

TENNESSEE VALLEY AUTHORITY

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JUN 13 1988

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of
Tennessee Valley Authority

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Docket Nos. 50-327
50-328

SEQUOYAH NUCLEAR PLANT (SQN) - STAFFING OF FIRE BRIGADE

Similar to our previous discussions concerning Browns Ferry Nuclear Plant, TVA is informing NRC of its intent to staff the SQN fire brigade with personnel from a new onsite Fire Operations Unit. The present fire brigade is staffed by the assistant shift engineer as the fire brigade leader and four Operations personnel. The reorganized fire brigade will be controlled by the assistant shift engineer (now referred to as the assistant shift operations supervisor) as the incident commander and staffed by the brigade leader and four qualified individuals from the onsite Fire Operations Unit. This new approach will provide trained, dedicated fire suppression personnel to respond to fires and augment the Operations staff. This will allow the Operations staff to concentrate their efforts on plant safety and will enhance SQN's ability to handle fire emergencies. Enclosure 1 provides an overview of the plan for incorporating the onsite Fire Operations Unit into the fire brigade.

The new fire brigade organization is in compliance with SQN technical specification change 87-44 submitted to NRC by TVA letter dated March 1, 1988. This change indicates that the fire protection responsibility remains the functional responsibility of the plant manager as is presently shown in the existing technical specifications. TVA has reviewed correspondence concerning the brigade requirements and concludes that the new fire brigade organization meets or exceeds the existing fire brigade commitments and requirements. Because SQN is only changing the composition of the fire brigade and will continue to satisfy existing requirements, SQN plans to implement the new fire brigade organization on June 15, 1988.

As documented previously in correspondence with NRC, SQN is committed to Appendix A of Branch Technical Position (BTP) APCSB 9.5-1. TVA is providing in enclosure 2 a comparison to BTP CMEB 9.5-1, section C.3, Fire Brigade (a later revision of the same BTP). This comparison demonstrates that the reorganized fire brigade meets or exceeds the existing fire brigade commitments and requirements. However, TVA remains committed to Appendix A of BTP APCSB 9.5-1; and no new commitments are made in this submittal.

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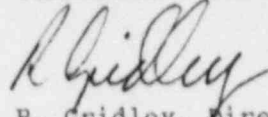
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Please refer any questions regarding this matter to Les Ginn at (615) 751-7667.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



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Enclosures

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ENCLOSURE 1

OVERVIEW OF THE FIRE EMERGENCY RESPONSE ORGANIZATION AT SEQUOYAH NUCLEAR PLANT

Sequoyah Nuclear Plant (SQN) is upgrading its manual fire suppression capabilities by implementing a new Fire Operations Unit. This organization reports to a member of the Plant Manager's staff for all routine functions, but reports to the shift operations supervisor (formerly the shift engineer) during emergencies. This new dedicated organization will greatly improve the manual fire suppression activities at SQN.

This philosophy of providing the plant Operations staff with highly trained suppression personnel to augment and support the incident commander during emergencies is an example of SQN's dedication in achieving its goal of excellence in the area of fire protection.

This new approach will provide trained, dedicated fire suppression personnel to respond to fires and augment the Operations staff. This will allow Operations staff to concentrate their efforts on plant safety and will enhance SQN's ability to handle fire emergencies.

The assistant shift operations supervisor (formerly the assistant shift engineer) will now function as the incident commander. The incident commander responds to all plant fire emergencies and provides the necessary technical knowledge of safe shutdown systems and equipment to determine the effects of fire and fire suppressants on safety-related systems and equipment.

He will remain in direct communications with the shift operations supervisor/emergency coordinator in order to provide any necessary technical information that may be required for the plant Operations staff to safely shut down an operating reactor if a fire occurs and damages safety-related equipment or components. In case of multiple fire events occurring simultaneously, the shift operations supervisor has the knowledge and authority to direct firefighting resources to the fire emergency that presents the greatest threat to the safety of the public.

