



Illinois Power Company
Clinton Power Station
P.O. Box 678
Clinton, IL 61727
Tel 217 935-8881
U-602116
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10CFR50.12
10CFR50.90

Docket No. 50-461

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

Subject: Application for One-time Exemption from 10CFR50 Appendix J and Amendment of Facility Operating License No. NPF-62 for Clinton Power Station (LS-93-003)

Dear Sirs:

In accordance with 10CFR50.12 and 10CFR50.90, Illinois Power (IP) hereby applies for a one-time exemption from 10CFR50 Appendix J regarding local leak rate testing of the Inclined Fuel Transfer System (IFTS) containment penetration (LMC-04). The design of the IFTS containment penetration at Clinton Power Station (CPS) incorporates piping fitted with a flexible bellows assembly, and thus the penetration is subject to receive a Type B local leak rate test(s) in accordance with Appendix J, Paragraph II.G.1. The leakage rate for this penetration is required to be measured according to the method prescribed in 10CFR50 Appendix J Paragraph III.B.1.(b). The Type B test(s) shall be performed at least once every 24 months in accordance with Paragraph III.D.2.(a), and the results shall be added to the combined leakage rate for all penetrations and valves subject to Type B and C tests to verify the total combined leakage rate is less than the acceptance criteria identified in Appendix J, Paragraph III.B.2.(a). With respect to these requirements, IP requests a one-time exemption (for CPS operating cycle 5) from the Type B testing requirements for the IFTS containment penetration as a result of the potential inability to perform a valid Type B local leak rate test (LLRT) on the penetration two-ply bellows assembly. The proposed exemption will necessitate a revision to Technical Specification 3/4.6.1.2 to document the approved one-time exemption.

A description of the proposed exemption, the associated justification and a description of the special circumstances (as required by 10CFR50.12) are provided in Attachment 2. In addition, Attachment 2 provides a description and the associated justification (including a Basis for No Significant Hazards Consideration) for the proposed Technical Specification changes. A marked-up copy of the affected pages from the current Technical Specifications is provided in Attachment 3. Further, an

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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 environmental considerations. The proposed changes do not involve a significant hazards consideration, increase the types and amounts of effluents that may be released offsite, nor increase the individual or cumulative occupational radiation exposures. The proposed exemption and associated Technical Specification change will permit a one-time exemption for cycle 5 from the Type B testing requirement for the IFTS containment penetration. The Integrated Leak Rate Test (ILRT) performed during the fourth refueling outage will provide evidence that the containment leakage continues to meet the requirements of Appendix J. In addition, the bellows outer surface will be visually inspected and a LLRT will be performed on the associated penetration in accordance with the method that has been used to date to thus provide added assurance that no significant leakage pathway through the bellows exists. Therefore, it can be concluded that the proposed changes will not have a significant effect on the quality of the human environment.

For convenience, Attachment 4 contains a marked-up copy of Technical Specification 3/4.6.1.2 and its associated bases section to indicate all outstanding proposed changes to this specification. The mark-up includes those changes proposed by IP in its letter (U-602097) dated February 17, 1993, as well as the changes proposed by this letter.

Please note that IP desires to implement this request during the fourth refueling outage at Clinton Power Station (which is currently scheduled to begin September 26, 1993). Therefore, IP requests that this application be reviewed on a schedule sufficient to support this outage.

Sincerely yours,



J. S. Perry
Senior Vice President

TAB/nls
Attachments

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

Attachment 1
to U-602116

STATE OF ILLINOIS
COUNTY OF DEWITT

J. Stephen Perry, being first duly sworn, deposes and says: That he is Senior 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.

DATE: This 16 day of April, 1993.

Signed: _____

Stephen Perry
Stephen Perry

Subscribed and sworn to before me this 16 day of April, 1993

Diane R. Miller
Notary Public

Background

In accordance with 10CFR50.54(o), primary reactor containments are subject to the leak rate testing requirements as set forth in Appendix J to 10CFR50. These requirements provide for periodic verification by test of the leak-tight integrity of the primary containment as well as systems and components which penetrate containment, and they establish the acceptance criteria for such tests. One of the purposes of these tests is to assure "periodic surveillance of reactor containment penetrations and isolation valves is performed so that proper maintenance and repairs are made during the service life of the containment, and systems and components penetrating primary containment." This purpose is served primarily by the performance of Type B and C testing as defined in Appendix J to 10CFR50. The Type B testing is intended to detect local leaks and to measure leakage across each pressure-containing or leakage-limiting boundary for primary containment penetrations of the type described in 10CFR50 Appendix J, Paragraph 11.G.

