



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

November 29, 1977

Doclet No. 50-298 - 874

Nebraska Public Power District  
ATTN: Mr. J. M. Pilant, Director  
Licensing and Quality Assurance  
Post Office Box 499  
Columbus, Nebraska 68601

Gentlemen:

RE: COOPER NUCLEAR STATION

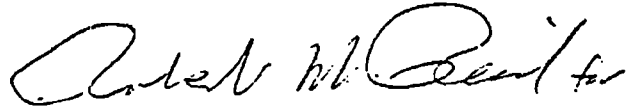
As you know, the Nuclear Regulatory Commission (NRC) has been working closely with your staff since the Brown's Ferry fire to enhance the fire protection capability of your facility. A number of improvements have been made in the areas of reducing the potential for exposure fires by control of combustible materials, control of sources of flame and improvement of fire protection personnel. These are generally reflected in your July 20, 1977 response to our June 24, 1977 letter which requested preparation of interim Technical Specifications on fire protection for your Cooper Nuclear Station. Following our review, which included discussion with your staff concerning the interim Technical Specifications, we have determined that revisions to your submittal are needed and that the enclosed Technical Specifications should be implemented by an amendment to your facility license. In many instances these Technical Specifications are similar to things you are already doing at your facility but which have not been included in your Technical Specifications. We believe that it is important that fire protection requirements generally be consistent for all facilities and we are taking these steps to achieve consistent interim action with respect to fire protection for all plants. Please let us know in writing within 20 days whether there are any specific requirements to which you object. If you object to any specific provision of the enclosed specifications, cite the portion that you find objectionable and specify your reasons and the technical bases therefor. If you have no objection to these specifications, it is nonetheless important to let us know within

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20 days. We plan to initiate steps to issue the enclosed changes to the Technical Specifications for your facility in approximately 20 days following the date of this letter. If we do not hear from you, we will act to issue the specifications on the basis that assumes your agreement.

Sincerely,

A handwritten signature in cursive script, appearing to read "Karl R. Goller".

Karl R. Goller, Assistant Director  
for Operating Reactors  
Division of Operating Reactors

Enclosures:

1. Technical Specifications
2. Safety Evaluation

cc w/enclosures:

See next page

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cc w/enclosures:

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Station Superintendent  
P. O. Box 98  
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Auburn Public Library  
118 - 15th Street  
Auburn, Nebraska 68305

Director  
Department of Environmental Control (w/cy of NPPD filing  
Executive Building, 2nd Floor dtd. 7/20/77)  
Lincoln, Nebraska 68509

Mr. William Siebert, Commissioner  
Nemaha County Board of Commissioners  
Nemaha County Courthouse  
Auburn, Nebraska 68305

Chief, Energy Systems Analyses  
Branch (AW-459)  
Office of Radiation Programs  
U. S. Environmental Protection Agency  
Room 645, East Tower  
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Washington, D. C. 20460

U. S. Environmental Protection Agency  
Region VII  
ATTN: EIS COORDINATOR  
1735 Baltimore Avenue  
Kansas City, Missouri 64108

## LIMITING CONDITIONS FOR OPERATION

### 3.14 FIRE DETECTION SYSTEM

#### APPLICABILITY

Applies to the operational status of the Fire Detection System.

#### OBJECTIVE

To assure continuous automatic surveillance throughout the Main Plant.

#### SPECIFICATIONS

- A. The Fire Detection System instrumentation for each fire detection zone shown in Table 3.14 shall be operable.
- B. With one or more of the fire detection instrument(s) shown in Table 3.14 inoperable:
  1. Within 1 hour establish a fire watch patrol to inspect the zone(s) with the inoperable instrument(s) at least once per hour, and
  2. Restore the inoperable instrument(s) to OPERABLE status within 14 days or prepare and submit a Special Report to the Commission pursuant to Specification 6.7.2 within the next 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the instrument(s) to OPERABLE status.

### 3.15 FIRE SUPPRESSION WATER SYSTEM

#### APPLICABILITY

Applies to the availability of water for fire fighting purposes.

#### OBJECTIVE

To assure a continuous operable water supply for fire fighting systems from at least 2 fire pumps, or 2 back-up screen wash pumps or 1 fire pump and 1 back-up screen wash pump.

## SURVEILLANCE REQUIREMENTS

### 4.14 FIRE DETECTION SYSTEM

#### APPLICABILITY

Applies to the operational status of the Fire Detection System.

#### SPECIFICATIONS

- A. Each detector on Table 3.14 shall be demonstrated operable every 6 months by performance of a channel functional test.
- B. The NFPA Code 72.D Class A supervised circuits supervision associated with the detector alarms of each of the above required fire detection instruments shall be demonstrated OPERABLE at least once per 6 months.

### 4.15 FIRE SUPPRESSION WATER SYSTEM

#### APPLICABILITY

Applies to the availability of water for fire fighting purposes.

