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 CONWAY, W.F. Arizona Public Service Co. (formerly Arizona Nuclear Power  
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SUBJECT: Forwards revised relief requests for PVGS Inservice Testing Program.

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10 CFR 50.55a

WILLIAM F. CONWAY  
EXECUTIVE VICEPRESIDENT  
NUCLEAR

102-02269-WFC/JRB  
September 08, 1992

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
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Washington, DC 20555

Reference: Letter 161-00496-JGH/BJA, dated September 10, 1987, from J. G. Haynes, APS,  
to NRC, "PVNGS Inservice Testing Program"

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)**  
**Units 1, 2, and 3**  
**Docket Nos. STN 50-528/529/530**  
**Revised Relief Requests for PVNGS Inservice Testing Program**  
**File: 92-056-026**

In the referenced letter, Arizona Public Service Company (APS) submitted Valve Relief Request Numbers 33 and 34 in accordance with 10 CFR 50.55a(g)(5)(iii). These relief requests requested relief from ASME Section XI, paragraph IWV-3520 for Safety Injection Tank discharge check valves and Safety Injection Tank/Reactor Coolant System loop check valves. APS has identified several improvements which can be realized by full-stroke exercising these valves to the position required to fulfill their safety function during each refueling outage. Pursuant to 10 CFR 50.55a(g)(5)(iii), revised Valve Relief Request Numbers 33 and 34 which incorporate this improved testing methodology are being submitted as Enclosure 1. Additional information regarding these revised relief requests is provided in Enclosure 2. Currently approved Valve Relief Request Numbers 33 and 34 are provided as Enclosure 3. The check valves to which Valve Relief Request Numbers 33 and 34 apply are depicted on the Piping and Instrumentation Diagram provided as Enclosure 4.

If you should have any questions, please contact Thomas R. Bradish at (602) 393-5421.

Sincerely,



WFC/JRB/pmm  
Enclosures

cc: J. B. Martin (all w/enclosures)  
J. A. Sloan

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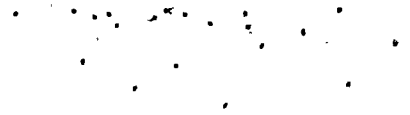
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**ENCLOSURE 1**

**REVISED VALVE RELIEF REQUEST**

**NOS. 33 AND 34**



**VALVE RELIEF REQUEST NO. 33**

**SYSTEM:** Safety Injection and Shutdown Cooling (SI)

**COMPONENTS:** SIE-V215, SIE-V225, SIE-V235, SIE-V245

**P&ID COORDINATES:** 13-M-SIP-002 @A15, A12, A7, and A5

**CATEGORY:** AC

**CLASS:** 1

**FUNCTION:** OPEN to provide a flow path from the Safety Injection Tanks to the Reactor Coolant System.  
CLOSE to prevent backflow of primary coolant into the Safety Injection Tanks.

**TEST REQUIREMENT:** Full-stroke exercise every three months, or part-stroke exercise every three months and full-stroke test during cold shutdown.

**BASIS FOR RELIEF:** Full-stroke exercising these valves is not practical in any plant mode except refueling shutdown when the reactor vessel head is removed. Part stroke testing every 3 months is not practical since a plant mode reduction would be required to perform the test.

**ALTERNATE TESTING:** Full-stroke exercise during each refueling outage when the reactor vessel head is removed.





**VALVE RELIEF REQUEST NO. 34**

**SYSTEM:** Safety Injection and Shutdown Cooling (SI)

**COMPONENTS:** SIE-V217, SIE-V227, SIE-V237, SIE-V247

**P&ID COORDINATES:** 13-M-SIP-002 @ A13, A10, A6, and A3

**CATEGORY:** AC

**CLASS:** 1

**FUNCTION:** OPEN to provide a flow path from Safety Injection and Shutdown Cooling to the Reactor Coolant System (RCS).  
CLOSE to prevent pressurization of SI piping from RCS loop pressure.

