

The system is composed of two redundant, 100% capacity, supply circuits and two redundant, 100% capacity, exhaust circuits. Each supply circuit consists of a blower, prefilter and associated piping and valves. Each exhaust circuit consists of a blower, HEPA filter and charcoal filter, dehumidifier, flowmeter, sample connection and associated piping and valves.

The blower is a rotary positive type. The dehumidifier consists of two redundant heating elements inserted in a section of ventilation duct. The function of the dehumidifier is to sufficiently increase the temperature of the entering air to assure 70 percent relative humidity entering the filter train with 100 percent saturated air entering the dehumidifier. The purpose of the dehumidifier is to assure optimum charcoal filter efficiency. Heating element control is provided by a thermostatic switch. The filter train provides high efficiency particulate filtration and iodine filtration. Face velocity to the charcoal adsorber is low. The charcoal adsorber is composed of a module consisting of two inch deep double tray carbon cells. Both the purge flow to the unit vent and the purge sample flow are metered using rotometers. Both of these rotometers have an accuracy of \pm two percent of full scale, and each has remote readout capability. The purge sample activities can be collected, counted and analyzed in the radio-chemistry laboratory.

The in-place test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent for expected accident conditions. If the efficiencies of the HEPA filters and charcoal adsorbers are as specified, the resulting doses will be less than the 10CFR100 guidelines for the accidents analyzed. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If the hydrogen purge system is found to be inoperable, there is not an immediate threat to the containment system performance and reactor operation may continue for a limited period of time while repairs are being made.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 27 TO FACILITY OPERATING LICENSE NO. DPR-51

ARKANSAS POWER & LIGHT COMPANY

ARKANSAS NUCLEAR ONE - UNIT 1

DOCKET NO. 50-313

INTRODUCTION

By teletype dated August 26, 1977, Arkansas Power & Light Company (AP&L) requested an emergency change to the Technical Specifications for Arkansas Nuclear One - Unit No. 1 (ANO-1). The proposed change would allow operation of ANO-1 for 30 days without the hydrogen purge system operational. The requested change was authorized by telephone call and teletype, both of August 26, 1977. The basis for approval of the change is presented in this Safety Evaluation.

DISCUSSION & EVALUATION

The hydrogen purge system consists of two physically separated, independent circuits, each incorporating a HEPA filter and charcoal adsorber unit to remove radioactive particulate matter and iodine from the containment atmosphere after a Loss-of-Coolant-Accident (LOCA). The system is operated manually (from a remote station) to maintain hydrogen concentration less than 3.5% by volume and thus avoid the possibility of an explosive hydrogen concentration.

Section 6.6 of the ANO-1 Final Safety Analysis Report (FSAR) states that hydrogen concentration within containment would initially reach 3.5% in 11.5 days. AP&L further calculated, in the FSAR, that the dose at the Low Population Zone (LPZ) would be 2.0 Rem thyroid and 0.5 mrem whole body, assuming a conservative 50 cubic feet per minute continuous purge. In actuality the system would not be utilized continuously, but rather would be on a "duty cycle" purging as necessary to lower the hydrogen concentration.

The June 6, 1973 AEC Safety Evaluation, pursuant to the initial ANO-1 operating license, stated that the Regulatory staff calculated doses at the LPZ were less than 1 Rem both to whole body and thyroid, for the course of the LOCA accident situation from hydrogen purge alone. Total course-of-accident LOCA doses at the LPZ, as calculated by the staff, were 62 Rem (thyroid) and 5 Rem (whole body), which were well within the 10 CFR 100 limits of 300 Rem thyroid and 25 Rem whole body.

Our recent computer calculations, assuming total loss of the hydrogen purge system filters, showed that LPZ doses from H₂ purge alone would be 0.1 rem whole body and 7 rem thyroid. This is not considered to be significant.

The latest revision of the Babcock and Wilcox (B&W) Standard Technical Specifications (STS), allow 30 days reactor operation with no operable hydrogen purge system, even in those plants with less than two hydrogen recombiners (ANO-1 has none).

Because the doses attributable to the loss of the hydrogen purge system filters will not cause ANO-1 to exceed 10 CFR 100 limitations, and because the proposed change is in accordance with the latest guidelines of the Standard Technical Specifications, which AP&L is in the process of adopting for ANO-1, we have found the proposed change acceptable.

ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

CONCLUSIONS

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: September 22, 1977

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-313

ARKANSAS POWER & LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 27 to Facility Operating License No. DPR-51, issued to Arkansas Power & Light Company (the licensee), which revised Technical Specifications for operation of Arkansas Nuclear One - Unit No. 1 (ANO-1) (the Facility) located in Pope County, Arkansas. The amendment was effective as of August 26, 1977.

The amendment revised the Technical Specifications for the facility to authorize operation with the total hydrogen purge system inoperable for a period up to 30 days. An emergency technical specification change, authorizing the requested change, had been issued by letter dated August 26, 1977 and authorized by telephone call that same day. This action supersedes that change.

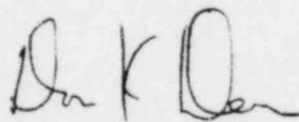
The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice was not required since these actions do not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated August 26, 1977, (2) change authorization letter dated August 26, 1977, (3) Amendment No. 27 to License No. DPR-51 and (4) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Arkansas Polytechnic College, Russellville, Arkansas 72801. A single copy of items (2),(3) and (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 22nd day of September, 1977.

FOR THE NUCLEAR REGULATORY COMMISSION



Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors