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AUTH.NAME AUTHOR AFFILIATION
FITZPATRICK,E. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
RECIP.NAME RECIPIENT AFFILIATION
MURLEY,T.E. Document Control Branch (Document Control Desk)

SUBJECT: Application for amends to Licenses DPR-58 & DPR-74, suspending fire protection water flow testing per TS 3/4 7.9.1,3/4 7.9.2 & 3/4 7.9.5 to lesson probability of infestation of zebra mussels in fire protection sys.

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Power Company
P.O. Box 16631
Columbus, OH 43216

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AEP:NRC:0692CH

Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
FIRE PROTECTION WATER FLOW TESTING
TECHNICAL SPECIFICATIONS AMENDMENT

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

Attn: T. E. Murley

May 15, 1992

Dear Dr. Murley:

This letter and its attachments constitute an application for an emergency amendment of the Technical Specifications (T/Ss) for the Donald C. Cook Nuclear Plant Units 1 and 2. Specifically, this letter proposes to immediately suspend the fire protection water flow testing required by T/Ss 3/4 7.9.1, 3/4 7.9.2, and 3/4 7.9.5. These sections cover the fire pumps, water suppression systems, and hose stations. We will continue to perform all other fire protection T/S testing. The suspension of water flow testing will lessen the possibility of infestation of zebra mussels in the fire protection system until the installation of the zebra mussel free fire protection water storage tanks and fire pumps are completed. This is estimated to be May 31, 1993, after which testing will resume.

In order to assure ourselves that the Cook Nuclear Plant fire protection systems are unobstructed and free of live zebra mussel colonies, we will perform random internal inspections of the piping prior to turnover of the new fire protection water supply system for operation. The inspection program for the distribution and suppression system piping may include any of several methods, e.g. visual, radiograph, boroscope, etc.

Attachment 1 provides a detailed description of the proposed changes, the justification for the changes, and our proposed determination of no significant hazards consideration performed pursuant to 10 CFR 50.92. Attachment 2 contains the existing T/Ss pages marked to reflect the proposed changes. Attachment 3 contains the proposed T/Ss pages.

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We believe that the proposed changes will not result in: (1) a significant change in the types of any effluent that may be released offsite, or (2) a significant increase in individual or cumulative occupational radiation exposure.

These proposed changes have been reviewed by the Plant Nuclear Safety Review Committee and by the Nuclear Safety and Design Review Committee.

This document has been prepared following Corporate procedures that incorporate a reasonable set of controls to ensure its accuracy and completeness prior to signature by the undersigned.

Sincerely,

S J Brewer for EEF

E. E. Fitzpatrick
Vice President

dag

Attachments

cc: D. H. Williams, Jr.
A. A. Blind - Bridgman
J. R. Padgett
G. Charnoff
NFEM Section Chief
A. B. Davis - Region III
NRC Resident Inspector - Bridgman

ATTACHMENT 1 to AEP:NRC:0692CH

10 CFR 50.92 ANALYSIS FOR CHANGES TO

THE DONALD C. COOK NUCLEAR PLANT

UNITS 1 AND 2

TECHNICAL SPECIFICATIONS

1.0 Section to be Changed

A. Unit 1

1. T/S 4.7.9.1.1.a - page 3/4 7-42
2. T/S 4.7.9.1.1.c - page 3/4 7-42
3. T/S 4.7.9.1.1.e.1,2,4 - page 3/4 7-42
4. T/S 4.7.9.1.1.f - page 3/4 7-42
5. T/S 4.7.9.1.2.a.2 - page 3/4 7-43
6. T/S 4.7.9.2.b.1.a - page 3/4 7-45
7. T/S 4.7.9.5c.1&2 - page 3/4 7-51

B. Unit 2

1. T/S 4.7.9.1.1.a - page 3/4 7-37
2. T/S 4.7.9.1.1.c - page 3/4 7-37
3. T/S 4.7.9.1.1.e.1,2,4 - page 3/4 7-37
4. T/S 4.7.9.1.1.f - page 3/4 7-37
5. T/S 4.7.9.1.2.a.2 - page 3/4 7-38
6. T/S 4.7.9.2.b.1.a - page 3/4 7-40
7. T/S 4.7.9.5.c.1&2 - page 3/4 7-45

2.0 Extent of Change

The license amendment request proposes a temporary change to T/Ss 4.7.9.1, 4.7.9.2 and 4.7.9.5 for both units. The proposed change involves adding a footnote to the affected fire protection water flow testing T/S section. The footnote will briefly state the reason for the suspension of water flow testing and the date that it will resume.

3.0 Specific Changes Requested

(The change numbers in the following discussion refer to those in Section 1.0, above.)