The Fire Operations Unit at SQN consists of a group of firefighters who are highly trained in a wide range of emergency situations, from hazardous materials handling to emergency medical services.

Each duty Fire Operations shift is nominally composed of the following five personnel: a fire captain (brigade leader), who has professional fire service experience; and four fire operators.

These personnel have completed the following training and certification:

1. Fire Operations personnel have met the minimum standards as a firefighter II, as set forth in the National Fire Protection Association's (NFPA) Professional Standard 1001, and have been certified to at least this level by the National Professional Qualification Board (NPQB). Firefighter II certification requires approximately 250 hours of training.

2. All captains and many of the Fire Operations personnel have received certification from the NPQB in accordance with the standards set forth by the NFPA for the following: firefighter III, fire instructor I, fire officer I, and fire apparatus driver operator.
3. Fire operators are scheduled to be certified in Tennessee as emergency medical technicians.
4. Each member of Fire Operations has completed at least 80 hours of classroom instruction on site-specific systems, plus approximately 100 hours of on-the-job training (OJT) in systems familiarization. This training is documented by using qualification cards that have approval by the Fire Protection Section Supervisor, responsible Plant Manager, and Chief, Operations Training Branch.
5. Fire Operations members have completed at least 80 hours of classroom instruction in site-specific fire protection systems.
6. Fire Operations members have completed an OJT program of plant facilities. This training is documented by using qualification cards that have received approval by the Fire Protection Supervisor, responsible Plant Manager, Operations Group Supervisor, and Chief, SQN Training Branch.
7. Fire Operations members have completed a site-specific, 40-hour Emergency Health Physics Training Course.
8. Fire Operations has responded successfully as a team member in announced and unannounced drills that have been evaluated by the Fire Protection Staff, representatives from the Site Emergency Services Training Unit, and the Operations Section.
9. Fire Operations has received training on inspection, testing, and maintenance of plant fire-protection equipment and systems.

Branch Technical Position CMEB 9.5-1 Comparisons

Note. SQN is committed to Appendix A of BTP APCS 9.5-1. This comparison with BTP CMEB 9.5-1 is for ease of review by NRC and does not constitute a commitment to this later revision of BTP 9.5-1. Portions quoted from this later version are underlined for emphasis.

SECTION C.3. - FIRE BRIGADEC.3.a

"The need for good organization, training, and equipping of fire brigades at nuclear power plant sites requires that effective measures be implemented to ensure proper discharge of these functions. The guidance in Regulatory Guide 1.101, "Emergency Planning for Nuclear Power Plants," should be followed as applicable."

TVA RESPONSE TO C.3.a

The Manager of Nuclear Power, who has management control over all organizations involved in fire protection activities for TVA's nuclear plants, has responsibility for the SQN fire protection program. This responsibility has been delegated by the SQN Site Director to the Plant Manager, who has management control over all organizations involved in fire protection activities for his facility. The day-to-day implementation of the fire protection program has been delegated to a member of the Plant Manager's staff. During normal operation, Fire Operations reports functionally and administratively to this manager. During an emergency, Fire Operations reports to the shift operations supervisor (formerly the shift engineer).

The basic recommendations of NFPA 600, "Private Fire Brigades," were used in formulating the guidelines for the organization and the training and operating of the fire brigade.

The responsibility for the fire-fighting training of the plant's fire brigade is delegated to the Division of Nuclear Training (DNT), Fire Protection and Emergency Service Training Section.

Minimum training and experience standards have been established for the personnel within DNT responsible for training of the fire brigade. The training program personnel have been evaluated by the NFPA. The NFPA determined that the training personnel were qualified for the positions they held as of January 1988. These training personnel have been certified by the NPQB to at least the level of fire instructor II in accordance with standards set forth in the NFPA Professional Standard 1041.

The shift operations supervisor assumes overall responsibility for all plant fire emergencies. The incident commander/assistant shift operations supervisor responds to plant fire emergencies and reports directly to the shift operations supervisor. It is recognized that, during a fire emergency, the five-man brigade is dedicated to fire suppression; therefore, the plant has developed a support mechanism consisting of additional personnel to render logistical and technical assistance to the fire brigade. These personnel will not be involved in fire suppression operations or activities. This will allow the brigade to devote full energies to fire suppression. This support mechanism will be established under the control of the incident commander during a fire emergency.

