

DRAFT REQUEST FOR ADDITIONAL INFORMATION
LICENSE AMENDMENT REQUEST REGARDING REVISION OF FEEDWATER LINE
BREAK WITH LOSS OF OFFSITE POWER AND SINGLE FAILURE ANALYSIS
PALO VERDE UNITS 1, 2, & 3
DOCKET NUMBERS 50-528, 50-529, & 50-530

By a letter dated August 27, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No.ML102510161), Arizona Public Service Company (APS) requested a license amendment to Operating Licenses NPF-41, NPF-51, and NPF-74, for Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2, and 3 respectively, to allow credit for reducing the available time for an existing manual operator action to initiate pressurizer level control. The revised analysis would assume that the action is initiated at twenty minutes into the scenario as opposed to the current assumption of thirty minutes. The staff requested additional information in its letter dated December 21, 2010 (ADAMS Accession No.ML103500510). The licensee responded with supplementary information in its submittal dated February 11, 2011 (ADAMS Accession No. ML110550323).

The Health Physics and Human Performance Branch (IHPB) performed a review of the supplementary information associated with the license amendment request. The licensee's responses to the following requests for additional information (RAI) with regard to the human performance aspects of the license amendment will allow the staff to complete its review in a timely manner.

The licensee has based its evaluation of the reduced time available to initiate control of pressurizer level on the guidance of ANSI/ANS-58.8 "Time Response Design Criteria for Nuclear Safety Related Operator Actions", 1984.

1. The current version of ANSI/ANS-58.8 is ANSI/ANS-58.8-1994, reaffirmed on August 25, 2008. Please review your submittals in light of this most current version of ANSI/ANS-58.8 and identify any changes you would like to make based on the review.

Note: The NRC has not endorsed ANSI/ANS-58.8. The IHPB staff uses IN 97-78 and NUREG-1764, in addition to the Standard Review Plan (NUREG-0800), for its review of changes to operator response times.

2. In its submittals, the licensee requests credit for operator action "at 20 minutes". This terminology implies a start time rather than a duration. Use of this terminology is vague and could mean that the action (including recognition and diagnosis) is initiated at 20 minutes, or that the physical act of opening an ADV (NOT including recognition and diagnosis) is initiated at 20 minutes, or that the entire action from recognition to successful completion of the safety function takes place in 20 minutes or less.

Examples from the licensee's submittal dated August 27, 2010 are:

- "...the analysis assumes operator action to open an ADV (on the intact steam generator) to preclude a direct challenge to the RCS Inventory Control and RCS Pressure Control Safety Functions twenty (20) minutes after the event initiation."
- "The FWLB/LOP/SF event analysis is revised such that operator action is now credited after 20 minutes (1200 seconds) of the transient instead of the previous 30-minute (1800 seconds) time frame.";
- "The assumption of operator action within 20 minutes after the first few alarms are triggered is based on ANSI/ANS Standard 58.8, "Time Response Design Criteria for Nuclear Safety Related Operator Actions" (Reference 6.5).";
- "20 minutes is considered by the industry as a reasonable length of time for the operators to determine what has happened, assess the current conditions, and initiate required actions to mitigate the conditions."

Please clarify what is meant by "at 20 minutes"; is it a start time or a duration?

3. Please provide more information on the simulator verification. For example, what were the makeups of the crews, and how many times was the scenario run? Furthermore, are the required actions also part of a more frequently performed set of procedures that the individuals have more experience performing? If so, please describe whether that experience supports the basis for the time associated with the actions.
4. Has a Human Reliability Assessment been done to support this LAR? Has any statistical modeling of the human actions involved been performed, or has it been determined that the statistical modeling is not necessary? Does this change affect the plant PRA in any way?
5. Although the licensee believes that it has addressed all credible errors, the staff would like the licensee to consider the case where an operator inadvertently sets the ADV thumbwheel for open/close demand at 10% closed (90% open) instead of 10% open. How long would it take the operator(s) to recognize the mistake (based on instrument responses or annunciator alarms) and correct the setting? Are there any adverse consequences if the operators do not recognize the error?