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 STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529
 STN-50-530 Palo Verde Nuclear Station, Unit 3, Arizona Publi 05000530
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SUBJECT: Informs of revised target date for completion of initial Service Water Heat Exchanger Thermal Performance Test Program.

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102-03932-JML/AKK/DLK
May 16, 1997

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Reference: Letter 102-03576 dated December 29, 1995, from W. L. Stewart, APS, to
USNRC

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528, 50-529, 50-530
License Nos. NPF-41, NPF-51, NPF-74
Initial Service Water Test Program Revision

Arizona Public Service Company (APS) is revising the target date for the completion of the initial Service Water Heat Exchanger Thermal Performance Test Program. Enclosure three (3) of the referenced letter included the target date of refueling outage 3R7 (1998) for completion of the initial test program. The target date was based on the completion of three (3) consecutive thermal performance tests on both Essential Cooling Water (EW) Heat Exchangers in Units 1, 2 and 3.

Thermal performance testing relies on the heat accumulated in the Spent Fuel Pool following a hot core offload as the heat source. While offloading the core during refueling outage 2R6, Palo Verde experienced a stuck fuel assembly. Removal of the stuck fuel assembly caused a delay in the start of Heat Exchanger Thermal Performance Testing. The initial conditions for Heat Exchanger testing could not be established because the Spent Fuel Pool had cooled to a point where the temperature of the pool cooling water was not sufficient to provide an adequate heat source. As a result, data gathered from the first EW Heat Exchanger test was invalid and Thermal Performance Testing on the second EW Heat Exchanger was canceled. In order to complete the initial set of Heat Exchanger tests in Unit 2, additional testing during refueling outage 2R8 will be

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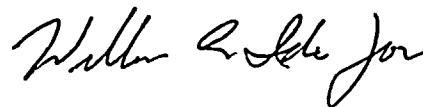
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necessary. The new target date for completion of the initial Heat Exchanger Thermal Performance Test Program is refueling outage 2R8 (1999).

Enclosure 1 to this letter contains the basis for Heat Exchanger Testing and Revises Enclosure 3 of the referenced letter. The section of the basis that was revised is marked with a revision bar.

Should you have any questions, please contact Angela K. Krainik at (602) 393-5421.

Sincerely



JML/AKK/DLK/mah

Enclosure:

1. Basis for Heat Exchanger Thermal Performance Testing

cc: E. W. Merschoff
K. E. Perkins
J. W. Clifford
K. E. Johnston

ENCLOSURE 1

Basis for Heat Exchanger Thermal Performance Testing

Basis for Heat Exchanger Thermal Performance Testing

The Essential Cooling Water (EW) Heat Exchanger Testing Procedure was developed in accordance with the commitments made in the revised response to NRC Generic Letter (GL) 89-13 (reference 2). The intent of the Thermal Performance Testing Program was to perform three (3) tests on each EW Heat Exchanger, which would satisfy the requirement to complete an initial test program. Each EW Heat Exchanger is currently being tested every refueling outage in accordance with Palo Verde's Service Water Reliability Program and will continue to be tested every refueling outage until at least three (3) tests have been performed on each EW Heat Exchanger. Once this initial test program is complete, a periodic retest program will be established based on one of the five methods described in EPRI NP 7552 Guidelines with a retest interval of less than five years.

The accelerated testing program discussed in APS' initial response to NOD 50-528/529/530/93-17-02 would have required mid-cycle testing at approximately six month intervals. This testing approach presented a number of disadvantages, three of which are listed below:

Testing during mid-cycle operation provides only the spent fuel pool decay heat for a heat load on the EW Heat Exchangers. The very low Spent Fuel Pool Heat Loads produce very small temperature differences across an EW Heat Exchanger. Extremely accurate temperature measurements are necessary to obtain thermal performance data with acceptable accuracy. Such testing would prove to be difficult and impractical. The current Thermal Performance Testing, performed during refueling outages, uses the additional load of the core decay heat to provide larger temperature differences across the EW Heat Exchangers. The data obtained under these test conditions is more reliable.

Testing on six month (6) intervals presents difficulties in achieving meaningful Thermal Performance Trend Data because no significant degradation occurs over six months. The SP System used at Palo Verde is an "open" Cooling Water System but differs considerably from the "open" Service Water Systems at plants that use raw (untreated) water for once-through service water cooling. Spray Pond water chemistry is closely monitored and controlled to minimize corrosion of Heat Exchanger materials and to control potential biological growths and potential scaling. As a result, the EW Heat Exchangers are not subject to the failure mechanisms common to raw water service water systems, such as biological tube sheet blockage, tube fouling or silt buildup. Due to the controlled system conditions, no significant degradation occurs over the shorter six month testing intervals.

Testing during mid-cycle operation requires a train of the EW System to be removed from service and considered INOPERABLE for the duration of the testing evolution. This test condition contributes to system unavailability and negatively impacts the Maintenance Rule Targets established for the EW System.

The intent to test each EW Heat Exchanger during every refueling outage for a minimum of three performances is consistent with the GL 89-13 Recommended Action II. During the 2R6 refueling outage (Spring 1996), due to the operating restrictions and delay caused by the stuck fuel assembly event, necessary plant conditions for EW Heat Exchanger Thermal Performance Testing could not be established. When data was collected from the first EW Heat Exchanger test, the calculations yielded inconclusive results due to the insufficient heat loads. Data collection for the second EW Heat Exchanger was subsequently canceled. Because of the inconclusive Heat Exchanger Thermal Performance Test results obtained during refueling outage 2R6, another set of tests will need to be performed during the refueling outage 2R8 (Spring 1999). Based on current outage schedules, three (3) successful Thermal Performance Tests on both EW Heat Exchangers in Units 1, 2, and 3 will be completed by the end of refueling outage 2R8 (1999).