The responsibilities of the fire brigade positions are defined in Physical Security Instruction (PHYSI) 13 entitled, "Fire," and correspond with the actions required by the firefighting procedures. The responsibilities of the fire brigade members under normal plant conditions do not conflict with their responsibilities during a fire emergency.

Fire brigade members are medically evaluated to ensure that they can perform strenuous activities and obtain a medical clearance appropriate for fire brigade duty and training.

The minimum number of trained fire brigade members available onsite for each operating shift is a leader and four members.

Specific prefire plans are provided for those areas identified as presenting unusual hazards to safety-related equipment because of combustible loading, susceptibility to fire damage, or other unusual condition. Each prefire plan includes, as applicable, the following subjects:

1. POSTULATED FIRE EMERGENCY - This section of the plan identifies the combustibles in the areas covered by the plan.
2. LOCATION - The fire location is identified in procedures using standard plant elevations and area designations.
3. METHOD OF ACCESS - This section addresses the most favorable and alternate directions from which to attack the fire. Some of the factors considered are ventilation, access hallways, stairs and doors, and the best elevation for fighting the fire. Any access or egress routes that involve locked doors are specifically identified in the procedure with the appropriate precautions and methods for access clearly outlined.
4. FIRE PROTECTION AVAILABLE - This section specifies the type and closest location of available extinguishing equipment that is best suited for the combustibles in that area.
5. MANPOWER REQUIREMENTS - The procedure specifies any unique manpower requirements above and beyond the normal fire brigade complement.

6. FIRE BRIGADE ACTIONS - Special duties, such as hose laying, extinguishment, advance support supplies, conducting radiation surveys, communication with the control room, and coordination with outside fire departments, are assigned by job title so that all firefighting functions are covered by any complete shift fire brigade.
7. RELATED CONSIDERATIONS AND HAZARDS - In addition to precautions that must be taken to protect the fire brigade from smoke inhalation and carbon dioxide or requirements for use of respiratory protection equipment, this section also gives consideration to unusual hydraulic or electrical systems in the area that could increase the hazard because of overpressurization, spillage, or electrical hazards. Consideration is also given to vital heat-sensitive components and hazardous combustible sources in the area that should be kept cool. Each prefire plan addresses ventilation necessary to remove smoke from the fire area. These ventilation alignments do not violate containment criteria. Vital systems, structures, and components and their protection are considered.

The control room operator initiates a fire brigade response immediately upon confirmation of all valid fire alarms. All available information on the fire emergency is immediately conveyed to the incident commander. The control room operator immediately announces the location of the fire emergency over the public address system and periodically thereafter. The control room operator discontinues the fire alarm when notified by the incident commander that the emergency is over or the situation is under control.

C.3.b

"A site fire brigade trained and equipped for fire fighting should be established to ensure adequate manual fire fighting capability for all areas of the plant containing structures, systems, or components important to safety. The fire brigade should be at least five members on each shift. The brigade leader and at least two brigade members should have sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown capability. The qualification of fire brigade members should include an annual physical examination to determine their ability to perform strenuous fire fighting activities. The shift supervisor should not be a member of the fire brigade. The brigade leader shall be competent to assess the potential safety consequences of a fire and advise control room personnel. Such competence by the brigade leader may be evidenced by possession of an operator's license or equivalent knowledge of plant safety-related systems."

TVA RESPONSE TO C.3.b

The SQN fire brigade is trained and equipped for fire fighting to ensure adequate manual fire fighting capability for all areas of the plant containing structures, systems, or components important to safety. The fire brigade has available at least five members on each shift. The incident commander for these areas is an assistant shift operations supervisor who is licensed and has sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown

capability. Additionally, the fire brigade leaders and members have been given specific classroom and OJT to provide knowledge of safety-related systems. The qualifications of the fire brigade members include an annual physical examination to determine their ability to perform strenuous fire fighting activities. The shift operations supervisor is not a member of the fire brigade. The incident commander is competent to assess the potential safety consequences of a fire and advise the control room personnel.

