1990. My responsibilities were law enforcement related, and included communications, warrants, animal control, the holding facility, and support services. I was Fire Captain for the Orem Department of Public Safety from February 1983 to August 1988, and was station commander, responsible as the on-scene commander of fire or other emergency incidents, and managed one of the fire stations. Additionally, prior to 1983 I worked as a firefighter in Utah and California for 15 years, and held positions of Fire Lieutenant and Fire Engineer during part of that time.

I earned an A.S. degree in Fire Science from Rancho Santiago College, Santa Ana, California, and am Fire Officer II Certified, Haz-Mat Operations Level Certified, P.O.S.T. Certified Peace Officer since 1985, and EMT Certified since 1973. I attended Command & Control of Fire Department Operations at Catastrophic Disasters, National Fire Academy, January 1992, and have additional training in fire officer management and tactics, fire apparatus purchase, building construction for suppression, fire prevention inspections, fire incident management, wildland firefighting, haz-mat environmental response and incident command, CEM exercise design, emergency communications, community emergency response teams trainer, and fire service instructor.

In 1991 Utah Governor Bangerter appointed me to the State Fire Prevention Board for a six year term, and in 1994 Governor Leavitt appointed me to the State EMS Committee for a two and one half year term. I have held the position of President of the Greater Salt Lake Valley Chief Fire Officer's Association (1992) and the Utah State Fire Chief's Association (1996). Presently I am a member of the National Association of State Fire Marshals and the International Association of Fire Chiefs, and am a past member of a number of fire, emergency, rescue, and other related community organizations.

In the course of my fire department career, I developed the "Life Safety Trailer Program" for the fire service statewide; designed and implemented a new communications Dispatch Center for the City of Orem; implemented an enhanced 911 system for the City of Orem; established the statewide adoption of the Uniform Fire Code; developed and implemented several public fire education programs; developed emergency response map books for the Fire Division; developed the Vial of Life Program for Orem; and established Orem's Haz-Mat response vehicle. I was awarded the NFPA Champion Award in 1993 for Fire Prevention Programs, the Firefighter of the Year in 1984 and 1991, and the Orem Employee of the Quarter in 1990.

Q. 2. What is the purpose of your testimony?

A. 2. The purpose of my testimony is to explain the basis for my professional opinion that the Applicant will not have a sufficient number of personnel or adequately trained personnel to fight fires on site at the PFS facility.

Q. 3. What materials did you review in support of your evaluation and opinion?

A. 3. My examination and review included, but was not limited to, the Applicant's Emergency Plan ("EP"); relevant portions of the Safety Analysis Report ("SAR") and responses to Requests for Additional Information ("RAIs") as those documents relate to onsite fires; NFPA standards; OSHA regulations; and 10 CFR 72.32(a).

Q. 4. What offsite fire fighting assistance will be available to PFS and, effectively, what support could that offsite assistance render at the site?

A. 4. According to the Applicant's Emergency Plan, PFS intends to call on the Tooele County Fire Department to "augment PFSF fire fighting capabilities and to fight large fires beyond the capability of the PFSF fire brigade." EP Rev. 5 at 10-2. In addition, the response time for the PFS fire brigade personnel to be called back to the site during off-normal hours is anticipated to be approximately 90 minutes. Safety RAI Response No. 2, EP-7, dated February 10, 1999.

The fire departments in Tooele County consist of an all volunteer force. Members of the fire departments hold a variety of full time positions, such as law enforcement officers. The City of Tooele is located over 50 miles from the PFS facility and availability of such offsite assistance would be at least as long as it would take PFS to recall its personnel during off-normal hours (*i.e.*, 90 minutes). Any offsite fire fighting assistance after a delay of 90 minutes would be totally ineffective in controlling and containing onsite fires. Consequently, PFS must be totally self-reliant in its ability to fight fires onsite.

Q. 5. What is your understanding of the organization, training and equipment to be utilized by PFS personnel to fight fires at the PFS facility?

