



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 98

TO FACILITY OPERATING LICENSE NO. DPR-21

NORTHEAST NUCLEAR ENERGY COMPANY

MILLSTONE NUCLEAR POWER STATION, UNIT 1

DOCKET NO. 50-245

1.0 INTRODUCTION

By letter dated August 29, 1996, the Northeast Nuclear Energy Company (NNECO) submitted a request for changes to the Millstone Nuclear Power Station, Unit 1 Technical Specifications (TS). The requested changes would (1) modify the applicability requirements for certain radiation monitors so that the radiation monitors are required to be operable only when secondary containment integrity is required to be operable; (2) would delineate when secondary containment integrity is required; (3) would modify standby gas treatment (SBGT) operability requirements; (4) would make editorial corrections to clarify the configuration of the radiation monitors; and (5) would revise the associated Bases sections.

2.0 BACKGROUND

The proposed amendment would revise TS operability requirements for the secondary containment system and associated support systems. The application is a followup corrective action associated with an event reported in Licensee Event Report (LER) 96-041. In that event, which occurred while in cold shutdown with secondary containment integrity not required, the SBGT system was being operated as a required action due to the inoperability of several radiation monitors. The plant operators violated TS requirements when they terminated SBGT operation due to indications of filter clogging (high differential pressure), which was thought to be a result of smoke particles from a fire in the containment.

3.0 DISCUSSION AND EVALUATION

3.1 Description of Secondary Containment System and Associated Radiation Monitoring Instruments

The Millstone Unit 1 nuclear steam supply system is enclosed within a primary containment (drywell and torus) system which in turn is enclosed by a secondary containment (reactor building) system. In the event of a loss-of-coolant accident (LOCA) during power operation, the primary containment

provides a high pressure, low leakage, fission product control boundary. The secondary containment serves as a low pressure fission product control system to collect and filter primary containment leakage effluent and release it at a high elevation. During maintenance and refueling outages, the primary containment is opened and becomes contiguous to the reactor building. The secondary containment then becomes the sole containment system; its purpose being to mitigate a fuel handling accident. The secondary containment system includes two redundant trains of SBT, which would provide filtration and elevated release of fission products collected in the secondary containment. Secondary containment integrity (operability) is deemed to exist when (a) the reactor building is intact, (b) the SBT system is operable, (c) at least one door in each reactor building access is closed, and (d) all automatic ventilation system isolation valves are operable or secured shut.

Three sets of safety-related radiation monitoring instruments are provided for automatic initiation of the active components of the secondary containment system. One pair of instruments (RE-1735A/B) is located adjacent to the reactor building ventilation exhaust duct and monitors the vent exhaust effluent. The second set of instruments (RE-1740A/B) is located near the fuel pool and monitors the refueling floor area, and a third pair ((RE-1705-36A/B) is located adjacent to the steam tunnel vent exhaust duct. A high level trip on any one instrument, or downscale trips on any redundant set of instruments (both of the instruments at one location), will result in a signal that isolates the secondary containment by closure of fast-acting ventilation dampers, and starts the SBT system. In addition to providing trip signals to the secondary containment isolation logics, the six radiation monitoring instruments also provide audible/visual alarm and monitoring indication information. Because the radiation monitoring instruments and secondary containment system are provided for the purpose of mitigation of design basis accidents, they are classified as engineered safety features (ESFs).

Other radiation monitoring instruments are also provided; however, those instruments have no automatic accident mitigation function are thus not classified as ESFs. They include stack effluent monitoring instruments and various reactor building area monitoring instruments.

3.2 Technical Specifications and Proposed Changes

The license amendment application proposes changes to TS Sections 3.2.E, 3.7.B, 3.7.C, and Bases Section 3.2.

