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

SAFETY EVALUATION BY THE

OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 63 TO LICENSE NO. DPR-36

MAINE YANKEE ATOMIC POWER COMPANY

DOCKET NO. 50-309

Introduction

By a letter dated March 26, 1975, and subsequently revised in letters dated January 27, 1977, March 19, 1980, and February 13, 1981, the Maine Yankee Atomic Power Company (MYAPC) proposed to amend its operating license DPR-36 for the Maine Yankee Plant by submitting a revision to the Technical Specifications. The proposed changes were submitted in response to our January 8, 1975 request and consist of the addition of Limiting Condition for Operation (LCO) 3.25, Surveillance Requirement (SR) 4.11 and revisions to LCO 3.13 and SR 4.2.

Discussion

Our letter of January 8, 1975, to MYAPC indicated the need for the Maine Yankee Plant's Technical Specifications to include additional items within their LCOs and SRs in order to assure confidence that safety related air filter systems would function reliably, when required, at a degree of efficiency equal to or greater than that assumed in previously performed accident analyses. MYAPC initially responded to our request on March 26, 1975, and following discussions with the NRC staff modified their response in letters dated January 27, 1977, March 19, 1980, and February 13, 1981.

MYAPC's proposed changes to the Technical Specifications include:

(1) revisions to LCO 3.13, and SR 4.2 which delete or modify existing references to installed filter systems;

DESIGNATED ORIGINAL

Certified By Patricia J. Noonan

8210050505 820907
PDR ADOCK 05000309
P PDR

(2) the addition of LCO 3.25 and SR 4.11, which address the control room ventilation system, the containment hydrogen purge system, and the spent fuel pool area ventilation system.

MYAPC's proposal includes the addition of technical specifications which address the operability of the various ESF filter systems and the expansion of the surveillance test requirements for the control room ventilation system, the spent fuel pool area ventilation system and the containment hydrogen purge system such that the frequency of the tests are increased and the number of tests performed to establish the system's operability are increased.

The changes were proposed by MYAPC so that the specified filter test program would conform to the objectives of the model Technical Specifications included in our letter of January 8, 1975.

Evaluation

Our evaluation was based upon the model Technical Specifications included in the January 8, 1975 letter. The technical specifications proposed by MYAPC would provide a LCO and SR for the control room ventilation system, for the post-accident containment hydrogen purge system and the spent fuel pool area ventilation system. Existing reference to these ESF filter systems would be deleted from LCO 3.13 and SR 4.2 since the filter systems are now addressed in the new LCO and SR. These additions to the present technical specifications have expanded the scope of the LCOs and SRs such that they now specify required operator action if the particular ESF filter system is found inoperable, and increase the frequency and the number of tests to be performed to demonstrate that the system is operable.

The revision to LCO 3.13 deletes the requirement for the operation of the spent fuel pool ventilation system whenever spent fuel is being handled in the spent fuel pit and the revision to SR 4.2 deletes the requirements for the tests and test frequency associated with the control room ventilation system and the primary auxiliary building charcoal and HEPA filters. These requirements are now addressed in the proposed LCO 3.25 and SR 4.11.

The primary auxiliary building charcoal and HEPA filters are utilized by the spent fuel pool ventilation system and the containment hydrogen purge system to filter their effluent. The following sections discuss each ESF filter system for which a LCO and a SR was added.

Containment Hydrogen Purge System

MYAPC proposed as item A of LCO 3.25 a specification which requires the containment hydrogen purge system to be operable whenever the reactor is critical. They proposed that the system could be inoperable for a period of 30 days. However, if the system is not operable at the end of this 30 day period, then the reactor is required to be in the Hot Shutdown condition within the next 12 hours. The Maine Yankee Plant does not presently have a specification that requires the containment hydrogen purge system to be operable. The addition of such a specification will increase the likelihood that such a system will be operable in the event of an accident or that if the system is inoperable it will only be inoperable for a reasonable period of time. Otherwise, the reactor will be shut down.

