APS

Palo Verde Nuclear Generating Station

Gregg R. Overbeck
Senior Vice President
Nuclear

TEL (623) 393-5148
FAX (623) 393-6077

Mail Station 7602
P.O. Box 52034
Phoenix, AZ 85072-2034

10 CFR 50.54(f)

102-04983-GRO/SAB/TNW/GAM
August 8, 2003

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-37
Washington, DC 20555-0001

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528, 50-529, and 50-530
Response to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors"

On June 9, 2003, the Nuclear Regulatory Commission (NRC) issued NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors." The bulletin requests that addressees provide a response within 60 days that contains either the information requested in Option 1 or Option 2, as described in the bulletin. Enclosed is Arizona Public Service Company's response to Bulletin 2003-01 containing the information requested for Option 2 for PVNGS Units 1, 2, and 3.

A list of commitments is provided in Enclosure 3.

Should you have any questions, please contact Thomas N. Weber at (623) 393-5764.

Sincerely,

Gregg R. Overbeck

GRO/SAB/TNW/GAM

Enclosures: 1. Notarized affidavit
2. Response to NRC Bulletin 2003-01
3. List of Commitments

cc: Regional Administrator [NRC Region IV]
J. N. Donohew [NRC/NRR Project Manager]
N. L. Salgado [NRC Senior Resident Inspector]

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ENCLOSURE 1
NOTARIZED AFFIDAVIT

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Gregg R. Overbeck, represent that I am Senior Vice President – Nuclear, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, and that to the best of my knowledge and belief, the statements made therein are true and correct.

Gregg R. Overbeck

Sworn To Before Me This 8th Day Of August, 2003.

Cassandre Justiss
Notary Public

OFFICAL SEAL
Cassandre Justiss
NOTARY PUBLIC - STATE of ARIZONA
MARICOPA COUNTY
MY COMM. EXPIRES October 30, 2006

Notary Commission Stamp

Enclosure 2

Arizona Public Service Company's Response to NRC Bulletin 2003-01 for Palo Verde Nuclear Generating Station Units 1, 2, and 3

Arizona Public Service Company's
Response to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors"

This response from Arizona Public Service Company (APS) to the NRC provides the information requested for Option 2 in NRC Bulletin 2003-01 for the Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2, and 3. This response discusses: 1) elements already in place, such as existing analyses, plant design considerations, and administrative controls, which substantiate that the associated risk of degraded Emergency Core Cooling System (ECCS) performance by debris blockage of the sump screens is low, including the structural adequacy of the sump structure and the effects of debris on downstream components, 2) supplemental interim compensatory measures that have been or will be implemented to provide additional assurance that the risk of degraded ECCS performance by debris blockage of the sump screens remains low, and 3) measures discussed in the bulletin that will not be implemented at this time and the associated justification.

1 Existing Elements That Demonstrate Low Risk

1.1 Analysis

The ECCS design has been evaluated in PVNGS calculation 13-MC-SI-309, "Emergency Sump Screen Blockage," Revision 3 and supporting study 13-MS-A41, "Evaluation of Fiberfrax and Unqualified Paints/Coatings," Revision 1, relative to the potential for debris, generated during high energy line breaks, to transport and accumulate on the containment ECCS sump screens and subsequently degrade the safety injection and containment spray functions. These analyses were originally completed in 1988 in response to NRC questions during the original plant licensing process and NRC recommendations presented in NRC Generic Letter 85-22, "Potential For Loss of Post-LOCA Recirculation Capability Due To Insulation Debris Blockage." As recommended therein, APS replaced the original assumption of 50% blockage with a comprehensive mechanistic assessment of debris blockage of the ECCS sump screens. The results of these analyses are predicated on correlations for generation and transport which have been compared to information recently published in NUREG/CR-6808, "Knowledge Base for the Effects of Debris on PWR Emergency Core Cooling Sump Performance." This comparison verifies that the generation and transport results of the design basis analyses remain valid, and the associated risk of degraded ECCS performance is low. Accordingly, only minimal interim compensatory measures have been or will be implemented while additional NRC research continues and a more detailed and comprehensive evaluation methodology is developed.

