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PY-CEI/NRR-2340L

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Perry Nuclear Power Plant
Docket No. 50-440

Request for Exemption pursuant to 10 CFR 50.12, and Response to a Request for Additional Information Regarding Revision of Main Steam Line Leakage Requirements and Elimination of the Main Steam Isolation Valve Leakage Control System (TAC No. M96931)

Ladies and Gentlemen:

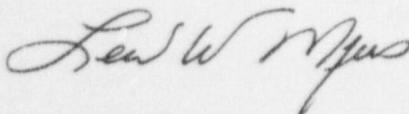
Pursuant to the requirements of 10 CFR 50.12, an Exemption is requested to 10 CFR 50 Appendix A General Design Criterion (GDC) 19, for the Perry Nuclear Power Plant (PNPP). This Exemption is to the control room dose acceptance criterion for postulated accidents. The Exemption request supports a PNPP license amendment request dated August 27, 1996 (PY-CEI/NRR-2076L), as supplemented by a letter dated July 22, 1998 (PY-CEI/NRR-2299L).

The Exemption request would permit use of a 5 rem total effective dose equivalent (TEDE) dose acceptance criterion, in place of the current 5 rem whole body criterion. The TEDE dose guidelines, which are needed to support revised accident source term applications, are not currently provided in specific regulations governing operating reactors. The attachment to this letter provides a discussion of the basis for the proposed Exemption request.

This letter also supports closure of a Request for Additional Information (RAI) from the NRC staff dated July 23, 1998. The RAI identified two items necessary to complete the NRC Staff review. The first item requested a radiological consequence assessment using the TEDE methodology. That radiological consequence assessment was provided in the July 22, 1998 letter discussed above. The second RAI item requested submittal of an Exemption request for 10 CFR 50 Appendix A GDC 19. This letter satisfies that request. The second RAI item also requested submittal of an Exemption request for several sections of 10 CFR 100. In further discussions with the NRC staff, it was determined that an Exemption to 10 CFR 100 is not necessary.

There are no regulatory commitments in this letter or the attachment. If you have questions or require additional information, please contact Mr. Henry L. Hegrat, Manager - Regulatory Affairs, at (440) 280-5606.

Very truly yours,



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Attachment

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III
State of Ohio

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REQUEST FOR EXEMPTION

SUMMARY

Pursuant to the requirements of 10 CFR 50.12, an Exemption is requested to 10 CFR 50 Appendix A General Design Criterion (GDC) 19, for the Perry Nuclear Power Plant (PNPP), regarding the dose acceptance criteria for postulated accidents. The Exemption request would permit use of a 5 rem total effective dose equivalent (TEDE) dose acceptance criterion in place of the "5 rem whole body, or its equivalent to any part of the body" dose acceptance criterion that is currently specified in GDC 19. The TEDE dose guidelines, which are needed to support revised accident source term applications, are not currently provided in specific regulations governing operating reactors.

Regulatory guidance on accident source terms was originally published in 1962 in Technical Information Document (TID) 14844, "Calculation of Distance Factors for Power and Test Reactors." The accident source term is used to characterize the postulated release of fission products from the reactor core into the containment atmosphere during an accident. This source term application is currently used for evaluating the radiological consequences of design basis accidents (DBAs).

Since the publication of TID-14844, significant advances have been made in understanding the timing, magnitude, and chemical form of fission product releases from severe nuclear power plant accidents. In 1995, the NRC published NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants," consolidating these significant advances. This provided a more physically based estimate of the accident source term that could be applied to the design of future power reactors or to currently licensed power reactors as a change to the facility design basis. For DBA application, the NUREG-1465 source term is comparable to the TID-14844 source term with regard to the magnitude of the noble gas and radioiodine release fractions. In addition, the revised accident source term provides a more representative description of the radionuclide composition and release timing.

There have also been significant developments in the principles and scientific knowledge underlying standards for systems of radiation dose limitation and assessment. These developments include not only updated scientific information on radionuclide uptake and metabolism, but also reflect changes in the basic philosophy of radiation protection. In 1991, the NRC revised 10 CFR 20, "Standards for Protection Against Radiation," to reflect these developments. The revision to 10 CFR 20 provided for the use of the TEDE dose acceptance criteria. The TEDE dose acceptance criteria is a risk-consistent methodology that assesses the impact of all relevant radionuclides upon all body organs. The accident dose guidelines specified in 10 CFR 50, Appendix A, GDC 19, were not changed at that time since the requisite revision to the licensing basis of each operating plant was not deemed to be warranted.

Following issuance of NUREG-1465, the nuclear power industry expressed interest in using the revised accident source term insights for DBA evaluations. On November 25, 1996, the NRC issued SECY-96-242, "Use of the NUREG-1465 Source Term at Operating Reactors," and recommended that dose guidelines be expressed in terms of TEDE if a licensee elects to use the revised accident source term. This was formally accepted by the Commission in a

Staff Requirements Memorandum, dated February 12, 1997, which directed the NRC Staff to incorporate TEDE into the rulemaking.

The proposed Exemption request supports the Commission directive for using the TEDE dose acceptance criteria in a revised accident source term application. The proposed change is based on reanalysis of the PNPP design basis loss of coolant accident (LOCA) using the revised accident source term from NUREG-1465 and the Nuclear Energy Institute (NEI) document entitled "Generic Framework for Application of Revised Accident Source Term to Operating Plants." The specific PNPP license amendment request was provided in a letter from D.C. Shelton to the NRC, "License Amendment Request: Revision of Main Steam Line Leakage Requirements and Elimination of the Main Steam Isolation Valve Leakage Control System," dated August 27, 1996, as supplemented by a letter from L.W. Myers to the NRC, "Supplement to a License Amendment Request: Revision of Main Steam Line Leakage Requirements and Elimination of the Main Steam Isolation Valve Leakage Control System," dated July 22, 1998.