**TEST REQUIREMENT:** Full-stroke open every three months, or part-stroke open every three months and full-stroke open at cold shutdown.

**BASIS FOR RELIEF:** These valves can only be stroked open by initiating flow through the valves into the RCS. Safety Injection pump head is not sufficient to overcome RCS pressure and stroke the valves during plant operation. Full-stroke exercising is not practical during any plant mode except refueling shutdown when the reactor vessel head is removed. Part stroke testing every three months is not practical since a plant mode reduction would be required to perform the test.

**ALTERNATE TESTING:** Full-stroke exercise during each refueling outage when the reactor vessel head is removed.



**ENCLOSURE 2**

**ADDITIONAL INFORMATION REGARDING  
REVISED VALVE RELIEF REQUEST NOS. 33 AND 34**



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## **ADDITIONAL INFORMATION REGARDING REVISED VALVE RELIEF REQUEST NOS. 33 AND 34**

### **ASME Section XI Requirement**

ASME Section XI, paragraph IWV-3520, requires check valves to be exercised at least once every three months to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation, the check valve shall be part-stroke exercised during plant operation and full-stroke exercised during cold shutdowns.

### **Basis For Relief**

The Safety Injection Tank (SIT) discharge check valves (SIE-V215, SIE-V225, SIE-V235, SIE-V245) and the Safety Injection Tank/Reactor Coolant System (SIT/RCS) loop check valves (SIE-V217, SIE-V227, SIE-V237, SIE-V247) can only be full-stroke exercised during refueling shutdowns when the vessel head is removed.

### **Current Alternate Testing Method**

One SIT discharge check valve and one SIT/RCS loop check valve are disassembled and inspected to verify freedom of disc movement each refueling outage. If a disassembled valve's full-stroke capability is questionable, the other three SIT discharge check valves or SIT/RCS loop check valves, as applicable, are disassembled, inspected, and full-stroke exercised during the same outage. In addition, the SIT discharge check valves are part-stroke exercised in Mode 3 after each refueling outage when the SIT pressure is above 600 psig.

### **Proposed Alternate Testing Method**

Each SIT discharge check valve and SIT/RCS loop check valve will be full-stroke exercised to the position required to fulfill its safety function during each refueling outage.

To conduct the test, an initial SIT level and pressure will be selected to maximize rate and duration of flow without discharging nitrogen into the RCS or exceeding the capacity of the SIT structural supports. Flow will be initiated by opening the SIT discharge motor-operated valve located just upstream of the SIT discharge check valve. The rate of change in SIT pressure and level will be recorded and analyzed to determine the system hydraulic resistance or, 'k' factor. Hydraulic resistance, or 'k' factor, is a function of piping configuration and check valve disc position, but is independent of flow rate. Therefore, the 'k' factor determined during this test will be representative of system performance during accident conditions. The determined 'k' factor will be compared to the calculated maximum 'k' factor provided in the UFSAR. A 'k' factor less than or equal



to the maximum 'k' factor provided in the UFSAR will demonstrate the ability of the check valve to fulfill its safety function.

Two full-scale tests have been performed using this test method. The first test was performed on Unit 2 in the fall of 1991 and the second test was performed on Unit 1 in the spring of 1992. Acoustic data from both tests provided additional assurance that the check valves actually stroked fully open during the tests.

#### **Justification For Proposed Alternate Testing Method**

The proposed alternate testing method offers the following improvements over the current alternate testing method:

- Full-stroke exercising the SIT discharge check valves and SIT/RCS loop check valves with flow to the position required to fulfill their safety function provides greater assurance that the valves function properly.
- Each SIT discharge check valve and SIT/RCS loop check valve will be tested every refueling outage.
- Full-stroke exercising the SIT discharge check valves to the position required to fulfill their safety function eliminates the need to part-stroke exercise the valves after each refueling outage.
- The possibility of reassembly errors and bonnet sealing problems encountered during the current testing method of disassembly and inspection will be eliminated.
- The proposed alternate testing method will result in reduced personnel radiation exposures.





