September 21, 1983

Docket No 50-298

Mr. L. G. Kuncl
Assistant General Manager - Nuclear
Nebraska Public Power District
P. O. Box 499
Columbus, Nebraska 68601

Dear Mr. Kuncl:

SUBJECT: EXEMPTION REQUESTS - 10 CFR 50.48 FIRE PROTECTION AND APPENDIX R TO 10 CFR PART 50

Re: Cooper Nuclear Station

The Commission has issued the enclosed Exemptions from certain requirements of Section 50.48 and Appendix R to 10 CFR Part 50 for the Cooper Nuclear Station. This action responds to your request dated June 28, 1982, as supplemented with additional information provided on March 18, 1983 and June 2, 1983. In your letter, you requested exemptions from the requirements of Section III.G of Appendix R for the:

1. Service Water Intake Structure
2. Cable Spreading Room
3. Cable Expansion Room
4. Reactor Building, Northeast Corner Room
5. Control Building Basement
6. Auxiliary Relay Room
7. Control Room
8. Fire Area Boundaries-Four Areas

   a. Reactor Building 932' Elevation - Critical Switchgear Rooms 1F and 1G.
   b. Reactor Building 931' Elevation.
   c. Reactor Building 903' Elevation (excluding northeast corner).
   d. Reactor Building 859' and 881' Elevations - quadrants and torus area.

Based on our evaluation, we find that the level of protection currently provided in conjunction with the proposed modifications provides a level of fire protection equivalent to the technical requirements of Section III.G of Appendix R. Therefore the exemptions requested should be granted.

8310070391 830921
PDR ADOCK 05000298
F PDR

OFFICE							
SURNAME							
DATE							

The description of the modifications for alternate shutdown capability independent of the Control Room and the Auxiliary Relay Room should be submitted to the NRC within six months of the date of your June 2, 1983 submittal.

A copy of the enclosed Exemption is being filed with the Office of the Federal Register for publication.

Sincerely,

Original signed by RAHermann for/

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosure:
Exemption

cc w/enclosure:
See next page

DISTRIBUTION:
Docket File
NRC PDR
Local PDR
NSIC
ORB#2 Reading
D. Eisenhut
ORAB
S. Norris
B. Siegel
OELD
E. Jordan
T. Barnhard (4)
ACRS (10)
OPA, C. Miles
J. Taylor
SECY
R. Diggs

*SEE ~~PAR~~ ORC VIOUS CONCURRENCE

OFFICE	ORB#2:DL	ORB#2:DL	ORB#5:DL	ORB#2:DL	AD:DL	OELD	D:DL
SURNAME	*SNorris;km	*BSiegel	*TWambach	DVassallo	GLainas	N Karnal	DEisenhut
DATE	8/9/83	8/11/83	8/17/83	8/23/83	8/24/83	8/26/83	8/16/83

The description of the modifications for alternate shutdown capability independent of the Control Room and the Auxiliary Relay Room should be submitted to the NRC, within six months of the date of this letter.

A copy of the enclosed Exemption is being filed with the office of the Federal Register for publication.

Sincerely,

D.B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosure:
Exemption

cc:
see next page

OFFICE	ORB#2:DL	ORB#2:DL	ORB#2:DL	ORB#5:DC	AD-OR:DL	OLED	D:DL
SURNAME	SNorris:ef	BSiegel	DVassallo	TWambach	GLainas		DEisenhut
DATE	8/9 /83	8/11/83	8/ /83	8/17/83	8/ /83	8/ /83	8/ /83

Mr. L. G. Kuncl
Nebraska Public Power District
Cooper Nuclear Station

cc:

Mr. G. D. Watson, General Counsel
Nebraska Public Power District
Post Office Box 499
Columbus, Nebraska 68601

Mr. Arthur C. Gehr, Attorney
Snell & Wilmer
3100 Valley Center
Phoenix, Arizona 85073

Cooper Nuclear Station
ATTN: Mr. Paul Thomason
Station Superintendent
Post Office Box 98
Brownville, Nebraska 68321

Director
Nebraska Dept. of Environmental Control
Post Office Box 94877
State House Station
Lincoln, Nebraska 68509

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

Mr. Dennis Dubois
U. S. Nuclear Regulatory Commission
Resident Inspector
Post Office Box 218
Brownville, Nebraska 68321

U. S. Environmental Protection
Agency
Region VII Office
Regional Radiation Representative
324 East 11th Street
Kansas City, Missouri 64106

John T. Collins
Regional Administrator
Region IV Office
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

H. Ellis Simmons, Director
Division of Radiological Health
Department of Health
301 Centennial Mall, South
Post Office Box 95007
Lincoln, Nebraska 68509

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	Docket No. 50-298
	)	
NEBRASKA PUBLIC POWER DISTRICT	)	
	)	
(COOPER NUCLEAR STATION)	)	

EXEMPTION

I.

