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

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

DOCKET NO. 50-331

DUANE ARNOLD ENERGY CENTER

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 54
License No. DPR-49

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Iowa Electric Light and Power Company, Central Iowa Power Cooperative, and Corn Belt Power Cooperative (the licensee) dated December 27, 1978, as supplemented May 23, 1979, August 15, 1979 and August 17, 1979, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-49 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 54, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 4, 1979

ATTACHMENT TO LICENSE AMENDMENT NO. 54

FACILITY OPERATING LICENSE NO. DPR-49

DOCKET NO. 50-331

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

Remove	Replace
3.3-6	3.3-6
3.3-17	3.3-17
3.3-18	3.3-18
3.3-19/3.3-20	3.3/19
3.3.21/3.3-22	
3.3-23	
3.12-9a	3.12-9a

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS

C. Scram Insertion Times

1. The average scram insertion time, based on the de-energization of the scram pilot valve at time zero, of all operable control rods in the reactor power operation condition shall be no greater than:

Rod Position	Average Scram Insertion Times (Sec)
46	0.361
36	0.917
26	1.479
06	2.693

2. The average scram insertion times for the three fastest control rods of all groups of four control rods in a 2 x 2 array shall be no greater than:

Rod Position	Average Scram Insertion Times (Sec)
46	0.383
36	0.972
26	1.556
06	2.847

3. Maximum scram insertion time for 90% insertion of any operable control rod should not exceed 7.00 seconds.

C. Scram Insertion Times

1. After each refueling outage all operable rods shall be scram time tested from the fully withdrawn position with the nuclear system pressure above 950 psig (with saturation temperature) and the requirements of Specification 3.3.B.3a met. This testing shall be completed prior to exceeding 40% power. Below 30% power, only rods in those sequences (A_{12} and A_{34} or B_{12} and B_{34}) which are fully withdrawn in the region from 100% rod density shall be scram time tested. During all scram time testing below 30% power, the Rod Worth Minimizer shall be operable or a second licensed operator shall verify that the operator at the reactor console is following the control rod program.

2. Near the end of cycle, all operable rods shall be scram time tested from the fully withdrawn position with the nuclear system pressure above 950 psig (with saturation temperature) and the requirements of specification 3.3.b.3a met.

3. The data from the testing specified in section 4.3.C.2 shall be compared to the data from the testing required in section 4.3.C.1 to verify that no trend of degradation exists. A report of this evaluation shall be submitted to the NRC within 90 days of testing.

999 197

Surveillance Requirements 4.3.C.2 and 4.3.C.3 shall be deleted upon completion of Cycle 6.

bypassed from the console for maintenance and/or testing. Tripping of one of the channels will block erroneous rod withdrawal soon enough to prevent fuel damage. This system backs up the operator who withdraws control rods according to written sequences. The specified restrictions with one channel out of service conservatively assure that fuel damage will not occur due to rod withdrawal errors when this condition exists.

A limiting control rod pattern is a pattern which results in the core being on a thermal hydraulic limit. During use of such patterns, it is judged that testing of the RBM system prior to withdrawal of such rods to assure its operability will assure that improper withdrawal does not occur. It is the responsibility of the Reactor Engineer to identify these limiting patterns and the designated rods either when the patterns are initially established or as they develop due to the occurrence of inoperable control rods in other than limiting patterns. Other personnel qualified to perform this function may be designated by the DAEC Chief Engineer.

3. Scram Insertion Times

The control rod system is designed to bring the reactor subcritical at a rate fast enought to prevent fuel damage; i.e., to prevent the MCPR from becoming less than the safety limit.

999 198

After initial fuel loading and subsequent refuelings when operating above 950 psig, all control rods shall be scram tested within the constraints imposed by the Technical Specifications and before the 40% power level is reached. This testing shall also be conducted near the end of cycle (through Cycle 6) to confirm non-degradation of scram times over a fuel cycle. The requirements for the various scram time measurements ensure that any indication of systematic problems with rod drives will be investigated on a timely basis.

4. Reactivity Anomalies

During each fuel cycle excess operative reactivity varies as fuel depletes and as any burnable poison in supplementary control is burned. The magnitude of this excess reactivity may be inferred from the cirtical rod configuration. As fuel burnup progresses, anomalous behavior in the excess reactivity may be detected by comparison of the critical rod pattern at selected base states to the predicted rod inventory at that state. Power operating base conditions provide the most sensitive and directly interpretable data relative to core reactivity. Futhermore using power operating base conditions permits frequent reactivity comparisons.

Requiring a reactivity comparison at the specified frequency assures that a comparison will be made before the core reactivity change exceed 1% Δ k. Deviations in core reactivity greater than 1% Δ k are not expected and require thorough evaluation. One percent reactivity limit is considered safe since an insertion of the reactivity into the core would not lead to transients exceeding design conditions of the reactor system.

999 199

3,3, 4.3 References

1.) NEDO 24087-3, 78NED265, Class 1 June 1978 "General Electric Boiling Water Reactor Reload 3 (Cycle 4) Licensing Amendment For Duane Arnold Energy Center, Supplement 3: Application of Measured Scram Times"

TABLE 3.12-2

MCPR LIMITS

Fuel Type	
7 x 7	1.22
8 x 8	1.26