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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 169 TO FACILITY OPERATING LICENSE NO. DPR-49

IOWA ELECTRIC LIGHT AND POWER COMPANY
CENTRAL IOWA POWER COOPERATIVE
CORN BELT POWER COOPERATIVE

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

1.0 INTRODUCTION

By letter dated July 27, 1988, Iowa Electric Light and Power Company (the licensee) requested changes to the Duane Arnold Energy Center (DAEC) Technical Specifications (TSs). The proposed changes were submitted in response to NRC Generic Letter (GL) 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping," and its enclosure, NUREG-0313, Revision 2, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping."

The NRC staff approved the licensee's proposed inspection program and response to GL 88-01 in a letter dated May 31, 1990. That letter did not address the proposed TS changes that are reviewed in this Safety Evaluation, except to identify that the licensee's proposed frequency of monitoring reactor coolant system (RCS) leakage once per 24 hours was unacceptable. The May 31, 1990 letter also described a change in the NRC staff position regarding the frequency of leakage monitoring. The staff position in GL 88-01 had specified that leakage monitoring of sump levels using fixed-measurement-interval methods should be conducted at 4-hour intervals or less. The staff has subsequently relaxed the specified frequency to once every 8 hours, due to the unnecessary administrative hardship imposed by the 4-hour interval. The licensee revised its request of July 27, 1988 by letter dated June 29, 1990, to conform with the staff's current position on RCS leakage monitoring.

The proposed changes clarify Table 3.2-E, "Instrumentation that Monitors Drywell Leak Detection," revise TSs 3.6.C and 4.6.C, and add TS 4.6.G.3 to conform with the staff positions of GL 88-01, as revised. In addition, the proposed changes revise TSs 4.6.G.1.a and 4.6.G.2.a to specify the beginning dates for the second 10-year inservice inspection (ISI) and inservice testing (IST) programs. TS 4.6.G.3 is deleted, as the first 10-year ISI and IST intervals have been completed, and TS 4.6.G.4 is also deleted, as the interim ISI program for the recirculation system inlet nozzle safe-ends has been completed and future inspections will be included in the scope of the GL 88-01 program. The associated Bases for the TSs are also revised to reflect the proposed changes.

2.0 EVALUATION

The licensee has proposed revisions to Table 3.2-E, "Instrumentation that Monitors Drywell Leak Detection," and to TS 3.6.C.2, to clarify the operability requirements for those systems used for drywell leak detection. The licensee provided additional information on these systems in a letter dated April 24, 1989.

The primary system used for the detection of drywell leakage at the DAEC is the Sump system, consisting of the Equipment Drain Sump subsystem and the Floor Drain Sump subsystem. Each subsystem is comprised of a flow integrator, a sump pump run timer, and a sump fill timer. Each of these devices can be used by plant operators to calculate drywell leakage rates. The flow integrators receive signals from flow transmitters located in the discharge piping of both sumps, and calculate the total amount of fluid discharged from each sump. This information is used by the operators to calculate the drywell leakage rates and record them at 4-hour intervals in accordance with plant procedures. The two sump pump run timers measure the length of time each pump runs, from the point that a high sump level starts the pump, until it shuts off automatically upon reaching the low level setpoint. For a given pump flow rate, the time the pump is running corresponds to a set drywell leakage rate. Therefore, if the pump is running for too long, a high drywell leakage rate is indicated in the control room. The sump fill timers measure the time between successive pump starts. These timers are set to correspond to the time period between pump starts for an established pump flow rate and specified drywell leakage rate. If the pump restarts prior to reaching the set time interval, then drywell leakage is greater than the setpoint and an annunciator is activated in the control room.

Any one of these six instruments is sufficient to detect increased drywell leakage. Identified leakage, which is composed of normal seal and valve packing leakage, is collected in the Equipment Drain Sump, while unidentified leakage, composed of all other leakage from the reactor primary system, is collected in the Floor Drain Sump. The two sumps are adjacent to each other, located beneath the reactor, inside the reactor vessel pedestal. If all three leak detection instruments in one sump were inoperable, the pumps in that sump would not start automatically and the sump would eventually overflow into the adjacent sump. Based on the 850-gallon capacity of each sump (and the 200 gallon low-level setpoint), at a drywell leakage rate of 5 gpm, one sump would begin to overflow to the other in just over 2 hours. At a leakage rate of 2 gpm, the time would be roughly 5½ hours.

