



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 24 TO

FACILITY OPERATING LICENSE NO. R-81

CINTICHEM, INC.

DOCKET NO. 50-54

1.0 INTRODUCTION

By letter dated July 21, 1988, Cintichem Inc. (licensee) requested an amendment to their Technical Specifications (TS) for their 5 MW (thermal) research reactor. The TS changes result from the intent of the licensee to replace an existing Honeywell amplifier used as a Log-N and period amplifier with a Keithley amplifier. The Honeywell amplifier (Model 4639-Cx-4) is an old high power consumption tube type unit, which has been causing many false scrams. The Keithley amplifier (Model 25012A Log-N) is a low voltage, low power, all solid state unit that has a very reliable operating history at other research reactors.

2.0 EVALUATION

The difference between the Honeywell and Keithley models that causes changes to the TS is their operating range and the need to supply a bucking current for the Honeywell amplifier after an extended shutdown.

The Honeywell amplifier range is from 5 watts to 15 M watts or .0001% to 300% of rated power. The Keithley amplifier range is .1 watt to 10 M watts or .000002% to 200% rated power. Keithley has about a two decade larger operating range than the Honeywell but the upper limit of the Keithley is 200% vs. 300% for the Honeywell. Therefore, the licensee would like to change the TS sections which contain a reference to the 300% upper limit to 200% i.e. section 3.34 (basis) and section 5.2.2. Since the Log-N amplifier has no control functions above a 125% power rod reverse setpoint off the recorder and the safety channels scram at \leq 150% power the staff finds that the upper limit of 200% is acceptable.

Another change which has to do with replacement of the amplifier is in section 5.2.2, which says that a bucking current "is" needed for the amplifier. The bucking current was required for the Honeywell because after an extended shutdown the Honeywell Log-N would be off scale and would need a bucking current to bring it on scale before a startup to prevent a false period scram. This current is then returned to zero once criticality is achieved. This feature will not be needed with the Keithley Log-N because it will still be on scale after an extended shutdown. Therefore, the licensee has changed the word "is" in section 5.2.2 to "may be" to not require the bucking current with the Keithley but to require it when the Honeywell is used as a backup amplifier. The staff finds this acceptable.

A change, unrelated to the amplifier substitution, has been made in section 3.5.1, as recommended by an NRC inspector, to cite section 3.4 in the specifications as the more accurate reference number. The staff agrees.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves changes in the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and changes in inspection and surveillance requirements. 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 there is no significant increase in individual or cumulative occupational radiation exposure. Accordingly, this 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 this amendment.

4.0 CONCLUSION

The staff has 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 evaluated, or create the possibility of a new or different kind of accident from any accident previously evaluated, and does not involve a significant reduction in a margin of safety, 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 the proposed activities, 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 the health and safety of the public.

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Dated: August 16, 1988