A. 5. PFS's Emergency Plan states: "A minimum of five PFSF staff personnel is required to fully staff a PFSF fire brigade." EP Rev. 5 at 4-3 (State's Exhibit 1, EP Chapter 4). The EP states that the five fire brigade members will be organized, operated, trained, and equipped in accordance with NFPA 600. Id. If fire occurs during off-hours, PFS will fill

positions through call out by telephone. Id. The estimated response time for personnel to return to the site during off-hour events is anticipated to be 90 minutes. This time estimate, however, is uncertain because PFS does not know where personnel will live or the distance and time it will take them to arrive back at the site. State's Exhibit 2, Safety RAI Response No. 2, EP-7, dated February 10, 1999.

Figure 4-1 of the EP ("Functional PFSF Organization") shows Fire Protection, as well as Security and First Aid/EMT functions coming under PFS's "Security" organization. This unit consists of a captain, a sergeant and 17 guards. It is presumed that the five fire brigade members fall under the "Security" functional organization chart on Figure 4-1. *See* Exhibit 1.

If fire breaks out at the facility, one fire brigade member "will supervise the four remaining brigade members, with two persons assigned to each hose." Safety RAI Response No. 2, EP-7, dated February 10, 1999 at p. 1 (*see* Exh. 2). This means that only five trained persons will be available to take on the necessary tasks of incident commander or officer, operator of the fire truck, manning the hoses, and providing trained back up on standby to relieve or rescue the persons manning the fire hoses. PFS plans that additional personnel, with some unknown level of fire fighting training, may also provide response to fires. EP Rev. 5 at 4-3. These quasi trained employees will be used for initial response and are to be replaced, as conditions permit, as soon as assigned fire brigade members are available. Id.

If PFS decides that, during normal working hours, it needs the assistance of another fire truck, it will send a fire brigade member five miles to the Goshute village to bring back another fire truck. State's Exhibit 3, Safety RAI Response No. 2, EP-8, dated February 10, 1999. It is unclear whether the person sent to retrieve the truck is one of the five member fire brigade team or a person from another part of the organization. It appears, however, that it must be a fire brigade member because "[o]nly properly trained PFSF personnel will operate the backup fire truck when it is used in response to fires at PFSF." Id.

The EP states that the five member fire brigade will be organized, trained, and equipped in accordance with NFPA 600. EP Rev. 5 at 4-3. The training is to include methods of controlling fires under accident conditions in accordance with fire protection procedures, search and rescue, etc. EP Rev. 5 at 6-2. The fire brigade members are also to receive training on the types of fires (including those involving radioactive materials), fire tetrahedron, dangers of fire, protective clothing, self-contained breathing apparatus, and

types of fire extinguishers and their uses as well as participate in fire drills annually. State's Exhibit 4, Safety RAI Response No. 2, EP-21, dated February 10, 1999.

The equipment available to the five member fire brigade includes automatic fire detection and suppression equipment to be stored at the canister transfer building; two pumper trucks, one onsite at the facility and the other at the Goshute village. SAR RAI No. 1, Question 9-14, dated June 15, 1998; *see also* EP Rev. 5 at 5-8. The fire fighting equipment and gear includes personnel protective clothing, self-contained breathing apparatus, respirators and anti-contamination clothing, inventoried and maintained in accordance with NFPA 600. EP Rev. 5 at 5-8 to 5-9. State's Exhibit 5, EP Rev. 5, Section 5.5.1 (pp 5-8 & 9), Equipment and Supplies.

Q. 6. What is your opinion of PFS's ability to fight fires on site?

A. 6. In my opinion, PFS has not complied with all of the requirements found in NFPA 600, *Standard on Industrial Fire Brigades*, (State's Exhibit 6), nor has it complied with all of the requirements for fire brigades as found in OSHA, 29 CFR §1910.156 (State's Exhibit 7). NFPA 600 applies to any organized private, industrial group of employees having fire fighting duties such as emergency brigades, emergency response teams, fire teams, and plant emergency organizations. In its Emergency Plan, PFS has not given an adequate "organizational statement" as required by NFPA 600 § 1-4.1 and § 2-1.2.1, and OSHA § 1910.156 (b)(1). Such a statement is to establish the "basic organizational structure; the type, amount, and frequency of training to be provided the 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." OSHA § 1910.156 (b)(1).

In its EP, PFS has provided only sketchy details on the type, amount, and frequency of training to be provided the fire brigade members. PFS states that fire brigade members will receive training that includes methods of controlling fires under accident conditions, search and rescue, and the like. EP Rev. 5, at 6-2. In addition, PFS states that fire brigade members will receive training on the types of fires (including those involving radioactive materials), fire tetrahedron, and dangers of fire. Response to Safety RAI No. 2, EP-21, dated February 10, 1999 (*see* Exh. 4). Also, PFS maintains that fire brigade members are to receive hands on training in fighting fires using all types of fire fighting equipment. *Id.* Additionally, PFS states that fire drills will be conducted at least annually. State's Exhibit 8, EP Rev. 0 at 8-2. Such statements do not meet the specificity required by NFPA 600 and thus do not suffice as a proper organizational statement. The EP affirmatively states that the PFS fire brigade is to consist of five members, but it does not state what functions those

members are to perform at the facility. To fully comply with NFPA 600, PFS must develop and articulate a proper organizational statement.

In addition, the training PSF claims it will provide appears to be deficient. If the PSF fire brigade members perform or are anticipated to perform “advanced exterior”¹ or “interior structural fire fighting”² beyond the “incipient stage,”³ then under NFPA 600, §§ 4-2.2 and 5-2.2 all fire brigade members are required to participate in a drill “at least semi-annually” to meet the general education, training, and drills requirements of NFPA 600 § 2-3. Given the unavailability of timely off-site response assistance, PFS should anticipate that the PSF fire brigade will be required to perform advanced exterior and interior structural fire fighting in emergencies at PFS. Thus, PFS’s statement that all fire brigade members participate in drills annually is deficient under NFPA 600 and must be revised.

Another concern is PFS’s statement in its EP that a “back-up fire brigade” will also provide fire response, which is unsupported by an organizational statement that describes the types, amounts, and frequency of training to be provided these back-up members. Response to Safety RAI No. 2, EP-8, dated February 10, 1999 (State's Exh. 3). Clearly, these “back-up fire brigade” members are “employees with fire fighting duties”; thus, NFPA 600 and its requirements should apply to them as well. To comply with NFPA 600, PFS must provide an organizational statement that outlines the numbers, training, and functions of the “back-up fire brigade.”

¹ Advanced Exterior Fire Fighting: Offensive fire fighting performed outside of an enclosed structure when the fire is beyond incipient stage. Advanced exterior fire fighting often requires fire brigade members to contain, control, and extinguish exterior fires involving site-specific hazards, such as flammable and combustible liquid spills or leaks, liquefied petroleum gas releases, and electrical substations. Thermal protective clothing is required and the use of self-contained breathing apparatus (SCBA) could be required. See NFPA 600, § 1-5 (Definitions).

² Interior Structural Fire Fighting: The physical activity of fire suppression, rescue, or both, inside of buildings or enclosed structures that are involved in a fire situation beyond the incipient stage. See NFPA 600, § 1-5 (Definitions).

³ Incipient Stage: Refers to the severity of a fire where the progression is in the early stage and has not developed beyond that which can be extinguished using portable fire extinguishers or hand lines. A fire is considered to be beyond the incipient stage when the use of thermal protective clothing or self-contained breathing apparatus is required or a fire brigade member is required to crawl on the ground or floor to stay below smoke and heat. See NFPA 600, § 1-5 (Definitions).

