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Nuclear
Operations

January 29, 1992
NRC-91-0160

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

- References:
- 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
 - 2) Detroit Edison letter to NRC, NRC-91-0150,
dated November 11, 1991
 - 3) Detroit Edison letter to NRC, NRC-90-0150,
dated September 11, 1990
 - 4) Detroit Edison letter to NRC, NRC-91-0151,
dated November 14, 1991
 - 5) NRC letter from Mr. William Gammill to
Mr. Fred Lakie, Nuclear Containment Systems, Inc.,
dated September 24, 1981
 - 6) NRC Information Notice 87-32, "Deficiencies in the
Testing of Nuclear-Grade Activated Charcoal,"
dated July 10, 1987
 - 7) Detroit Edison letter to NRC, NRC-89-0215,
dated November 16, 1989

Subject: Proposed Technical Specification Change (License
Amendment) - Charcoal Testing Standards for Control
Room Emergency Filtration System and Standby Gas
Treatment System

Pursuant to 10CFR50.90, Detroit Edison Company hereby proposes to amend Operating License NPF-43 for the Fermi 2 plant by incorporating the enclosed changes into the Plant Technical Specifications. The proposed change provides an updated laboratory testing standard for surveillance testing of representative activated charcoal samples from the Control Room Emergency Filtration System and the Standby Gas Treatment System. In Reference 2, Detroit Edison committed to submit a Technical Specification change proposal to update these standards. This submittal satisfies this commitment.

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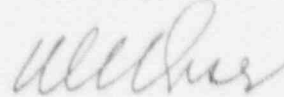
NRC-91-0160

Page 2

Detroit Edison has evaluated the proposed Technical Specifications against the criteria of 10CFR50.92 and determined that no significant hazards consideration is involved. The Fermi 2 Onsite Review Organization has approved and the Nuclear Safety Review Group has reviewed the proposed Technical Specifications and concurs with the enclosed determinations. In accordance with 10CFR50.91, Detroit Edison has provided a copy of this letter to the State of Michigan.

If you have any questions, please contact Mr. Glen D. Ohlemacher at (313) 586-4275.

Sincerely,



Enclosure

cc: T. G. Colburn
A. B. Davis
R. W. DeFayette
S. Stasek
Supervisor, Electric Operators, Michigan
Public Service Commission - J. R. Padgett

USNRC
January 29, 1992
NRC-91-0160
Page 3

I, WILLIAM S. ORSER, do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

William S. Orser

WILLIAM S. ORSER
Senior Vice President

On this 29th day of January, 1992, before me personally appeared William S. Orser, being first duly sworn and says that he executed the foregoing as his free act and deed.

Rosalie A. Armetta

Notary Public

ROSALIE A. ARMETTA
NOTARY PUBLIC STATE OF MICHIGAN
MONROE COUNTY
MY COMMISSION EXPIRES NOV. 20, 1995

INTRODUCTION

Technical Specification (TS) surveillances for the Standby Gas Treatment System (SGTS) and the Control Room Emergency Filtration System (CREFS) require a laboratory analysis of a representative sample of charcoal from the system filter trains. These analyses are required at least once every 18 months, after 720 hours of charcoal adsorber operation and following specified events which may degrade charcoal performance. The specified events are structural maintenance on the filter or charcoal adsorber housings, and after painting, fire or chemical release in any ventilation zone communicating with the system. These surveillance requirements are detailed in TS 4.6.5.3.b.2 and 4.6.5.3.c for SGTS, and in TS 4.7.2.c.2 and 4.7.2.d for CREFS.

Each of these surveillances specify that the sample meet the testing criteria of Regulatory Position C.6.a of Regulatory Guide (RG) 1.52, Revision 2, March 1978. A maximum methyl iodide penetration is also specified for each system. This penetration is based upon the assumed inefficiency of the filter train when evaluated under accident conditions. The testing acceptance criteria includes margins for filter bypass leakage and potential testing inaccuracies.

