

UNITED STATES NUCLEAR REGULATORY COMMISSIONPHILADELPHIA ELECTRIC COMPANYDOCKET NO. 50-352ENVIRONMENTAL ASSESSMENT AND FINDING OFNO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (the Commission) is issuing exemptions from certain requirements of 10 CFR Part 50 to the Philadelphia Electric Company (the licensee) for the Limerick Generating Station, Unit 1 facility located in Montgomery and Chester Counties, Pennsylvania.

ENVIRONMENTAL ASSESSMENTA. Standby Gas Treatment SystemIdentification of Proposed Action:

The exemption would allow a delay in the completion of those portions of the standby gas treatment system (SGTS) which serve the refueling floor area. This schedular exemption from the requirements of General Design Criterion 61, "Fuel Storage and Handling and Radioactivity Control" would require completion of the SGTS to the refueling floor area prior to start up following the first refueling outage. The exemption is in accordance with the licensee's requests dated September 21, 1984.

The Need for the Proposed Action:

The exemption is required to facilitate the continued progress of the preoperational and startup testing programs.

Environmental Impacts of the Proposed Action:

The secondary containment for Limerick, Unit 1 consists of (a) the reactor enclosure zone and (b) the refueling floor zone. According to FSAR Section 6.2.3 and 6.5.1.1.1, the SGTS is needed to maintain a 0.25 inch water gauge

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vacuum in each zone during secondary containment isolation conditions. This vacuum, along with the effluent treatment features of SGTS, mitigates offsite releases during either a LOCA or a fuel handling accident. The licensee has indicated that the refueling floor zone is completely isolated from the Unit 1 secondary containment zone and that the refueling zone is only relied upon during fuel handling. The licensee has further stated that there will be no irradiated fuel in the spent fuel pool until the first refueling outage. Thus this exemption would allow a delay in the completion of the SGTS to serve the refueling floor zone area until prior to the first refueling outage which would be the first time that irradiated fuel would be expected to be handled in the refueling floor zone area.

With respect to this exemption the increment of environmental impact is related solely to the potential increased probability and the magnitude of containment leakage from the Unit 1 secondary containment zone into the refueling floor zone during an accident which could lead to potentially higher radiological dose consequences. However, the potential increase due to the exemption being granted is small due to (a) the leak tight integrity of the primary containment as demonstrated during the preoperational containment integrated leak rate tests and (b) the maintenance of reactor enclosure secondary containment integrity in accordance with the Limerick Technical Specifications.

Alternative to the Proposed Action:

Because the staff has concluded that there is no measurable environmental impact associated with the proposed exemptions, any alternative to this exemption will have either no environmental impact or greater environmental impact.

The principal alternative would be to deny the requested exemption. This would not reduce the environmental impacts of plant operations and would result in unwarranted delays in power ascension.

B. Automatic Containment Isolation

Identification of Proposed Action:

The exemption would allow a delay until prior to startup following the first refueling outage in (a) the installation of redundant automatic isolation valves for hydrogen recombiner lines and the requirement for implementation of automatic isolation signals to existing reactor enclosure cooling water inboard and outboard isolation valves in supply and return lines to the recirculation pumps and to existing drywell chilled water outboard isolation valves in the supply and return lines. These schedular exemptions from the requirements of General Design Criterion 56, Primary Containment Isolation, are in accordance with the licensee's request dated September 21, 1984.

The Need for the Proposed Action:

The exemption is required to enable the licensee to fulfill its commitment to implement redundant automatic containment isolation provisions for these lines penetrating containment at the first refueling outage and to avoid unwarranted delay in the preoperational and startup testing programs.

