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U-602243
L47-94(04-18)LP
8E.100a
JGC-004-94
April 18, 1994
10CFR50.90

Docket No. 50-461

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

Subject: Clinton Power Station Proposed Amendment of Facility Operating License No. NPF-62 (LS-91-023)

Dear Sir:

Pursuant to 10CFR50.90, Illinois Power (IP) hereby applies for amendment of Facility Operating License No. NPF-62, Appendix A-Technical Specifications, for Clinton Power Station (CPS). This request consists of proposed changes to Technical Specification 3/4.6.6.3, "Standby Gas Treatment System," and Technical Specification 3/4.7.2, "Control Room Ventilation System." Specifically, the proposed changes would allow IP to update the revision of the American Society for Testing and Materials (ASTM) Standard utilized to periodically perform laboratory testing of charcoal adsorber samples from the 1979 revision of ASTM D3803 to the 1989 revision.

A description of the proposed changes and the associated justification (including a Basis For No Significant Hazards Consideration) is provided in Attachment 2. A marked-up copy of the affected pages from the current Technical Specifications is provided in Attachment 3. In addition, associated changes to the Technical Specification Bases are provided in Attachment 4 and changes to IP's previous request to convert to the Improved Standard Technical Specifications (reference IP letter U-602196 dated October 26, 1993) are provided in Attachment 5. Further, an affidavit supporting the facts set forth in this letter and its attachments is provided in Attachment 1.

IP has reviewed the proposed changes against the criteria of 10CFR51.22 for categorical exclusion from environmental impact considerations. The proposed changes do not involve a significant hazards consideration, or significantly increase the amounts or change the types of effluents that may be released off-site, nor do they significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, IP concludes the proposed changes meet the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirement for an Environmental Impact Statement.

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In order to support use of the updated, more accurate testing method during the next required surveillances on the associated filter systems, IP requests that this proposed change be reviewed and approved by June 15, 1994.

Sincerely yours,

J. G. Cook
Vice President

DAS/csm

Attachments

cc: NRC Clinton Licensing Project Manager
NRC Resident Office, V-690
Regional Administrator, Region III, USNRC
Illinois Department of Nuclear Safety

STATE OF ILLINOIS

COUNTY OF DEWITT

John G. Cook, being first duly sworn, deposes and says: That he is Vice President of Illinois Power Company; that the application for amendment of Facility Operating License NPF-62 has been prepared under his supervision and direction; that he knows the contents thereof; and that to the best of his knowledge and belief said application and the facts contained therein are true and correct.

DATED: This 18 day of April 1994

Signed: J G Cook

Subscribed and sworn to before me this 18 day of April 1994.

" OFFICIAL SEAL "
Jacqueline S. Matthias
Notary Public, State of Illinois
My Commission Expires 11/24/97

Jacqueline S. Matthias
Notary Public

Background

Nuclear Regulatory Commission (NRC) Information Notice (IN) 87-32, "Deficiencies in the Testing of Nuclear-Grade Activated Charcoal," was issued by the NRC to all nuclear power reactor facilities to call attention to deficiencies found in the testing of nuclear-grade activated charcoal used for accident mitigation in nuclear facilities. The NRC IN was written in response to the identification of a large variation in testing results obtained during an interlaboratory comparison conducted by the American Society of Mechanical Engineers (ASME) Committee on Nuclear Air and Gas Treatment. The NRC had contracted with the Idaho National Engineering Laboratory (INEL) (EG&G) to investigate the problem. The investigation identified serious problems with the capabilities of the testing companies and with the testing standard being utilized at that time (ASTM standard D3803-1979). Specific suggestions were made to improve the testing capabilities of the testing companies, a new testing protocol was developed to correct shortcomings found in the standard, and a final interlaboratory comparison was conducted. The results of this subsequent interlaboratory comparison indicated a substantial improvement over the original results; however, some companies still did not report acceptably accurate results. The NRC contractor's investigation is documented in report EGG-CS-7653, "Final Technical Evaluation Report for the NRC/INEL Activated Carbon Testing Program."

The NRC IN identified that the testing standard was being revised and that deficiencies could be corrected only by the individual companies. The failure to upgrade equipment so that test parameters could be adequately controlled was identified as the principal reason for the unacceptable results in the follow-up tests.