As outlined in NFPA 600 § A-1-4, the potential exposure and training is what “separates an organized fire brigade from designated employees who have some fire response duties within the general work area.” Also, under NFPA 600 § A-1-4.2, “[d]esignated employees who are intended to respond to incipient fires within their immediate work area should receive training commensurate with the duties they are expected to perform. Their responsibilities are normally limited to sounding an alarm, taking immediate action to extinguish the fire, and evacuation of the area.” However, the training these employees receive should be “commensurate with the duties and functions they are expected to perform” as required by OSHA § 1910.156(c)(1) and NFPA 600 § 2-3.1. NFPA 600 § 2-3 and chapters 3, 4, 5 and 6 outline the general education, training, and drills for all fire brigade members. The “back-up fire brigade members” should receive much the same training as the regular fire brigade members because in many foreseeable instances and due to a considerable estimated response time for the fire brigade after-hours, these “back-ups” will have to perform fire fighting duties beyond incipient fire fighting if the safety of the facility is to be maintained.

Q. 7. Do you have other concerns with PFS ability to fight fires on site?

A. 7. Yes. In my opinion the size of the PFS fire fighting group is a concern and would be insufficient to operate both the PFS onsite fire truck and the fire truck from the Goshute village. The five member PFS fire brigade may also be too small to operate any more than one hose on the PFS pumper truck.

Procedures under OSHA for fighting interior structural fires require what is termed “two-in two-out.” See State’s Exhibit 9, OSHA regulation 29 CFR § 1910.134(g)(4). Under 29 CFR 1910(g)(4), when two fire fighters are fighting an interior structural fire, two other fire fighters must be located at a safe distance from the first two so they may perform rescue operations if necessary. One of the standby fire fighters may act as incident commander so long as he or she can also perform rescue operations. 29 CFR § 1910.134(g)(4), Note 1 to paragraph (g). It is unclear from PFS’s description of the pumper truck located at the PFS site if more than one hose is available on that truck. With only five trained persons, however, PFS could not meet the two-in two-out rule such that it could operate both hoses and at the same time comply with OSHA. Furthermore, PFS would not have enough additional trained firefighters to retrieve and operate the back-up fire truck from the Goshute village.

In its EP, PFS appears to rely on the fact that a second fire truck located at the Goshute village is available to bolster the adequacy of its fire protection at the facility.

However, PFS's fire brigade consisting of five members, including the fire brigade leader, may only be adequate in size to operate one hose on the fire pumper truck located at the facility. Consequently, the PFS fire brigade is not large enough to adequately operate the back-up truck if it is needed, and thus, fails to comply with OSHA. When the PFS fire brigade is fighting a fire within the canister transfer building (*i.e.*, interior structural fire) or any other structural fire, all five fire brigade members would be needed to operate the PFS fire truck and one of the hand lines necessary to fight the fire. Two would be required on one hose, another two would need to standby, and the fifth member would operate the pumper truck. This would leave no available fire brigade members to operate another hose on the PFS pumper truck or, if needed, to safely operate the back-up fire truck from the Goshute village. Thus, if PFS wants to use more than one hose on its pumper truck or rely on the second fire truck and safely provide fire protection for the facility, it must add additional members to its fire brigade.

Q. 8. What other NFPA standard(s) could PFS follow to organize, train, and equip a fire fighting unit?

A. 8. PFS could follow NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*

Q. 9. How does NFPA 1500 differ from NFPA 600?

A. 9. The purpose of NFPA 600 is to set minimum requirements for the organizing, operating, training, and equipping of industrial fire brigades.⁴ NFPA 600 § 1-2 (State's Exh. 6). It also sets the minimum requirements for the occupational safety and health of industrial fire brigade members while performing fire fighting and related duties. NFPA 600 § 1-1.1. The standard also applies to any organized private, industrial group of employees having fire fighting duties such as emergency brigades, emergency response teams, fire teams, and plant emergency organizations. NFPA 600 § 1-1.2.