The Floor Drain Sump instrumentation is set to detect unidentified drywell leakage, while the Equipment Drain Sump instrumentation is set to detect identified leakage. In the event that all three Floor Drain sump components are inoperable, the Equipment Drain Sump timers would be recalibrated to the lower setpoint for detection of identified leakage Therefore, if any one of the six instruments of the Sump system was operable, plant operators could detect high drywell leakage and take appropriate actions in a reasonable amount of time.

The Air Sampling System provides backup capability to detect drywell leakage, by monitoring increases in the radioactivity in the drywell atmosphere. However, this system is not capable of quantifying drywell leakage and is therefore only intended to be used when the Sump system is inoperable.

Proposed TS 3.6.C.2 specifies that the Sump system shall be operable any time irradiated fuel is in the vessel and reactor coolant temperature is above 212°F. If the Sump system is inoperable, continued reactor operation is permissible for 24 hours only if the Air Sampling System is operable; otherwise, the reactor shall be in the Cold Shutdown Condition within 24 hours. This revised specification has a 24-hour limiting condition for operation (LCO) instead of the current 7-day LCO; however, the current LCO requires that the Air Sampling System be operable in addition to the Sump system.

The NRC staff finds that the revised Table 3.2-E and revised TS 3.6.C.2 more accurately reflect the redundant design of the DAEC Sump system drywell leakage monitoring instrumentation and the backup function of the Air Sampling System, thereby providing more appropriate requirements for drywell leak detection. The Bases of pages 3.2-45 and 3.6-26 have also been revised to reflect these changes, which the staff finds acceptable.

Proposed TS 3.6.C.1 and 4.6.C.1 and 2 have been revised consistent with the staff's position in GL 88-01, as modified, in part, in the May 31, 1990 NRC letter to the licensee. TS 3.6.C.1.b adds a limit of 2 gpm increase in unidentifed leakage within a 24-hour period. If this additional limit is exceeded, the reactor shall be in a Cold Shutdown Condition within 24 hours, as required by TS 3.6.C.3. As a point of clarification, if a 2 gpm increase in unidentified leakage was observed in less than 24 hours, the limit would also be considered to be exceeded and the appropriate action required, consistent with the wording of GL 88-01. The revised Bases of page 3.6-25 provide additional clarification. Surveillance Requirements (SRs) 4.6.C.1 and 2 require the RCS leakage to be checked by the sump system and recorded once every 8 hours and the Air Sampling system to be checked and recorded once every 8 hours. These revised TSs are consistent with the current staff positions as described in GL 88-01 and the May 31, 1990 NRC letter; therefore they are acceptable.

SR 4.6.D.1 is revised to delete a footnote referring to a previous change. Deletion of the footnote is an editorial change that clarifies the requirement and is therefore acceptable.

Proposed SRs 4.6.G.1.a and 4.6.G.2.a and the associated Bases specify the starting dates for the second 10-year intervals for the ISI and IST programs, respectively. Also, SR 4.6.G.3. is deleted, removing extraneous information regarding the completed first 10-year intervals. These sections are added or deleted for clarification and do not alter any existing requirements; therefore, the staff finds these changes acceptable.

A new Surveillance Requirement 4.6.G.3 is proposed, in which the licensee commits to perform an inservice inspection program for piping identified in NRC GL 88-01, in accordance with the staff positions contained therein. The proposed SR is worded exactly the same as the sample specification provided in GL 88-01. Therefore, the staff finds the proposed SR acceptable.

Finally, SR 4.6.G.4 is deleted to remove the references to the interim testing program for the recirculation system inlet nozzle safe-ends. Inspection of these components will be continued at the same frequency within the scope of the licensee's GL 88-01 inspection program, as required by SR 4.6.G.3. Therefore, the deletion of SR 4.6.G.4 does not alter existing requirements and is acceptable to the staff.

In summary, the proposed TS changes conform with the staff positions of GL 88-01, as they commit the licensee to conduct an approved inservice inspection program for piping susceptible to intergranular stress corrosion cracking. The licensee's GL 88-01 inspection program for the DAEC was previously approved by the staff in a letter dated May 31, 1990.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or a change to a surveillance requirement. The 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). This amendment also involves changes in recordkeeping, reporting or administrative procedures or requirements. Accordingly, with respect to these items, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR §51.22(c)(10). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

4.0 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 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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Dated: September 19, 1990