3.2.1 Changes to TS 3.2.E

Current Requirement: TS 3.2.E.1 and 3.2.E.2 state:

1. *Except as specified in 3.2.E.2 below, six radiation monitors shall be operable at all times.*

2. *One of the two radiation monitors in the reactor building ventilation duct, one of the two radiation monitors on the refueling floor, and one of the two radiation monitors in the steam tunnel ventilation may be inoperable for 24 hrs. If it is not restored to service in this time, the reactor building ventilation system and steam tunnel ventilation system shall be isolated and the standby gas treatment operated until repairs are complete.*

Proposed Requirement: TS 3.2.E.1 and 3.2.E.2 would be revised to state:

1. *Except as specified in 3.2.E.2 below, two reactor building ventilation duct radiation monitors, two refueling floor radiation monitors and two steam tunnel ventilation radiation monitors shall be operable whenever secondary containment integrity is required.*
2. *One of the two reactor building ventilation duct radiation monitors, one of the two refueling floor radiation monitors, and one of the two steam tunnel ventilation radiation monitors may be inoperable for 24 hrs. If it is not restored to service in this time, the reactor building ventilation system and steam tunnel ventilation system shall be isolated and the standby gas treatment operated until repairs are complete or until secondary containment integrity is not required.*

The proposed changes would couple the applicable condition for radiation monitor operability to those of the secondary containment integrity requirements. Thus, none of the six radiation monitors would be required to be operable during conditions when secondary containment integrity is not also required.

Staff Evaluation: The safety function of the six radiation monitors is to provide high radiation level signals for secondary containment isolation in the event of an accident. When the secondary containment and the SBT system are not required to be operable, the radiation monitors are not needed. It is therefore acceptable to couple the radiation monitor operability requirements to those of the secondary containment system. Thus, the proposed change is acceptable. The staff confirmed that the audible/visual radiation level measurement functions provided by the six affected instruments are not associated with any safety-related Regulatory Guide 1.97 Post Accident Monitoring (TMI Item II.B.3) requirements.

3.2.2 Changes To TS 3.7.B

Current Requirement: TS 3.7.B.3 through 3.7.B.5 state:

- 3.7.B.3. *From and after the date that one circuit of the standby gas treatment system is made or found to be inoperable, for any reason, reactor operation and fuel handling is permissible only during the succeeding seven days unless such circuit is sooner made operable, provided that during such seven days all active components of the other standby gas treatment circuit shall be operable.*
4. *During fuel handling, both circuits of the standby gas treatment system shall be operable, except as stated in paragraph 3.7.B.3. In addition, there shall be operable either (a) two sources of offsite power (two 345kV or one 23kV and one 345kV) and one emergency power source, or (b) one source of offsite power (345kV or 23kV) and two emergency power sources to operate components required in paragraph 3.7.B.3.*
5. *If the above cannot be met, procedures shall be initiated immediately to establish the conditions listed in 3.7.C.1.a and b and compliance shall be completed within 24 hours thereafter.*

Proposed change: The above requirements would be changed to read:

3. *If one train of the standby gas treatment system is inoperable when secondary containment integrity is required, restore the train to operable status within seven days. Normal and emergency power must be operable to the operable standby gas treatment system train.*
4. *During a REFUELING OUTAGE, when reactor coolant temperature is less than or equal to 212°F and secondary containment integrity is required, both trains of the standby gas treatment system shall be operable, except as specified in paragraph 3.7.B.3. Operable power sources for two operable trains of standby gas treatment system shall be either (a) two sources of offsite power (two 345kV or one 23kV and one 345kV) and one emergency power source, or (b) one source of offsite power (345kV or 23kV) and two emergency power sources.*
5. *If the above cannot be met, immediately suspend the activities listed in 3.7.C.1.a and 3.7.C.1.b and establish, within 24 hours, conditions where secondary containment integrity is not required.*

Staff Evaluation: The changes to 3.7.B couple SBT system operability to that of secondary containment operability and thereby expand the SBT system operability requirement and associated action statement to encompass additional plant conditions such as core alterations, and movement of critical

heavy loads and operations having potential to drain the vessel. These changes are consistent with the revised secondary containment operability requirements changes that would provide more encompassing secondary containment protection. They are therefore acceptable.

(Note: The requirements for power sources during periods when secondary containment integrity is required would not be changed by the proposed amendment. The existing ac power requirements may not be consistent with new requirements being proposed for shutdown operations and may need to be changed in the future.)