MYAPC proposed as item A of SR 4.11 the surveillance testing requirement for this system which requires on a monthly basis that flow be initiated through the HEPA filter and charcoal adsorber train for at least 15 minutes and that flow be verified by observing flow indication on the system flow meter. No additional tests are specified since the same filter train is utilized for the spent fuel pool ventilation as for the hydrogen purge. The additional tests are referenced as being applicable to the spent fuel pool ventilation system and are discussed later in this safety evaluation. The addition of item A of SR 4.11 in conjunction with the spent fuel pool ventilation system testing requirements of item C of SR 4.11 will provide a reasonable basis for the demonstration of operability of the containment hydrogen purge system.

We find the changes proposed for the containment hydrogen purge system to be consistent with the intent of the model Technical Specifications. In addition, we find that the changes will ensure increased confidence that the system will be operable when called upon, and that the system will perform at the level assumed in the operating license SER of February 25, 1972.

Control Room Ventilation System

MYAPC has proposed, as item B of LCO 3.25, that the control room must have one train operable whenever minimum safeguards are required and two trains whenever the reactor is critical. One control room ventilation system may be inoperable for a period of up to 14 days. If the system is not operable at the end of this time period, the reactor must be brought to the Hot Standby condition. The addition of such a specification will increase the likelihood

that the system will be operable in the event of an accident or that if the system is inoperable it will only be for a short period of time. Otherwise, the reactor will be shut down.

As a method of ensuring that the filter trains will be capable of functioning as designed, MYAPC has proposed the following surveillance tests to demonstrate the operability of the system:

(1) Monthly demonstration of operability through the initiation of flow through each train.

(2) Performance of the following tests at least once during each refueling interval and following painting, fire, or chemical release in any ventilation zone communicating with the system:

   (a) in-place cold DOP and halogenated hydrocarbon tests at design flow on HEPA and charcoal filter banks, respectively, showing $\geq$ 99% DOP removal and $\geq$ 99% halogenated hydrocarbon removal;

   (b) laboratory analysis of a carbon sample showing $\geq$ 95% radioactive methyl iodide removal at 25°C, 70% relative humidity;

   (c) verification that the recirculation filter system flow rate is $\geq$ 3300 cfm;

   (d) verification that the pressure drop across the prefilter and HEPA filter bank is $\leq$ 4 inches H_2O while operating at system flow; and

   (e) verification that the breathing air supply system flow rate is $\geq$ 40 cfm during system operation.

Other tests which were proposed to verify operability included:

(1) Cold DOP testing after each complete or partial replacement of the HEPA filter bank or modification to the filter housing that could affect filter efficiency.

(2) Halogenated hydrocarbon testing following each complete or partial replacement of the charcoal filter bank or modifications to the filter housing that could affect filter efficiency.

(3) Air distribution test demonstrating uniformity within $\pm$ 20% if the filter housing is modified such that air distribution could be adversely affected.

(4) Laboratory analysis of a carbon sample after 720 hours of system operation with the analysis showing $\geq$ 95% radioactive methyl iodine removal.

Table 4.2-2 of the present SR 4.2 includes surveillance testing for the control room ventilation system which is performed only on a refueling interval schedule. These tests include in-place DOP and halogenated hydrocarbon testing and laboratory analysis of a carbon sample showing $\geq$ 99% removal of radioiodines. However, the carbon sample is analyzed for elemental radioiodine and not methyl radioiodine.

The proposed addition of LCO 3.25 and SR 4.11 increases the number of tests to be performed and the frequency of such tests. The increase in the number and frequency of tests will provide an effective mechanism for verifying the operability of the control room ventilation system and will increase the

likelihood that the system will operate as it was intended in the event of an accident. The testing for methyl radioiodine to show $\geq$ 95% removal will increase the likelihood that the system will meet filter efficiency necessary to meet GDC 19.