Illinois Power's (IP's) initial evaluation of the NRC IN was completed in 1987. The laboratory used (then and now) by Clinton Power Station (CPS) to test nuclear-grade activated charcoal is NUCON. According to the EG&G report, NUCON has "very good monitoring and control" of test parameters. The EG&G report goes on to state that "NUCON (has) made significant expenditures of money and effort to comply with all the INEL recommendations throughout this program. Their efforts have resulted in apparently accurate and precise results." Based on review of the EG&G report, IP concluded that no further action at CPS was required. It should also be noted that at that time CPS had completed only one operating cycle, so sufficient test results were not available for meaningful trending.

During an NRC inspection at CPS in November 1991, an NRC inspector identified a significant amount of "data scatter" in the test results that had been received by that date. The test results indicated that the charcoal adsorbers had improved over time in their effectiveness in removing radioiodine. Charcoal adsorbers normally experience continued loading of contaminates over time and lose effectiveness in removing radioiodine. The apparent anomalies reduced confidence in the charcoal adsorber testing results. As a result of that inspection finding, IP committed to reevaluate its response to the NRC IN.

Subsequent to issuance of NRC IN 87-32, ASTM standard D3803 was revised. In addition to requiring increased accuracies for testing and measuring equipment, the 1989 revision to this standard added a requirement to "equilibrate" samples prior to testing. This equilibration, in conjunction with the use of more efficient backup beds for collection of the methyl iodide passing through the test bed and the use of more accurate measuring equipment, provides more accurate and repeatable test results.

IP requests that the CPS Technical Specifications be revised to allow use of the 1989 revision to standard ASTM D3803.

Description of Proposed Changes

In accordance with 10CFR50.90, the following changes to the CPS Technical Specifications are being proposed. Replace references to "ASTM D3803-79" with generic references to this standard, "ASTM D3803," in surveillance requirements 4.6.6.3.b.2 and 4.6.6.3.c for the Standby Gas Treatment System (SGTS) and in surveillance requirements 4.7.2.c.3 and 4.7.2.d for the Main Control Room Ventilation System (VC). The current references to the 1979 version of ASTM D3803 are being replaced with generic references to ASTM D3803 rather than references to the 1989 version to allow future flexibility in updating to newer revisions of this standard. It should be noted that changes to the revision of ASTM D3803 being utilized by CPS will be subject to the change control provisions of 10CFR50.59. The proposed changes are shown on the marked-up copies from the current Technical Specifications contained in Attachment 3.

In addition, a correction is proposed for the Bases for Technical Specification 3/4.7.2 to appropriately refer to the ANSI standard for periodic testing (ANSI-N510-1980) rather than the standard for installation acceptance testing (ANSI-N509-1980). This change is reflected on the marked-up copy from the current Technical Specifications Bases contained in Attachment 4.

As the NRC staff is currently reviewing IP's request to adopt the Improved Technical Specifications (ITS) (reference IP letter U-602196 dated October 26, 1993), the proposed changes are reflected in marked-up copies from the CPS ITS submittal contained in Attachment 5.

Justification for Proposed Changes

As described in CPS Updated Safety Analysis Report (USAR) Section 6.5.1, the function of the SGTS is to reduce iodine and particulate concentrations in gases leaking from the primary containment that would potentially be present in the secondary containment following an accident. The SGTS is located in the Control Building, outside the secondary containment, and utilizes charcoal adsorbers to adsorb the fission products which may leak from the primary containment into the secondary containment. The SGTS

is automatically initiated upon receipt of a high radiation signal from one or more areas or in response to a loss-of-coolant accident (LOCA) signal (i.e., low reactor water level and/or high drywell pressure).

As described in CPS USAR Section 6.4.1, the function of the filter train portion of the Main Control Room Heating, Ventilation, and Air Conditioning (HVAC) System is to reduce the radioactive fission products that main control room operators might be exposed to following an accident to ensure their doses are maintained within the limits of 10CFR50, Appendix A, General Design Criterion 19. The main control room HVAC system (VC) is located in the Control Building, outside the secondary containment, and utilizes charcoal adsorbers to adsorb any fission products that may exist in the main control room inlet or recirculation air.

As described in USAR Section 6.5.1, the VC system consists of two filter systems, a makeup filter subsystem and a recirculation filter subsystem. Upon receipt of a high radiation signal from the radiation monitors installed in the minimum outside air intakes and the control room HVAC system or in response to manual actuation, the VC system is automatically started in the high radiation mode of operation. In this mode of operation, the exhaust fan supplying the locker room, toilet, and kitchen areas is automatically tripped and the supply air is routed through the recirculation filter train. In addition, the 3000 cfm makeup air is automatically recirculated through the makeup filter train before being routed to the control room envelope to maintain positive pressure. The control room operator can use handswitches to close the minimum outside air intake damper and to open the other intake damper to take advantage of the separation of the two air intakes and minimize radioactivity intake.

