



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 81 TO PROVISIONAL OPERATING LICENSE NO. DPR-20

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By letter dated August 30, 1982 as supplemented by letter dated November 5, 1982, Consumers Power Company (the licensee) proposed changes to the Technical Specifications for the Palisades Plant. These changes would (1) modify the operability and testing requirements for the control room and fuel building ventilation filters to meet upgraded model Technical Specifications issued by the NRC on December 12, 1974, and (2) replace the requirement for containment purge filters with a requirement for hydrogen recombiners.

A Notice of Consideration of Issuance of Amendment to License and Proposed No Significant Hazards Consideration Determination and Opportunity for Hearing related to the requested action was published in the Federal Register on November 22, 1983 (48 FR 52810). A request for hearing and public comments were not received.

2.0 DISCUSSION

The NRC staff's letter of December 11, 1974, to Consumers Power Company indicated the need for the Palisades Plant's Technical Specifications to include additional items in order to assure confidence that Engineered Safety Feature (ESF) air filtration systems would function reliably, when required, at a degree of efficiency equal to or greater than that assumed in previously performed accident analyses. Consumers Power initially responded to the staff's request on March 6, 1975, and following discussions with the NRC staff, modified their response in letters dated June 18, 1975, and February 25, 1976. The licensee's August 30, 1982 submittal further modified their response and superceded all previously requested changes addressing ESF filter systems. This latter submittal was supplemented by letter dated November 5, 1982.

Consumers Power Company's proposal includes the expansion of the present technical specification for the control room ventilation and isolation system and the fuel storage area HEPA/charcoal exhaust system, such that the frequency of some tests are increased and the number of tests performed to establish the system's operability are increased.

The licensee's proposed changes to the Technical Specifications include: (1) revision of Section 3.8.4 which addresses the operation of the fuel storage area ventilation system and HEPA/charcoal filter during refueling operations, revision of Table 4.1.3 of Section 4.1 to delete item 14 on control room ventilation and revision of Table 4.2.2 to delete item 11, charcoal and high efficiency filters, to modify items 12.b and 13.c of that Table, and to then renumber items 12 and 13 of that Table; and (2) the addition of Section 3.6.4 which addressed the two independent containment hydrogen recombiners, the addition of item c to Section 3.13 which addresses when the fuel storage building ventilation shall be discharging through the HEPA filter and charcoal adsorbers, the addition of item b to Section 3.14 which addresses the operability of the control room ventilation system with both fans or the filter system inoperable, and the addition of Table 4.2.3 which establishes the manner in which the HEPA filter and charcoal adsorber systems are demonstrated operable for the control room and fuel storage areas.

The changes were proposed by Consumers Power Company so that the specified filter test program would conform to the objectives of the model Technical Specifications included in our letter of December 11, 1974.

3.0 EVALUATION

The NRC staff's evaluation was based upon Positions C.5 (in-place testing criteria) and C.6 (laboratory testing criteria for activated charcoal) of Regulatory Guide 1.52, Revision 2, "Design, Testing, and Maintenance Criteria for Atmospheric Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants," and on the Standard Technical Specifications for ESF air filtration systems for Combustion Engineering nuclear reactors (NUREG-0212).

These proposed additions and revisions to the present Technical Specifications expand the scope such that required operator action is specified if the particular ESF filter system is found inoperable, and there is also an increase in the frequency and the number of tests to be performed to demonstrate that the system is operable.

The following sections discuss each of the proposed changes to the Technical Specifications. The proposed changes also necessitate that other related Technical Specifications be modified or added.

3.1 Hydrogen Recombiners (Sections 3.6.4 and 4.2)

The licensee has proposed that a new section, 3.6.4 be added to 3.6 "Containment System." The new section would conform to the guidance of NUREG-0212 and would address the operability of the two independent containment hydrogen recombiners. Both recombiners would be required to be operable when the reactor was at power or at hot standby. One recombinder could be inoperable for up to 30 days. If the recombinder was still inoperable at the end of 30 days, then the reactor would have to be placed in the hot shutdown condition within 12 hours.

With the incorporation of Section 3.6.4 into the Technical Specifications, it is no longer necessary to include the containment post-accident filter system because the hydrogen recombiners will be the means for controlling the buildup of hydrogen following a loss-of-coolant accident (LOCA), rather than through containment purging. Therefore, the requirements for testing the HEPA filters and the charcoal adsorbers of the containment post-accident filter system will not be needed. The NRC staff finds that this proposed Technical Specification change is acceptable.

The tests to demonstrate that the recombiners are operable are presently contained in item 12 of Table 4.2.2. The licensee has proposed that the frequency of the tests in item 12.b be changed from once per 18 months to once per refueling cycle. The NRC staff finds that this modification is acceptable.

With the deletion of item 11 of the present Table 4.2-2, which addresses the frequency of tests of the charcoal and HEPA filters for the control room, fuel storage building, and the containment post-accident filter system, the hydrogen recombiners, presently item 12, now becomes item 11 of Table 4.2-2.

