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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 131 TO

FACILITY OPERATING LICENSE NO. NPF-38

ENTERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By application dated April 11, 1997, Entergy Operations, Inc. (the licensee), submitted a request for changes to the Waterford Steam Electric Station, Unit 3 (Waterford 3), Technical Specifications (TSs). The requested changes would revise TS 3.6.2.2 and Surveillance Requirement 4.6.2.2 for the Containment Cooling System (CCS). These changes are intended to make TS consistent with the containment cooling assumptions made in containment analysis for Waterford 3. Also, a Surveillance Requirement will be inserted to verify that valves actuate on a Safety Injection Actuation Signal. To support this addition, Technical Specification Bases 3/4.3.6.2.2 has been included.

2.0 EVALUATION

There are two Containment Heat Removal Systems provided at Waterford 3. Each system consists of a CCS and a Containment Spray System (CSS). They are both equally rated at 100 percent heat removal capacity meaning that either system can remove the design heat load from containment. Since the proposed TSs changes only relate to the CCS, CSS will not be discussed in this evaluation.

Each CCS has two fan coolers both discharging into a common duct. The duct work system then distributes the discharge to different areas of the containment. Component cooling water (CCW) flows through each cooler to remove containment heat. The fans are two speed, fast for normal operation and slow for accident mitigation. The fans are normally turned on manually as needed to maintain containment temperature between 90-120 °F. Upon receipt of a Safety Injection Actuation Signal (SIAS), the fan coolers are automatically energized at low fan speed. It is important to note that the fan coolers in the accident mode cannot be manually initiated without the presence of an SIAS signal and the high speed fan cannot be energized in the accident mode.

The original TS 3.6.2.2 for the CCS required that two independent groups of containment cooling fans be operable with two fan systems to each group. As a result of reanalysis in May 1988, the licensee concluded that acceptable containment peak pressures and temperatures could be achieved at full power with only one cooling fan per train operable at the start of the accident. Long term operation was also found acceptable when the analysis verified that the containment peak pressure can be reduced by a factor of two within 24 hours after the accident. These analyses assumed a 1325 gpm flow rate through the coolers.

Based on the above analysis, the Staff granted TS changes by letter dated June 2, 1988, which changed the operability requirement from two fans per group to one fan in each group. However, the water flow rate was maintained at the original 1325 gpm value. These TSs have been in place since that time.

During Sept-Oct 1995, as part of a Waterford 3 initiated program to perform flow balance testing on the CCW system, it was found that measured flow rates were less than TS value of 1325 gpm. An evaluation was performed and determined that the CCS remained operable with the measured flows. Licensee also determined that the fouling in the Dry Cooling Towers (DCT) caused the low flow condition in CCW. The DCT tubes were cleaned during January through March, 1996. Subsequent measurements showed that at least one cooler in each train exceeded the criteria of 1325 gpm after the tube cleaning.

Operations continued with TSs that required only one fan system per train. In addition, the flow rate criteria of 1325 gpm has been maintained. However, by letter dated April 11, 1997, the licensee requested to change the TSs for CCS to make it consistent with the current supporting analyses for Waterford 3. The proposed change will require two independent trains of containment cooling system with two fan coolers in each train instead of one fan cooler per train. The staff finds the change acceptable because this change will return this specification back to the original requirement.

Supporting this change is a request to lower the required flow rate to each cooler from 1325 gpm to 1200 gpm. The lower flow rate will restore the originally intended margin relative to pump performance. An additional specification (SR 4.6.2.2.b.3) has been added to verify that each cooling water control valve goes to the open position on an SIAS. In the process of making these changes the licensee has replaced the nomenclature of "group of containment cooling fans" with "train of containment cooling" in both the Specification and Surveillance. Other minor changes have also been included consistent with the above changes. These changes have been modeled after the containment cooling Specification in NUREG 1432, "Standard Technical Specifications - Combustion Engineering Plants". The staff has reviewed these changes and agrees that the revised nomenclature more closely follows the guidance provided in the NUREG. Therefore the staff finds these changes acceptable.

The lower flow rate of 1200 gpm from the 1325 gpm is supported by the revised analyses using CONTEMPT computer code. The results of these analyses were provided in the April 11, 1997, submittal. It is important to note that CONTEMPT is the same computer program that was used in the original design basis analyses which the staff had found to be acceptable. In addition, the revised analyses used the same set of assumptions as the current analyses of record documented in the FSAR, except for the CCW flow to CFCs and shutdown cooling heat exchanger, air flow rate for each CFC, and the number of CFCs per train.

The results of these analyses show that all design criteria are satisfied with a flow rate of 1100 gpm. Therefore, the proposed TS change to 1200 gpm still contains a 100 gpm margin over the supporting analyses. In addition, the air flow rate was assumed to be 33,250 ACFM. This represents a 5 percent reduction from the value provided by the fan cooler vendor (American Air Filter). The value provided by the vendor represents the design air flow rate of the CFC. In addition, the licensee indicated that CFC flow rate will be measured as part of the implementation of Generic Letter 89-13 program.

Based on the above discussion and evaluation of the proposed TS changes, the NRC staff determined that the changes to the TSs are consistent with the analyses performed by the licensee using the computer program that has been accepted by the staff. Therefore, the staff finds the proposed changes acceptable.

3.0 STATE CONSULTATION

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

4.0 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 and changes surveillance requirements. 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 (62 FR 19626). 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.

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Date: July 3, 1997