**ENCLOSURE 3**

**CURRENTLY APPROVED VALVE RELIEF REQUEST  
NOS. 33 AND 34  
(TYPICAL OF UNITS 1, 2, AND 3)**

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PVNGS ASME SECTION XI PUMP AND  
VALVE INSERVICE TESTING PROGRAM, UNIT 1

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VALVE RELIEF REQUEST NO. 33

SYSTEM: Safety Injection and Shutdown Cooling (SI)

COMPONENTS: SIE-V215, SIE-V225, SIE-V235, SIE-V245

P&ID COORDINATES: 13-M-SIP-002 @ A15, A12, A7 and A5

CATEGORY: AC

CLASS: 1

FUNCTION: To prevent backflow of Primary Coolant into the Safety Injection Tanks while providing a flow path for Safety Injection Tank water into the RCS loops.

TEST REQUIREMENT: Full stroke exercise every three months or part stroke exercise every three months and full stroke test during cold shutdown.

BASIS FOR RELIEF: Full stroke testing to stroke these valves is not practical during any plant mode other than when the reactor vessel head is removed, fuel is off-loaded, and the core barrel is removed. Part stroke testing is feasible during hot shutdown. Plant design conditions allows part stroke testing with a maximum of 35gpm through the valve. Full stroke testing would require a full blowdown of SIT. This is not feasible and would create a significant crud burst, and airborne contamination.

ALTERNATE TESTING:

1. Part stroke exercise in Mode 3 after each refueling outage when the Safety Injection Tank pressure is above 600 psig.
2. Disassemble valves and verify freedom of movement of disc motion on a refueling basis, such that one valve is inspected every refueling outage.
3. If it is found that the disassembled valve's full-stroke capability is in question, the other valves shall also be disassembled, inspected and manually full-stroked the same outage.

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## NUCLEAR ADMINISTRATIVE AND TECHNICAL MANUAL

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PVNGS ASME SECTION XI PUMP AND  
VALVE INSERVICE TESTING PROGRAM, UNIT 1

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VALVE RELIEF REQUEST NO. 34

SYSTEM: Safety Injection and Shutdown Cooling (SI)

COMPONENTS: SIE-V217, SIE-V227, SIE-V237, SIE-V247

P&ID COORDINATES: 13-M-SIP-002 @ A13, A10, A6, A4, C14, C11, C6, C4

CATEGORY: AC

CLASS: 1

FUNCTION: Valves open to provide a flow path from Safety Injection and Shutdown Cooling to the Primary Loop. Category "AC" valves close to prevent pressurization of SI piping from RCS loop pressure.

TEST REQUIREMENT: Full stroke open every three months or part stroke open every three months and full stroke open at cold shutdown.

BASIS FOR RELIEF: These valves can only be stroked open by initiation of flow through the valves and into the RCS. Low Pressure Safety Injection pump head is not sufficient to exercise these valves due to pressure of the RCS. Discharge of Safety Injection Tank through the valves would create significant crud burst, airborne contamination and could uplift core vessel head and UGS is not in place or Fuel is not loaded.

ALTERNATE TESTING:

1. Disassemble one valve each refueling outage to verify freedom of disc movement and structural soundness of internals. Manually full-stroke the valve.
2. If it is found that the disassembled valve's full-stroke capability is in question, the other valves shall also be disassembled, inspected and manually full-stroked the same outage.

NOTE: Valves SIE-V540, V541, V542 and V543 are now covered under CSJ-31.

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**ENCLOSURE 4**

**PIPING AND INSTRUMENTATION DIAGRAM  
DEPICTING SAFETY INJECTION TANK DISCHARGE  
CHECK VALVES AND SAFETY INJECTION TANK/REACTOR  
COOLANT SYSTEM LOOP CHECK VALVES**

