

# REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 FACIL: STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Publi 05000528  
 STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529  
 STN-50-530 Palo Verde Nuclear Station, Unit 3, Arizona Publi 05000530  
 AUTH. NAME AUTHOR AFFILIATION  
 VAN BRUNT, E.E. Arizona Nuclear Power Project (formerly Arizona Public Serv  
 RECIP. NAME RECIPIENT AFFILIATION  
 KNIGHTON, G.W. Licensing Branch 3

SUBJECT: Provides addl info confirming that facility small break LOCA spectrum conforms to criteria of 10CFR50.46 & bounded by limiting large break LOCA.

DISTRIBUTION CODE: A001D COPIES RECEIVED: LTR 1 ENCL 0 SIZE: 2  
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NOTES: Standardized plant. 05000528  
 OL: 12/31/84  
 Standardized plant. 05000529  
 Standardized plant. 05000530

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149

1. The first of these is the fact that the system is not a simple one, but a complex one, involving many different factors and many different people. The second is that the system is not a static one, but a dynamic one, constantly changing and evolving. The third is that the system is not a closed one, but an open one, constantly interacting with the outside world. The fourth is that the system is not a linear one, but a non-linear one, with many feedback loops and many different paths. The fifth is that the system is not a deterministic one, but a probabilistic one, with many uncertainties and many different outcomes. The sixth is that the system is not a simple one, but a complex one, involving many different factors and many different people. The seventh is that the system is not a static one, but a dynamic one, constantly changing and evolving. The eighth is that the system is not a closed one, but an open one, constantly interacting with the outside world. The ninth is that the system is not a linear one, but a non-linear one, with many feedback loops and many different paths. The tenth is that the system is not a deterministic one, but a probabilistic one, with many uncertainties and many different outcomes.

[illegible][illegible]

1. The first group of people who are not in the majority are those who are not in the majority of the population. This group is the largest and most diverse. It includes people of different ethnicities, religions, and social classes. They are often the most vulnerable to discrimination and oppression.

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## Arizona Nuclear Power Project

P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

Director of Nuclear Reactor Regulation  
Attention: Mr. George W. Knighton, Chief  
Licensing Branch No. 3  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

September 30, 1985  
ANPP-33609-EEVB/KLM

Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Units 1, 2, and 3  
Docket Nos. STN 50-528 (License No. NPF-41)/529/530  
Limiting Small Break LOCA Analysis-Additional Information  
File: 85-056-026; G.1.01.10

References: (A) Letter to G. W. Knighton, NRC, from E. E. Van Brunt, Jr.,  
ANPP, dated April 15, 1985 (ANPP-32401);  
Subject: Revised Chapter 15 Analyses  
  
(B) Letter to G. W. Knighton, NRC, from E. E. Van Brunt, Jr.,  
ANPP, dated December 19, 1984 (ANPP-31535);  
Subject: Post-FDA Proposed CESSAR Changes

Dear Mr. Knighton:

This letter provides additional information confirming that the PVNGS small break LOCA spectrum conforms to the criteria of 10CFR 50.46 and is bounded by the limiting large break LOCA. This information supplements the evaluation provided in the Reference (A) which addressed the Staff's concerns stated in PVNGS Operating License NPF-34 Condition 2.C.(21) and was discussed with members of your staff in a meeting held on August 29, 1985.

The limiting small break analyzed in the spectrum presented in CESSAR is a  $0.05\text{ft}^2$  break in the Reactor Coolant Pump (RCP) discharge leg. This break was reanalyzed to evaluate the results of PVNGS plant specific changes. The results of this reanalysis yielded a Peak Cladding Temperature (PCT) of  $1630^\circ\text{F}$  which was presented in Reference (B). Discussion was provided in Reference (A) to demonstrate that this  $0.05\text{ft}^2$  break would remain the most limiting break analyzed in the small break spectrum.

To resolve a NRC concern that another break size, not currently analyzed, could yield more adverse results than currently presented, further evaluation was conducted. As stated in Reference (A), the most limiting small break LOCA would be the size which results in the maximum RCS depressurization possible without the Safety Injection Tanks (SITs) acting to mitigate the PCT. An engineering calculation indicated that a break size of  $0.07\text{ft}^2$  would provide this performance.

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11. *Phragmites australis* (Cav.) Trin. ex Steud.

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1. The first group of people who are not in the labor force are those who are not in the labor force for any reason. This group is the largest and is made up of people who are not in the labor force for any reason. This group is the largest and is made up of people who are not in the labor force for any reason.

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Mr. George W. Knighton  
Limiting Small Break LOCA Analysis  
ANPP-33609

Page 2

This break size was then analyzed using the NRC approved small break LOCA evaluation model. The results yielded a PCT of 1230°F. This was lower than the 0.05ft<sup>2</sup> result because of beneficial effects of an additional loop seal blowing out, resulting in redistribution of water to the reactor vessel. As predicted, however, RCS depressurization for the 0.07ft<sup>2</sup> break was such that the maximum PCT was achieved just before SIT actuation. To conservatively define an upper limit on PCT for small break LOCA, core uncover and depressurization were estimated using a hand calculation which assumed the same loop seal behavior as the 0.05ft<sup>2</sup> case. This calculation resulted in a PCT of approximately 1870°F occurring at 1365 seconds into the transient. SIT actuation was estimated to occur coincident with the maximum PCT.

These results indicate that the most limiting analyzed break in the small break LOCA spectrum remains the 0.05ft<sup>2</sup> case. Although a break larger than 0.05ft<sup>2</sup> should exist which results in a higher PCT than the 0.05ft<sup>2</sup> case, an engineering evaluation has confirmed that the large break LOCA results bound the small break LOCAs. The PVNGS changes which resulted in Unit 1 license NPF-34 condition 2.C.(21) have, therefore, been demonstrated to result in consequences which preserve the licensing conclusions presented by the NRC in the PVNGS Safety Evaluation Report.

Please contact Mr. W. F. Quinn, of my staff, if you have any questions concerning this matter.

Very truly yours,



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

EEVB/KLM/bg

cc: E. A. Licitra  
R. P. Zimmerman  
A. C. Gehr