3.2.3 Changes to TS 3.7.C.

Current Requirement: TS 3.7.C. reads:

1. *Secondary containment integrity, as defined in Section 1 [of the TS], shall be maintained during all modes of plant operation except when all of the following conditions are met.*
 - a. *The reactor is in COLD SHUTDOWN [i.e., RCS temp $\leq 212^{\circ}\text{F}$ and vessel is vented] condition, all control rods are fully inserted, and the reactor is verified subcritical.*
 - b. *The Fuel Cask or Irradiated Fuel is not being moved within the Reactor Building.*

Proposed change and licensee's basis: The proposed changes would modify TS 3.7.C. to read:

1. *Secondary containment integrity, as defined in Section 1, shall be OPERABLE:*
 - a. *When moving the fuel cask, irradiated fuel or other loads in containment which have the potential for causing a significant release of fission products.*
 - b. *When performing CORE ALTERATIONS or operations with a potential for draining the reactor vessel when the vessel contains irradiated fuel.*
 - c. *When in RUN, STARTUP/HOT STANDBY or HOT SHUTDOWN.*
2. *If the above cannot be met, immediately suspend the activities listed in 3.7.C.1.a and 3.7.C.1.b and establish, within 24 hours, conditions where secondary containment integrity is not required.*

With the revised format, TS 3.7.C would identify the specific conditions for which secondary containment is required, rather than the exception conditions for when it is not required. The RUN, STARTUP/HOT STANDBY and HOT SHUTDOWN conditions would be identified as conditions for which secondary containment is required, but the cold shutdown, refuel and defueled conditions would not

be included. Instead the TS would identify, for cold, subcritical conditions, the various operating activities for which secondary containment integrity is needed (e.g., fuel movement, fuel cask movement, core alterations, operations having potential to drain the vessel [OPDRVs]). One effect of the proposed change is that for certain plant conditions secondary containment integrity will no longer be required (e.g., single rod withdrawals with the vessel head in place, and plant in REFUEL CONDITION with no rod movements).

The current 3.7.C lacks an associated action statement. Paragraph 2 of the proposed 3.7.C adds an action requirement.

Staff Evaluation: The proposed changes to TS 3.7.C will provide enhanced safety by extending secondary containment operability to include additional plant operations such as fuel cask movements and OPDRVs. The elimination of the operability requirement for certain affected shutdown conditions (e.g., single rod withdrawals with the vessel head in place, plant in REFUEL CONDITION with no rod movements) will not increase the probability of a fuel handling accident or other shutdown event (e.g., inadvertent criticality, loss of decay heat removal) as these are Modes 4 and 5 conditions for which the generic staff position is that secondary containment integrity is unnecessary because the probability and consequences of a LOCA are minimal (Ref: BWR/4 Standard Technical Specification Bases B.3.6.4). The radiological dose consequences of a shutdown accident could increase as a result of not having secondary containment integrity during those conditions. However, because the probability of fuel damage is low during cold, subcritical conditions if OPDRVs, fuel movement or core alterations are not being conducted, and, because there are no design basis accidents postulated for these conditions, the staff does not require secondary containment integrity for these conditions and no credit is taken for its safety function in performing accident dose assessments. The proposed changes to TS 3.7.C are therefore acceptable.

The new action statement would specify that if secondary containment integrity requirements are not met, the outage activities that require it (e.g., fuel movement, fuel cask movement, core alterations, OPDRVs) are to be immediately suspended. If in RUN, STARTUP/HOT STANDBY or HOT SHUTDOWN, 24 hours would be allowed to restore secondary containment integrity. The 24-hour limitation is not consistent with the generic staff position (4 hours), but is appropriate for Millstone Unit 1 based on consistency with the existing SBT system operability requirements of TS 3.7.B, which specifies a 24-hour action in the event of both trains of SBT being inoperable.

3.2.4 Changes to Associated Bases

The application includes proposed changes to the Bases to maintain consistency with the operability requirements.

3.3 Staff Conclusion

Based on the above discussion and evaluation, the staff concludes that the proposed TS changes are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (61 FR 54242 dated October 17, 1996). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 Conclusion

The Commission 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: W. Long

Date: January 14, 1997