



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 201

TO FACILITY OPERATING LICENSE NO. DPR-16

GPU NUCLEAR, INC. AND

JERSEY CENTRAL POWER & LIGHT COMPANY

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

1.0 INTRODUCTION

By letter dated September 19, 1998, GPU Nuclear, Inc., (GPU or the licensee) submitted a request for changes to Section 5.4.8 of the Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report (UFSAR). The requested change would incorporate the use of a freeze seal as a temporary part of the reactor coolant boundary.

2.0 EVALUATION

The reactor water cleanup (RWCU) return line to the discharge of reactor recirculation system pump B contains one motor-operated valve outside the drywell and one check valve inside the drywell. Between the return line check valve inside the drywell and the reactor pressure vessel (RPV) there is the normally locked open 6-inch manual valve V-16-63 that isolates the RWCU return line from the reactor pressure vessel. This valve cannot be isolated from the vessel. The valve bonnet of V-16-63 may need to be removed during the current outage. GPU has proposed the use of a freeze seal as a temporary reactor coolant pressure boundary between the RPV and V-16-63.

A second supply of Nitrogen will be provided in the event there are problems with the normal supply of nitrogen for the freeze seal upstream of the valve. In addition to the freeze seal at the reactor side, GPU also will be using the existing disc/stem of the valve as barrier. In case the valve disc is to be removed, mock-up testing has shown that the removal and replacement of the disc can be completed in about 55 minutes. The mitigating action to take during a loss of nitrogen supply with the stem/disc removed is to install a valve bonnet seal plate assembly and thereby establish the integrity of the reactor coolant pressure boundary. It is estimated that installation of the valve bonnet seal plate assembly will take 15 minutes.

In preparation for this evolution, the following conditions in the plant will be satisfied by the Technical Specification and/or plant procedures:

1. Plant mode switch in either the SHUTDOWN or REFUELING position.
2. RPV is reassembled with fuel in the core.

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3. The RCS bulk temperature, as measured by TE-31D , shall not exceed a temperature of 99 degrees F prior to the initiation of the valve repair activity and no evolution involving removal of the valve disc shall occur if the RCS bulk temperature exceeds 99 degrees F.
4. RPV water level will be at 210 inches above Top of the Active Fuel (TAF).
5. Shutdown cooling system will be in operation.
6. Both core spray systems shall be operable.
7. Fire Protection system shall be operable as a back up to core spray system.
8. One loop of the reactor recirculation system will be operable.
9. The emergency diesel generators and their respective safety related electrical distribution system will be operable.
10. Off-site power shall be available
11. Secondary containment shall be operable.
12. Both standby gas systems will be operable.
13. The RPV will be vented.
14. RWCU pumps will be electrically deenergized. RWCU valves will be closed.
15. Provisions will be in place to remove any equipment traversing the drywell airlock to ensure that the air lock can be closed in a timely fashion should the need arise.
16. The seal plate assembly for V-16-63 shall be staged and ready for fit up and installation.

The above listed conditions are prerequisites for establishing the freeze seal. As stated below, since the licensee has taken adequate precautions to reduce the likelihood of a freeze seal failure and to mitigate the consequences of a failed freeze seal, the use of the freeze seal is acceptable.

During the performance of the valve repair, reactor vessel water level will be monitored to ensure that it remains at 210 inches above TAF. As described above, two core spray pumps and the fire system will be available for make up in case of an inadvertent loss of reactor coolant inventory. GPU has determined that the core spray system is capable of supplying sufficient water to maintain the RPV water level at or above 56 inches TAF assuming a 6-inch opening in the reactor coolant system. The fuel heat up rate is significantly lower since the irradiated fuel bundles have been in shutdown for several days. GPU has determined that the core spray systems are capable of providing adequate core cooling.

The proposed valve repair activity will occur with the drywell airlock and primary containment open. However, the secondary containment will be closed. In the event of a loss of the freeze

seal and subsequent leak, the drywell air lock will be closed. The leak would be a liquid release and any gaseous release will be contained in the secondary containment.

The proposed repair activity does not involve fuel movement; therefore, design basis fuel handling accidents need not be considered during the maintenance.

At River Bend Station, a freeze seal failed in 1989 on a 6-inch service water line. Approximately 15,000 gallons of water were discharged and flooded the Auxiliary Building. Also, at Oconee, the freeze seal on a 3-inch line failed on a line connected to the borated water storage tank in 1987. Approximately 30,000 gallons of slightly radioactive contaminated water leaked into the auxiliary building. As a result of these freeze seal failures, the staff issued NRC Information Notice 91-41, "Potential Problems with the use of Freeze Seals." The information notice recommended that licensees use mock ups to thoroughly evaluate freeze seal applications before their use. Also, the licensees were advised of important considerations such as examine training, procedures and contingency plans associated with the use of freeze seals, and evaluating the need for and availability of additional water makeup systems and their associated support systems. A freeze seal mock up test was performed by GPU to demonstrate the capability of the freeze seal methodology and barrier. In addition, a loss of nitrogen event was simulated during the mock up test. GPU verified that there would not be a loss of the freeze seal for 55 minutes after a loss of nitrogen. GPU considered the recommendations of the information notice and has followed the guidelines for mock up, contingency plans and additional water supplies.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment (which incorporates the use of a freeze seal as a temporary part of the reactor coolant pressure boundary into Section 5.4.8 of the UFSAR) 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 (63 FR 52307). 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.

### 5.0 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: G. Thomas

Date: November 4, 1998