## LIMITING CONDITIONS FOR OPERATION

3.15 (cont'd)

### SPECIFICATIONS

- A. The fire suppression water system shall be OPERABLE with:
1. Two fire pumps, each with a capacity of 2000 gpm or 2 backup screen wash pumps, each with a capacity of 2000 gpm, or 1 fire pump and 1 backup screen wash pump with their discharge aligned to the fire suppression header.
  2. An OPERABLE flow path capable of taking suction from the Missouri River and transferring the water through distribution piping with OPERABLE sectionalizing control or isolation valves to the yard hydrant valves and the front valve ahead of the water flow alarm device on each sprinkler, hose standpipe or spray system riser.
- B. If one or both back-up screen wash pumps are utilized as outlined in 3.15A, a man shall be designated and made available to manipulate the valves and controls as necessary.
- C. With one pump and/or one water supply inoperable, restore the inoperable equipment to OPERABLE status within 7 days or prepare and submit a Special Report to the Commission pursuant to Specification 6.7.2 within the next 30 days outlining the plans and procedures to be used to provide for the loss of redundancy in this system.
- D. With the fire suppression system inoperable:
1. Establish a backup fire suppression water system within 24 hours, and

## SURVEILLANCE REQUIREMENTS

4.15 (cont'd)

### SPECIFICATIONS

- A. The Fire Suppression Water Supply System shall be demonstrated operable:
1. At least once per 31 days by starting each pump on a staggered start-up basis and operating it for:
    - a) A minimum of 15 minutes for a diesel engine-driven fire pump, and
    - b) A minimum of 7 minutes for an electrical motor-driven fire pump.
  2. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed or otherwise secured in position, is in its correct position.
  3. At least once per 12 months by cycling each testable valve in the flow path through at least one complete cycle of full travel.
  4. At least once per 18 months by performing a system functional test which includes simulated automatic actuation of the system throughout its operating sequence, and:
    - a) Verifying that each automatic valve in the flow path actuates to its correct position on a test signal.
    - b) Verifying that each pump develops at least 2000 gpm at 125 psi,

## LIMITING CONDITIONS FOR OPERATION

## SURVEILLANCE REQUIREMENTS

3.15 (cont'd)

4.15 (cont'd)

- 2) Verifying the diesel starts from ambient conditions on the auto-start signal and operates for  $\geq 15$  minutes while loaded with the fire pump.

7. The fire pump diesel starting 24-volt battery bank and charger shall be demonstrated OPERABLE:

- a) At least once per 7 days by verifying that:
  - 1) The electrolyte level of each battery is above the plates, and
  - 2) The overall battery voltage  $\geq 24$  volts.
- b. At least once per 92 days by verifying that the specific gravity is appropriate for continue service of the battery.
- c. At least once per 18 months by verifying that:
  - 1) The batteries, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration, and
  - 2) The battery-to-battery and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material.

### 3.16 SPRAY AND/OR SPRINKLER SYSTEM

#### APPLICABILITY

Applies to the availability of automatic Fire Protection to Cable Spreading Room - 913 Ft. Elev. of Control Building.

#### OBJECTIVE

To assure automatic Fire Protection to the Cable Spreading Room - 913 Ft. Elev. of Control Building

### 4.16 SPRAY AND/OR SPRINKLER SYSTEM

#### APPLICABILITY

Applies to the availability of automatic Fire Protection to Cable Spreading Room - 913 Ft. Elev. of Control Building.

## LIMITING CONDITIONS FOR OPERATION

### SPECIFICATIONS

- A. The Automatic Preaction Sprinkler System protecting the Cable Spreading Room shall be operable.
- B. With the Automatic Preaction Sprinkler system required inoperable, establish a continuous fire watch with backup fire suppression equipment for the unprotected area within 1 hour; restore the system to OPERABLE status within 14 days or prepare and submit a Special Report to the Commission pursuant to Specification 6.7.2 within the next 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

### 3.17 CARBON DIOXIDE SYSTEM

#### APPLICABILITY

Applies to the operational status of the High Pressure Carbon Dioxide Extinguishing System protecting the Diesel Generator Rooms.

#### OBJECTIVE

To assure continuous Automatic Fire Protection for the Diesel Generator Rooms.

#### SPECIFICATIONS

- A. The High Pressure Carbon Dioxide Extinguishing System protecting the Diesel Generator Rooms shall be operable.

## SURVEILLANCE REQUIREMENTS

### SPECIFICATIONS

- A. The Automatic Preaction Sprinkler System protecting the Cable Spreading Room shall be demonstrated to be operable by:
  - 1. At least once per 12 months by cycling each testable valve in the flow path through at least one complete cycle of full travel.
  - 2. At least once per 18 months:
    - a) By performing a system functional test which includes simulated automatic actuation of the system, and
      - 1) Verifying that the automatic valves in the flow path actuate to their correct positions on a test signal, and
      - 2) Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel.
    - b. By inspection of the spray headers to verify their integrity.

### 4.17 CARBON DIOXIDE SYSTEM

#### APPLICABILITY

Applies to the operational status of the High Pressure Carbon Dioxide Extinguishing System protecting the Diesel Generator Rooms.

#### SPECIFICATIONS

- A. The High Pressure Carbon Dioxide Extinguishing System protecting the Diesel Generator Rooms shall be demonstrated operable by:

## LIMITING CONDITIONS FOR OPERATION

- B. If the requirement of 3.17.A cannot be met:
1. Establish a continuous fire watch with backup fire suppression equipment for the unprotected area(s) within 1 hour; restore the system to OPERABLE status within 14 days or prepare and submit a Special Report to the Commission pursuant to Specification 6.7.2 within the next 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

### 3.18 FIRE HOSE STATIONS

#### APPLICABILITY

Applies to the operational status of the Fire Hose Stations in the Control and Reactor Buildings.