Calculation 13-MC-SI-309 and study 13-MS-A41 document the evaluation of debris generation, transport, and the associated head loss for the ECCS and containment spray system (CSS) pumps. The analyses consider the transport of loose fibrous insulation (Fiberfrax) material that has been installed in the annulus of the pipe

penetrations through the biological shield (bio-shield) and unqualified coatings. Qualified coatings, applied and maintained in accordance with the PVNGS Qualified Coatings Program, are not considered as a potential debris source term. In addition, minor amounts of insulation materials such as NUKON and Temp-Mat are also not considered since the quantities are small and not installed in areas in which they would be subject to destruction during a high energy line break.

The resultant head loss for amounts of Fiberfrax and failed coatings determined to have been transported to the sump screen is estimated using the correlation found in NUREG-0897, "Containment Emergency Sump Performance," Revision 1. It is recognized that this correlation neglects the filtration effect of particulate matter by the built-up fiber material and consequently may under-predict the head loss for a given accumulation of debris. However, the head loss during recirculation is determined using an extremely conservative accumulated debris thickness resulting from a conservative assessment of the generation and transport of the Fiberfrax insulation.

Calculation 13-MC-SI-309 conservatively assumes that all available Fiberfrax material (162 ft^3) is ejected during a high energy line break. No consideration of the initial spatial distribution of the fibrous materials is made. Based on a transport assessment, the calculation conservatively estimates that approximately 50 ft^3 of the total quantity of Fiberfrax is transported to the screen. The available screen area is conservatively reduced to account for coatings that are assumed to fail, transport, and accumulate on the sump screen.

It is emphasized that calculation 13-MC-SI-309 neglects the fact that the flow rates approaching the containment sump[1] are less than the minimum velocities required for incipient motion of high density fiberglass insulation (typical of Fiberfrax), provided in NUREG/CR-2982, "Buoyancy, Transport, and Head Loss of Fibrous Reactor Insulation," Revision 1. The minimum required flow rates are substantiated by the transport results for fibrous materials found in NUREG/CR-6808 (i.e., section 5.2.1 of NUREG/CR-6808 provides a discussion of HDFG insulation which is similar to Fiberfrax in structure and specific gravity).

Walkdowns completed in accordance with NEI 02-01, Revision 1, "Condition Assessment Guidelines: Debris Sources Inside PWR Containments," demonstrated that the Fiberfrax is well distributed throughout the PVNGS containment buildings[2]. Based

[1] Calculation 13-MC-SI-309 considers the design basis flow rates for post-recirculation operation which include only the High Pressure Safety Injection (HPSI) and Containment Spray (CS) pumps. The Low Pressure Safety Injection (LPSI) pump is automatically secured on switch-over. Operator action to restore LPSI pump operation will result in higher flow rates (i.e., 0.2 ft/s) which is comparable to the minimum flow rate necessary to initiate motion of individual shreds. However, this flow rate is that of the narrowest flow point and flow rates in most of the containment are well below this rate. Most material is again expected to settle and not reach the containment sump.

[2] Additional sources of fibrous insulation were also identified which have not been included in the analyses. These materials are addressed in the next section.

on these walkdowns, the materials were cataloged in zones which would envelop all HELBs. The zones were defined assuming a spherical zone of destruction consistent with research results documented in NUREG/CR-6808 (i.e., 12 pipe diameters). The amount contained in any one zone would be significantly less than that assumed in 13-MC-SI-309.

APS concludes that the existing PVNGS analyses provide sufficient assurance that the potential for debris accumulation on the sump screen and consequential impact on NPSH to the ECCS and CSS pumps is low. Conservatisms contained within the current analyses and consideration of debris source location compensate for the use of potentially non-conservative head loss correlations from NUREG-0897 and substantiate that the quantities of the fibrous materials will be a small fraction of that documented in those analyses. These conclusions remain valid even when NUREG/CR-6808 and other sources are considered. APS will, however, continue to assess the impact of sump blockage as additional information from on-going NRC research becomes available.

With respect to the concerns identified in Bulletin 2003-01 related to the impact of debris capable of passing through the sump screen, APS has previously considered these effects on the functionality of downstream components. APS has reviewed the concerns identified in NRC Information Notice 96-27, "Potential Clogging of High Pressure Safety Injection Throttle Valves During Recirculation," and documented that PVNGS does not utilize the pilot operated throttle valves identified in the notice in either the ECCS or CSS. PVNGS subsequently verified that the sump screen dimensions were limiting to ensure that debris that passed through the fine screen mesh was small enough so as to preclude blockage of the containment spray nozzles and the coolant flow paths within the fuel assemblies.