In March 1992 the NRC issued Information Notice 92-20, "Inadequate Local Leak Rate Testing," to alert licensees to problems involving local leak rate testing (LLRT) of containment penetrations under 10CFR50 Appendix J. One of the problems identified in the information notice was a series of inconsistent leak rate tests performed by Commonwealth Edison Company on a containment penetration bellows assembly at the Quad Cities Station, Unit 1. The problem, as described in the information notice, was that the LLRT, performed by pressurizing the gap between the two plies of the bellows assembly, could not be relied upon to accurately measure the leakage rate that could occur through the bellows assembly under accident conditions. It was determined following examination of the bellows cross-section, that a tight metal-to-metal contact occurred between the plies in the convolutions at the inflection point between the inner and outer apexes. A gap size of 0.002 to 0.010 inches was measured at the apexes, which is the maximum gap location. The contact points restricted the flow of the test medium to any crack locations located downstream of the restriction from the pressure source. As a result, Commonwealth Edison concluded that it is not possible to perform a valid Type B LLRT on this type of bellows assembly.

After completing a review of the facts provided in the information notice, Illinois Power (IP) determined there was only one bellows assembly at Clinton Power Station (CPS) used in a similar application. The Inclined Fuel Transfer System (IFTS) containment penetration (IMC-4) is equipped with a two-ply bellows assembly similar in construction to that at Quad Cities. At CPS, the two-ply bellows assembly surrounds the inclined fuel transfer tube that is used to transfer new and spent fuel between the transfer pool in the fuel building and the upper pool area of the containment. (The inclined fuel transfer tube is utilized only during plant shutdown/refueling conditions.) The bellows assembly is

attached by flanged connections to the penetration piping (fuel transfer tube guard pipe) near the containment wall and to the blind flange connection in the inclined fuel transfer tube, which constitutes part of the containment boundary. The bellows assembly thus provides a flexible seal between the IFTS containment penetration flange and the IFTS piping assembly. This configuration makes the bellows assembly an extension of the containment and as such is subject to local leak rate testing as required by Appendix J to 10CFR50. Review of the CPS IFTS bellows assembly construction indicates that it is apparently subject to the same leak testing problems as the bellows at Quad Cities as IP to date has also performed Type B testing by the same method used at Quad Cities (i.e., by pressurizing the gap between the two plies of the bellows assembly via a provided test port.) Therefore, IP is currently evaluating options to ensure that valid leak testing of the bellows assembly is performed.

As described in detail below, IP is requesting a one-time exemption from the requirements of 10CFR50 Appendix J for the Type B testing of containment penetration LMC-4. The exemption would be effective for the duration of Cycle 5. The proposed exemption will necessitate a revision to CPS Technical Specification 3/4.6.1.2. In addition, CPS Technical Specification 3/4.6.1.2 is being revised to delete references to a previously approved and unrelated one-time exemption that is no longer applicable.

Description of Proposed Changes

In accordance with 10CFR50.12, IP is requesting a one-time partial exemption from the requirements of 10CFR50 Appendix J, Paragraphs III.B.1.(b), III.B.3 and III.D.2 for Type B testing of the IFTS containment penetration LMC-4. This exemption is the result of the inability to ensure performance of a valid LLRT on the penetration bellows assembly.

Consistent with the proposed one-time partial exemption from 10CFR50 Appendix J, IP is requesting a change to the CPS Technical Specifications in accordance with 10CFR50.90. Surveillance Requirement 4.6.1.2.d, associated with Technical Specification 3/4.6.1.2, "Primary Containment Leakage," is being revised to add a proposed footnote, "#", to acknowledge that the combined leakage rate of penetrations and valves subject to Type B and C tests does not include the potential leakage pathway identified in the proposed one-time partial exemption to 10CFR50 Appendix J for containment penetration LMC-4.

As noted previously, IP is also requesting at this time an additional change to the CPS Technical Specification. Technical Specification 3.6.1.2 is being revised to delete footnotes "#" and "##" since these footnotes are no longer applicable. The exemptions acknowledged by these footnotes were only effective until startup from the third refueling, which occurred in May 1992.

The proposed changes to the Technical Specifications are indicated on the marked-up copies of the affected pages included in Attachment 3.

Justification for Exemption Request

Appendix J, Paragraph III.B.1.(b) requires "measurement of the rate of pressure loss of the test chamber of the containment penetration pressurized with air, nitrogen or pneumatic fluid specified in the technical specifications or associated bases" for a given penetration. These Type B tests shall be performed every refueling outage (not to exceed two years) in accordance with Paragraph III.D.2.(a). The leakage rate measurement is then required to be added to the combined leakage rate for all penetrations and valves subject to Type B and C tests to verify the total combined leakage rate is less than the acceptance criteria identified in Appendix J, Paragraph III.B.3.(a).

In accordance with 10CFR50.12(a), the NRC may grant exemptions from the requirements of the regulations when special circumstances, as defined in 10CFR50.12(a)(2), are present. 10CFR50.12(a)(2)(ii) states that special circumstances exist when application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. In accordance with 10CFR50.12(a)(2)(iii), special circumstances exist when compliance with the regulation would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated. In addition, 10CFR50.12(a)(2)(v) states that special circumstances exist when the exemption would provide only temporary relief from the applicable regulation and the licensee or applicant has made good faith efforts to comply with the regulation. Based on these criteria, IP requests a one-time partial exemption from the requirements of 10CFR50 Appendix J for Type B testing of the IFTS bellows assembly.

As discussed above, due to the design and configuration of the CPS IFTS containment penetration bellows assembly the current method for performing Type B testing on the bellows assembly may be inadequate. The possibility exists that separation of the two plies of the bellows may not be sufficient to allow air flow to any crack locations such that the current method of performing the Type B test (pressurizing between the two plies of the bellows) may not challenge 100% of the area of the two-ply bellows constituting the containment barrier(s). IP is therefore evaluating a number of options to provide a valid, reliable Type B test on the subject penetration. These options include replacing the bellows assembly with one that could be tested in accordance with 10CFR50 Appendix J and developing an alternate means of testing the penetration which meets the requirements of Appendix J.

IP has investigated the option of replacing the bellows assembly with one that can be tested in accordance with Appendix J. The best design is one which can be installed without disassembling the IFTS tube and removing the upper pool shutoff valve (located just upstream of the

blind flange to which bellows assembly is attached). A bellows assembly design has been identified which does not require any piping disassembly; however, the bellows would require an ASME "N" stamp and the lead time for procurement and fabrication is expected to be about one year. Based on this lead time it will not be possible to replace the bellows assembly during the next refueling outage, currently scheduled to begin in September 1993.

IP is also evaluating the use of a special test box which can be installed over the IFTS containment penetration bellows assembly to permit performance of an acceptable local leak rate test (minimum pathway) of the assembly. A vendor has been identified who can design and fabricate a test fixture for the testing of LMC-4. The box would be made in two or more pieces of stainless steel and would be temporarily attached for the test and then removed upon completion. However, the box is very large (46 inches inside diameter and 27.5 inches in height) and the probability of safely securing and making the box leak tight at the test pressure could prove to be difficult. The work scope for the upcoming refueling outage has already been established and fixed. The impact to the outage schedule and the cost resulting from attempting to utilize a test box in testing the bellows assembly would be significant. Additional time would have to be scheduled for installation and removal of the test box. The potential radiation exposure associated with the test box installation and removal is also a consideration. In addition, based on the uncertainties associated with the capabilities of the proposed test box, it is not clear that use of the test box will provide the most accurate or useful results.

Based on the above, IP has decided it would not be prudent to quickly implement one of the options described, until an in-depth design review of the options can be completed. This review would consider all aspects of the problem, including an evaluation of the cost of replacement vice the risks of a temporary fix. The requested exemption would provide IP the time needed to complete a thorough review. Although the requested exemption would permit IP to not complete a valid type B test of the IFTS penetration until RF-5, IP is confident that significant leakage from the bellows assembly can be identified in the meantime as further discussed below.

Until review of Information Notice 92-20, IP believed the design of the bellows assembly permitted Type B testing to be performed on the penetration in compliance with the requirements of Appendix J. Notwithstanding, IP believes the bellows assembly has been shown to be acceptably leak tight and that any significant degradation can continue to be detected by testing and inspection. A recent visual examination of the bellows assembly outer surface was performed and no signs of degradation were found. The last LLRT performed on containment penetration LMC-4 indicated a leakage of 21.36 sccm. While it is recognized that these test results may be questionable, it is believed they reflect the relative leakage rate of the penetration. LLRT test results to date have all been well within acceptance criteria (except for a technical problem experienced during RF-3). During the next refueling outage, IP will continue to test the bellows assembly as

previously tested, will maintain an acceptance criteria of less than 100 sccm per assembly and will perform a thorough examination of the outer bellows surface. In addition, as a final assurance, the integrity of the bellows will be confirmed as part of the Integrated Leak Rate Test (ILRT) to be performed during the outage.

In summary, IP believes it has made a good faith effort to comply with the requirements of 10CFR50 Appendix J for the IFTS containment penetration. In addition, IP believes that the currently scheduled testing (both LLRT and ILRT), as well as the planned visual examination of the bellows assembly during the next refueling outage and the historically low associated test leakage provide sufficient justification to support a one-time exemption to Appendix J Paragraphs III.B.1.(b), III.B.3 and III.D.2 for containment penetration LMC-4 until the fifth refueling outage.