1-7. We are proposing to add to every affected T/S section, an asterisk (*) footnote that states, "The fire protection water flow surveillance testing may be suspended until completion of the fire protection water storage tank and fire pump installations (May 31, 1993). The surveillance testing suspended as a result of this amendment will be initiated at its normal frequency within four months of the new fire protection water storage tanks and fire pumps being declared OPERABLE, with the exception of unit outage required testing which

would be completed before the end of the next scheduled outage."

4.0 Discussion

System Description and Safety Function

Since July of 1990, the zebra mussel population at the Cook Nuclear Plant has continued to follow the explosive population trends already established within the eastern Great Lakes (up to 600,000 mussels/sq. meter). Specifically, the densities within the Cook Nuclear Plant forebay (where the fire pumps take direct or indirect suction) have increased as follows, despite our periodic chemical treatments.

Date	No. of Mussels/Square Meter
07/90	1
11/90	100
09/91	63,000

Future design changes and chemical treatments will reduce but not eliminate the number of live mussels within the forebay. Hence, we expect to see an unacceptable (as far as the fire protection system is concerned) number of live mussels in the forebay during the remainder of this year and into the future.

The fire protection water system uses four high demand fire pumps, two electric motor driven and two diesel engine driven. For the two electric motor driven fire pumps, suction is from the nonessential service water suction header which draws from the circulating water discharge tunnel of each unit. The diesel engine driven fire pumps draw suction from the circulating water intake chamber behind the travelling screens in the screenhouse. The fire pumps discharge into underground ring headers around the outside of the plant and into the interior ring header in the turbine building. Automatic valves are employed in the fire piping system to release water into the plant in case of a fire.

We are in the process of replacing the fire protection water supply in order to remove the fire protection system from the zebra mussel risk associated with Lake Michigan. This will be accomplished by installing new fire protection water storage tanks and fire pumps (reference our letter AEP:NRC:0692CC dated February 14, 1992). This modification is scheduled to be completed by March 31, 1993. We are requesting relief until May 31, 1993 to allow for unplanned events that would delay the modification.

Until completion of the above modification, we are proposing to immediately suspend all fire protection water flow testing listed in T/Ss 4.7.9.1, 4.7.9.2, and 4.7.9.5 in both units. These sections cover the fire pumps, water suppression systems and fire hose stations. The period of relief needed would begin May 25, 1992 and remain in effect until the new fire pumps and dedicated water tanks are declared operable. The surveillance testing will be initiated at its normal frequency within four months of the modification being declared operable, with the exception of unit outage required testing which would be completed before the end of the next scheduled unit outage. This is based on manpower loadings and the need to space out the surveillance work.

The proposed suspended surveillance testing involves testing the fire pumps to ensure they are operable, testing automatic valves to verify they actuate to the correct position, and performing flow tests to verify no flow blockage. All of this surveillance testing would introduce lake water into the fire protection system.

Automatic valve actuation requires water flow through the fire protection piping system in order to perform the test. The valves that are not automatically actuated can still be tested by cycling the valve without water flow. The fire hose hydrostatic surveillance test in T/S section 4.7.9.5.c.2 is performed per procedures by connecting to one of the plant's fire hydrants. Conducting the surveillance for both the automatic valves and the fire hoses would then draw zebra mussel infested water into the fire protection system.

Justification for Emergency T/S Amendment

The emergency license amendment request is being submitted to obtain relief from the T/S fire protection water flow testing requirement in T/Ss 4.7.9.1, 4.7.9.2, and 4.7.9.5 for both units. We are requesting this suspension by May 25, 1992, which is the next surveillance test that would inject zebra mussel infested water into the fire protection system. The suspension of water flow testing is intended to prohibit infestation of zebra mussels into the fire protection system prior to the completion of the new fire protection storage tank and fire pump installations. Upon significant infestation of the piping network, we would be unable to prove reliable operation of the fire suppression systems.

We are basing this request for an emergency T/S amendment on information obtained over the past few weeks and having become aware of the fact that other utility fire protection systems have already become zebra mussel infested (e.g., Monroe, Bay

Shore, fossil-fired plants). We have only recently found localized evidence of the zebra mussel population in the screenhouse forebay of approximately 200,000 mussels per square meter. This indicates over a three-fold increase in the number of mussels since September of 1991. Lake Michigan is expected to reach the temperature at which the zebra mussels will start reproducing, approximately 55°F, by the end of May.

Justification for Change

Studies have shown that zebra mussels reproduce at an alarming rate (30,000 mussels per event). Female zebra mussels begin development in the fall of the year in which they settle. Egg development is completed rapidly the following spring when water temperatures are 12 to 14°C (54 to 57°F). Fertilized eggs usually hatch into veligers in two to three days. Zebra mussel veligers could be drawn into the fire protection system during the testing of the fire protection water suppression systems. Veligers in the underground or above ground distribution piping can be controlled through chemical treatments with a biocide. However, if the veligers enter the suppression system piping, it would be very difficult to eliminate them from the system due to the design of the suppression systems.

