

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS.119 AND 103 TO

FACILITY OPERATING LICENSE NOS. NPF-4 AND NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

NORTH ANNA POWER STATION, UNITS NO. 1 AND NO. 2

DOCKET NOS. 50-338 AND 50-339

1.0 INTRODUCTION

By letter dated September 30, 1988, Virginia Electric and Power Company (the licensee) requested changes to the Technical Specifications (TS) for the North Anna Power Station, Units No. 1 and 2 (NA-1&2). The changes would allow the direct reactor trip on turbine trip to be blocked below 30% of the rated thermal power (RTP). The present TS allows the direct reactor trip on turbine trip to be blocked below 10% of the rated thermal power. A review of historic data has shown that there have been a large number of direct reactor trips caused by turbine trips below the 30% power level. These reactor trips stress plant systems and increase down time. The design load rejection capability for these plants is 50%. The licensee has proposed changing the TS to allow direct reactor trip to be blocked on turbine trip below 30% power.

2.0 DISCUSSION

For power levels above 10% of RTP, the NA-1&2 reactors are tripped directly on turbine trip from a signal derived from the turbine autostop oil pressure or turbine stop valve position. To evaluate the impact of blocking the direct reactor trip on turbine trip for power levels below 30%, the licensee addressed the loss of external load accident, the loss of flow event during a loss of load and whether the turbine trip without reactor trip will challe ge the pressurizer Power Operated Relief Valves (PORVs).

The loss of load/turbine trip event was analyzed at 100% power where it is limiting. The previous analysis showed acceptable results for a complete load rejection from 100% power without taking credit for the direct reactor trip on turbine trip. Even though this analysis bounds the 30% case, the licensee performed an explicit analysis at 30% power. Cases were analyzed for beginning of cycle (BOC) and end of cycle (EOC) with minimum feedback with and without pressurizer control. In all cases, the minimum Departure from Nucleate Boiling Ratio (DNBR) is above the design limit value and the peak pressure remains well within the design limit.

8907280313 890718 PDR ADOCK 05000338 P PDC The licensee analyzed the transient response for a total loss of load with subsequent loss of flow from 30% power. Four cases, two at BOC and two at EOC, were analyzed. The minimum DNBR remains well above the limit and is bounded by the loss of load analysis in the Updated Final Safety Analysis Report (UFSAR).

The licensee's response to NUREG-0737 post-TMI requirements committed to a program of reducing the probability of a small-break LOCA due to a stuck open PORV such that it is not a significant contributor to the probability of a small-break LOCA due to all causes. Therefore, the licensee performed an analysis to demonstrate on a best estimate basis that a turbine trip without direct reactor trip at reduced power will not challenge the PORVs. The results of this analysis showed that the pressurizer PORVs are not challenged during this transient. Thus, the proposed changes will not have a significant impact on the frequency of a small-break LOCA caused by a stuck-open PORV.

3.0 EVALUATION

Based on our review of the licensee's September 30, 1988 submittal, we conclude that the requested TS changes are acceptable. The changes would increase the direct reactor trip on turbine trip to be blocked from the present value of 10% power to 30% power. As discussed above, the staff finds the proposed changes meet the applicable NRC requirements and are therefore acceptable.

The proposed changes will require the rewiring of the NA-1&2 Solid State Protection System so that the Permissive P-8 bistaple can be used to block reactor trip on turbine trip below 30% power. This requires that NA-1&2 be in cold shutdown (Mode 5) in order to implement the above changes. Therefore, implementation of the above changes shall take place no later than the end of the next refueling outages for NA-1&2.

4.0 ENVIRONMENTAL CONSIDERATION

These 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 published 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 $\S51.22(c)(9)$. Pursuant to 10 CFR $\S51.22(b)$, no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 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.

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