Justification for Proposed Technical Specification Changes

The proposed changes to CPS Technical Specification 3/4.6.1.2 consist of an editorial change to Limiting Condition for Operation (LCO) items "b" and "d", and a change to Surveillance Requirement 4.6.1.2.d to document the approved exemption from Type B testing for the IFTS containment penetration. Each of these changes is discussed separately below.

The editorial change to Technical Specification 3.6.1.2 LCO items "b" and "d" deletes the "#" and "##" footnotes which are no longer applicable. The footnotes document a one-time exemption to Appendix J which permitted excluding the leakage rates for valves 1B21-F032 A and B from the Type B and C combined leakage rate total. This exemption was approved for the period ending with startup from the third refueling outage. Startup from the third refueling outage occurred in May 1992 and therefore the exemption is no longer applicable. As a result, the footnotes are being deleted to prevent any confusion and do not result in any change to the technical requirements of the LCO.

The proposed change to Surveillance Requirement 4.6.1.2.d adds a footnote to document approval of the requested one-time exemption from Appendix J leak testing of the IFTS containment penetration bellows assembly. As described above, the inability to perform a reliable LLRT on the bellows assembly that is fully and always capable of accurately quantifying the bellows leakage has resulted in the need to request an exemption from the Appendix J Type B testing requirements. Since Surveillance Requirement 4.6.1.2.d requires the performance of Type B and C tests, IP is proposing the addition of a footnote to this requirement to document the exemption for the IFTS bellows assembly. IP will continue to perform a LLRT on the penetration via the existing method since this will provide, at least to a certain extent, some indicator of leakage or possibly, any change in the leakage relative to previously performed tests. In addition, during the next refueling outage, scheduled to begin in September 1993, IP will visually inspect the bellows external surface and an ILRT will be performed which will further provide confidence that a significant leakage pathway through the bellows does not exist. Since it will not be possible to replace

the bellows assembly or provide an alternate method for testing the bellows assembly during the fourth refueling outage, the exemption is to be effective until startup from the fifth refueling outage. The proposed Technical Specification change reflects this. This change affects only the Type B testing for containment penetration LMC-4 and does not impact the Type B and C testing for the other penetrations and valves required to be tested in accordance with Appendix J to 10CFR50. With the exception of the penetration LMC-4 all Appendix J required testing will continue to be performed as currently required by the CPS Technical Specifications.

Basis For No Significant Hazards Consideration

According to 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 the 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. This request is evaluated against each of these criteria below.

- (1) This request does not involve a change in plant design. Failure of or leakage through a containment barrier cannot create an accident and therefore this request does not increase the probability of any accident previously evaluated. Failure of or leakage through a containment barrier can, however, increase the consequences of those accidents previously evaluated. This request involves a one-time exemption from 10CFR50 Appendix J Type B testing for one containment penetration. The duration of the exemption is for one fuel cycle (cycle 5). While the leakage associated with containment penetration LMC-4 cannot be accurately quantified, leakage can be detected. The ILRT to be performed during the fourth refueling outage will provide evidence that containment leakage continues to meet the requirements of Appendix J. In addition, the bellows outer surface will be visually inspected and a limited LLRT will be performed on the penetration in question to provide added assurance that this potential leakage pathway does not contribute significantly to the leakage measured during the ILRT. Furthermore, any leakage through this potential leakage pathway would be processed by the Standby Gas Treatment System prior to release to the environment. Therefore, this request does not involve a significant increase in the probability or the consequences of any accident previously evaluated.

The editorial change merely deletes footnotes which are no longer applicable. As such it does not affect any previous analysis. The change will ensure there is no confusion in

implementing the requirements of this Technical Specification and therefore the proposed change cannot increase the probability or consequences of any accident previously evaluated.

- (2) The proposed changes (editorial and technical) do not involve a change to plant design or operation. The editorial-only change deletes information which is no longer applicable. Since this change does not result in a change to the technical requirements of the applicable LCO, the change does not introduce any new failure modes. The potential leakage through a containment barrier resulting from the Appendix J exemption cannot create an accident. As a result, these proposed changes cannot create the possibility of a new or different kind of accident from any accident previously evaluated.
- (3) The proposed editorial change merely deletes footnotes which are no longer applicable. This change does not alter or delete any technical specification requirements and as such maintains the same level of safety. The only margin of safety that could be potentially impacted by the proposed surveillance requirement change resulting from the appendix J exemption is the margin concerning the offsite dose consequences of postulated accidents (which is directly related to the containment leak rate). As discussed above, this request does not result in a significant increase in the consequences of any accident previously evaluated. The performance of the LLRT during the next refueling outage will provide added assurance that the potential leakage pathway does not contribute significantly to the leakage measured during the LLRT performed during the same outage. As a result, the proposed changes do not result in a significant reduction in the margin of safety.

Based upon the foregoing, IP concludes that this request does not involve a significant hazards consideration.