Regulatory Position C.6.a of RG 1.52, Revision 2 refers to ANSI N509-1976 for laboratory testing methods. ANSI N509-1976 refers to RDT M16-1T for detailed procedures. More recent standards exist which give more consistent and accurate results. The purpose of this submittal is to propose changes to reflect the more recent ASTM D3803-1979 procedures. ASTM D3803-1979 is the test procedure referenced by the most recent industry standard on this subject, ASME N510-1989. In addition, important test parameters are specified to assure proper test conditions are established.

EVALUATION

The proposed changes modify the laboratory analysis requirements of the SGTS and CREFS TS by specifying a new testing procedure and important test parameters, such as temperature, relative humidity and filter bed depth needed to utilize the procedure.

The test procedure specified is ASTM D3803-1979. This procedure is the most commonly used procedure for the purpose of determining the efficiency of charcoal installed in engineered safety feature (ESF) atmosphere cleanup systems. This procedure provides greater consistency and accuracy than the procedure called for by ANSI N509-1976. Use of the new procedure therefore provides greater

assurance that the installed charcoal will perform its intended safety function.

In Reference 5, the NRC staff specifically addressed laboratory methyl iodide testing requirements and the issue of how to perform these tests when the standards referenced by RG 1.52, Revision 2 are updated. In this instance, the issue was that ANSI N509-1976 had been updated by ANSI N509-1980. ANSI N509-1980 and ASME N510-1989 both refer to the testing procedures of ASTM D3803-1979. Reference 5 indicated that the utility has an option of literally invoking ANSI N509-1976 or utilizing the updated standard, ANSI N509-1980. Reference 5 indicates that on a technical basis the 1980 standard was preferred. Consistent with this philosophy, Detroit Edison has been using the procedures of ASTM D3803-1979 for charcoal testing.

This proposal removes the option of invoking the technically inferior ANSI N509-1976 standard and requires the use of the testing procedures called for by the latest industry standard, ASME N510-1989, which remains ASTM D3803-1979. This is consistent with the philosophy, expressed in Reference 5, to use the latest industry guidance when standard updates occur.

A 1989 version of ASTM D3803 has been issued. The 1989 version provides a modified test method which precedes the methyl iodide penetration test with a 16 hour exposure of the charcoal to air at the specified temperature and humidity for the test. This process is referred to as pre-equilibration. Exposing the charcoal to humid air decreases its adsorption capability and thus, this test method provides an increase in the methyl iodide penetration when compared to the 1979 test version. This is conservative, particularly in relation to the dose calculations involved. For example, more than a third of the total Control Room iodine dose is calculated to be experienced in the first 8 hours of the design basis accident. (The Control Room dose calculation was submitted with Reference 7.) During this 8 hour period, charcoal saturation is less likely and the charcoal performs better than modeled during the test. Although ASTM D3803-1989 provides a conservative test, adopting this procedure at this time is neither necessary nor desirable.

ASTM D3803-1989 has not been widely accepted in the industry since it has not been required by the latest ANSI or ASME standards. As stated above, the 1979 version or its equivalent continues to be used by a majority of units.

ASME N510-1989 does not reflect a need for pre-equilibration prior to penetration testing. In 1987, the NRC issued Information Notice 87-32 (Reference 6) on this subject. This notice indicates, by reference to a report, the desirability of pre-equilibration and the need for close tolerances at high relative humidities (approximately 95% and above). ASME N510-1989 indicates that ASTM D3803-1979 was under revision and provides guidance regarding testing tolerances. ASME N510-1989 also mentions that humidity pre-equilibration results in a more conservative test than the ASTM D3803-1979 required non pre-equilibration. It does not, however, indicate that pre-equilibration is necessary.

ASTM D3803-1989, due to its conservatism, will require charcoal replacement at a greater frequency than that envisioned at the time of system design. More frequent charcoal replacements will require increased out-of-service time and create difficulties in outage scheduling. This does not appear warranted considering the conservatism behind the test acceptance criteria, including the post-accident iodine source term. Detroit Edison believes that implementation of ASTM D3803-1989, if ultimately deemed necessary, should be coordinated with changes to accident source terms and filter safety factors used for the determination of the surveillance acceptance criteria. This will allow adjustment of acceptance criteria to maintain the designed filter media lifetimes.