C.3.c

"The minimum equipment provided for the brigade should consist of personal protective equipment such as turnout coats, boots, gloves, hard hats, emergency communications equipment, portable lights, portable ventilation equipment, and portable extinguishers. Self-contained breathing apparatus using full-face positive-pressure masks approved by NIOSH (National Institute for Occupational Safety and Health--approval formerly given by the U.S. Bureau of Mines) should be provided for fire brigade, damage control, and control room personnel. At least 10 masks shall be available for fire brigade personnel. Control room personnel may be furnished breathing air by a manifold system piped from a storage reservoir if practical. Service or rated operating life shall be a minimum of one-half hour for the self-contained units.

At least two extra bottles should be located onsite for each self-contained breathing unit. In addition, an onsite 6-hour supply of reserve air should be provided and arranged to permit quick and complete replenishment of exhausted supply air bottles as they are returned. If compressors are used as a source of breathing air, only units approved for breathing air shall be used; compressors shall be operable assuming a loss of offsite power. Special care must be taken to locate the compressor in areas free of dust and contaminants."

TVA RESPONSE TO C.3.c

The minimum equipment provided for the fire brigade meets the NRC guidelines. At least 10 self-contained breathing apparatus and 20 spare air bottles are available for use by the fire brigade. A six-hour supply of reserve air is provided through additional spare bottles.

3.C.d.1

"The fire brigade training program shall ensure that the capability to fight potential fires is established and maintained. The program shall consist of an initial classroom instruction program followed by periodic classroom instruction, fire fighting practice, and fire drills."

- (1) "The initial classroom instruction should include:
- (a) Indoctrination of the plant fire fighting plan with specific identification of each individual's responsibilities.
 - (b) Identification of the type and location of fire hazards and associated types of fires that could occur in the plant.
 - (c) The toxic and corrosive characteristics of expected products of combustion.
 - (d) Identification of the location of fire fighting equipment for each fire area and familiarization with the layout of the plant, including access and egress routes to each area.
 - (e) The proper use of available fire fighting equipment and the corrective method of fighting each type of fire. The types of fires covered should include fires in energized electrical equipment, fires in cables and cable trays, hydrogen fires, fires involving flammable and combustible liquids or hazardous process chemicals, fires resulting from construction or modification (welding), and record file fires.
 - (f) The proper use of communication, lighting, ventilation, and emergency breathing equipment.
 - (g) The proper method for fighting fires inside buildings and confined spaces.
 - (h) The direction and coordination of the fire fighting activities (fire brigade leaders only).
 - (i) Detailed review of fire fighting strategies and procedures.
 - (j) Review of the latest plant modifications and corresponding changes in fire fighting plans.
 - (k) Training of the plant fire brigade should be coordinated with the local fire department so that responsibilities and duties are delineated in advance. This coordination should be part of the training course and should be included in the training of the local fire department staff.
 - (l) Local fire departments should be provided training in operational precautions when fighting fires on nuclear power plant sites and should be made aware of the need for radiological protection of personnel and the special hazards associated with a nuclear power plant site.

Note: Items (i) and (j) may be deleted from the training of no more than two of the non-operations personnel who may be assigned to the fire brigade."

TVA RESPONSE TO C.3.d.1

The fire brigade training program ensures that the capability to fight potential fires is established and maintained. The program consists of an initial classroom instruction program followed by periodic classroom instruction, fire fighting practice, and fire drills.

The training program instruction includes:

Indoctrination of the plant fire fighting plan with specific identification of each individual's responsibilities.

Identification of the type and location of fire hazards and associated types of fires that could occur in the plant.

The toxic and corrosive characteristics of expected products of combustion.

Identification of the location of fire fighting equipment for each fire area and familiarization with the layout of the plant, including access and egress routes to each area.