APS also considered the effects of debris on ECCS and CSS pump performance relative to the concerns identified in NRC Daily Event Report 37940, dated April 07, 2003. Debris small enough to pass through the sump screen will be appropriately filtered prior to being supplied to the pump seals by the installed cyclone separators on each of the low pressure and high pressure safety injection pumps and the containment spray pumps. These separators filter flow from the pump discharge to the pump seal. Filtered debris is directed back to the pump suction where it is passed through the system.

1.2 Plant Design Considerations:

1.2.1 Insulation Materials and Distribution

The as-built design minimizes the total fibrous debris loading. No Calcium Silicate insulation materials (CalSil) are installed in the containment buildings in accordance with the existing insulation specifications. Reflective metallic insulation (RMI) is installed as the principle insulation system. Information documented in NUREG/CR-6808 suggests that stainless steel RMI will not reduce in significant quantities to transportable debris. Flow rates required for incipient and bulk motion of RMI are significantly greater

than the bulk flow rates calculated for the flood water in the containment. It is expected that little, if any RMI, will actually reach the sump.

As discussed in Section 1.1, small amounts of fibrous insulation (Fiberfrax) have been installed in the piping penetrations through the bio-shield wall as an air flow barrier. Minor amounts of Temp-Mat insulation are used in the form of small pillows installed as thermal convective boundaries between RMI sections on the steam-generators and pressurizer. In addition, small amounts of NUKON insulation have been installed on the top of the steam generators and pressurizer and at piping supports where frequent insulation removal makes application of RMI undesirable. Small pillows fabricated using the Temp-Mat material are also installed around the control element drive mechanism (CEDM) nozzles in the openings of the RMI installed on the reactor vessel head.

Assuming complete destruction of the Temp-Mat and NUKON insulation and release of the fibrous material, the total estimated quantity of fiber is approximately 30 ft^3. This excludes the NUKON material installed on the top of the steam generators and the Temp-Mat insulation about the CEDM nozzles. The only credible event that could dislodge the NUKON insulation from the top of the steam generators is a Main Steam Line Break (MSLB). The analyses for the MSLB demonstrate that the event is terminated prior to recirculation. Similarly, the Temp-Mat insulation installed on the CEDM nozzles could only be dislodged given a CEDM nozzle failure. These events, however, would not cause any Fiberfrax to be ejected from the bio-shield piping penetrations since there would be little pressurization of the respective steam generator compartments. Therefore, the results of the current analyses bound the events that could release the fibrous insulation from the steam generators or CEDMs.

The addition of these fibrous material sources to the amounts of Fiberfrax analyzed in the current analyses (162 ft^3) results in a total estimated volume of approximately 200 ft^3. As noted above, these materials are relatively evenly distributed throughout the containment building from the operating deck to the containment floor and around the bio-shield wall. The distribution of the Fiberfrax around the containment will result in only a fraction of this material being generated for any one break location. An even smaller fraction is expected to be transported to the sump.

1.2.2 Relative Sump Screen Size and Location

Two independent, safety related sumps are installed in the containment floor. Each sump has an independent screen structure installed which encloses the sump. The total effective surface area of each sump is 210 ft^2, which accounts for surface area lost to the outer trash rack and the corner and lateral supports. The sump structure is completely submerged at the time of recirculation.

The sumps are located remotely to the reactor coolant system piping and outside the bio-shield wall. Water spilling from a break from within the steam generator compartments or the pressurizer cubicle must flow along a tortuous path to the area outside the bio-shield by way of the pump bay or cubicle personnel access walkways.

Debris generated during an accident will travel along a flow path which is never within the line of sight of the sump.

1.2.3 Containment Design

The PVNGS units have large dry containment structures with significant open areas on the containment floor to permit free flow of water to the remotely located sumps. Debris that is generated during a high energy line break and reaches the periphery of the containment floor outside the bio-shield is expected to settle. Flow rates in most containment areas are calculated to be less than 0.1 ft/s at minimum containment flood level. The bulk flow rate at the narrowest point is calculated to be approximately 0.2 ft/s. Only debris that falls into the areas adjacent the sumps is expected to be transported. There are, however, no sources of fibrous material and very little non-qualified coating materials in the vicinity of the sumps.

