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SUBJECT: Updates status of scram reduction program.

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March 28, 1988

Docket Nos. STN 50-528/529/530

U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Reference: (1) Letter from J. G. Haynes, ANPP, to G. W. Knighton, NRC, dated December 26, 1986 (ANPP-39506). Subject: ANPP Response to Operational Concerns.

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Updated Status of Scram Reduction Program
File: 88-A-056-026

In the referenced letter, ANPP described a scram reduction program that had been developed to identify Balance of Plant (BOP) systems and components in which a single failure could result in a reactor trip. The program consisted of several separate phases and concluded with the preparation of a final report. In the referenced letter, ANPP stated that the final report would be completed by December, 1987. Due to a revision to the scope of work for the scram reduction program, it is necessary to revise the schedule for completion of the final report. Several months into the program, ANPP embarked on the development of a BOP transient analysis code that is needed to resolve a portion of the identified single failure scram initiators and that could be used for many other engineering applications at ANPP. However, the addition of the BOP model development expanded the original work scope and impacted the schedule for completion of the program. ANPP now expects to complete the final report on the scram reduction program within 6 months after completion of the BOP model. Although the completion of the scram reduction program has been delayed, a great deal of work has been accomplished to date. Information on the current status of the program is provided below.

The initial task of the scram reduction program was to review the applicable PVNGS control systems to identify any single failures which could cause an inadvertent reactor trip. This review resulted in the development of detailed Failure Modes and Effects Analyses (FMEAs) for several of the more important plant monitoring and control systems (feedwater control, steam bypass control, pressurizer pressure control, pressurizer level control, reactor regulating system, plant monitoring system, and emergency response data acquisition and display system). As a result of these analyses, a list of potential single failure scram initiators was generated. These initiators were then grouped into the following three categories:

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1) Scram initiators that would result in an immediate reactor trip.

2) Scram initiators that would result in a likely reactor trip but operator prevention was indeterminate.

3) Scram initiators that were mitigated by automatic system response or adequate operator recovery.

Since the Category 3 scram initiators would not result in a reactor scram, they were eliminated from further review. Scram initiators already determined to be Category 1 were then evaluated to determine if cost effective changes could be implemented to reduce or eliminate the reactor trip potential. The Category 1 scram initiators led to eight Engineering Action Requests (EARs) to be resolved by the ANPP Engineering Department's Instrumentation and Control group. Four of the eight EARs were resolved by the preparation of plant change requests, one was resolved by a site modification, two were closed with no cost effective changes recommended, and the last EAR is still open. Without the BOP model discussed earlier, it is not possible to determine if a Category 2 scram initiator would actually lead to a reactor trip. The BOP model, which is being developed by ANPP's Nuclear Fuel Management Department, allows for a detailed and accurate simulation of plant response to the potential scram initiators.

In conclusion, the scram reduction program is being extended in order to fully utilize the BOP simulation model to evaluate Category 2 scram initiators. ANPP believes that the delays in completion of the program are warranted and we further believe that the detailed BOP model will provide us with a very powerful tool in the future that can be used for the plant specific simulator, post-trip reviews, setpoint analyses, and other engineering investigations.

If you have any additional questions on this matter, please contact Mr. A. C. Rogers of my staff.

Very truly yours,

E. E. Van Brunt

E. E. Van Brunt, Jr.
Executive Vice President
Project Director

EEVB/BJA/ls

cc: G. W. Knighton
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