The proper use of available fire fighting equipment and the correct method of fighting each type of fire. The types of fires covered include fires in energized electrical equipment, fires in cables and cable trays, hydrogen fires, fires involving flammable and combustible liquids or hazardous process chemicals, fires resulting from construction or modification (welding), and record file fires.

The proper use of communication, lighting, ventilation, and emergency equipment.

The proper method for fighting fires inside buildings and confined spaces.

The direction and coordination of the fire fighting activities (fire captains).

Detailed review of fire fighting strategies and procedures.

Review of the latest plant modifications and corresponding changes in fire fighting plans.

Arrangements have been made with the local fire department to provide assistance.

Annual briefings are conducted for the local fire department officers and fire fighters to ensure their continued understanding of their role in the event of a fire emergency at the plant and to make them aware of the potential radiation hazards and equipment danger.

An incident commander course is given to new incident commanders who have not been previously trained and annually to all incident commanders. This course provides classroom instruction to ensure that the incident commanders are trained in fire protection systems, effects of suppressants on plant equipment and safety systems, and incident command.

C.3.d.2

"The instruction should be provided by qualified individuals who are knowledgeable, experienced, and suitably trained in fighting the types of fires that could occur in the plant and in using the types of equipment available in the nuclear power plant."

TVA RESPONSE TO C.3.d.2

DNT is responsible for providing the training for fire fighting. The NFPA has evaluated the training program and determined that the instructors have the proper qualifications. The NPQB has approved DNT's Fire Protection and Emergency Services Training Section as a national certification agency for fire fighter I, II, and III; fire instructor I and II; fire officer I; and fire apparatus driver operator.

C.3.d.3

"Instruction should be provided to all fire brigade members and fire brigade leaders."

TVA RESPONSE TO C.3.d.3

Instruction is provided to fire brigade members and fire brigade leaders. Incident commanders have received training in fire protection systems and effects of suppressants on plant equipment and safety systems.

C.3.d.4

"Regular planned meetings should be held at least every 3 months for all brigade members to review changes in the fire protection program and other subjects as necessary."

TVA RESPONSE TO C.3.d.4

Quarterly meetings are held for fire brigade members and fire brigade leaders that include a review of changes in the fire protection program and other subjects as necessary. Incident commanders are made aware of changes to the fire protection program by periodic training letters.

C.3.d.5

"Periodic refresher training sessions shall be held to repeat the classroom instruction program for all brigade members over a 2-year period. These sessions may be concurrent with the regular planned meetings."

TVA RESPONSE TO C.3.d.5

The quarterly refresher training sessions are held in order to repeat the classroom instruction program for all brigade members over a two-year period.

C.3.d.6. - Practice

- a. "Practice sessions should be held for each shift fire brigade on the proper method of fighting the various types of fires that could occur in a nuclear power plant. These sessions shall provide brigade members with experience in actual fire extinguishment and the use of emergency breathing apparatus under strenuous conditions encountered in fire fighting."
- b. These practice sessions should be provided at least once per year for each fire brigade member."

TVA RESPONSE TO C.3.d.6

- a. An annual refresher course is performed for classroom review and "hands on" exercises. Specific skills, such as use of self-contained breathing apparatus, hose lines, and extinguishers, are enhanced while training at a slower pace than would be experienced in a drill.

The classroom percentage is approximately 10 percent to support the approximately 90-percent practical skills training.

- b. Practice sessions are annual.

C.3.d.7 - Drills

- a. "Fire brigade drills should be performed in the plant so that the fire brigade can practice as a team."
- b. Drills should be performed at regular intervals not to exceed 3 months for each shift fire brigade. Each fire brigade member should participate in each drill, but must participate in at least two drills per year.

A sufficient number of these drills, but not less than one for each shift fire brigade per year, should be unannounced to determine the fire fighting readiness of the plant fire brigade, brigade leader, and fire protection systems and equipment. Persons planning and authorizing an unannounced drill should ensure that the responding shift fire brigade members are not aware that a drill is being planned until it is begun. Unannounced drills should not be scheduled closer than 4 weeks."