For the above reasons, Detroit Edison does not believe that adopting ASTM D3803-1989 is appropriate at this time. NRC representatives and documents have indicated that the post-accident iodine source term is under review and regulatory guidance may be issued in the future on charcoal filter testing. Detroit Edison will review such guidance if it is issued and take any appropriate actions at that time.

The use of ASTM D3803-1979 does not pose a safety concern. The existing safety factors, filter efficiency assumptions and source terms provide sufficient conservatism and safety margins. Avoiding unnecessary charcoal replacements allows resources to be applied to more important tasks and reduces filter out-of-service time during replacement.

ASTM D3803-1979 can be applied using either of two test temperatures. In addition, the procedure has default values for relative humidity and filter bed depth which are utilized unless otherwise specified. To assure ASTM D3803-1979 is properly applied, this proposal specifies the test temperature, relative humidity and filter bed depth for each surveillance. The temperature and humidity values provided in the proposed TS bound the expected accident conditions at the filter. The

proposed filter bed depth values correspond to the installed bed depths for the filter units.

In summary, the proposed change enhances safety by providing an updated charcoal laboratory testing procedure and associated test parameters for CREFS and SGTS. The change provides greater assurance that the installed charcoal can perform its design function.

SIGNIFICANT HAZARDS CONSIDERATION

In accordance with 10CFR50.92, Detroit Edison has made a determination that the proposed amendment involves no significant hazards consideration. To make this determination, Detroit Edison must establish that the operation in accordance with the proposed amendment would not: 1) involve a significant increase in the probability or consequences of an accident previously evaluated, or 2) create the possibility of a new or different kind of accident from any accident previously evaluated, or 3) involve a significant reduction in a margin of safety.

The proposed change provides an updated standard for laboratory analysis of representative charcoal samples from filter units in the Standby Gas Treatment System (SGTS) and the Control Room Emergency Filtration System (CREFS). The proposal does not:

- 1) Involve a significant increase in the probability or consequences of an accident previously evaluated. By providing an improved procedure for charcoal analysis the proposal provides greater assurance that the installed charcoal can perform its design function and, thus, the consequences of evaluated accidents are valid. The method of laboratory analysis has no effect upon how the plant is operated, including the method of sample removal. Therefore, the probability of any evaluated accident is unchanged.
- 2) Create the possibility of a new or different kind of accident from any accident previously evaluated. As described in 1) above, the proposal has no effect on the manner of plant operation. The proposal does not involve any change to the plant design. Therefore, the change creates no new accident modes.
- 3) Involve a significant reduction in a margin of safety. By providing an improved procedure for charcoal analysis the proposal acts to maintain existing safety margins.

Based on the above, Detroit Edison has determined that the proposed amendment does not involve a significant hazards consideration.

ENVIRONMENTAL IMPACT

Detroit Edison has reviewed the proposed Technical Specification changes against the criteria of 10CFR51.22 for environmental considerations. The proposed change does not involve a significant hazards consideration, nor significantly change the types or significantly increase the amounts of effluents that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed Technical Specifications do meet the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement.

CONCLUSION

Based on the evaluation above: 1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and 2) such activities will be conducted in compliance with the Commission's regulations and proposed amendments will not be inimical to the common defense and security or to the health and safety of the public.

As stated above, the current Fermi 2 charcoal testing program utilizes the test procedures of ASTM D3803-1979. However; in the case of SGTS, a test temperature of 80°C has been specified instead of the proposed 30°C test temperature. Detroit Edison intends to utilize the 30°C test temperature during the next scheduled surveillance tests during the third refueling outage. It is unnecessary to perform the tests at 30°C earlier. This is because the results of the last tests at 80°C showed .001 percent penetration versus an acceptance criteria of .175 percent penetration. The effect of the temperature difference on the test results is quite small when compared to this margin between the results and the acceptance criteria. If this proposal is approved prior to the third refueling outage it is requested that the amendment allow implementation of the change with the next performance of the affected surveillances. In any case, a thirty day implementation period is requested for site document revision.

The attached TS pages also reflect the TS changes proposed in References 3 and 4. The Reference 3 and 4 proposals are independent of this proposal although they affect the same pages.