In contrast, NFPA 1500 sets minimum requirements for a fire-service-related occupational safety and health program. NFPA 1500 § 1-1.1. The standard applies to public, governmental, military, private, and industrial fire department organizations

⁴ Fire brigade is defined in NFPA 600 as an organized group of employees within an industrial occupancy who are knowledgeable, trained, and skilled in at least basic firefighting operations, and whose full-time occupation might or might not be the provision of fire suppression and related activities for their employer. See State's Exh. 6, NFPA § 1-5.

providing rescue, fire suppression, emergency medical services, hazardous materials mitigation, special operations, and other emergency services. NFPA 1500 §1-1.2. However, this standard does not apply to industrial fire brigades or industrial fire departments meeting the requirements of NFPA 600. NFPA 1500 § 1-1.3. The purpose of the standard is to specify the minimum requirements for an occupational safety and health program for a fire department and to specify safety guidelines for those members involved in rescue, fire suppression, emergency medical services, hazardous materials operations, special operations, and related activities. NFPA 1500 § 1-2.1 (State's Exhibit 10, NFPA 1500, Chapter 1 and App. A (Explanatory Material)).

Q. 10. Considering the location and the unique circumstances surrounding the PFS facility, in your opinion, which of the two above named standards should PFS comply with in organizing, training and equipping its fire fighting unit?

A. 10. I believe that the PFS fire fighting unit should be organized, trained, and equipped in compliance with NFPA 1500. As stated in NFPA 1500, most industrial fire brigades are not considered industrial fire departments, but where a “plant is located far from municipalities with organized fire departments” an industrial fire brigade may be considered an industrial fire department. NFPA 1500 § A-1-5 (Industrial Fire Department). The distance from the PFS facility to the nearest municipality with an organized fire department is a concern because if adequate back-up is needed, the lengthy response time could put the facility and the safety of those working there at risk. The closest municipality with a fire department to the PFS site is Tooele City, which is over 50 miles away, and it could take up to 90 minutes for the Tooele fire department to reach the facility after a call is made.

Additionally, the fire fighting unit, as currently organized by PFS, should comply with NFPA 1500 because it meets the requirements for an industrial fire department. The standard states that industrial fire departments “are organized and equipped for interior structural fire fighting . . . Their apparatus is similar to that used by municipal fire departments.” *Id.* Structural fire fighting is defined in NFPA 1500 as “activities of rescue, fire suppression, and property conservation in buildings, enclosed structures, aircraft interiors, vehicles, vessels, or like properties that are involved in a fire or emergency situation.” NFPA 1500 § 1-5. Likewise, the PFS fire fighting unit will be trained and expected to perform rescue and fire suppression and property conservation in the canister transfer building, other facility buildings, enclosed structures, vehicles, vessels, and like properties. Also, the fire fighting brigade at the PFS facility will be equipped for interior structural fire fighting. PFS will have two fire trucks available, one onsite and another to be located at the Goshute village some five miles away. Response to Safety RAI No. 2, EP-8,

dated February 10, 1999 (State's Exh. 3). Personnel protection and fire fighting equipment includes respirators, anti-contamination clothing, and self contained breathing apparatus. EP Rev. 5 at 5-8 (State's Exh. 5).

Furthermore, industrial fire brigades that provide rescue services are to be considered industrial fire departments. Rescue is defined in NFPA 1500 as "those activities directed at locating endangered persons at an emergency incident, removing those persons from danger, treating the injured, and providing for transport to an appropriate health care facility." NFPA 1500 § 1-5. According to the PSF Emergency Plan, the Fire Brigade will receive training in "search and rescue" and related services. EP Rev. 5 at 6-2. In sum, the PFS fire fighting unit should be staffed and trained according to NFPA 1500.

Q. 11. In your opinion, what are the consequences of having an inadequately staffed and trained organization to fight fires on site at the PFS facility?

A. 11. As a consequence of inadequate staffing and training of its fire fighting unit, PFS onsite workers and others, as well as the fire brigade itself, may be endangered and placed at risk of injury or death. Inadequate staffing and training could lead to PFS's inability to timely control onsite fires. To illustrate, flammable liquids, such as diesel fuel, would become free burning almost immediately and require immediate response by fire fighters, especially if the fire occurred in an internal structure. If left unabated, the fire would progress at a greater rate and burn for a longer period of time than if no internal attack were waged. PFS's ability to protect onsite workers is questionable when its fire fighting unit is deficiently staffed and trained, contrary to 10 CFR § 72.32(a)(5), which requires mitigation of consequences of accidents and protection of onsite workers. For the same reason, PFS would be in violation of OSHA.