The Nebraska Public Power District (NPPD/the licensee) is the holder of Facility Operating License No. DPR-46 which authorizes NPPD to operate the Cooper Nuclear Station at power levels not in excess of 2381 megawatts thermal. The facility is a boiling water reactor located at the licensee's site in Nemaha County, Nebraska. The license provides, among other things, that it is subject to all Rules, Regulations and Orders of the Commission now or hereafter in effect.

II.

On February 17, 1981, the fire protection rule for nuclear power plants, 10 CFR 50.48 and Appendix R, became effective. Section 50.48 requires that licensed operating reactors be subject to the requirements of Appendix R to 10 CFR Part 50. Appendix R contains the general and specific requirements for fire protection programs. This rule requires all licensees of plants licensed prior to January 1, 1979, to submit: (1) plans and schedules for meeting the applicable requirements of Appendix R, (2) a design description of any modifications proposed to provide alternative safe shutdown capability pursuant to Paragraph III.G.3 of Appendix R, and (3) exemption requests for which the tolling provision of Section 50.48(c)(6) is to be invoked.

8310070393 830921
PDR ADOCK 05000298
F PDR

The licensee responded to these requirements by letter dated June 28, 1982, as supplemented and amended by letters dated March 18, 1983, and June 2, 1983. In these letters, the licensee requested certain exemptions from the requirements of Section III.G of Appendix R. Section III.G requires that one train of cables and equipment necessary to achieve and maintain safe shutdown be kept free of fire damage by one of the following means:

a. Separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a three-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier;

b. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than twenty feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or

c. Enclosure of cables and equipment and associated non-safety circuits of one redundant train in a fire barrier having a one hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

If these conditions are not met, Section III.G.3 requires alternative shutdown capability independent of the fire area of concern.

III

The licensee requests exemptions from Section III.G. of Appendix R within seven plant fire areas and a general exemption for four specific areas from the requirements of Section III.G. to the extent that it requires three-hour fire rated boundaries for the separation of fire areas. In all areas evaluated for exemption, we have assumed a transient fire load typical of these type areas. If the licensee should introduce extraordinary transient fire loads, appropriate supplementary fire protection measures must be taken.

1. Service Water Intake Structure

   In the service water intake structure, the licensee proposes to provide automatic suppression and detection, however, the separation of redundant pumps is less than twenty feet as specified by Section III.G. The diesel driven fire pump will be removed from the area and all cables are in conduit. Therefore, the only significant in-situ combustible in the fire area is the pump motor lubricating oil. The licensee has stated that the probability of ignition of the oil is low because the lubricating oil has a high flashpoint (approximately 450°F) and that sufficiently hot surfaces do not exist in this fire area to cause the ignition of the lube oil. We have reviewed the licensee's submittals and agree that the low probability of ignition of the lube oil in conjunction with the existing separation distance provides reasonable assurance that the proposed automatic detection and suppression systems will be activated before the redundant service water components are damaged. Therefore, we conclude that with the proposed modifications, the

level of safety provided in the service water intake structure area will be equivalent to the techincal requirements of Section III.G of Appendix R and therefore, the licensee's request should be granted.

2. Cable Spreading Room

This area does not meet Section III.G because twenty feet of separation free of intervening combustibles or one-hour barriers are not provided between redundant trains. Because of the physical configuration of the cables and equipment in the cable spreading room, the installation of a one-hour rated fire barrier may be difficult. Instead, the licensee has proposed the use of fire resisting barriers to enclose vertical cable risers, and additional automatic sprinklers for the protection of horizontal cables, the majority of which are routed in steel conduits and are at the ceiling level. There are also several cable trays in the area. An exposure fire is therefore most likely to involve floor level combustibles.