1.2.4 Sump Structure Curb

The containment sump screen structures are seated on top of a concrete footer that, in combination with the sump screen bottom structural member serves as a debris curb. The sump sits at a minimum of 2 inches above the containment floor. Debris tumbling along the containment floor which reaches the sump structure is expected to settle at the base of the sump screen. Data in NUREG/CR-6808 demonstrates that the velocities necessary to lift debris over the curb are well in excess of the predicted flow velocities near the sump.

1.3 Administrative Controls

1.3.1 Foreign Materials Exclusion (FME) Program

FME is controlled in accordance with procedure 30DP-0WM12, "Housekeeping and System Cleanliness." The housekeeping practices and FME requirements contained within this procedure provide the basis for a program that focuses on minimization of potential transportable materials. The procedure outlines good work practices for foreign material prevention throughout the plant. Accountability forms are utilized which document materials carried into and out of an FME area, including the containment building during power entries. Unrecoverable items are tracked under the corrective action program.

1.3.2 Containment Cleanliness Inspection Program

Containment cleanliness is administratively controlled by procedure 40ST-9ZZ09, "Containment Cleanliness Inspection." This Technical Requirements Manual-mandated surveillance procedure provides instruction for performing a visual inspection that verifies that no loose debris is present in the containment which could be transported to the containment ECCS sump and cause restriction of the pump suctions during LOCA conditions. The inspections are performed for all accessible areas of the containment

prior to establishing containment integrity. These inspections satisfy the Technical Requirements Manual Surveillance Requirement 3.5.202.1 to conduct visual containment inspections to verify that the containment sumps will not be restricted by debris. The procedure is performed prior to Mode 4 entry following an outage.

In preparation for the containment cleanliness inspection, the outage organization assembles clean-up teams that inspect and remove all loose debris. Clean-up crews also vacuum the grating at all elevations and wet-mop the containment floor. Radiation Protection personnel periodically power-wash the pump bay walls and floor for contamination control which is credited for elimination of latent debris. Any transient materials which are requested to be left in containment and which exceed pre-determined limits are evaluated using the corrective action program relative to the impact on sump blockage.

Separate inspections conducted as part of the NEI 02-01 assessments following the performance of 40ST-9ZZ09 have substantiated a very high level of containment cleanliness. Insignificant amounts of latent debris were identified during performance of the NEI 02-01 assessments. No incidence of undocumented materials was noted.

1.3.3 Sump Screen Integrity Surveillance and Inspection

Surveillance procedure 31ST-9SI01, "Cleaning/Inspection of ECCS Sumps," is required when restoring the recirculation sumps to operation following a normal plant outage. This procedure verifies that the ECCS sumps and suction inlet piping are not restricted by debris and the sump components show no evidence of structural distress or corrosion. This procedure satisfies Technical Specification Surveillance Requirement SR 3.5.3.8. No indications of any degraded condition have been identified during performance of these inspections.

Additional detailed inspections have been conducted in all three units in response to NRC Information Notice 89-77, Supplement 1, "Debris in Containment Emergency Sumps and Incorrect Screen Configurations," and industry operating experiences. These inspections verified that no gaps existed between structural members and the fine screen that would permit passage of debris larger than the screen mesh size. Similarly, all penetrations into the sump were adequately equipped with collar devices or other barriers to ensure that no gaps existed that would permit larger debris to pass into the sump. These inspections also verified that the fine screen was adequately supported (i.e., tack welded) and secured to the support structure to ensure that dynamic loads during recirculation operation did not result in deformation of the screen.

The sump screen structure is seismically qualified. The design and construction of the screen structure ensures that the hydrodynamic loads imposed during recirculation operation do not adversely affect the performance of the sump.

2 Supplemental Interim Compensatory Actions That Have Been Or Will Be Taken In Response To Bulletin 2003-01

2.1 Design Process Procedural Enhancements

Completion of the containment walkdowns recommended by NEI 02-01 has been documented in Condition Reporting Disposition Request (CRDR) 2606217. Subsequent actions are in progress to update the Plant Modification Process - Design Inputs Requirements Checklist (DIRC), Section 9, "Hydraulic Requirements," to provide additional guidance for the review of all potential plant changes which may affect debris generation, transport, and accumulation on the containment ECCS sump screens. This action will be completed by October 30, 2003. (Commitment no. 1 in Enclosure 3.) This implementation schedule is considered appropriate because of the time needed to implement changes using the plant processes.