#### OBJECTIVE

To assure continuous manual fire fighting capability provided by existing Fire Hose Stations.

#### SPECIFICATIONS

- A. The Fire Hose Stations shown in Table 3.18 shall be operable.
- B. If the requirement of 3.18.A cannot be met, route an additional hose to the area protected by the inoperable Fire Hose Station from an operable Fire Hose Station of equivalent capacity within 1 hour.

## SURVEILLANCE REQUIREMENTS

1. At least once per 6 months, the High Pressure Carbon Dioxide storage cylinders should be weighed.
2. At least once per 18 months by verifying the system valves, alarms, and associated ventilation motor interlocks and dampers actuate to a simulated automatic and manual actuation signal. A brief flow test ("Puff Test") shall be made to verify flow from each nozzle.

### 4.18 FIRE HOSE STATIONS

#### APPLICABILITY

Applies to the operational status of the Fire Hose Stations in the Control and Reactor Buildings.

#### SPECIFICATIONS

- A. The Fire Hose Stations in the Control Building and Reactor Building shall be demonstrated to be operable by:
1. At least once per 31 days by:
    - a) Visual inspection to assure all required equipment is at the station.
  2. At least once per 18 months by:
    - a) Removing the hose for inspection and re-racking, and
    - b) Replacement of all degraded gaskets in couplings.
  3. At least once per 3 years by:
    - a) Partially opening each hose station valve to verify valve OPERABILITY and no flow blockage, and



## LIMITING CONDITIONS FOR OPERATION

## SURVEILLANCE REQUIREMENTS

### 3.19 FIRE BARRIER PENETRATION FIRE SEALS

#### APPLICABILITY

Applies to the integrity of all Fire Barrier and Fire Wall Penetration Fire Seals.

#### OBJECTIVE

To assure the integrity of all Fire Barrier and Fire Wall Penetration Fire Seals.

#### SPECIFICATIONS

- A. Fire Barrier and Fire Wall Penetration Fire Seals integrity shall be maintained.
- B. If the requirement of 3.19.A cannot be met, a continuous fire watch shall be established on at least 1 side of the penetration within 1 hour.

- b) Conducting a hose hydrostatic test at a pressure at least 50 psig greater than the maximum pressure available at that hose station.

### 4.19 FIRE BARRIER PENETRATION FIRE SEALS

#### APPLICABILITY

Applies to the integrity of all Fire Barrier and Fire Wall Penetration Fire Seals.

#### SPECIFICATIONS

- A. Fire Barrier and Fire Wall Penetration Fire Seals shall be verified to be functional by:
  - 1. At least every 18 months inspect each side of each Fire Barrier and Fire Wall Penetration Seal (where possible), and
  - 2. A visual inspection of a Fire Barrier and Fire Wall Penetration Seal prior to declaring a penetration fire barrier functional following repairs or maintenance.

TABLE 3.14  
FIRE DETECTION INSTRUMENTS

	INSTRUMENT ID NO.
1 <u>Reactor Building</u>	
859 & 881 Elev. (Covers RCIC, Core Spray, RHR, and HPCI Pumps)	FP-TD-18-2 FP-TD-18-3 FP-TD-19-2 FP-TD-19-3 FP-TD-20-2 FP-TD-20-3 FP-TD-20-4 FP-TD-20-5 FP-TD-21-2 FP-TD-21-3
903 Elev.	FP-SD-18-1 FP-TD-18-4 FP-SD-19-1 FP-SD-20-1 FP-SD-21-1
931 Elev.	FP-SD-23-1 FP-SD-23-2 FP-SD-23-3 FP-SD-23-4
958 Elev.	FP-SD-24-1 FP-SD-24-2 FP-SD-24-3 FP-SD-24-4 FP-SD-24-5 FP-SD-24-6
976 Elev. Covers Standby Liquid Control Pump and Standby Gas Treatment	FP-SD-25-1 FP-TD-25-2 FP-SD-25-1 FP-SD-25-2 FP-SD-25-3 FP-SD-25-4 FP-TD-25-5 FP-TD-33-1 FP-TD-34-1
1001 Elev. Also Fuel Storage Area	FP-TD-26-3 FP-TD-26-4 FP-TD-26-6 FP-TD-26-7

INSTRUMENT LOCATION	INSTRUMENT ID NO.
2 <u>Control Room</u>	FP-SD-17-1 FP-SD-17-2 FP-SD-17-3
3 <u>Cable Spreading</u>	FP-SD-16-1 FP-SD-16-2 FP-SD-16-3 FP-SD-16-4 FP-SD-16-5 FP-SD-16-6
4 <u>Switchgear Rooms</u> <u>DC Switchgear Rooms</u>	FP-SD-15-2 FP-SD-15-3
Critical Switchgear Room	FP-SD-22-1 FP-SD-22-2
5 <u>Station Battery Rooms</u>	FP-SD-15-1 FP-SD-15-4
6 <u>Diesel Generator Rooms</u>	FP-SD-10-1 FP-SD-10-2 FP-SD-10-3 FP-SD-10-4 CO2-SD-DG-1A CO2-SD-DG-1B
7 <u>Diesel Fuel Storage Rooms</u>	CO2-TD-DG-1A CO2-TD-DG-1B
8 <u>Safety Related Pumps not in Reactor Building</u>	
RHR Service Water Booster Pumps	FP-SD-14-2
Emergency Condensate Storage Tanks	FP-SD-14-1
Fire Water Pumps & Service Water Pumps	FP-FD-32-1 FP-FD-32-2
9 <u>Auxiliary Relay Room &amp; Reactor Protection System Rooms</u>	
Auxiliary Relay Room	FP-SD-15-9
Reactor Protection System Room 1A	FP-SD-15-7
Reactor Protection System Room 1B	FP-SD-15-8

