

TENNESSEE VALLEY AUTHORITY

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APR 29 1988

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

Gentlemen:

In the Matter of)	Docket Nos. 50-259
Tennessee Valley Authority)	50-260
		50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - STAFFING OF FIRE BRIGADE

As a result of numerous discussions with the NRC staff, TVA is informing NRC of its intent to staff the BFN fire brigade with personnel from a new onsite Fire Emergency Response Organization. The present fire brigade is staffed by the assistant shift engineer as the incident commander and four operations personnel. The reorganized fire brigade will be staffed by the assistant shift engineer (now referred to as the assistant shift operations supervisor) as the incident commander and five qualified individuals from the onsite Fire Emergency Response Organization. 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 BFN's ability to handle fire emergencies. Enclosure 1 provides an overview of the plan for incorporating the onsite Fire Emergency Response Organization into the fire brigade.

The new fire brigade organization is in compliance with the existing BFN Technical Specification requirements. Therefore, a license amendment or technical specification amendment is not required to implement the new fire brigade organization. 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. Since BFN is only changing the composition of the fire brigade and will continue to satisfy existing requirements, BFN plans to implement the new fire brigade organization on April 29, 1988.

As stated in a TVA letter to NRC dated April 4, 1988 concerning the "Browns Ferry Nuclear Plant - Fire Protection Report," TVA is providing in enclosure 2 a revised comparison to Branch Technical Position (BTP) CMEB 9.5-1, section C.3, Fire Brigade. This comparison demonstrates that the reorganized fire brigade is in compliance with section C.3, Fire Brigade, of BTP CMEB 9.5-1.

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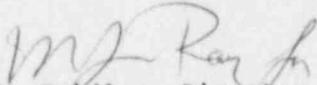
U.S. Nuclear Regulatory Commission

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Please refer any questions regarding this matter to Patrick Carier at
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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 BROWNS FERRY NUCLEAR PLANT

Browns Ferry Nuclear Plant (BFN) is upgrading its manual fire suppression capabilities by implementing a new Fire Emergency Response Organization. This organization reports to the manager of Fire Protection 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 BFN.

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 BFN'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 Operation's staff to concentrate their efforts on plant safety, and will enhance BFN's ability to handle fire emergencies.

The incident commander will continue to be an Assistant Shift Operations Supervisor (previously known as the Assistant Shift Engineer). 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 shutdown 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 which presents the greatest threat to the safety of the public.

The Fire Emergency Response Organization at BFN 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 Emergency Response group is nominally comprised 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 Emergency Response Organization members have as a minimum national certification as a Firefighter II by the National Fire Protection Association (NFPA). Firefighter II certification requires approximately 250 hours of training.

2. Captains and the Fire Operator II personnel have the following:
National certification as Firefighter III, Fire Instructor I, and Fire Officer I by the NFPA.
3. Fire operators are certified as Emergency Medical Technicians. In addition, several fire operators are certified Paramedics.
4. Each member of the fire emergency response organization has completed at least 80 hours of classroom instruction on site specific systems, plus approximately 200 hours of on-job-training (OJT) systems familiarization. This training is documented by using qualification cards which have approval by a Shift Operations Supervisor or Assistant Shift Operations Supervisor, the Supervisor of Operations Training, and the Operations Supervisor.
5. Fire Emergency Response members have completed at least 80 hours of classroom instruction in site-specific fire protection systems.
6. Fire Emergency Response members have completed an OJT program of plant facilities. This training is documented by using qualification cards which have received approval by the Shift Operations Supervisor or Assistant Shift Operations Supervisor, the Chief of Training, and the Operations Supervisor.
7. Fire Emergency Response members have completed a site specific 40 hour Emergency Health Physics Training Course.
8. The Fire Emergency Response Organization has responded successfully as a team member in announced and unannounced drills which have been evaluated by the fire protection staff, and representatives from the Site Fire Training Section, and Operations Section.
9. The Fire Emergency Response Organization has received training on inspection, testing, and maintenance of plant fire protection equipment and systems.

ENCLOSURE 2

Branch Technical Position CMEB 9.5-1 Comparisons

Note: Revision from the April 4, 1988 Comparison are indicated by bar lines.

SECTION C.3. - FIRE BRIGADE

C.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 BFN fire protection program. This responsibility has been delegated to the BFN Site Director 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 the Fire Protection Manager and his staff. During normal operation, the Fire Emergency Response organization reports functionally and administratively to the Fire Protection Manager. During an emergency, the Fire Emergency Response organization reports to the Shift Operations Supervisor (formerly known as the Shift Engineer).