Based on our review of the licensee's submittals, we have determined that the combination of vertical fire barriers, additional sprinkler head coverage, and complete automatic suppression and detection provide reasonable assurance that one train of power cables in the cable spreading room will be maintained free of fire damage. Therefore, we conclude that the proposed modifications with the existing fire protection for the cable spreading room provides a level of fire protection equivalent to the technical requirements of Section III.G of Appendix R and the exemption should be granted.

3. Cable Expansion Room

This area does not meet Section III.G because twenty feet of separation free of intervening combustibles or one hour barriers are not provided between redundant trains.

In the cable expansion room, the licensee has proposed extending the partial automatic sprinkler system to cover the entire room. Because it is difficult to install a one-hour barrier around the power cables, the licensee proposes to install flame inpingement baffles beneath the conduit bank containing the power cables. Based on our review of the licensee's submittals, we have determined that because of the low fuel load in the area, and the automatic suppression and detection provided, the alternative fire protection proposed provides reasonable assurance that one train of power cables will be maintained free of fire damage. Therefore, we conclude that the proposed modifications with the existing fire protection for the cable expansion room provides a level of fire protection equivalent to the technical requirements of Section III.G of Appendix R, and the exemption should be granted.

4. Reactor Building, Northeast Corner Room

This area does not comply with Section III.G because redundant conduits are not provided with one-hour rated fire barriers, and the automatic suppression system does not protect the entire area. The cables that need to be protected are installed over twenty feet above the floor level, within a highly congested conduit bank.

There is a partial, automatic sprinkler system installed in the area where the conduits are routed. The sprinkler heads are located beneath the lowest layer of conduits.

Based on our review of the licensee's submittals we have determined that due to the configuration of redundant cables, and their height above the floor, the existing automatic suppression and detection equipment provides reasonable assurance that one train will be maintained free of fire damage.

Therefore, we conclude that the existing protection provided for the northeast corner room of the reactor building provides a level of fire protection equivalent to the technical requirements of Section III.G and the exemption should be granted.

5. Control Building Basement

This area does not comply with Section III.G because an automatic suppression system is not provided. The primary combustible material in the area is lubricating oil. The licensee has stated that the probability of ignition of the oil is low because the lubricating oil has a high flashpoint (approximately 450°F) and that sufficiently hot surfaces do not exist in this fire area to cause the ignition of the lube oil.

The licensee has committed to protect one train of the 4160 volt power feeds to the service water pumps up to the ceiling or to a point very near the ceiling where interferences preclude protection. One division will be boxed out from the south wall in a one-hour

fire barrier utilizing fire barrier material. The licensee has also committed to protect one train of the 125 volt power feeds to the diesel generator control circuitry with a one-hour barrier.

Based on our review we agree with the licensee that the low probability of ignition of the lube oil in conjunction with the proposed one-hour barrier and high ceiling provides reasonable assurance that one train of power cables will be maintained free of fire damage for the time interval needed for the fire brigade to respond and manually extinguish the fire.

We therefore conclude that the proposed modifications with the existing fire protection for the control building basement provides a level of fire protection equivalent to the technical requirements of Section III.G and the exemption should be granted.

6. Auxiliary Relay Room

This area does not comply with Section III.G because a fixed suppression system is not provided.

An alternate shutdown system is provided for those systems necessary to maintain safe shutdown capability which is independent of the auxiliary relay room. For areas where alternate shutdown capability is provided, Section III.G requires a fixed suppression system in the fire area of concern if it contains a large concentration of cables or other combustibles. However, since the auxiliary relay room contains primarily metal cabinets, cables in conduits, and cable trays, the combustible loading is low. The area is also provided with an early warning smoke detection system.

Based on our review, we agree with the licensee that a fire in this area would be of limited severity and duration and therefore the installation of a fixed suppression system would not greatly enhance the fire protection for safe shutdown capability.

We therefore conclude the existing protection provided for the auxiliary relay room provides a level of fire protection equivalent to the technical requirements of Section III.G and the exemption should be granted.

7. Control Room

This area does not comply with Section III.G.3, because the control room is not provided with fixed suppression.

The control room is equipped with area fire detectors, and is provided with both a hose station and fire extinguishers for manual fire fighting. The fire load in the area is low. In addition, an alternate shutdown system is provided with control capabilities for those systems necessary to maintain safe-shutdown capability which is independent of the main control room. The fire protection features currently installed in the control room and the continuous manning of the control room provide adequate defense-in-depth fire fighting capability for these areas.