Table 3-18  
FIRE HOSE STATIONS

<u>Location</u>	<u>Identification</u>	<u>Hose Size</u>
1. <u>Reactor Building</u>		
859 & 881 Elevation	HV-31	1 1/2"
	HV-32	1 1/2"
	HV-33	1 1/2"
903 Elevation	HV-35	1 1/2"
	HV-36	1 1/2"
	HV-38	1 1/2"
	HV-34	1 1/2"
931 Elevation	HV-37	1 1/2"
958 Elevation	HV-39	1 1/2"
	HV-40	1 1/2"
	HV-56	1 1/2"
976 Elevation	HV-41	1 1/2"
	HV-46	1 1/2"
1001 Elevation	HV-43	1 1/2"
	HV-44	1 1/2"
	HV-45	1 1/2"
2. <u>Cable Spreading Room</u>	HV-18	1 1/2"
3. <u>Computer &amp; Control Rooms</u>	HV-19	1 1/2"
4. <u>Switchgear Rooms &amp; Station Battery Room</u>		
D.C. Switchgear Room and Station Battery Rooms	HV-17	1 1/2"
5. <u>Safety Related Pumps not in Reactor Building</u>		
RHR Service Water Booster pumps	HV-16	1 1/2"
6. <u>Fire Water Pumps &amp; Service Water Pumps</u>	HT-1 (hydrant)	2 - 2 1/2"

### 3.14-3.19/4.14-4.19 BASES

#### 3.14/4.14 FIRE DETECTION INSTRUMENTATION

OPERABILITY of the fire detection instrumentation ensures that adequate warning capability is available for the prompt detection of fires. This capability is required in order to detect and locate fires in their early stages. Prompt detection of fires will reduce the potential for damage to safety related equipment and is an integral element in the overall facility fire protection program.

In the event that a portion of the fire detection instrumentation is inoperable, the establishment of frequent fire patrols in the affected areas is required to provide detection capability until the inoperable instrumentation is returned to service.

#### 3.15-3.18/4.15-4.18 FIRE SUPPRESSION SYSTEMS

THE OPERABILITY of the fire suppression systems ensures that adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety related equipment is located. The fire suppression system consists of the water system, spray and/or sprinklers, CO<sub>2</sub> and fire hose stations. The collective capability of the fire suppression systems is adequate to minimize potential damage to safety related equipment and is a major element in the facility fire protection program.

In the event that portions of the fire suppression systems are inoperable, alternate backup fire fighting equipment is required to be made available in the affected areas until the affected equipment can be restored to service.

In the event the fire suppression water system becomes inoperable, immediate corrective measures must be taken since this system provides the major fire suppression capability of the plant. The requirement for twenty-four hour report to the Commission provides for prompt evaluation of the acceptability of the corrective measures to provide adequate fire suppression capability for the continued protection of the nuclear plant.

#### 3.19/4.19 FIRE BARRIER PENETRATION SEALS

The functional integrity of the fire barrier penetration seals ensures that fires will be confined or adequately retarded from spreading to adjacent portions of the facility. This design feature minimizes the possibility of a single fire rapidly involving several areas of the facility prior to detection and extinguishment. The fire barrier penetration seals are a passive element in the facility fire protection program and are subject to periodic inspections.

During periods of time when the seals are not functional, a continuous fire watch is required to be maintained in the vicinity of the affected seal until the seal is restored to functional status.

Organization

## 6.1.1

The Station Superintendent shall have the over-all full-time onsite responsibility for the safe operation of the Cooper Nuclear Station. During periods when the Station Superintendent is unavailable, he may delegate his responsibility to the Assistant to Station Superintendent or, in his absence, to one of the Department Supervisors.

## 6.1.2

The portion of the Nebraska Public Power District management which relates to the operation of this station is shown in Figure 6.1.1.

## 6.1.3

The organization for conduct of operation of the station is shown in Fig. 6.1.2. The shift complement at the station shall at all times meet the following requirements. Note: Higher grade licensed operators may take the place of lower grade licensed or unlicensed operators.

- A. A licensed senior reactor operator (SRO) shall be present at the station at all times when there is any fuel in the reactor.
- B. A licensed reactor operator shall be in the control room at all times when there is any fuel in the reactor.
- C. Two licensed reactor operators shall be in the control room during all startup, shutdown and other periods involving significant planned control rod manipulations. A licensed SRO shall either be in the Control Room or immediately available to the Control Room during such periods.
- D. A licensed senior reactor operator (SRO) with no other concurrent duties shall be directly in charge of any refueling operation, or alteration of the reactor core.  
  