The basic recommendations of NFPA "Private Fire Brigades," currently NFPA 600 were used in formulating the guidelines for the organization, and 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. The training is monitored by the BFN fire protection staff.

Minimum training and experience standards have been established for the personnel within the Division of Nuclear Training 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.

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. Because it is recognized that a fire emergency may tax the resources of the five man brigade to the limit, the plant has developed a support mechanism consisting of personnel from assorted disciplines to render assistance to the fire brigade. These personnel will

not be involved in fire suppression but will provide valuable logistical support for mobilization or restoration of equipment and systems, and assistance with non-fire rescue or provision of other allied non-suppression logistical assistance. This will allow the brigade to devote full energies to fire suppression. This support organization will be established and maintained by the fire protection manager but be under the control of the incident commander during a fire emergency.

The responsibilities of the fire brigade positions are defined in procedural attachment to the Fire Protection Plan (FPP) entitled "Fire Emergency Response Organization and Prefire Plans", and do correspond with the actions required by the fire fighting 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 assure that they can perform strenuous activities and obtain a medical clearance without restrictions 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. In most cases additional members will also be available onsite.

Prefire plans for each of the areas which could affect safety-related equipment are attached to the FPP. The prefire plans include:

- (1) The prefire plans provide information on the fire potential in each of the areas and generally the quantities and class of combustibles present in these areas.
- (2) The prefire plans provide detailed information on the fire extinguisher materials available and where they are located.
- (3) Each prefire plan describes the primary and secondary access from which to attack a fire. Keycard or locked doors and availability of keys are also identified.
- (4) The prefire plans provide operational considerations for pumps, electrical equipment and similar equipment that should be removed from service to aid in extinguishing the fire.
- (5) The prefire plans identify hazardous materials and safety-related equipment that is particularly heat-sensitive.
- (6) The prefire plans detail assignment of special duties, command control of the brigade, support equipment, communications and possible coordination with outside fire departments.
- (7) The prefire plans provide detailed survey information for potential radiological and toxic hazards.
- (8) Ventilation system operation requirements are provided in the prefire plans.

- (9) The prefire plans provide guidance on any operations that would require control room and shift operations supervisor coordination or authorizations.
- (10) The only responsibility of general site personnel is to report a fire and evacuate the area. A procedural attachment to the FPP entitled "Fire Emergency Response Organization and Prefire Plans" identifies the responsibilities of operators and general site personnel.

The control room operator initiates fire brigade response immediately upon receipt of all fire alarms. All available information on the fire emergency is immediately conveyed to the incident commander. This action is dictated by procedural attachment to the FPP entitled "Fire Emergency Response Organization and Prefire Plans." 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 and announces the end of the emergency when notified by the fire brigade that the emergency is over.

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 BFN 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 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 on-the-job training to provide the required 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. Well in excess of 10 self-contained breathing apparatus and 30 air bottles are available for use by the fire brigade.

A six hour supply of reserve air is provided. The air compressor for breathing air is an acceptable unit and will remain operable with a loss of offsite power.

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 initial classroom 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 only).

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. The fire captain outlines to the local fire department the potential radiation hazards and potential equipment danger.

Annual briefings are conducted for the local fire department officers and fire fighters to assure their continued understanding of their role in the event of a fire emergency at the plant.

An incident commander course is given to new incident commanders who have not been previously trained. This course will provide 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

The Division of Nuclear Training (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 National Professional Qualification Board (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 will receive training in fire protection systems, effects of suppressants on plant equipment and safety systems and incident command.

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, fire brigade leaders, and incident commanders which includes a review of changes in the fire protection program and other subjects as necessary.

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 meeting of the fire brigade includes refresher training. Refresher training is also given annually and quadrennially.

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 eight hour refresher course is performed for classroom review and "hands on" exercises. Specific skills such as use of SCBA, hoselines, and extinguishers are polished while training at a slower pace than would be experienced in a drill.

The classroom percentage is approximately 40 percent and field work is approximately 60 percent.

- 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 which meet all of these requirements. Incident commanders will participate in at least two drills per year.
- d. The local fire department is briefed on plant activities, and participates in an annual drill.
- e. This drill is a portion of the three-year fire protection audit conducted by a qualified outside consultant under contract to DNQA. The drill observers include individual's who are not TVA employees.
- f. i through iv. A procedural attachment to the FPP entitled "Fire Training and Fire Drills" establishes the BFN fire drill program. The BFN 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 are 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 "Private Fire Brigades," currently NFPA 600. TVA's training program has been reviewed by the National Professional Qualification Board 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 is performed by the fire protection staff, following the guidance of NFPA 600.