The fire suppression systems use a series of dead end piping with progressively smaller sized pipes. This design feature inherently increases susceptibility to fouling and/or plugging. Flushing of the suppression systems through existing points (drains and inspector's test connections) is limited and cannot provide an effective flow throughout the entire system without considerable manpower and expense in obtaining flow through each dead end branchline. Thus, treatment of the system with a biocide is limited by this design feature. In addition, the biocide only kills the mussels, it does not remove the mussel shells from the system. The flushing treatments will raise the fear of introducing new veligers into the fire protection system. Hence, the stagnant conditions of the fire suppression systems cannot be reasonably treated with the water treatment technologies that have been successful with free flowing or once through systems.

The fire protection system has not shown signs of system degradation that would warrant our need to continue the T/S surveillance testing during this period of relief. Data collected from the past fire pump performance tests demonstrates this point. The four high demand fire pumps are performance tested on an eighteen-month frequency. The pump performance data from the past six years has been reviewed and the test results have remained consistent. The other

components of the fire protection water system have also not shown signs of system degradation. The required system flushes have not indicated blockages within the system. The automatic valves have actuated to their correct position.

In the past, we have taken measures to ensure that the zebra mussels have not infested the fire protection water system. To date, no evidence of live zebra mussels has been found within the fire protection system piping. This is based on inspections of the fire protection piping and valves that are performed each time we enter the system for maintenance.

We have also contacted our insurer, American Nuclear Insurers, on the issue of temporarily suspending all water flow testing of fire suppression systems until completion of the new fire pump and supply tank project. They have endorsed this position.

5.0 No Significant Hazards Determination

We have evaluated the proposed T/S changes and have determined that the changes should involve no significant hazards consideration. Operation of the Cook Nuclear Plant in accordance with the proposed amendment will not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated

The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated because of the reliability of the fire protection water system over the past years. The fire protection system has not shown signs of system degradation that would warrant our need to continue the T/S surveillance testing during this period of relief. Consequently, our fire fighting capability will not be compromised. We believe the fire protection water system will adequately perform its function in the event of a fire. This is based on actions taken to prevent zebra mussel infestation such as chemical biocide treatments five times a year and visual inspection during maintenance activities. To date we have found no signs of zebra mussel infestation in the fire protection system. In addition, we note that not performing the surveillance testing will help prevent mussel infestation. For these reasons we conclude that the relief from fire protection water flow testing will not significantly increase the probability or consequences of an accident.

(2) Create the possibility of a new or different kind of accident from any previously analyzed

The proposed amendment does not create the possibility of a new or different kind of accident from any previously evaluated because of the reliability of the fire protection water system over the past years. The fire protection system has not shown signs of system degradation that would warrant our need to continue the T/S surveillance testing during this period of relief. Consequently, our fire fighting capability will not be compromised. We believe the fire protection water system will adequately perform its function in the event of a fire. This is based on actions taken to prevent zebra mussel infestation such as chemical biocide treatments five times a year and visual inspection during maintenance activities. To date we have found no signs of zebra mussel infestation in the fire protection system. In addition, we note that not performing the surveillance testing will help prevent mussel infestation. For these reasons we conclude that the relief from conducting fire protection water flow surveillance testing will not create the possibility of a new or different kind of accident from any previously evaluated.

(3) Involve a significant reduction in a margin of safety

This proposed amendment does not involve a significant reduction in the margin of safety because of the reliability of the fire protection water system over the past years. The fire protection system has not shown signs of system degradation that would warrant our need to continue the T/S surveillance testing during this period of relief. Consequently, our fire fighting capability will not be compromised. We believe the fire protection water system will adequately perform its function in the event of a fire. This is based on actions taken to prevent zebra mussel infestation such as chemical biocide treatments five times a year and visual inspection during maintenance activities. To date we have found no signs of zebra mussel infestation in the fire protection system. In addition, we note that not performing the surveillance testing will help prevent mussel infestation. For these reasons we conclude that any reduction in the margin of safety would not be significant. Consequently, the proposed amendment does not involve a significant reduction in the margin of safety.

6.0 Pending T/Ss Proposals Impacting This Submittal

The pages that are being submitted in this proposal (AEP:NRC:0692CH) are also contained in our submittals AEP:NRC:0692CC, dated February 14, 1992, and AEP:NRC:1143, dated May 1, 1992. The changes proposed in this letter are in addition to those changes and do not supersede them.