A licensed reactor operator (RO) with no other concurrent duties shall be directly in charge of operations involving the handling of irradiated fuel other than refueling or reactor core alteration operations.
- E. An individual who has been trained and qualified in health physics techniques shall be on site at all times that fuel is on site.
- F. Minimum crew size during reactor operation shall consist of three licensed reactor operators (one of whom shall be a licensed SRO) and two unlicensed operators. Minimum crew size during reactor cold shutdown conditions shall consist of two licensed reactor operators (one of whom shall be a licensed SRO) and one unlicensed operator.

In the event that any member of a minimum shift crew is absent or incapacitated due to illness or injury a qualified replacement shall be designated to report on-site within two hours.

- G. A fire brigade of at least 5 members shall be maintained at all times. This excludes the 3 members of the minimum shift crew necessary for safe shutdowns, and other personnel required for other essential functions during a fire emergency.

6.2.4

The minimum qualifications, training, replacement training, and retraining of plant personnel at the time of fuel loading or appointment to the active position shall meet the requirements as described in the American National Standards Institute N18.1-1971, "Selection and Training of Personnel for Nuclear Power Plants". The Assistant to Station Superintendent qualifications shall comply with Section 4.2 of ANSI-N18.1-1971. The minimum frequency of the retraining program shall be every two years. The training program shall be under the direction of a designated member of the plant staff.

- A. A training program for the fire brigade will be maintained under the direction of the plant training coordinator and shall meet or exceed the requirements of Section 27 of the NFPA code 1976.

The training program requirements will be provided by a qualified fire protection engineer, thru the Risk Manager.

tary material reviewed; copies of the minutes shall be forwarded to the Chairman of the NPPD Safety Review and Audit Board and the Director of Power Supply within one month.

**7. Procedures:**

Written administrative procedures for Committee operation shall be prepared and maintained describing the method for submission and content of presentations to the committee, provisions for use of subcommittees, review and approval by members of written Committee evaluations and recommendations, dissemination of minutes, and such other matters as may be appropriate.

**B. NPPD Safety Review and Audit Board.**

The board must: verify that operation of the plant is consistent with company policy and rules, approved operating procedures and operating license provisions; review safety related plant changes, proposed tests and procedures; verify that unusual events are promptly investigated and corrected in a manner which reduces the probability of recurrence of such events; and detect trends which may not be apparent to a day-to-day observer.

Audits of selected aspects of plant operation shall be performed with a frequency commensurate with their safety significance and in such a manner as to assure that an audit of all nuclear safety related activities is completed within a period of two years. Periodic review of the audit programs should be performed by the Board at least twice a year to assure that such audits are being accomplished in accordance with requirements of Technical Specifications. The audits shall be performed in accordance with appropriate written instructions or procedures and should include verification of compliance with internal rules, procedures (for example, normal, off-normal, emergency, operating, maintenance, surveillance, test and radiation control procedures and the emergency and security plans), regulations involving nuclear safety and operating license provisions; training, qualification and performance of operating staff; and corrective actions following abnormal occurrences or unusual events. A representative portion of procedures and records of the activities performed during the audit period shall be audited and, in addition, observations of performance of operating and maintenance activities shall be included. Written reports of such audits shall be reviewed at a scheduled meeting of the Board and by appropriate members of management including those having responsibility in the area audited. Follow-up action, including reaudit of deficient areas, shall be taken when indicated.

In addition to the above, the Safety Review and Audit Board will audit the facility fire protection and its implementing procedures at least once every 24 months.



- b. Approve safety related changes or modifications to station systems and equipment, provided such changes or modifications do not involve an unreviewed safety question by the NRC and do not require changes in the Operating License.

6. Records:

Minutes shall be recorded for all meetings of the NPPD Safety Review and Audit Board and shall identify all documentary material reviewed. Copies of the minutes shall be forwarded to the General Manager and the Station Superintendent, and such others as the Chairman may designate within one month of the meeting.

7. Procedures:

Written administrative procedures for Board operation shall be prepared and maintained that contain:

- a. Subjects within the purview of the group.
- b. Responsibility and authority of the group including responsibility to identify problems and to recommend solutions, and authority to verify implementation of approved actions.
- c. Mechanisms for convening meetings.
- d. Provisions for any use of subgroups.
- e. Authority to obtain access to the nuclear power plant operating record files and operating personnel to perform the audit function.
- f. Requirements for distribution of reports and minutes prepared by the group to others in the NPPD organization.
- g. Identification of the management position to which the Board reports.
- h. Provisions for assuring that the Committee is kept informed on a timely basis of matters within its purview.
- i. Provision for a formal approval of the minutes.

8. Fire Protection Inspection:

- a. An annual fire protection and loss prevention inspection will be performed utilizing either qualified off-site licensee personnel or an outside fire protection consultant.
- b. An inspection and audit by an outside qualified fire protection consultant shall be performed at least once per 36 months.

### 6.3 Station Operating Procedures

6.3.1 Station personnel shall be provided detailed written procedures to be used for operation and maintenance of system components and systems that could have an effect on nuclear safety.

6.3.2 Written integrated and system procedures and instructions including applicable check off lists shall be provided and adhered to for the following:

- A. Normal startup, operation, shutdown and fuel handling operations of the station including all systems and components involving nuclear safety.
- B. Actions to be taken to correct specific and foreseen potential or actual malfunctions of safety related systems or components including responses to alarms, primary system leaks and abnormal reactivity changes.
- C. Emergency conditions involving possible or actual releases of radioactive materials.
- D. Implementing procedures of the Security Plan and the Emergency Plan.
- E. Implementing procedures for the fire protection program.