"At least one drill per year should be performed on a "back shift" for each shift fire brigade.

- c. The drills should be preplanned to establish the training objectives of the drill and should be critiqued to determine how well the training objectives have been met. Unannounced drills should be planned and critiqued by members of the management staff responsible for plant safety and fire protection. Performance deficiencies of a fire brigade or of individual fire brigade members should be remedied by scheduling additional training for the brigade or members.

Unsatisfactory drill performance should be followed by a repeat drill within 30 days.

- d. These drills should provide for local fire department participation periodically (at least annually).
- e. At 3-year intervals, a randomly selected unannounced drill should be critiqued by qualified individuals independent of the licensee's staff. A copy of the written report for such individuals should be available for NRC review.
- f. Drills should as a minimum include the following:
 - i. Assessment of fire alarm effectiveness, time required to notify and assemble fire brigade, and selection, placement, and use of equipment and fire fighting strategies.
 - ii. Assessment of each brigade member's knowledge of his or her role in the fire fighting strategy for the area assumed to contain the fire. Assessment of the brigade members' conformance with established plant fire fighting procedures and use of fire fighting equipment, including self-contained emergency breathing apparatus, communication equipment, and ventilation equipment, to the extent practicable.
 - iii. The simulated use of fire fighting equipment required to cope with the situation and type of fire selected for the drill. The area and type of fire chosen for the drill should differ from those used in the previous drills so that brigade members are trained in fighting fires in various plant areas. The situation selected should simulate the size and arrangement of a fire that could reasonably occur in the area selected, allowing for fire development due to the time required to respond, to obtain equipment, and organize for the fire, assuming loss of automatic suppression capability.
 - iv. Assessment of brigade leader's direction of the fire fighting effort as to thoroughness, accuracy, and effectiveness."

TVA RESPONSE TO C.3.d.7

- a. (7)(a), (b), and (c). Periodic drills are conducted that meet all of these requirements. An incident commander participates in these drills.
- d. The local fire department participates in an annual drill and drill critique.
- e. This drill is a portion of the three-year fire protection audit conducted by a qualified, outside consultant under contract to the Division of Nuclear Quality Assurance. The drill observers include individuals who are not TVA employees.
- f. (i through iv.) PHYSI-13, "Fire," establishes the SQN fire drill program. The SQN program complies with these guidelines.

C.3.d.8 - Records

"Individual records of training provided to each fire brigade member, including drill critiques, should be maintained for at least 3 years to ensure that each member receives training in all parts of the training program. These records of training should be available for NRC review. Retraining or broadened training for fire fighting within buildings should be scheduled for all those brigade members whose performance records show deficiencies."

TVA RESPONSE TO C.3.d.8

Individual training records, including drill critiques, are maintained by Document Control and retained for three years. Retraining or broadened training for fire fighting within buildings is scheduled for all those brigade members whose performance records show deficiencies.

C.3.d.9 - Guidance Documents

"NFPA 27, "Private Fire Brigade," should be followed in organization, training, and fire drills. This standard also is applicable for the inspection and maintenance of fire fighting equipment. Among the standards referenced in this document, NFPA 197, "Training Standard on Initial Fire Attacks," should be utilized as applicable. NFPA booklets and pamphlets listed in NFPA 27 may be used as applicable for training references. In addition, courses in fire prevention and fire suppression that are recognized or sponsored by the fire protection industry should be utilized."

TVA RESPONSE TO 3.C.d.9

The fire brigade is organized, trained, and drilled following the guidelines of NFPA 600, "Private Fire Brigades." TVA's training program has been reviewed by the NPQB and accredited as a national certifying agency within the National Professional Qualification System for the Fire Service for the following levels:

- Fire Fighter I, II, and III
- Fire Instructors I and II
- Fire Officer I
- Fire Apparatus Driver Operator

Fire fighting equipment maintenance and inspection are performed by the fire protection staff following the guidance of NFPA 600.