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To: <FOIA@nrc.gov>  
Date: Fri, Mar 31, 2006 2:31 PM  
Subject: References in Palo Verde SER

FOIA/PA REQUEST

Case No.: 2006-0165  
Date Rec'd: 3-31-06  
Specialist: Kennedy  
Related Case: \_\_\_\_\_

In accordance with the Freedom of Information Act, I would like to request three references from the November 1981 Palo Verde Safety Evaluation Report. The attached pages reflect the three documents requested; they are provided as references on page 3-36 and include a Pacific Northwest Lab report and two letters from APS to NRC dated August 5, 1981 and July 6, 1979.

Regards,

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# **Quality Evaluation Report**

related to the operation of  
Verde Nuclear Generating Station,  
Units 1, 2, and 3

STN 50-528, STN 50-529, and STN 50-530

Verde Service Company, et al.

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Nuclear Regulatory

Nuclear Reactor Regulation

**NUCLEAR STAFF**

### 3.9 MECHANICAL SYSTEMS AND COMPONENTS

The staff, using the guidance of SRP Sections 3.9.1 through 3.9.6, reviewed the structural integrity and functional capability of various safety-related mechanical components and supports.

The staff review was not limited to those components covered by the American Society of Mechanical Engineers (ASME) Code, but was extended to other components designed to industry standards other than the ASME Code. The staff reviewed such issues as load combination, allowable stresses, methods of combination and analysis, summary of results, requirements for preoperational testing, and requirements for inservice testing of pumps and valves. The staff review concludes that there is adequate assurance that the mechanical components will perform their safety-related function under all postulated combinations of normal operating conditions, system operating transients, postulated pipe breaks, and seismic events.

#### 3.9.1 Special Topics for Mechanical Components

The review of this section is performed using the guidance of SRP Section 3.9.1, "Special Topics for Mechanical Components" (NUREG-75/087). The staff reviewed the design transients and methods of analysis used for all seismic Category I components, including those components and component supports designated as Class 1, 2, and 3 in Section III of the ASME Code. In addition, the staff reviewed those components and component supports not covered by the Code. The method of analyses and inclusion of transients in the fatigue analysis of ASME Code Class 1 components has also been reviewed. The staff review also included a review of the computer programs used in the design of seismic Category I mechanical components and a review of experimental or inelastic analytical techniques.

① Additionally, the staff contracted with the Pacific Northwest Laboratory to perform an independent analysis of a sample piping system at PVNGS 1-3. This analysis verified that the sample piping system met the applicable ASME Code acceptance requirements. The detailed results of this analysis are documented in the report by Pacific Northwest Laboratory, "Palo Verde Nuclear Generating Station Safety Injection System - Loop 1A," dated May 1981.

A discussion of the areas within the NSSS scope of responsibility is contained in the CESSAR SER, Section 3.9.1 (NUREG-0852). The topics discussed in this section are applicable only to the balance-of-plant.

The design transients used for the evaluation of transient responses and the fatigue analysis for BOP Class 1 piping are given in the PVNGS FSAR, Table 3.9-0.

② In addition, Combustion Engineering (CE) provided a detailed list of transients to the applicant for inclusion in the transient response and fatigue analysis of components outside of the CE scope of design that are influenced by transients originating in the CE System 80 reactor coolant system. The staff has reviewed this list of design transients and concludes that the CESSAR interface requirements have been satisfied.

Computer programs were used in the analysis of many components. A list of the computer programs used in the static and dynamic analyses to determine the structural integrity and functional capability of these components is included

American Nuclear Society

ANS-18.2

American National Standards Institute

ANSI B31.1  
ANSI A58.1 (1972)

American Petroleum Institute

API-620  
API-650

American Concrete Institute:

ACI 318-71

American Institute of Steel Construction:

AISC Specification

Pacific Northwest Laboratory:

① "Palo Verde Nuclear Generating Station Safety Injection System - Loop #1,"  
May, 1981

Institute of Electrical and Electronics Engineers:

IEEE Std 323-1974  
IEEE Std 344-1975

Arizona Public Service Company Reports:

FSAR for Palo Verde Nuclear Generating Station through Amendment 6

Combustion Engineering Reports:

Standard Technical Specifications  
CENPD-201-A

General Electric Company:

"Functional Capability Criteria for Essential Mark II Piping"  
(NEDO-21985), September 1978.

Letters:

- APS
- ③ Letter from E. E. Van Brunt, to R.L. Tedesco dated August 5, 1981
  - ② Letter from APS to NRC dated July 6, 1979
  - Letter from NRC to APS dated February 5, 1980
  - Letter from NRC to APS dated February 21, 1980