Samples from the charcoal adsorbers in these filter systems are periodically tested in accordance with the CPS Technical Specifications. The Technical Specifications require that every 18 months; following any structural maintenance on the HEPA filters or charcoal adsorber housings; following painting, fire, or chemical release in any ventilation zone communicating with the filter system; or after 720 hours of adsorber operation; a sample of the charcoal be removed and the penetration of methyl iodide be verified to be less than a specified limit when tested in accordance with ASTM D3803-79.

Per ASTM D3803-79, the methyl iodide penetration test consists of the following methodology. The test bed is brought to the specified temperature without flow through the bed. When the specified temperature is reached, the feed period, using air at the specified temperature and humidity, commences. During the feed period, a mass concentration of 1.75 mg of methyl iodide/cubic meter of air is added to the humid air flow for 60 minutes. Following this feed period, air flow without the methyl iodide is continued under the same conditions for a 240-minute "elution period." Throughout the entire test, the effluent from the sample bed passes through a backup bed having a known high efficiency for removal of methyl iodide. This backup bed traps essentially all the methyl iodide that may pass through the test bed. At the end of the elution period, the

amount of I-131 gamma activity in the test bed and the backup bed is measured using a gamma counter and the bed-depth penetration is calculated based on the ratio of the activity trapped in the backup bed to the combined activity trapped in the test and backup beds.

The test method for determining methyl iodide penetration per ASTM D3803-89 is similar to that specified in ASTM D3803-79 with the following significant differences. The 1989 version of this standard requires a "pre-equilibration period" consisting of purge air at the specified temperature and humidity for 16 hours and an "equilibration period" for two hours prior to commencing a feed period of 60 minutes and an elution period of 60 minutes. These equilibration periods ensure that all samples have a common starting point before challenging the sample with radioactive gas. In addition, the 1989 version of this standard requires the use of two (rather than one) higher efficiency backup beds and the use of higher accuracy monitoring instrumentation. These enhancements ensure more accurate and repeatable test results.

Testing in accordance with later versions of ASTM D3803 will facilitate trending of the test results at CPS to provide a better indication of when the charcoal is approaching, or has reached, its end of useful life. As identified above, the carbon test results at CPS have experienced data scatter and in most cases have not indicated a slowly degrading trend that would allow IP to predict the need for future charcoal bed replacements.

Basis for No Significant Hazards Consideration

In accordance with 10CFR50.92, a proposed change to the operating license (Technical Specifications) involves no significant hazards consideration if operation of the facility in accordance with the proposed change would not (1) involve a significant increase in the probability or consequences of any 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 changes are evaluated against each of these criteria below.

(1) The proposed changes to the Technical Specification surveillance requirements for determining the methyl iodide penetration of carbon samples would not involve a significant increase in the probability or the consequences of any accident previously evaluated because the proposed change merely allows IP to utilize a more up-to-date version of the same test method currently specified. More recent versions of the test method are more effective at detecting unsatisfactory charcoal performance because they include equilibration periods to ensure that all samples have a common starting point before being challenged with radioactive gas. The proposed change would not affect the quality of the charcoal or the reliability of the filter subsystems as it only relates to testing and involves no changes to the design or operation of the ventilation subsystems themselves. The updated standards provide more accurate and repeatable test results and do not change the

properties or acceptance criteria for these properties. As a result, the performance capabilities of the associated filter subsystems would not be adversely impacted by the proposed change.

(2) The proposed change would not involve a change in the design or operation of any plant system or component. In addition, the proposed change would not reduce the level of filter train subsystem reliability nor would it create an initiating event for any accident. Because the performance, function, and redundancy of the original design remain unchanged, the proposed change would not create the potential for a new event. Furthermore, since no new types of equipment would be introduced into the plant design and the proposed change would not adversely impact existing equipment, no potential for a different type of malfunction is created by the proposed change. Therefore, this proposed change cannot create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) The margin of safety for the charcoal filter subsystems as defined in the Bases to the Technical Specifications associated with the proposed change refers to the ability of the filters to remove radioiodines. The proposed change would allow IP to upgrade the currently specified test for determining charcoal adsorber performance with one which utilizes the same type of methodology, but provides greater accuracy and repeatability. The newer versions of the test method are more effective at detecting unsatisfactory charcoal performance because they include equilibration periods to ensure that all samples have a common starting point before being challenged with radioactive gas. Thus, the proposed change would not involve a reduction in the margin of safety.

Based upon the foregoing, IP has concluded that the proposed change does not involve a significant hazards consideration.