



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 21, 2010

Mr. Randall K. Edington
Executive Vice President Nuclear/
Chief Nuclear Officer
Mail Station 7602
Arizona Public Service Company
P.O. Box 52034
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3–
REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE
AMENDMENT REQUEST TO REVISE THE FEEDWATER LINE BREAK WITH
LOSS OF OFFSITE POWER AND SINGLE FAILURE ANALYSIS (TAC NOS.
ME4596, ME4597, AND ME4598)

Dear Mr. Edington:

By letter dated August 27, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML102510161), Arizona Public Service Company (the licensee), submitted a license amendment request to revise the methodology in the feedwater line break with loss of offsite power and single failure event (FWLB/LOP/SF) analysis summarized in the Palo Verde Nuclear Generating Station Updated Final Safety Analysis Report. The revision would change the credited operator action time to 20 minutes from 30 minutes.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided by the licensee and determined that additional information identified in the enclosure to this letter is needed in order for the NRC staff to complete its review. The draft copy of the request for additional information was provided to Mr. Russell Stroud of your staff via e-mail on Monday, December 6, 2010. A conference call with Mr. Tom Weber and others of your staff was held on December 16, 2010. During that call, Mr. Weber agreed to provide the responses to the requests for additional information by February 11, 2011.

R. Edington

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If you have any questions, please contact me at (301) 415-4032 or via e-mail at randy.hall@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "J. R. Hall". To the right of the signature, the word "FER" is written in a smaller, less distinct hand.

James R. Hall, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-528, STN 50-529,
and STN 50-530

Enclosure:
As stated

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION
LICENSE AMENDMENT REQUEST TO REVISE THE FEEDWATER LINE BREAK
WITH LOSS OF OFFSITE POWER AND SINGLE FAILURE ANALYSIS
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3
ARIZONA PUBLIC SERVICE COMPANY
DOCKET NOS. STN-50-528, STN-50-529, AND STN-50-530

By letter dated August 27, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML102510161), Arizona Public Service Company (the licensee), submitted a license amendment request (LAR) to revise the methodology in the feedwater line break with loss of offsite power and single failure event (FWLB/LOP/SF) analysis summarized in the Palo Verde Nuclear Generating Station (PVNGS) Updated Final Safety Analysis Report. The revision would change the credited operator action time to 20 minutes from 30 minutes.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided by the licensee and determined that the following additional information is needed to complete the review:

1. The LAR states that the current PVNGS emergency operating procedures (EOPs) contain explicit directions to the operators to ensure that the plant is placed in a stable, safe condition following an FWLB event. Opening of the atmospheric dump valve (ADV) that is connected to the unaffected steam generator (SG) is in the EOPs for standard post trip actions (40EP-9EO01), excess steam demand (40EP-9EO05), loss of all feedwater (40EP-9EO06), and LOP/loss of forced circulation events (40EP-9EO07). Please identify the FWLB EOP that directs the opening of this ADV as one of the variable methods.
2. The licensee stated that the assumed operator action of opening an ADV is not mandated by the EOPs. If an operating crew decides to use alternate methods, please explain if the time duration of the various action sequences will be less than or equal to opening an ADV.
3. The table in Insert C of the Enclosure to the letter dated August 27, 2010, indicates that the operators will open the ADV, at 20 minutes, to 10 percent of its full throat area. From this, it is inferred that the intent is to maintain the shell-side water level by relieving only the steam that is generated by boiling off the incoming 650 gallons per minute of auxiliary feedwater flow.
 - a. Please show that there is a stable SG water level indication available to the operators;
 - b. Please discuss the effect, if any, upon SG water level indication caused by the

Enclosure

FWLB-induced hostile environment in the region of the intact SG;

- c. Please confirm that the ADV flow area can be controlled to 10; and
 - d. Please confirm that, given the LOP, there is a reliable and sufficient source of power to move the ADV, continually, to maintain the desired relief rate, for at least 10 minutes.
4. Please provide an evaluation to show that the 20 minutes includes the time allowed for indication and recognition, diagnosis, operator action, and system response. Include all documentation required by American National Standards Institute/American Nuclear Society (ANSI/ANS)-58.8, "Time Response Design Criteria for Nuclear Safety Related Operator Actions" (i.e., the required operator action and the manipulations that make up the action, the indications that prompt the operator(s), and the feedback by which the operator verifies that the action succeeded or failed). Also, please provide event analysis chart(s) showing the assumed time interval estimates including time to indication, time to diagnose, time to complete the action, process time until success or failure would be recognized, and safety margin assumed, if any.¹
 5. Please provide any available empirical human performance data, such as timed simulator training scenarios, that are available to derive time intervals that could justify crediting the 20-minute assumption. The NRC staff notes that, in accordance with ANSI/ANS-58.8, such empirical evaluation should be designed to yield results at a 95 percent confidence level.¹
 6. Please describe or provide a copy of the procedure for controlling the plant's Time Critical Action Program.
 7. The licensee stated in its submittal, "If an error were to occur for any reason there is ample indication of plant status available to the operators to ensure timely recovery." Please provide the basis for this statement. Please state how the recovery time was estimated or determined. Also, please explain how there can be sufficient time available to recover if the diagnosis takes the full 20 minutes available.

¹ Information provided in response to this request for additional information should provide evidence that PVNGS operators are highly likely (95 percent confidence or higher) to be capable of performing the required actions in the expected control room environment within the assumed time constraints of the analysis.

R. Edington

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If you have any questions, please contact me at (301) 415-4032 or via e-mail at randy.hall@nrc.gov.

Sincerely,

/RA by Lynnea Wilkins for/

James R. Hall, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-528, STN 50-529,
and STN 50-530

Enclosure:
As stated

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ADAMS Accession No. ML103500510

***via e-mail dated**

OFFICE	NRR/LPL4/PM	NRR/LPL4/PM	NRR/LPL4/LA	NRR/DIRS/IHPB/BC
NAME	LKGibson	JRHall (LWilkins for)	JBurkhardt	UShoop*
DATE	12/20/10	12/20/10	12/17/10	12/6/10
OFFICE	NRR/DSS/SRXB/BC	NRR/LPL4/BC	NRR/LPL4/PM	
NAME	AUises*	MMarkley	JRHall (LWilkins for)	
DATE	12/2/10	12/21/10	12/21/10	

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