2.2 Containment Cleanliness Procedural Enhancements

Completion of the walkdowns recommended by NEI 02-01 and documented in CRDR 2606217 has also initiated a subsequent action to add additional guidance and precautionary information to procedure 40ST-9ZZ09, "Containment Cleanliness Inspection," relative to the potential for latent debris to affect ECCS and CSS pump performance by debris accumulation on the sump screen. This action will be completed by September 30, 2003. (Commitment no. 2 in Enclosure 3.) This implementation schedule is considered appropriate because of the time needed to implement changes using the plant processes.

2.3 Procedure Changes To Ensure Unobstructed Flow Path

Walkdowns conducted in accordance with NEI 02-01 documented the potential for debris accumulation on the reactor coolant pump bay personnel access doors, thereby potentially obstructing flow from the pump bays to the outside and to the ECCS containment sumps. The potential amounts of debris at these locations at PVNGS is expected to be very small. However, as an enhancement, Engineering will identify plant changes needed to address the potential for debris accumulation on the pump bay personnel access doors. This action will be completed by November 30, 2003, with any plant changes to be implemented prior to startup following the subsequent refueling outages in each unit (U1R11, May 2004; U2R12, May 2005; U3R11, November 2004). (Commitment no. 3 in Enclosure 3.) This implementation schedule is considered appropriate because this is an enhancement and because of the time needed to implement changes using the plant processes.

2.4 Operator Notification of Issues Identified in NRC Bulletin 2003-01

Licensed operator required reading will include a review of NRC Bulletin 2003-01 and APS' response in regards to the potential for degraded ECCS and CSS pump performance due to accumulated debris on the containment sump screens. Operators

will be informed that generic guidance is being developed to provide support to identify and mitigate degraded ECCS and CSS pump performance due to sump blockage. This action will be completed by November 30, 2003. (Commitment no. 4 in Enclosure 3.) This implementation schedule is considered appropriate because of the time needed to prepare the required reading and implement this required reading for all of the Operations crews.

3 Deferred Measures

3.1 Operator and Staff Training on Indications of And Responses to Sump Clogging

APS plans to defer implementation of specific training on the identification of and response to sump clogging at PVNGS at this time. The PVNGS Emergency Operating Procedures (EOPs) are based on the Emergency Procedure Guidelines (EPGs) in CEN-152, "Combustion Engineering Emergency Procedure Guidelines." Changes to EPGs are evaluated and implemented in accordance with formal Westinghouse Owners Group (WOG) EPG revision processes. The Emergency Procedure Guidelines in CEN-152 are currently being reviewed by the WOG to address containment sump blockage issues. Enhanced training at PVNGS on indications of and responses to sump clogging, subject to a corresponding revision to the PVNGS EOPs, will be considered by APS after revision of the Emergency Procedure Guidelines in CEN-152. (Commitment no. 5 in Enclosure 3.)

Currently, the Emergency Procedure Guidelines in CEN-152 do not include an optimal recovery strategy or guidance that specifically addresses a set of symptoms indicative of a clogged containment sump (ECCS) screen following RAS initiation. This situation is considered to be beyond the design basis. However, if it were to occur, the operators would transition from the LOCA Optimal Recovery Guideline to the Functional Recovery Procedure, and continue to monitor and restore the safety functions. In parallel, management (i.e., the Technical Support Center [TSC]) would be called on to provide guidance and recommendations using existing guidance in the Severe Accident Management Guidelines (SAMGs).

3.2 Procedure Actions That Delay the Switchover to Containment Sump Recirculation

APS plans to defer implementation of changes to the PVNGS emergency operating procedures that delay the switchover to containment sump recirculation at this time. Implementation of procedure changes that delay the switchover to containment sump recirculation will be considered upon completion of a generic WOG effort to update the Combustion Engineering Emergency Procedure Guidelines (EPGs) in CEN-152 with the appropriate justification and technical basis to support a delay in switchover.