Finally, if PFS security personnel take on duties other than security during a fire emergency, especially during off-normal hours, security at the facility may be compromised. Accordingly, the Applicant's Emergency Plan is inadequate to protect human health and safety or comply with NRC and OSHA regulations.

Q. 12. Does this conclude your testimony?

A. 12. Yes.

Gary A. Wise
1053 East 720 North
Orem, UT 84097
801-224-0435

**Professional
Experience**

- Utah State Fire Marshal, State of Utah, -Dec.,1996 to present
- Chief of Fire Division, Orem Department of Public Safety, Orem, UT - July 1990 to Dec., 1996
- Division Commander Support Services, Orem Department of Public Safety, Orem, UT - August, 1988 to July, 1990.
- Fire Captain, Orem Department of Public Safety, Orem, UT - Feb., 1983 to August, 1988.
- Fire Lieutenant, Fire Engineer, Firefighter, Orem Department of Public Safety, Orem, UT - Nov., 1978 to Feb., 1983.
- Firefighter/Engineer - Anaheim Fire Department, Anaheim, California, - August, 1968 to Oct., 1977.

Education

- A.S. Degree in Fire Science - Rancho Santiago College, Santa Ana, CA.
- Fire Officer II Certified
- Command & Control of Fire Department Operations at Catastrophic Disasters, National Fire Academy, January, 1992.
- Haz-Mat Operations Level Certified.
- P.O.S.T. Certified Peace Officer - 1985.
- EMT Certified since 1973.
- Other seminars and conferences as follows:
 - Dynamics of Supervision
 - Fire Service Instructor
 - Fire Officer Management & Tactics
 - Improved Management Through Better Leadership
 - Fire Incident Management
 - Fire Apparatus Purchase
 - Wildland Firefighting
 - Building Construction for Suppression
 - Fire Prevention Inspections
 - Haz-Mat Environmental Response
 - CEM Exercise Design
 - Emergency Communications
 - I.C./Emergency Communications Center
 - Community Emergency Response Teams Trainer
 - Haz-Mat Incident Command

Professional

- Organizations** - Appointed by Governor Bangarter to the State Fire Prevention Board for 6 year term - 1991.
- Appointed by Governor Leavitt to the State EMS Committee for 2 ½ year term - 1994.
 - President, Greater Salt Lake Valley Chief Fire Officer's Assoc. - 1992.
 - President of the Utah State Fire Chief's Association - 1996.
 - Member of the National Association of State Fire Marshals
 - Member of the International Association of Fire Chiefs
 - Past Member of ;
Board of Directors for Orem City Employee's Credit Union.
Utah State Paramedic Advisory Subcommittee.
Orem City Development Review Committee.
Utah County Fire Chief's Association.
Utah State Fire and Rescue Academy's Standard and Training Council.
Utah State EMS Trauma Task Force Committee.
Utah Attorney General's Regional Exchange Effort (AGREE).
Utah County EMS Council.

**Professional
Accomplishments**

Developed the "Life Safety Trailer Program" for the fire service statewide.
Designed, purchased equipment and implemented new communications Dispatch Center for the City of Orem.
Implemented Enhanced 911 System for the City of Orem.
Statewide adoption of the Uniform Fire Code established through the State Fire Prevention Board.
Implemented several public fire education programs.
Developed emergency response map books for the Fire Division.
Developed Vial of Life Program for Orem, Utah.
Established Orem's Haz-Mat Response Vehicle in 1992.
Awarded the NFPA Champion Award in 1993 for Fire Prevention Programs.
Awarded Firefighter of the Year twice - 1984 and 1991.
Awarded Orem Employee of the Quarter - 1990.