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

H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental costs and considering available alternatives, the issuance of Facility Operating License No. DPR-49 is in accordance with 10 CFR Part 50, Appendix D, of the Commission's regulations and all applicable requirements of said Appendix D have been satisfied;

I. The receipt, possession, and use of source, by-product and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Part 30 and 70, including 10 CFR Section 30.33, 70.23 and 70.31.

2. Facility Operating License No. DPR-49 is hereby issued to the Iowa Electric Light and Power Company (IEL&P), Central Iowa Power Cooperative (CIPCO) and Corn Belt Power Cooperative (Corn Belt) to read as follows:

A. This license applies to the Duane Arnold Energy Center, a boiling water reactor and associated equipment (the facility), owned by the licensees and operated by IEL&P. The facility is located on the licensees' site near Palo in Linn County, Iowa. This site consists of approximately 500 acres adjacent to the Cedar River and is described in the "Final Safety Analysis Report" as supplemented and amended (Supplements 1 through 14) and the Environmental Report as supplemented and amended (Supplements 1 through 5).

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:

(1) Iowa Electric Light & Power Company, pursuant to Section 104b of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities", to possess, use, and operate the facility; and CIPCO and Corn Belt to possess the facility at the designated location in Linn County, Iowa, in accordance with the procedures and limitations set forth in this license;

(2) IEL&P, pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Updated Final Safety Analysis Report, as supplemented and amended as of June 1992 and as supplemented by letter dated March 26, 1993.

Revision to OL
Amendment #9
6/3/75

Revision to OL
RTS-252
03/26/93

5.5 SPENT AND NEW FUEL STORAGE

1. The new fuel storage facility shall be such that the effective neutron multiplication factor (k_{eff}) of the fuel, dry is less than 0.90 and flooded is less than 0.95. These k_{eff} values are satisfied if the maximum infinite lattice multiplication factor (k_∞) of the individual fuel bundles is ≤ 1.31.

2. The k_{eff} of the fuel in the spent fuel storage pool shall be less than or equal to 0.95. This k_{eff} value is satisfied if the maximum, exposure-dependent k_∞ of the individual fuel bundles is ≤ 1.31 and the initial uniform average enrichment is ≤ 4.6 wt% U-235.

3. Spent fuel shall only be stored in the spent fuel pool in a vertical orientation in approved storage racks.

Bases

The basis for the k_∞ limit is described in Reference 1 for the GE-designed new fuel storage racks. Compliance with this specification is demonstrated by comparing the beginning-of-life, uncontrolled k_∞ values for the fuel type of interest to the 1.31 limit. For GE-supplied fuel, k_∞ values can be found in Reference 2. The k_∞ values found in Reference 2 represent the maximum, exposure-dependent lattice reactivity and can be conservatively applied to the new fuel limit.

Calculations have been performed (Reference 3) to determine the bounding reactivity limits for bundles of GE-designed fuel, when stored in the spent fuel storage racks of an approved design. These analyses were performed conservatively assuming uniform average initial enrichments in a parametric evaluation for fuel with enrichments up to 4.6 wt% U-235 initially. The bounding limit of an infinite multiplication factor of 1.31 for fuel of 4.6 wt% enrichment (or less) was evaluated at the maximum k_∞ over burnup and includes a conservative allowance for possible differences between the rack design calculations and the fuel vendor calculations.

References

1) General Electric Standard Application for Reactor Fuel, NEDE-24011-P-A.*

2) General Electric Fuel Bundle Designs, NEDE-31152-P.*

3) Licensing Report for Spent Fuel Storage Capacity Expansion, Duane Arnold Energy Center, Holtec Report HI-92889.

*Latest NRC-approved revision.