At present, PVNGS has not quantified the net reduction in plant risk attributed to a delay in switchover relative to the risks imposed by sump blockage. Analyses in support of a

revision to CEN-152 are in progress and may provide the basis for a subsequent change in the PVNGS EOPs. These analyses will need to show that for larger LOCAs that require ECCS injection flow and CSS spray, pre-emptive operator actions to stop pumps or throttle flow solely for the purpose of delaying switchover to containment sump recirculation would reduce the net risk. In the interim, it has not been recommended that such changes be implemented until the impact of the changes can be evaluated on a generic basis for the following reasons:

- Operator actions to stop ECCS or CSS pumps or throttle flow may result in conditions that are either outside of the design basis safety analyses assumptions or violate the design basis safety analyses assumptions (single failure). This would result in the potential for creating conditions that would make the optimal recovery more challenging (e.g., stopping containment spray impacts containment fission product removal, containment sump pH and equipment environment qualification design basis requirements).

- These actions would be inconsistent with the overall WOG EPG philosophy. The WOG EPGs are symptom-based procedures that provide for the monitoring of plant parameters and prescribe actions based on the response of those parameters. To avoid the risk of taking an incorrect action for an actual event, the WOG EPGs do not prescribe contingency actions until symptoms that warrant those contingency actions are identified.

- These actions would be inconsistent with the current operator response using the WOG EPGs that has been established through extensive operator training. The expected operator response is based on the optimal set of actions considering both design basis accidents and accidents outside the design basis. The WOG EPG operator response is not limited to a specific accident progression in order to provide optimal guidance for a wide range of possible accidents.

- To be effective in delaying the switchover to containment sump recirculation, operator actions to stop ECCS or CSS pumps must be taken in the first few minutes of an accident. This introduces a significant opportunity for operator errors based on other actions that may be required during this time frame. Any new operator actions to stop ECCS or CSS pumps, when modeled in the PRA, may result in increased risk due to an increased chance for operator error.

Based on the philosophy adopted in the current WOG EPGs to take actions based on plant symptoms, it is more appropriate to address actions to "delay RWST inventory depletion" once the loss of recirculation capability is diagnosed. Any generic changes to the WOG EPGs will be evaluated as part of an Owners Group program. These procedures currently exist and the licensed operators are thoroughly trained on their use.

Changes to EPGs are evaluated and implemented in accordance with formal WOG EPG revision processes. The Emergency Procedure Guidelines in CEN-152 are

currently being reviewed by the WOG to address containment sump blockage issues. After the generic EPG guidance is approved and issued, APS will determine if the guidance is to be incorporated for changes to the PVNGS emergency operating procedure actions that delay the switchover to containment sump recirculation and, if so, will establish an implementation schedule to incorporate the recommended guidance. (Commitment no. 6 in Enclosure 3.)

3.3 Procedure Actions That Delay RWT Inventory Depletion

APS plans to defer implementation of procedure changes to delay RWT inventory depletion at this time. It is recognized however, that the PVNGS RWT inventory during normal operations is substantially greater than the minimum requirements assumed for ECCS performance. Consequently, the injection phase is expected to be much longer for smaller and medium break LOCAs. This additional water volume has been considered relative to the maximum containment water volume following a LOCA and does not jeopardize safety related equipment due to submergence. Changes to EPGs are evaluated and implemented in accordance with formal WOG EPG revision processes. The Emergency Procedure Guidelines in CEN-152 are currently being reviewed by the WOG to address containment sump blockage issues. After the generic EPG guidance is approved and issued, APS will determine if the guidance is to be incorporated for changes to the PVNGS emergency operating procedure actions that delay RWT inventory depletion and, if so, will establish an implementation schedule to incorporate the recommended guidance. (Commitment no. 7 in Enclosure 3.)

3.4 Procedure Changes That Provide For Alternate Sources To Refill the RWT

APS plans to defer implementation of specific changes to the EOPs to refill the RWT. Changes to EPGs are evaluated and implemented in accordance with formal WOG EPG revision processes. The Emergency Procedure Guidelines in CEN-152 are currently being reviewed by the WOG to address containment sump blockage issues. After the generic EPG guidance is approved and issued, APS will determine if the guidance is to be incorporated for changes to the PVNGS emergency operating procedure actions that provide for alternate sources to refill the RWT and, if so, will establish an implementation schedule to incorporate the recommended guidance. (Commitment no. 8 in Enclosure 3.)