Since plant Techincal Specifications require continuous occupancy of the control room by the operators and because the operators constitute a continuous fire watch, manual fire suppression in event of a fire would be prompt and effective. Therefore, we have determined that a fixed suppression system will not enhance the fire protection in this area.

We have therefore concluded that the existing fire protection program for the control room provides a level of fire protection equivalent to the technical requirements of Section III.G.3 and the exemption should be granted.

8. Fire Area Boundaries

The licensee has requested an exemption from our requirements to provide a three-hour rated barrier at fire area boundaries for the following four specific areas.

8.a Reactor Building 922' Elevation - Critical Switchgear Rooms 1F and 1G

These areas do not meet Section III.G because three-hour rated fire dampers are not provided in the HVAC ducts where they penetrate three-hour rated fire walls. The licensee has provided 1 1/2-hour rated dampers in the ductwork, and has committed to upgrade one electrical buss duct penetration through the east wall of Critical Switchgear Room 1G and through the common wall between the two switchgear rooms to a three-hour rating.

Because of the low combustible loading exposing the barriers, and the automatic detection system, we have determined that the existing dampers provide reasonable assurance that one train of critical switchgear will be maintained free of fire damage in the interval required for the fire brigade to respond and manually extinguish the fire. We have therefore concluded that with the commitment to upgrade the penetration seal to three hours the protection provided for 1F and 1G critical switchgear rooms now provides a level of protection equivalent to the technical requirements of Section III.G and the exemption should be granted.

8.b Reactor Building 931' Elevation

This area does not comply with Section III.G because redundant reactor vessel level and pressure instrument racks and cables are not separated by three-hour barriers, or provided with twenty feet of separation free of intervening combustibles combined with automatic suppression and detection, and there is not alternate shutdown capability independent of the area.

However, because of the wide separation of these instrument racks, low in-situ fuel loading, and installed detection systems, we have determined the probability is low that an exposure fire of sufficient magnitude to damage redundant trains could occur prior to response of the fire brigade.

We have therefore concluded that the protection provided for the reactor vessel level and pressure instrument racks in the Reactor Building at the 931' elevation provides a level of fire protection equivalent to the technical requirements of Section III.G and the exemption should be granted.

8.c Reactor Building 903' Elevation (Excluding Northeast Corner)

This area, which contai redundant Division I and Division II safe shutdown equipment and cables in conduit, does not comply with Section III.G because redundant cables and equipment are not separated by three-hour barriers, or provided with twenty feet of separation free of intervening combustibles combined with automatic suppression and detection, and there is not alternate shutdown capability independent of the area. However, all redundant components are separated by greater than seventy five feet.

Because of the wide separation of this equipment, low in-situ fuel loading, and installed detection systems, we have determined the probability is low that an exposure fire of sufficient magnitude to damage redundant trains could occur prior to response of the fire brigade.

We have therefore concluded that the protection provided for the 903' elevation of the reactor building provides a level of fire protection equivalent to the technical requirements of Section III.G and the exemption should be granted.

8.d Reactor Building 859' and 881' Elevations - Quadrants and Torus Area

This area does not comply with Section III.G because redundant Division I and Division II cables and equipment are not separated by three-hour barriers, or [illegible]ided with twenty feet of separation free of intervening combustibles combined with automatic suppression and detection, and there is not alternate shutdown capability independent of the area. However, all redundant Division I and Division II components are separated by greater than seventy five feet with intervening walls. Because of the wide separation of this equipment and cables, low in-situ fuel loading, and installed detection systems, the staff has determined the probability is low that an exposure fire of sufficient magnitude to damage redundant trains could occur prior to response of the fire brigade.

We have therefore concluded the protection provided for the Division I and Division II cables and equipment located in the Reactor Building

at the 859' and 881' elevations provides a level of fire protection equivalent to the technical requirements of Section III.G and the exemption should be granted.

Accordingly, the Commission has determined that pursuant to 10 CFR 50.12, the exemptions requested by licensee's letters as referenced in Section II and discussed in Section III above are authorized by law, will not endanger life or property or the common defense and security, are otherwise in the public interest and are hereby granted. The NRC staff had determined that the granting of these exemptions will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact appraisal need not be prepared in connection with this action.

FOR THE NUCLEAR REGULATORY COMMISSION

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 21st day of September, 1983.