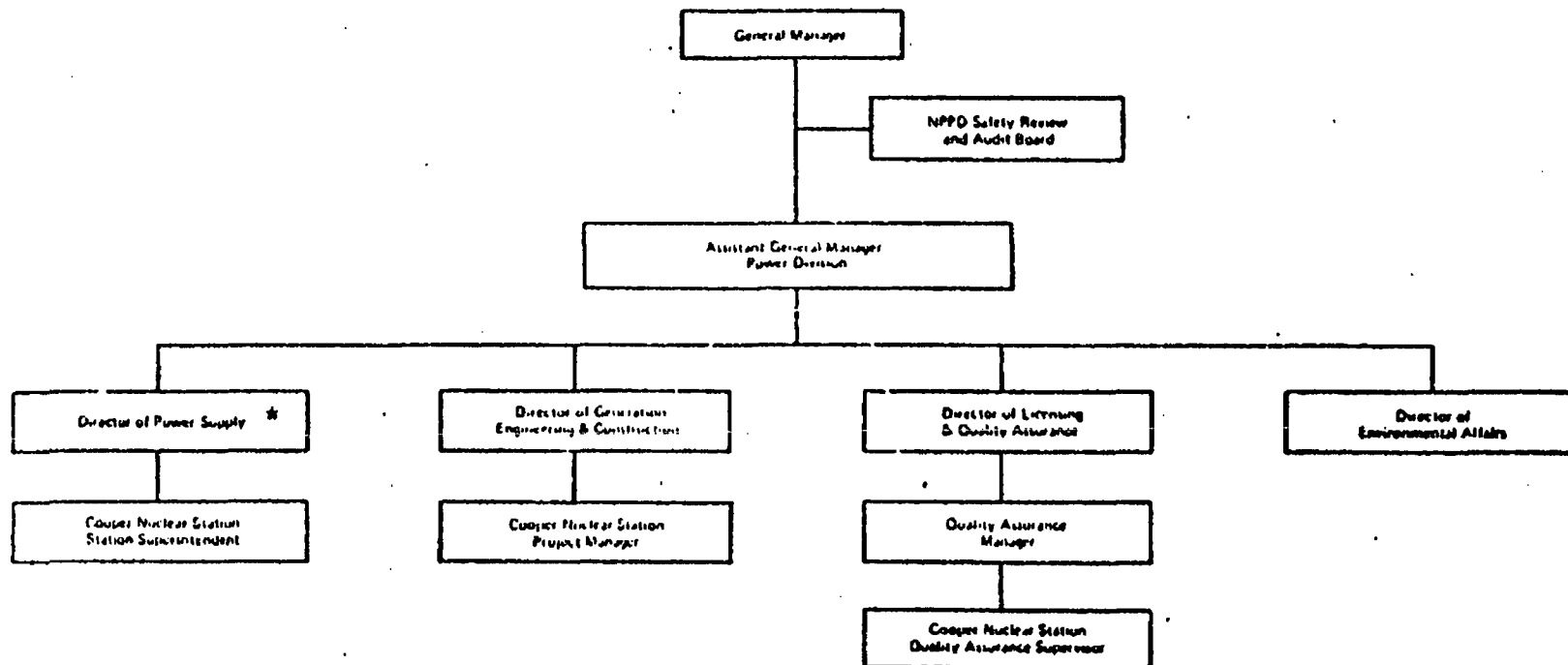
6.3.3 The following maintenance and test procedures will be provided to satisfy routine inspection, preventive maintenance programs, and operating license requirements.

- A. Routine testing of Engineered Safeguards and equipment as required by the facility License and the Technical Specifications.
- B. Routine testing of standby and redundant equipment.
- C. Preventive or corrective maintenance of plant equipment and systems that could have an effect on nuclear safety.
- D. Calibration and preventive maintenance of instrumentation that could affect the nuclear safety of the plant.
- E. Special testing of equipment for proposed changes to operational procedures or proposed system design changes.

6.3.4 Radiation control procedures shall be maintained and made available to all station personnel. These procedures shall show permissible radiation exposure, and shall be consistent with the requirements of 10 CFR 20.

- A. Pursuant to 10 CFR 20.103(c)(1) and (3), allowance can be made for the use of respiratory protective equipment in conjunction with activities authorized by the operating license for this plant in determining whether individuals in restricted areas are exposed to concentrations in excess of the limits specified in Appendix B, Table I, Column 1, of 10 CFR 20, subject to the following conditions and limitations:

# NPPD MANAGEMENT ORGANIZATION CHART



\*Responsible for the Fire Protection Program.

Figure 8.1.1  
NPPD Management  
Organization Chart



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT TO FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-296

INTRODUCTION

Following a fire at the Browns Ferry Nuclear Station in March 1975, we initiated an evaluation of the need for improving the fire protection programs at all licensed nuclear power plants. As part of this continuing evaluation, in February 1976 we published a report entitled "Recommendations Related to Browns Ferry Fire", NUREG-0050. This report recommended that improvements in the areas of fire prevention and fire control be made in most existing facilities and that consideration be given to design features that would increase the ability of nuclear facilities to withstand fires without the loss of important functions. To implement the report's recommendations, the NRC initiated a program for reevaluation of the fire protection programs at all licensed nuclear power stations and for a comprehensive review of all new license applications.