3.5 Procedure Changes That Provide For Alternate Sources To Inject Into The Reactor Coolant System

APS plans to defer implementation of changes to the EOPs to inject alternate water sources into the RCS. Changes to EPGs are evaluated and implemented in accordance with formal WOG EPG revision processes. The Emergency Procedure Guidelines in CEN-152 are currently being reviewed by the WOG to address containment sump blockage issues. After the generic EPG guidance is approved and issued, APS will determine if the guidance is to be incorporated for changes to the PVNGS emergency operating procedure actions that provide for alternate water sources to inject into the

Reactor Coolant System and, if so, will establish an implementation schedule to incorporate the recommended guidance. (Commitment no. 9 in Enclosure 3.)

3.6 Enhanced Containment Cleaning And Increased Foreign Material Controls

Details concerning the PVNGS programs for FME and containment cleanliness described in Section 1 identify that the current measures are adequate to ensure that potential debris sources, including latent debris, are minimized. Considering the current cleanliness in the PVNGS containment buildings, as demonstrated during the applicable procedural inspections and during those inspections conducted in support of NEI 02-01, no additional measures or changes to these procedures are warranted.

3.7 Calculation Revisions

APS plans to defer any revisions to the current PVNGS calculations and analyses of sump screen blockage until after the NRC issues their expected Generic Letter with updated guidance for this issue. APS has concluded that insufficient guidance currently exists by which to update these analyses to ensure that the calculated results are adequate and afford assurance that sump screen blockage will not occur and degrade ECCS and CSS performance.

ENCLOSURE 3

List of Regulatory Commitments

The following table identifies those actions committed to by APS in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Thomas N. Weber at (623) 393-5764.

REGULATORY COMMITMENT	DUE DATE
1. (Section 2.1) Update the Design Inputs Requirements Checklist (DIRC), Section 9, "Hydraulic Requirements," to provide additional guidance for the review of all potential changes which may affect debris generation, transport, and accumulation on the containment ECCS sump screens.	This action will be completed by October 30, 2003.
2. (Section 2.2) Add additional guidance and precautionary information to PVNGS procedure 40ST-9ZZ09, "Containment Cleanliness Inspection" relative to the potential for latent debris to affect ECCS and CSS pump performance by debris accumulation on the sump screen.	This action will be completed by September 30, 2003.
3. (Section 2.3) Engineering will identify plant changes needed to address the potential for debris accumulation on the pump bay personnel access doors.	This action will be completed by November 30, 2003. Any plant changes to be implemented prior to startup following the subsequent refueling outages in each unit (U1R11, May 2004; U2R12, March 2005; U3R11, November 2004).
4. (Section 2.4) Licensed operator required reading will include a review of NRC Bulletin 2003-01 and APS' response in regards to the potential for degraded ECCS and CSS pump performance due to accumulated debris on the containment sump screens. Operators will be informed that generic guidance is being developed to provide support to identify and mitigate degraded ECCS and CSS pump performance due to sump blockage.	This action will be completed by November 30, 2003.

REGULATORY COMMITMENT	DUE DATE
5. (Section 3.1) Enhanced training at PVNGS on indications of and responses to sump clogging, subject to a corresponding revision to the PVNGS EOPs, will be considered by APS after revision of the Emergency Procedure Guidelines in CEN-152.	After revision of the Emergency Procedure Guidelines in CEN-152.
6. (Section 3.2) After the generic EPG guidance is approved and issued, APS will determine if the guidance is to be incorporated for changes to the PVNGS emergency operating procedure actions that delay the switchover to containment sump recirculation and, if so, will establish an implementation schedule to incorporate the recommended guidance.	After the generic EPG guidance is approved and issued.
7. (Section 3.3) After the generic EPG guidance is approved and issued, APS will determine if the guidance is to be incorporated for changes to the PVNGS emergency operating procedure actions that delay RWT inventory depletion and, if so, will establish an implementation schedule to incorporate the recommended guidance.	After the generic EPG guidance is approved and issued.
8. (Section 3.4) After the generic EPG guidance is approved and issued, APS will determine if the guidance is to be incorporated for changes to the PVNGS emergency operating procedure actions that provide for alternate sources to refill the RWT and, if so, will establish an implementation schedule to incorporate the recommended guidance.	After the generic EPG guidance is approved and issued.
9. (Section 3.5) After the generic EPG guidance is approved and issued, APS will determine if the guidance is to be incorporated for changes to the PVNGS emergency operating procedure actions that provide for alternate water sources to inject into the Reactor Coolant System and, if so, will establish an implementation schedule to incorporate the recommended guidance.	After the generic EPG guidance is approved and issued.