Environmental Impact of the Exemptions:

The increment of environmental impact is related to the potential increased probability and magnitude of leakage during an accident which could lead to potentially greater offsite radiological consequences. However the potential increase due to the exemption for the hydrogen recombiner isolation valves is small since one automatic isolation valve is already included in the system

design and the licensee has indicated that the closed piping of the recombiner system meets certain criteria for a second isolation barrier. Additionally, the potential increase due to the exemption for the additional automatic isolation signals is small since (a) the lines do not open directly to the containment atmosphere or to the reactor coolant pressure boundary and (b) special interim operating instructions have been provided to isolate the lines when required.

Alternatives to the Proposed Action:

Because the staff has concluded that there is no measurable environmental impact associated with the exemption, any alternative to the exemption will have either no environmental impact or greater environmental impact.

The principal alternative would be to deny the requested exemption. This would not reduce the environmental impact of plant operations and would result in unwarranted delays in power ascension.

C. Redundant Remote Shutdown Capability

Identification of Proposed Action:

The exemption from the requirements of General Design Criterion 19, Control Room, would allow the use of jumpers and procedures for the operation of the B Residual Heat Removal (RHR) pump, the B RHR Service Water (KhRSW) pump and the B Emergency Service Water (ESW) pump in lieu of transfer switches until the first refueling outage. The requested exemption is in accordance with the licensee's request dated October 25, 1984 as supplemented by letters dated April 18 and 22, 1985.

The Need for the Proposed Action:

The exemption is required because of the design of the remote shutdown system. Should the control room become uninhabitable the plant would be shutdown using the remote shutdown system. Redundant safety-related trains of remote shutdown equipment are needed to meet this requirement. One train is presently complete in the Limerick plant. The functioning of the second train is dependent on the use of jumpering and lifting of leads in accordance with established procedures until installation of the transfer switches; thus the need for this exemption.

Environmental Impact of the Proposed Action:

With respect to this exemption from GDC 19 the increment of environmental impact is related to the increased probability of not sustaining operations to cool down the plant and maintain it in a cold shutdown condition under conditions where the control room is uninhabitable. The potential increase due to this exemption is small and would result from the difference in probabilities of the operators being able to operate the pumps with transfer switches versus with the use of jumpering in accordance with established procedures. However, the initial probability of the operators being required to use these pumps in the remote shutdown mode during the period of the exemption is small due to the low probability of an event rendering the control room uninhabitable and the availability of the primary train of remote shutdown equipment.

Alternatives to the Proposed Action:

Because the staff has concluded that there is no measurable environmental impact associated with the proposed exemptions, any alternative to these exemptions will have either no environmental impact or greater environmental impact. The principal alternative would be to deny the requested exemption.

This would not reduce the environmental impact of plant operation and would result in unwarranted delays in power ascension.

D. Containment Airlock Testing

Identification of Proposed Action:

The exemption would eliminate the full pressure test required by Paragraph III.D.2(b)(ii) of Appendix J each time the air lock is opened during periods when containment integrity is not required and substitute a seal leakage test to be conducted at a pressure specified in the Technical Specifications. The exemption is in accordance with the licensee's request dated September 14, 1984.

The Need for the Action:

The exemption is required to provide the licensee with greater plant availability over the lifetime of the plant.

Environmental Impact of the Action:

The exemption would allow the substitution of an airlock seal test for an airlock pressure test while the reactor is in a shutdown or refueling mode. With respect to this exemption from Appendix J, the increment of environmental impact is related solely to the potential increased probability and the magnitude of containment leakage during an accident which could lead to potentially greater offsite radiological consequences. However, the potential increase due to this exemption is small and would result from the potential leakage path through the door mechanism which will not be measured by this modified test. Other tests every six months or when maintenance is performed on the airlock, will measure the leakage through the door mechanism.

Alternative to the Proposed Action:

Because the staff has concluded that there is no measurable environmental impact associated with the exemption, any alternative to the exemption will have either no environmental impact or greater environmental impact.

The principal alternative would be to deny the requested exemption. This would not reduce the environmental impacts of plant operations and would result in reduced operational flexibility and unwarranted delays in power ascension.

E. Leak Rate Testing of Main Steam Isolation Valves

Identification of Proposed Action:

The exemption would (1) allow testing of the main steam isolation valves (MSIV) to be conducted at a differential pressure less than that required by Paragraphs II.H.4 and III.C.2 of Appendix J, and (2) allow exclusion of the measured MSIV leakage rates from the summation for the local leak rate tests as otherwise required by Paragraph III.C.3 of Appendix J. The proposed exemptions are in accordance with the licensee's request dated September 14, 1984.

The Need for the Proposed Action:

The exemption from Paragraphs II.H.4 and III.C.2 is required because, due to the design of the main steam isolation system, a testing of the MSIVs at the calculated peak internal containment design basis pressure,  $P_a$ , would lift the disc of the inboard MSIV and result in a meaningless test. In lieu of testing at pressure  $P_a$  the licensee proposes to test at one-half of  $P_a$ . The exemption from Paragraph III.C.3 is requested because leakage that is to be collected by the MSIV leakage control system and processed by the standby gas treatment need not be included in the determination of direct containment leakage to the environs.

Environmental Impact of the Proposed Action

The exemption would allow the Appendix J Type C testing of the main steam isolation valves to be conducted at a differential pressure less than that required by Appendix J and would allow exclusion of the measured leakage from the combined local leak rate test results. With respect to these exemptions from Appendix J, the increment of environmental impact is related to the potential increased probability and the magnitude of leakage during an accident which could lead to potentially higher offsite radiological consequences. However, the potential increase due to the exemption granted for the reduced differential pressure testing and exclusion of the measured MSIV leakage from combined local leak rate test results will not result in an increase in doses beyond those already accounted for and determined in the Chapter 15 Accident Analysis of the Final Safety Analysis Report.

Alternative to the Proposed Action:

Because the staff has concluded that there is no measurable environmental impact associated with the proposed exemptions, any alternative to these exemptions will have either no environmental impact or greater environmental impact.

The principal alternative would be to deny the requested exemptions. This would not reduce the environmental impact of plant operations and would result in unwarranted delays in power ascension.

F. Leak Rate Testing of Traversing Incore Probe Shear Valves

Identification of the Proposed Action:

The exemption would allow substitution of alternate provisions to ensure isolation capability of the traversing incore probe (TIP) guide tubes. These provisions are in lieu of the leak rate testing otherwise required by



Paragraphs II.H.1 and III.B.2 of Appendix J for the guide tube explosively actuated shear valves. The exemption is in accordance with the Licensee's request dated September 14, 1984.

The Need for the Proposed Action:

The exemption is required because it is impractical to leak rate test the shear valves since their destruction would be required.

Environmental Impacts of the Proposed Action:

The requested exemption would allow substitution of other isolation provisions for the TIP guide tube shear valves in lieu of leakage rate testing otherwise required by Appendix J. With respect to this exemption from Appendix J, the increment of environmental impact is related to the potential increased probability and magnitude of containment leakage during an accident which could lead to potentially higher radiological consequences. However, there is no potential increase due to the exemption since leakage rate testing of a once actuated explosive shear valve would not provide any practical information about the leak-tight integrity of the valve used to replace the actuated valve. Instead alternate provisions are included in the Technical Specifications which periodically (a) verify the continuity of the valves explosive charge, (b) initiate an explosive charge and (c) replace all explosive charges in accordance with a recommended lifetime.

Alternative to the Proposed Action:

Because the staff has concluded that there is no environmental impact associated with the exemption any alternative to the exemption will have either no environmental impact or greater environmental impact.

The principal alternative would be to deny the requested exemption. This would not reduce the environmental impact of plant operations and would provide no greater assurance of TIP shear valve leak-tight integrity.

G. Leak Rate Testing of Residual Heat Removal Relief Valves

Identification of Proposed Action:

The exemption from the requirements of Paragraphs II.H.4 and III.B.2 of Appendix J would allow the initial local leak rate test on seven residual heat removal valves to be delayed until the first refueling outage. The requested exemption is in accordance with the licensee's request dated September 14, 1984.