We find the changes proposed for the control room ventilation system to be consistent with the intent of the model technical specifications. In addition, we find that the changes will ensure increased confidence that the system will perform at a level necessary to meet GDC 19.

Spent Fuel Pool Ventilation System

MYAPC has proposed, as item C of LCO 3.25, that the spent fuel pool ventilation system is operating and discharging through a HEPA and charcoal adsorber filter train during fuel movement within the spent fuel pool or during crane operations with loads over the spent fuel pool whenever irradiated fuel, which has decayed for less than 60 days, is in the spent fuel pool. If the spent fuel ventilation system is not operating and is not discharging through the HEPA and charcoal adsorber filter trains, then all operations involving movement of fuel within the spent fuel pool or crane operation with loads over the spent fuel pool must be suspended.

The addition of such a specification will increase the likelihood that in the event of a spent fuel handling accident, offsite doses will not be greater than the value presented in the operating license SER. Allowing movement over the spent fuel pool by the crane with irradiated fuel of less than 60 days

decay only if the spent fuel pool ventilation system is on, ensures that the consequences of such an accident will be within the limits calculated for the operating license SER.

As a means of verifying operability of the spent fuel pool ventilation system, MYAPC has proposed, as a part of SR 4.11, a series of tests on the filter trains. The tests which have been proposed for this system are identical to those which have been proposed for the control room ventilation system with the following exceptions:

(1) the spent fuel pool ventilation system is verified to be operating within 2 hours prior to the initiation of and at least once per shift during either fuel movement within the spent fuel pool or crane operation with loads over the spent fuel when irradiated fuel which has decayed less than 60 days is present;

(2) laboratory analysis of a carbon sample shall show $\geq$ 99% removal of radioactive methyl radioiodine rather than $\geq$ 95% removal which is the removal efficiency required for the control room ventilation system;

(3) laboratory analysis is required after every 1500 hours of operation rather than 720 hours of operation; and

(4) flow rates are changed to reflect the spent fuel pool ventilation system design.

Table 4.2-2 of the present SR 4.2 requires the spent fuel pool ventilation system to undergo the same tests as presently designated for the control room ventilation system and with the same frequency. The proposed surveillance requirements increase both the frequency and the number of tests to verify that the spent fuel pool ventilation system is operable. In addition, item C of LCO 3.25 specifies appropriate operator action if the system is inoperable. This proposed requirement is not in the present technical specifications. The laboratory analysis to show $\geq$ 99% removal of methyl radioiodine is appropriate since a credit of 95% was claimed in the accident evaluation for the portion of the LOCA dose analysis associated with the H_2 purge.

It was considered appropriate to allow the system to operate for a period of 1500 hours rather than 720 hours prior to performing a laboratory analysis on a representative carbon sample because the impact of weathering and aging of the charcoal bed is anticipated to be reduced because there is a one-inch iodine guard bed prior to the charcoal adsorber and the charcoal adsorber bed is four-inches deep. Furthermore, a charcoal adsorber bed four-inches in depth could qualify for a removal efficiency of 99% per Regulatory Guide 1.52 if certain criteria are satisfied, but a credit of only 95% was needed to satisfy the accident evaluation criterion. Testing after every 1500 hours of system operation rather than 720 hours should not negate the capability of the spent fuel pool ventilation system to meet the laboratory testing criteria.

We find the changes proposed for the spent fuel pool ventilation system to be consistent with the intent of the model Technical Specifications. In addition, we find that the changes will insure increased confidence that the system will perform at the level assumed in the operating license SER.

Summary

We have concluded the proposed changes to Specifications 3.13 and 4.2 of the Maine Yankee Plant's Technical Specifications and addition of Specification 3.25 and 4.11 are acceptable as written.

Environmental Considerations

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

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) 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.

Date: September 7, 1982

Principal Contributors:

J. J. Hayes
R. L. Bangart