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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 42 TO FACILITY OPERATING LICENSE NO. NPF-4

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNIT NO. 1

DOCKET NO. 50-338

Introduction:

By letter dated June 8, 1982 (Serial No. 327), the Virginia Electric and Power Company (the licensee) requested an amendment to Facility Operating License No. NPF-4 and No. NPF-7 for the North Anna Power Station, Units No. 1 and No. 2 (NA-1&2).

The licensee's amendment request would implement Phase I of a Plant Upgrade Program for NA-1&2. Phases I and II of the Upgrade Program consist of implementing a steam pressure increase to maximize the electrical output at the currently licensed thermal power level. Completion of Phases I and II would be followed by implementation of Phase III, a core thermal power uprating program.

The licensee's June 8, 1982 request would implement Phase I by revising the NA-1 Technical Specifications (NA-2 to be revised at a later date) to allow operation with a Reactor Coolant System (RCS) average temperature (T_{av}) of 582.8 degrees Fahrenheit (^{o}F) as opposed to the currently approved RCS T_{av} of 580.3^{o}F. This 2.5^{o}F increase in T_{av} will provide an increase in the secondary side steam pressure of 18 pounds per square inch (psi) resulting in a higher secondary cycle thermal efficiency and a 2 Megawatt electrical (MWe) increase in electrical output.

Discussion:

The licensee has provided safety evaluations in order to provide a technical basis that the proposed increase in the RCS T_{av} does not involve any unreviewed safety question in accordance with 10 CFR Part 50.59. The safety evaluations included the scope of the Nuclear Steam Supply System (NSSS), the Balance of Plant (BOP), and the Turbine-Generator System.

Section 15.1.2.2 of the NA-1&2 Final Safety Analysis Report (FSAR) indicates that the original design bases for the accident analyses included a 2.5^{o}F additional allowance on temperature. The additional

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Certified By Patricia J. Noonan

allowance, without invalidating any accident analysis, calls for steady state operation at nominal average temperatures up to 2.5°F greater than the design value of 580.3°F. All accident analyses were performed at either the design RCS T_{av} of 580.3°F plus 6.5°F (586.8°F) or at 580.3°F -4°F, whichever is more conservative.

An uncertainty of plus or minus (±) 4°F is required to envelope temperature and control uncertainties. Therefore, the existing FSAR analysis is adequate for operation at 582.8°F ± 4°F. For transients postulated to initiate at "No Load" conditions, the docketed temperature of 540°F remains unchanged. In summary, the docketed NA-1&2 FSAR accident analyses envelopes NSSS fullpower operations at 2785 Megawatts thermal (MWt) with a RCS T_{av} of 582.8°F.

All the TS data are appropriate for an RCS T_{av} of 582.8°F except for the overtemperature and overpower ΔT setpoints and minor changes incorporating the higher RCS T_{av}. The calculation of the currently licensed overpower and overtemperature ΔT setpoints and associated constants was based on a nominal RCS average temperature of 580.3°F at 2785 MWt. The licensee has performed analyses to determine the overpower and overtemperature ΔT setpoints for an RCS average temperature of 582.8°F. Also, the licensee has performed confirmatory analyses to verify that the revised constants and resulting setpoints are appropriate and provide adequate protection against Departure from Nucleate Boiling (DNB). The new setpoints and associated changes will be incorporated in the utility Precautions, Limitations and Setpoints (PLS) document and plant procedures.

Evaluation:

We have reviewed the NA-1&2 FSAR and the licensee submittal justifying a 2.5°F increase in the RCS T_{av}. From our review we have determined that the increase is within the limits assumed in the docketed FSAR accident and transient analyses and, therefore, is acceptable. Thus, we find full power operation at the currently licensed thermal power level (2785 MWt) with an average RCS temperature of 582.8°F to be acceptable. Also, we have reviewed the TS changes associated with the NA-1&2 Phase I Upgrade Program and we find these changes 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.

Conclusion

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 an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, 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 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: October 4, 1982

Principal Contributors:

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