The Need for the Proposed Action:

The exemption is required because the existing design does not allow local leak rate testing of these valves. The licensee has stated that design changes to facilitate such local leak testing would have had an adverse impact on system turnover and plant startup. The exemption will allow the licensee to implement such design changes at the first refueling outage.

Environmental Impact of the Proposed Action:

The requested exemption would not affect the environmental impact of the facility because, on the basis provided in the licensee's letter of September 14, 1985, the probability of an accident has not been increased nor has the probability of post-accident leakage been significantly increased. Therefore, the post-accident radiological consequences will not be significantly different than previously determined.

Alternative to the Proposed Action:

Because we have concluded that there is no measurable environmental impact associated with the exemption, any alternatives to this exemption will have either no environmental impact or greater environmental impact.

The principal alternative would be to deny the requested exemption. This would not reduce the environmental impacts of plant operations and would result in unwarranted delays in power operation.

H. Containment Inerting

Identification of the Proposed Action:

The exemption would allow inerting of the containment in response to the requirements of 10 CFR Part 50.44 to be postponed from six months after initial criticality until either the conduct of the 100 percent thermal power trip test or 120 effective full power days of core burn-up is achieved. The exemption is in accordance with the licensee's request dated May 20, 1985.

The Need for the Proposed Action:

The exemption is needed to permit completion of the startup test program with a non-inerted containment. A non-inerted containment during startup testing would facilitate containment entries on an as-needed frequency for identifying and correcting potential safety problems and would also provide greater safety to personnel entering the containment during this period.

Environmental Impacts of the Proposed Action:

The increment of environmental impact is related to the potential increased consequences of an accident sequence that would have been mitigated by an inerted containment. However, the regulatory requirement from which an exemption is sought anticipated that power ascension test programs (PATP)

could be completed within six months and consequently the core fission product inventory that would build up over the life of the power ascension test program was acceptable. While the regulation contemplated a six-month period, typical BWR programs have proven to actually require an average of 330 days. The Limerick Unit 1 plant, due to its extended shutdown after completing the five percent power testing program, will not complete the PATP prior to six months after initial criticality. With this simple stretch in time, no significant increase in core inventory occurs and the same effective core history is experienced.

Alternative to the Proposed Action:

Because the staff has concluded that there is no measurable environmental impact associated with the exemption, any alternative to the exemption will have either no impact or greater environmental impact.

The principal alternative would be to deny the requested exemption. This would not reduce the environmental impacts of plant operation. Further, without the requested exemption, considerable delay to inert and reinert before and after containment entries and some hazard to personnel will be encountered. At this point in the PATP, to require inerting would significantly extend the time to complete the PATP and would produce unwarranted delays in power ascension.

Alternative Use of Resources:

These actions in the granting of exemptions A through H above do not involve the use of resources not previously considered in connection with the "Final Environmental Statement related to the Operation of the Limerick Generating Station, Units 1 and 2" dated April 1984.

Agencies and Persons Consulted:

The NRC staff reviewed the licensee's requests that support the requested exemptions A through H above. The NRC staff did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for the requested exemptions.

Based upon the foregoing environmental assessment, we conclude that the requested actions will not have a significant effect on the quality of the human environment.

For further details with respect to this action, see the requests for the exemptions as listed herein, which are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., 20555 and at the Pottstown Public Library, 500 High Street, Pottstown, Pennsylvania 19464.

Dated at Bethesda, Maryland, this 27<sup>th</sup> day of June 1985.

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas M. Novak, Assistant Director  
for Licensing  
Division of Licensing  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555

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MEMORANDUM FOR: Docketing and Service Branch  
Office of the Secretary of the Commission

FROM: Office of Nuclear Reactor Regulation

SUBJECT: ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT FOR  
LIMERICK GENERATING STATION, UNIT 1

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Office of Nuclear Reactor Regulation

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