3.1.2 Control Room Ventilation and Isolation System (Section 3.14 and Tables 4.2.2 and 4.2.3)

The licensee has proposed that the heading of Section 3.14 be changed from "Control Room Air Temperature" to "Control Room Ventilation." The licensee has also proposed to add item b to Section 3.14. This would require the reactor to be brought to the cold shutdown condition within 36 hours if both fans and/or the filter system are inoperable and the inoperable system can not be made operable within 3.5 days. Previously, the operability of the two fans and the filter system was not addressed. The time to restore the ventilation system, including the filter system, to the operable status is 3.5 days because a redundant filter system is not available in the control room. The staff finds that the proposed addition of item b to Section 3.14 is important, necessary, and acceptable.

The licensee also proposed to move the testing frequency and the tests to be performed on the HEPA filters and the charcoal adsorbers from item 11 of Table 4.2.2 and to incorporate these tests into a new Table 4.2.3. A number of new tests were added and the frequency of the tests increased compared to those presently in item 11 of Table 4.2.2. These additional tests and their frequency are discussed below.

The new Table 4.2.3 requires that flow be initiated for 15 minutes through the HEPA filters and charcoal adsorbers once per 31 days, and that such flow be initiated from the control room.

In-place halogenated hydrocarbon testing of the charcoal adsorber and in-place DOP testing of the HEPA filter bank is presently required during each refueling shutdown and anytime work on the filters could affect filter integrity. The licensee has proposed that in-place tests now be required once per refueling cycle or after any structural maintenance on the HEPA filter or charcoal adsorber housings, or following major painting, fire, or chemical release in any ventilation zone communicating with the system and that such tests be conducted in accordance with ANSI N510-1975. The licensee has also included, in Table 4.2.3, the requirement for in-place DOP or halogenated hydrocarbon tests following replacement, either partial or in its entirety, of either the HEPA filters or the charcoal adsorbers, respectively.

The licensee has also proposed that a laboratory analysis of charcoal be obtained and tested in accordance with Regulatory Guide 1.52, items C.6.a and C.6.b and that the sample be verified to remove 99% of the methyl iodide when tested in accordance with the testing criteria of Table 2 of Regulatory Guide 1.52. The frequency of this laboratory analysis was proposed to be the same as that proposed for the in-place DOP and halogenated hydrocarbon testing; except that no laboratory analysis is required following complete or partial replacement of a HEPA filter or a charcoal adsorber bank. The licensee proposed that a laboratory test also be performed after 720 hours of filter system operation; however, the licensee proposed some flexibility of operation to allow continued operation of the filter system for greater than 720 hours before requiring the laboratory analysis. The licensee proposed that the test be delayed until the operation, which requires use of filter system, is completed or up to 1500 hours of system operation, whichever occurs first.

The licensee has not proposed a Technical Specification to verify that bypass flow for the control room filtration system is less than 1% because of the difficulty in performing such a measurement. The staff has agreed to waive such a requirement because the licensee is redesigning a ventilation filter system for the control room. This new system should be operational by restart from the outage that began in August 1983. When this system does become operational, the bypass flow test will be required.

The licensee has proposed that, once per refueling cycle, the pressure drop across the combined HEPA filter and charcoal adsorber bank be verified to be less than 6 inches water gauge while operating the system. At this same test frequency, the licensee has also proposed that it be verified that control room maintains a positive pressure greater than or equal to 0.10 inch water gauge during system operation relative to the viewing gallery and that the control room system automatically switch to the recirculation mode of operation, with flow through the HEPA filter and charcoal adsorber bank, on a containment high pressure signal or on a high radiation signal.

The licensee has also proposed that the control room temperature be verified to be less than 120°F once per 12 hours when the temperature in the control room is greater or equal to 105°F. The licensee did not propose that the temperature be verified to be below 120°F once every 12 hours because the licensee concluded that it would be apparent to the control room operator when the temperature approached 120°F and that documentation on a 12 hour basis is unwarranted until you approach this temperature. The staff agrees with this and finds that the use of the temperature of 105°F as being the point at which the 12 hour surveillance program would become operational is acceptable.

The staff has reviewed the proposed addition of Table 4.2.3 and finds the addition to result in increased surveillance tests and greater assurance that the filter system will perform in a manner in which it was anticipated in the staff's accident evaluation.

With the adoption of Table 4.2.3, item 14 of Table 4.1.3, Control Room Ventilation, was proposed for elimination. The staff finds that this proposed change is acceptable.

The licensee has proposed that the phrase "once per 18 months" in items 12.b and 13.c of Table 4.2.2 be replaced with the phrase "once per refueling cycle." The staff finds that this change is acceptable. With the elimination, as noted earlier, of item 11 from Table 4.2.2, the affected items of Table 4.2.2 are renumbered as 11.b and 12.c, respectively.