JUSTIFICATION FOR GRANTING THE EXEMPTION REQUEST

In accordance with 10 CFR 50.12, "Specific Exemptions" the Commission is authorized to grant an Exemption upon a demonstration that the Exemption: (a) is authorized by law, (b) will not present an undue risk to the public health and safety, and (c) is consistent with the common defense and security.

In addition, the Commission will not consider granting an Exemption unless one of the following special circumstances exist: (i) application of the regulation in the particular circumstances conflicts with other rules or requirements of the Commission, (ii) 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, (iii) compliance 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, (iv) the Exemption would result in benefit to the public health and safety that compensates for any decrease in safety that may result from the granting of the Exemption, (v) the Exemption would provide only temporary relief from the applicable regulation and the licensee has made good faith efforts to comply with the regulation, or (vi) there is present any other material circumstance not considered when the regulation was adopted for which it would be in the public interest to grant an Exemption.

The Exemption is Authorized by Law

The Commission's authority to grant Exemptions from its regulations is defined in Title 10 of the Code of Federal Regulations. Specifically, the requirements of 10 CFR 50.12 are applied to this specific Exemption request. Therefore, this Exemption request is consistent with the regulatory scheme established by the NRC and is not prohibited by any statutory authority. Hence, the Exemption may be authorized under NRC regulations. Therefore, the Exemption is authorized by law.

The Exemption Will Not Present an Undue Risk to the Public Health and Safety

An Exemption request will not present an undue risk to the public health and safety if it can be shown that the Exemption meets the statutory standard of adequate protection to the health and safety of the public.

The evaluation of "no undue risk" considers such factors as the type of plant operation contemplated, the existence of alternative means of compliance or compensatory measures which meet the objective of the regulation (or requirement) but in a different way from that originally envisioned, and other safety factors.

The current regulatory guidance uses whole body and thyroid dose acceptance criteria. The PNPP license request to revise the main steam line leakage requirements and to eliminate the main steam isolation valve leakage control system is based on reanalysis of the design basis LOCA using the revised accident source term from NUREG-1465. In SECY-96-242, the NRC Staff informed the Commission of its approach to allow the use of the revised accident source term described in NUREG-1465 at operating plants. In this paper, the NRC Staff described its plans to review plant applications for use of the revised accident source terms. The Commission approved these plans and directed the NRC Staff to commence rulemaking and requested the use of a TEDE dose methodology in the implementation of the revised accident source term.

The PNPP radiological consequence assessment for the design basis accident using the TEDE methodology was provided in a letter dated July 22, 1998. The TEDE methodology facilitates assessments of releases of additional low-volatile radionuclides that are not fully considered in the current TID-14844 source term, and it provides a uniform method for assessing the radiological impact of all relevant radionuclides upon all body organs. For DBA application, the NUREG-1465 source term is comparable to the TID-14844 source term with regard to the magnitude of the noble gas and radioiodine release fractions. In addition, the revised source term provides a more representative description of the radionuclide composition and release timing. Thus, the TEDE methodology provides an alternate means of meeting the current regulatory requirement.

Therefore, the granting of the requested Exemption will not present an undue risk to the public health and safety.

The Exemption is Consistent with the Common Defense and Security

With regard to the "common defense and security" standard, granting the requested Exemption is consistent with the common defense and security of the United States. The Commission's Statement of Considerations in support of the Exemption rule note with approval the explanation of this standard as set forth in Long Island Lighting Company (Shoreham Nuclear Power Station, Unit 1) LBP-84-45, 20 NRC 1343, 1400 (October 2 1984). There, the term "common defense and security" refers principally to the safeguarding of special nuclear material, the absence of foreign control over the applicant, the protection of Restricted Data, and the availability of special nuclear material for defense needs. The

granting of the requested Exemption will not affect any of these matters and, thus, the requested Exemption is consistent with the common defense and security.

Special Circumstances Are Present

Special circumstances exist for the proposed Exemption request as prescribed by 10 CFR 50.12(a)(2). Specifically, application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule.

As discussed above, 10 CFR 50, Appendix A, GDC 19 would require use of a dose acceptance criterion of "5 rem whole body, or its equivalent to any part of the body". However, for the revised accident source term, the Commission has provided guidance in a Staff Requirements Memorandum, dated February 12, 1997, which states that the TEDE dose acceptance criteria "should be factored into the implementation of NUREG-1465 source term at operating reactors." The TEDE methodology facilitates assessments of releases of additional low-volatile radionuclides that are not fully considered in the current source term application and provides a uniform method for assessing the radiological impact of all relevant radionuclides upon all body organs. For DBA application, the NUREG-1465 source term is comparable to the TID-14844 source term with regard to the magnitude of the noble gas and radioiodine release fractions. In addition, the revised source term provides a more representative description of the radionuclide composition and release timing.

Applying the current regulation in the particular circumstance (DBA revised accident source term application) is not necessary to achieve the underlying purpose of the rule since the TEDE dose acceptance criterion is an acceptable alternative to the whole body criterion. Therefore, special circumstances exist for the proposed Exemption request.

CONCLUSION

Because the Exemption is authorized by law, will not present an undue risk to the public health and safety, is consistent with the common defense and security, and special circumstances exist, 10 CFR 50.12 authorizes the Commission to grant this specific Exemption. This is consistent with SECY-96-242, dated November 25, 1996 and a Staff Requirements Memorandum, dated February 12, 1997.