We have issued new guidelines for fire protection programs in nuclear power plants. These guidelines reflect the recommendations in NUREG-0050. These guidelines are contained in the following documents:

"Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," NUREG-75/007, Section 9.5.1, "Fire Protection," May 1976, which includes "Guidelines for Fire Protection for Nuclear Power Plants," (BTP APGSD 9.5-1), May 1, 1976.

"Guidelines for Fire Protection for Nuclear Power Plants" (Appendix A to BTP APGSD 9.5-1), August 23, 1976.

"Supplementary Guidance on Information Needed for Fire Protection Program Evaluation," September 30, 1976.

"Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance," June 14, 1977.

Nebraska Public Power District has submitted a description of the fire protection program for the Cooper Nuclear Station by letter dated December 17, 1976. This program is under detailed review by the NRC. In the interim, until we complete our detailed review, we have concluded that it is appropriate to amend the facility license by incorporating into the Technical Specifications operability and surveillance requirements for the existing fire protection equipment and systems. In addition, the amendment would include administrative requirements for the implementation of the fire protection program.

By letter dated September 30, 1976, we requested the licensee to submit Technical Specifications for presently-installed fire protection equipment at this facility. By letter of December 2, 1976, we issued sample Technical Specifications and reiterated that these specifications were for existing systems only.

Subsequently, the licensee proposed Technical Specifications by letter dated February 4, 1977. Based on our review and consideration of that response and the responses of other licensees, we modified certain action statements and surveillance frequencies in order to provide more appropriate and consistent specifications which we forwarded to the licensee by letter of June 24, 1977. That letter also requested submittal of appropriately revised specifications.

The licensee responded by letter dated July 20, 1977. We have reviewed the licensee's response and have made modifications where necessary to assure conformance to the fullest extent practicable with our requirements as set forth in the sample Technical Specifications pending completion of our ongoing detailed review of fire protection at this facility.

## DISCUSSION AND EVALUATION

The guidelines for technical specifications that we developed and sent to all licensees are based on assuring that the fire protection equipment currently installed for the protection of safety related areas of the plant is operable. This assurance is obtained by requiring periodic surveillance of the equipment and by requiring certain corrective actions to be taken if the limiting conditions for operation cannot be met. These guidelines also include administrative features for the overall fire protection program such as interim fire brigade requirements, training, procedures, management review and periodic independent fire protection and loss prevention program inspections.

The equipment and components currently existing at this facility included in the scope of these Technical Specification requirements are fire detectors, the fire suppression systems, the hose stations, and piping and cabling penetration fire barriers. Operability of the fire detection instrumentation provides warning capability for the prompt detection of fires, to reduce the potential for damage to safety related equipment by allowing rapid response of fire suppression equipment. In the event that the minimum coverage of fire detectors cannot be met, hourly fire patrols are required in the affected area until the inoperable instrumentation is restored to operability. The operability of the fire suppression system provides capability to confine and extinguish fires. In the event that portions of the fire suppression system are inoperable, alternate backup fire fighting equipment is required to be made available in the affected areas until the inoperable equipment is returned to service. In the event that the fire suppression water system becomes inoperable, a backup fire protection water system is required within 24 hours and a report to the NRC is required within 24 hours to provide for prompt evaluation of the acceptability of the corrective measures for adequate fire suppression capability. The functional integrity of the penetration fire barriers provides protection to confine or retard fires from spreading to adjacent portions of the facility. During periods of time when a fire barrier is not functional, a continuous fire watch is required to be maintained in the vicinity of the affected barrier to provide fire prevention methods and prompt detection and suppression in the event of a fire.

We have reviewed the licensee's proposed interim Technical Specifications against our requirements as implemented in the sample Technical Specifications. We have made some modifications to the specifications that were proposed by the licensee in order to make them conform to our requirements. One of the proposed specifications that we changed involves the minimum size of the on-site fire brigade. In our previous sample Technical Specifications we did not identify the number of members on a fire brigade that we would find acceptable. We have now concluded that minimum number for a typical commercial nuclear power plant to be five (5). The basis for this conclusion is presented in an attachment to this SER entitled "Staff Position Minimum Fire Brigade Shift Size."

In the report of the Special Review Group on the Browns Ferry Fire (NUREG-0050) dated February 1976, consideration of the safety of operation of all operating nuclear power plants pending the completion of our detailed fire protection evaluation was presented. The following quotations from the report summarize the basis for our conclusion that the operation of the plants, until we complete our review, does not present an undue risk to the health and safety of the public.

"A probability assessment of public safety or risk in quantitative terms is given in the Reactor Safety Study (WASH-1400). As the result of the calculation based on the Browns Ferry fire, the study concludes that the potential for a significant release of radioactivity from such a fire is about 20% of that calculated from all other causes analyzed. This indicates that predicted potential accident risks from all causes were not greatly affected by consideration of the Browns Ferry fire. This is one of the reasons that urgent action in regard to reducing risks due to potential fires is not required. The study (WASH-1400) also points out that 'rather straightforward measures, such as may already exist at other nuclear plants, can significantly reduce the likelihood of a potential core melt accident that might result from a large fire.' The Review Group agrees.

