



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 182 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

In a letter dated August 30, 1991, Iowa Electric Light and Power Company (the licensee) submitted a request to revise the Duane Arnold Energy Center (DAEC) Technical Specifications (TS). The licensee proposed to eliminate the scram and main steam line isolation valve (MSIV) closure requirements associated with the main steam line radiation monitors (MSLRM). This request was submitted as the plant-specific portion which, in conjunction with the General Electric Licensing Topical Report NEDO-31400 and the staff's May 15, 1991 Safety Evaluation (SE) on this topical report, formed the basis for the package to be evaluated. The August 30, 1991 submittal was supplemented by a January 27, 1992, submittal which responded to the staff's request for additional clarifying information in a January 9, 1992, conference call.

2.0 EVALUATION

In the staff's SE, which accepted the referencing of NEDO-31400 for the elimination of the MSIV closure function and scram function of the MSLRM, it was stated that the following three conditions had to be met:

1. The applicant needed to demonstrate that the assumptions with regard to input values, including power per assembly, Chi/Q , and decay times, that were made in the generic analysis, bound those for the plant.
2. The applicant needed to include sufficient evidence, which could be implemented or proposed operating procedures or equivalent commitments, that would provide reasonable assurance that increased significant levels of radioactivity in the main steam lines would be controlled expeditiously to limit both occupational doses and environmental releases.
3. The applicant needed to standardize the MSLRM and off gas radiation monitor alarm setpoint to 1.5 times the nominal N^{16} background dose rate at the monitor locations and commit to promptly sample the reactor coolant to determine possible contamination levels in the

reactor coolant and the need for additional corrective action, if the MSLRM or offgas radiation monitors or both exceed their alarm setpoints.

The licensee, in response to Condition 1 above, stated that the assumptions made in the generic analysis bound the DAEC. The staff has reviewed the licensee's assumptions for values such as Chi/Q and power level per assembly and has concluded that the generic analysis assumptions bound those presented in the DAEC analysis.

In response to Condition 2, the licensee's August 30, 1991 submittal indicated that procedures are in place which address the actions required in the event of a high radiation signal in the main steam line. This submittal also indicated that the licensee would revise the procedures as appropriate upon NRC approval of their request. In the January 9, 1992, conference call, the staff asked why revisions would be required if procedures are already in place that address the actions required in the event of a high radiation signal in the main steam line.

The licensee stated in the January 27, 1992 submittal that procedures are in place to ensure that any significant increase in the level of radioactivity in the main steam lines is promptly controlled to limit environmental and occupational exposures. These procedures would only need to be revised to reflect the elimination of the scram and MSIV isolation functions of the MSLRMs. The procedures direct the operator to confirm high radiation using the MSL or offgas radiation monitors and to determine if the radiation levels are trending upward. If conditions warrant, the procedures direct a reactor coolant isotopic analysis. In the January 27, 1992, submittal the licensee committed to update the procedures to incorporate the proposed TS change and to revise them to ensure that aggressive actions are taken in the event of confirmed high radiation in the main steam lines.

The staff has reviewed the licensee's commitments and has determined that they are acceptable and responsive to Condition 2 which was required to be addressed by Topical Report NEDO-31400.

The licensee stated in the August 30, 1991, submittal that the MSLRM would be set to alarm at 1.5 times normal background to account for the increased N^{16} carryover due to hydrogen water chemistry. The licensee also stated that procedures are currently in place for controlling the offgas monitor setpoints as part of the Offsite Dose Assessment Manual (ODAM), which implements Appendix I of 10 CFR Part 50 requirements. The licensee proposed an addition to TS Table 3.2-D which would trip the mechanical vacuum pump when the MSLRM trip level setpoint is exceeded, thereby isolating the mechanical vacuum pump suction valves. However, in the staff's review of this submittal, the licensee did not commit to promptly sample the reactor coolant to determine possible contamination levels in the reactor coolant if either the MSLRM and/or the offgas radiation monitor exceeded its alarm setpoint. Neither did the licensee identify any additional corrective actions if the offgas

radiation monitor exceeded its alarm setpoint. The staff's review of the ODAM did not reveal any guidance within that document if an offgas release exceeded the setpoint for the offgas radiation monitor.

The licensee's January 27, 1992, submittal referenced the procedures which identify appropriate actions in the event that MSLRMs and/or offgas monitors detect high radiation. The licensee indicated that the appropriate procedure would be revised to specifically direct the operator to request a reactor coolant sample from the Chemistry Department in the event of a confirmed high MSL radiation condition. The licensee also stated that the ODAM contains procedures for controlling the setpoint of the offgas pre-treatment monitor. This monitor's alarm is set to satisfy the DAEC TS by alarming at a value equivalent to 1.0 Ci/sec of noble gases after 30 minutes delay in the offgas holdup line. If this setpoint is exceeded, a procedure directs the operator to confirm the high activity and monitor the MSLRMs and offgas system operation. The operator is also referred to another procedure which contains a step that directs the operator to request the Chemistry Department to perform an isotopic analysis of the reactor coolant. The staff's further review of the ODAM revealed no procedures for controlling the setpoint of the offgas pre-treatment monitor. Therefore, the staff has concluded that the licensee should, consistent with their January 27, 1992 submittal, ensure that such procedures are contained in the ODAM. With their incorporation into the ODAM, Condition 3 is addressed to the staff's satisfaction.

In NEDO-31400 it was stated that some early vintage BWRs have plant operating procedures which allow continued bypassing of the offgas treatment system until late in power ascension. This operating mode was considered acceptable provided the offgas radiation monitors, pre-treatment and post-treatment, are being utilized to automatically isolate the offgas treatment bypass line and/or the offgas process line before the acceptable release rates are exceeded. The topical report stated that the pretreatment monitor is typically in the TS and has requirements for periodic calibration and functional testing. The licensee did not address this in the August 30, 1991, submittal.

In response to the NRC's inquiry on this matter, the licensee stated in the January 27, 1992, submittal that existing procedures do not allow continued bypassing of the offgas treatment system and that the appropriate procedure reiterates the TS 3.15.E.1 requirements that at least one train of charcoal beds in the offgas system be placed in operation to treat radioactive gases within 4 hours after commencing operation of the main condenser air ejectors. The licensee also stated that the requirements for the offgas post-treatment and pre-treatment radiation monitors are addressed in existing TS 3.2.D.1 and are included in Table 3.2-D, "Radiation Monitoring Systems that Initiate and/or Isolate Systems." Based upon the above, the staff has concluded that the bypassing of the offgas treatment system until late in the power ascension is not an issue for DAEC.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATIONS

This 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 or changes 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 the amendment involves no significant hazards consideration and there has been no public comment on such finding (56 FR 49922). 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 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, (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: March 24, 1992