3.1.3 Fuel Storage Area Filter System (Sections 3.8.4, 3.13, 4.2, Tables 4.2.2 and 4.2.3)

The licensee has proposed to modify Section 3.8.4. Presently, Section 3.8.4 requires that the fuel storage building ventilation system and charcoal filter be operating whenever refueling operations are in process with the equipment door open or whenever irradiated fuel is being handled in the fuel storage building. The licensee has proposed that the ventilation system and the charcoal filter be operating whenever irradiated fuel with less than 30 days decay is handled either during refueling operations with the equipment door open or during fuel handling in the fuel storage building. If both fans are unavailable, then any fuel movement in progress shall be completed and further fuel movements over the spent fuel storage pool will be prohibited until one fan is returned to service.

The staff performed a fuel handling accident analysis inside and outside containment as a part of SEP Topic XV-20. In this analysis, the staff determined that the consequences of a fuel handling accident outside containment (i.e., in the fuel storage building), were considered acceptable with or without the fuel storage area filter system operating. The dose with the filter system operating was calculated to be 9 rem to the thyroid. If the filtration was not operating, the dose would have been 91 rem which is still "appropriately within the guidelines" of 10 CFR Part 100 (i.e., <100 rem thyroid). If the fuel storage area filter system was not operating and fuel, which has decayed for 30 days or greater, was being handled and if an accident were to occur, the dose consequences of this accident would be of the same magnitude or smaller than the consequences of a fuel handling accident presented in the conclusion to SEP Topic XV-20 with the filter system operating (i.e., approximately 9 rem).

Because the movement of spent fuel over the spent fuel storage pool will not be allowed if both fans are unavailable, except for the completion of fuel movements already in progress, and because the consequences of a fuel handling accident with an assembly which has decayed for 30 days or more would be of a comparative magnitude to the consequences of a fuel handling accident with the filter system operating, the staff finds the proposed change to Section 3.8.4 to be acceptable.

The licensee has proposed to add to Section 3.13, item c, which requires that the fuel storage building ventilation system be operating and discharging through the HEPA filters and charcoal adsorbers during crane operations with loads in excess of 1300 pounds over the fuel storage pool when irradiated fuel, which has decayed less than 90 days, is in the spent fuel storage pool. If both fans are inoperable, any crane operations shall be completed and further crane operations with loads in excess of 1300 pounds over the spent fuel storage pool shall be terminated until one fan is returned to service.

The staff performed an evaluation of an accident involving a load in excess of 1300 pounds over the fuel storage pool. For loads such as a shield block dropped from the fuel storage building crane, there is a potential for rupturing the fuel elements of up to 32 fuel assemblies. The consequences of this accident could exceed the guidelines of 10 CFR Part 100 if the fuel has not decayed for an adequate length of time or if the refueling area filter system is not operating. The occurrence of a fuel handling accident two days after shutdown would result in an offsite dose of 290 rem to the thyroid if the filter system were operating.

If this accident were to occur after 90 days, the dose would be 0.15 rem. Since the filter system is designed to remove 90% of the radioiodines released in the fuel handling accident, the dose resulting from a fuel handling accident with fuel which has decayed for at least 90 days would be 1.5 rem if the filter system is not operating. The consequences of this accident are less than that involving a single fuel assembly with filtration (SEP Topic XV-20). Therefore, the staff finds that the proposed addition of item c to Section 3.13 is acceptable.

The licensee proposed that the filter tests, which are enumerated in Table 4.2.3, be applicable to the fuel storage area HEPA/charcoal exhaust system in addition to the control room ventilation and isolation system. Although some tests pertain to the control room system specifically, others encompass both systems. Those tests which are the same for both systems are the in-place DOP and halogenated hydrocarbon tests; the monthly initiation of flow through the filter system by actuation in the control room; laboratory analysis of a charcoal sample except that the methyl iodine removal efficiency should be 94% for the fuel storage area filter system, compared to 99% for the control room system; and verification of pressure drop across the HEPA filter bank and the charcoal adsorber to be less than 6 inches water gauge. The only specification in Table 4.2.3 which addresses the fuel storage area filter system only is item c.4 which requires that once per refueling cycle the bypass flow through damper 1893 be verified to be less than 1% at the system's rated flow $\pm 20\%$. The staff finds that this test, as well as the other tests of Table 4.2.3 proposed for the fuel storage area filter system is acceptable.

3.1.4 Summary

The staff has concluded that the proposed changes to Section 3.8.4 and Tables 4.1.3 and 4.2.2, and the addition of Section 3.6.4, item c to Section 3.13, item b to Section 3.14, and Table 4.2.3 to Section 4.2 of the Palisades Technical Specifications are acceptable.

4.0 ENVIRONMENTAL CONSIDERATION

The staff has determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, the staff has further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR 51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

5.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (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 the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ACKNOWLEDGEMENT

J. Hayes and W. Paulson prepared this evaluation.

Dated: May 22, 1984