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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENTS NOS. 87 AND 58 TO FACILITY OPERATING LICENSES

NOS. DPR-51 AND NPF-6

ARKANSAS POWER & LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNITS 1 AND 2

DOCKET NOS. 50-313 AND 50-368

INTRODUCTION

By letter dated September 14, 1983, as supplemented by letters dated January 20, 1984 and May 24, 1984, Arkansas Power and Light Company (the licensee or AP&L) proposed amendments to the Technical Specifications (TSs) appended to Facility Operating Licenses Nos. DPR-51 and NPF-6, for Arkansas Nuclear One, Units 1 and 2 (ANO-1 & 2). The amendments would modify the TSs to exempt from the current requirement of a six-month leak test cycle and to require an 18-month leak test cycle for the following specific sealed radioactive sources:

ANO Unit	#Sources	System	Isotope	Activity	Form	Encapsulation
1	4	Area Radiation Monitor (ARM)	Pb	10 μCi	Solid	Electroplated onto ceramic disc
1	1	Boron-ometer	Pu/Be	1.0 Ci	Solid	Encapsulated in Tantalum and stainless steel casing in a locked vessel
2	1	Boron-ometer	Am^{241}/Be	0.72 Ci	Solid	Encapsulated in Tantalum and stainless steel casing contained in a locked vessel

DISCUSSION

The encapsulation and form of these sources is such that activity is not readily removed from the sources' surfaces, and not readily affected by the environment. Additionally, the sources are located in systems/arrangements where the sources' surfaces are not directly accessible to personnel, and mechanical actions involving the sources during system operations are minimal, except during infrequent maintenance and leak checks. This low liability to damage greatly reduces the potential for inadvertent spread of contamination.

The licensee has estimated that the radiation doses of about 0.4 person-Rem per quarter presently required for leak checking these sources would be substantially reduced as an ALARA (as low as is reasonably achievable) measure (e.g., 2.4 person-Rem over 18 months under the present requirements, versus 0.4 person-Rem over 18 months under the proposed requirements with an 18-month leak test requirement. This could result in a dose saving of around 60 person-Rem over the next 30 years. For the boronometer sources, dose and manpower saving are most significant. For the Area Radiation Monitor (ARM) sources, dose and manpower saving as well as reduced access to high radiation area and a lesser impact on plant operations are of major considerations. Of particular concern to the NRC staff is the leak testing required for the ARM source in the incore instrument tunnel leading to the reactor cavity. There has been a trend of overexposures and uncontrolled exposures associated with reactor cavity entrance with thimbles withdrawn, and the extremely high dose rates in the reactor cavity areas create a situation where acute exposure sufficient to cause significant radiation injury is possible. Reduction of leak test frequency can reduce the need for access and thus this very real risk.

Direct leak test sources are supplemented by contaminated surveys of the source environs during relatively frequent routine area surveys and during special surveys when maintenance is performed. These would serve to detect contamination in the unlikely event of a leaking or ruptured source. Additionally, a special caution posting requires that leak testing must be current before maintenance is performed on these sources. The licensee has not experienced any problems with leakage from these sources at Arkansas Nuclear One. Information available to the NRC staff indicates no instances of the rupture or damage of these sources at power reactors during normal use. It appears the greatest risk of source damage is encountered during maintenance and leak test procedures.

EVALUATION

AP&L has identified specific sealed sources to be leak checked on an 18-month cycle at ANO-1 and 2, based on the following: the sources have a low probability of leakage or damage due to their encapsulation and solid form; they are located in systems where mechanical damage is unlikely; there is no history of leakage or damage to such sources; significant savings in dose and manpower can result; impact on plant/system down time is minimized; access to high dose rate areas is reduced; other radiation protection measures including routine surveys and special posting are utilized; and the small increase in the potential for the spread of contamination is more than offset by the reduction of related occupational dose to ALARA levels.

These measures are consistent with staff positions and guidance in Regulatory Guide 8.8 and survey requirements of 10 CFR 20.201(b), and, therefore, we have determined that the proposed changes to the Technical Specifications are acceptable.

ENVIRONMENTAL CONSIDERATION

The amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendments involve 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 amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendments meet 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 amendments.

CONCLUSION

We have 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: November 19, 1984

The following NRC personnel have contributed to this Safety Evaluation:
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