"Fires occur rather frequently; however, fires involving equipment unavailability comparable to the Browns Ferry fire are quite infrequent (see Section 3.3 [of NUREG-0050]). The Review Group believes that steps already taken since March 1975 (see Section 3.3.2) have reduced this frequency significantly.

"Based on its review of the events transpiring before, during and after the Browns Ferry fire, the Review Group concludes that the probability of disruptive fires of the magnitude of the Browns Ferry event is small, and that there is no need to restrict operation of nuclear power plants for public safety. However, it is clear that much can and should be done to reduce even further the likelihood of disabling fires and to improve assurance of rapid extinguishment of fires that occur. Consideration should be given also to features that would increase further the ability of nuclear facilities to withstand large fires without loss of important functions should such fires occur."

Subsequent to the Browns Ferry fire and prior to the Special Review Group's investigation, the Office of Inspection and Enforcement took steps with regard to fire protection. Special bulletins were sent to all licensees of operating power reactors on March 24, 1975, and April 3, 1975, directing the imposition of certain controls over fire ignition sources, a review of procedures for controlling maintenance and modifications that might affect fire safety, a review of emergency procedures for alternate shutdown and cooling methods, and a review of flammability of materials used in floor and wall penetration seals. Special inspections covering the installation of fire stops in electrical cables and in penetration seals were completed at all operating power reactors in April and May 1975. Inspection findings which reflected non-compliance with NRC requirements resulted in requiring corrective action by licensees. Follow-up inspections have confirmed that licensees are taking the required corrective actions and that administrative control procedures are in place.



Since these inspection activities and the subsequent Special Review Group recommendations in the 1975 to 1976 time period, there has been no new information to alter the conclusions of the Special Review Group, and the ongoing fire protection program flowing from those conclusions is still adequate.

Therefore, we have found these specifications acceptable on an interim basis until such time that our overall review is complete, required equipment is installed and operable, and final specifications have been developed and issued.

#### ENVIRONMENTAL CONSIDERATION

We have determined that the planned amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR 551.5(d)(4) that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this planned amendment.

#### CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this planned amendment will not be inimical to the common defense and security or to the health and safety of the public.

Attachment: Staff Position - Minimum Fire Brigade Shift Size

Date: November 29, 1977

## Staff Position

### Minimum Fire Brigade Shift Size

#### INTRODUCTION

Nuclear power plants depend on the response of an onsite fire brigade for defense against the effects of fire on plant safe shutdown capabilities. In some areas, actions by the fire brigade are the only means of fire suppression. In other areas, that are protected by correctly designed automatic detection and suppression systems, manual fire fighting efforts are used to extinguish: (1) fires too small to actuate the automatic system; (2) well developed fires if the automatic system fails to function; and (3) fires that are not completely controlled by the automatic system. Thus, an adequate fire brigade is essential to fulfill the defense in depth requirements which protect safe shutdown systems from the effects of fires and their related combustion by-products.

#### DISCUSSION

There are a number of factors that should be considered in establishing the minimum fire brigade shift size. They include:

- 1) plant geometry and size;
- 2) quantity and quality of detection and suppression systems;
- 3) fire fighting strategies for postulated fires;
- 4) fire brigade training;
- 5) fire brigade equipment; and
- 6) fire brigade supplements by plant personnel and local fire department(s).

In all plants, the majority of postulated fires are in enclosed windowless structures. In such areas, the working environment of the brigade created by the heat and smoke buildup within the enclosure, will require the use of self-contained breathing apparatus, smoke ventilation equipment, and a personnel replacement capability.

Certain functions must be performed for all fires, i.e., command brigade actions, inform plant management, fire suppression, ventilation control, provide extra equipment, and account for possible injuries. Until a site specific review can be completed, an interim minimum fire brigade size of five persons has been established. This brigade size should provide a minimum working number of personnel to deal with those postulated fires in a typical presently operating commercial nuclear power station.

If the brigade is composed of a smaller number of personnel, the fire attack may be stopped whenever new equipment is needed or a person is injured or fatigued. We note that in the career fire service, the minimum engine company manning considered to be effective for an initial attack on a fire is also five, including one officer and four team members.

It is assumed for the purposes of this position that brigade training and equipment is adequate and that a backup capability of trained individuals exist whether through plant personnel call back or from the local fire department.

#### POSITION

1. The minimum fire brigade shift size should be justified by an analysis of the plant specific factors stated above for the plant, after modifications are complete.

2. In the interim, the minimum fire brigade shift size shall be five persons. These persons shall be fully qualified to perform their assigned responsibility, and shall include:

One Supervisor - This individual must have fire tactics training. He will assume all command responsibilities for fighting the fire. During plant emergencies, the brigade supervisor should not have other responsibilities that would detract from his full attention being devoted to the fire. This supervisor should not be actively engaged in the fighting of the fire. His total function should be to survey the fire area, command the brigade, and keep the upper levels of plant management informed.

Two Hose Men - A 1.5 inch fire hose being handled within a windowless enclosure would require two trained individuals. The two team members are required to physically handle the active hose line and to protect each other while in the adverse environment of the fire.

Two Additional Team Members - One of these individuals would be required to supply filled air cylinders to the fire fighting members of the brigade and the second to establish smoke ventilation and aid in filling the air cylinder. These two individuals would also act as the first backup to the engaged team.