10 CFR 50.54(f)

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102-06886-JJC/TNW/PJH
May 30, 2014

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References:
1. NRC Letter, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated March 12, 2012
2. NRC Letter, *Prioritization of Response Due Dates for Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Flooding Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident,* dated May 11, 2012
3. APS Letter, 102-06850, *APS Extension Request for Flooding Hazard Reevaluation Submittal*, dated March 10, 2014
4. APS Letter, 102-06867, *APS Response to Request for Additional Information Regarding Recommendation 2.1 Flood Hazard Reevaluation Extension Request*, dated April 24, 2014

Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station (PVNGS)**
Units 1, 2, and 3
Docket Nos. STN 50-528, 50-529, and 50-530
Flooding Hazard Re-Evaluation Extension - Public Meeting Clarification Items

On March 12, 2012, the U. S. Nuclear Regulatory Commission (NRC) issued Reference 1 to request information associated with Near-Term Task Force (NTTF) Recommendation 2.1 for flooding, including a reevaluation of flooding hazards. The NRC subsequently identified in Reference 2 the submittal date to report the results of the Flooding Hazard Reevaluation (FHR) for the Palo Verde Nuclear Generating Station (PVNGS), a Category 2 plant, as March 12, 2014. Reference 3 provided the APS justification for the extension of the scheduled submittal date for the FHR to December 12, 2014. Reference 4 provided the APS response to an NRC request for additional information (RAI) related to the extension request, dated March 25, 2014.

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A public teleconference was held on May 14, 2014, to further discuss the activities being performed to support completion of the FHR. At the conclusion of the public teleconference, the NRC staff requested that APS provide a brief summary of two clarification items related to the extension request. The enclosure to this letter provides the requested clarification items that were discussed in the public teleconference.

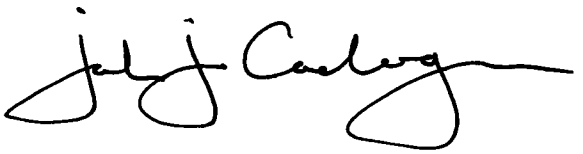
No commitments are being made to the NRC by this letter.

Should you have any questions concerning the content of this letter, please contact Mark McGhee, Department Leader, Regulatory Affairs, at (623) 393-4972.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 5-30-2014
(Date)

Sincerely,



JJC/TNW/PJH

Enclosure: PVNGS Flooding Hazard Re-Evaluation Extension - Public Meeting Clarification Items

cc:	E. J. Leeds	NRC Director, Office of Nuclear Reactor Regulation
	M. L. Dapas	NRC Region IV Regional Administrator
	J. K. Rankin	NRC NRR Project Manager
	M. A. Brown	NRC Senior Resident Inspector for PVNGS (electronic)
	R. Kuntz	NRC NRR/JLD Project Manager

ENCLOSURE

PVNGS Flooding Hazard
Re-Evaluation Extension - Public Meeting
Clarification Items

Introduction

On March 12, 2012, the U. S. Nuclear Regulatory Commission (NRC) requested information associated with Near-Term Task Force (NTTF) Recommendation 2.1 for flooding, including a reevaluation of flooding hazards. The NRC staff subsequently identified the submittal date to report the results of the Flooding Hazard Reevaluation (FHR) for the Palo Verde Nuclear Generating Station (PVNGS), a Category 2 plant, as March 12, 2014.

Arizona Public Service Company (APS) letter number 102-06850, *APS Extension Request for Flooding Hazard Reevaluation Submittal*, dated March 10, 2014, provided the justifications for an extension of the scheduled submittal date for the FHR to December 12, 2014. APS letter number 102-06867, *APS Response to Request for Additional Information Regarding Recommendation 2.1 Flood Hazard Reevaluation Extension Request*, dated April 24, 2014, provided the APS response to the NRC request for additional information (RAI) related to the extension request, dated March 25, 2014.

The NRC staff requested a public meeting with APS to clarify the basis for the requested FHR schedule extension. A public teleconference was held on May 14, 2014, to further discuss the activities being performed to support completion of the FHR. At the conclusion of the public teleconference, the NRC staff requested that APS provide a brief summary of two clarification items. This enclosure provides the requested clarification items that were discussed in the public meeting.

Specifically, in order to further aid the NRC staff evaluation of the FHR extension request, the NRC staff requested the following:

1. **Clarifying information on the analyses which the licensee has completed to date; as well as the impacts of these results on the facility; and, any additional evaluations that the licensee intends to perform (e.g. the revised LIP evaluation and room by room consequence evaluation)**

APS Response

In accordance with the guidance of NUREG/CR-7046, *Design-Basis Flood Estimation for Site Characterization at Nuclear Power Plants in the United States of America*, dated November 2011, APS completed the initial analyses on the causal mechanisms for PVNGS design basis floods prior to March 12, 2014. However, conclusions developed in the initial Local Intense Precipitation (LIP) calculation portion of the analyses have required APS to perform additional validation and verification of software and methodologies used.

The initial analysis used regional best available rainfall precipitation data and evaluation tools, and the computer modeling program FLO-2D to evaluate the LIP event at PVNGS. This initial simulation of the LIP event predicted localized ponding in the vicinity of some safety related structures. These predictions, while conservative, do not correspond to actual rainfall events that have been experienced at PVNGS. Therefore, APS is re-evaluating and refining, where appropriate, the initial LIP analysis by providing better input information for use in the FLO-2D model in areas such as: drainage modeling (e.g., roof/down-spout discharge modelling and as-built configuration of slabs around buildings); meteorological data and flood information; and analysis methodologies (e.g., nodalization, flow sheet modes, and assumptions used by the software for estimating discharge flow).

Since the majority of these analysis issues involve use of external expertise, the duration of supporting tasks is highly dependent on the availability of the external resources. This is the basis for the request for extension. The LIP analysis revision will result in an enhanced external flooding hazards report that better reflects the PVNGS site characteristics.

The response to the second clarification item addresses the impacts of these initial analysis results on the facility and the additional evaluations that APS is performing (e.g., the room by room consequence evaluation) to ensure protection of safe shutdown equipment at the PVNGS site.

2. A discussion regarding any interim actions or analyses that the licensee has completed, to ensure that safety related components meet the licensee's design bases; and are adequately protected.

APS Response

As indicated in the first clarification item, APS is validating the localized ponding effects predicted to occur around the safety related structures at site grade (reference elevation 100 ft.). Additionally, APS is also finalizing an evaluation that uses the results of the initial LIP analysis to assess the potential for impacts on safe shutdown equipment as a result of water migration into the various safety related structures through door gaps and hatches. This transient analysis of the flood depth in the safety related areas of the plant is being performed using methods originally developed for the design basis internal flooding analysis.

The path that water would take once it entered the buildings was investigated by a review of plant layout drawings, design basis internal flooding calculations and plant walk-downs. This review determined flow characteristics including the impact of the configuration of the various passive plant features such as walls, curbs, doors, door transoms, equipment pedestals, penetrations, drains and check valves in limiting or increasing the effects of internal flooding.

The evaluation has confirmed that internal water levels, as a result of ponding due to the initial LIP analysis, are within the original design basis for internal flooding. The passive lower elevation barriers and plant features, such as drains, are adequate to maintain the plant safe shut down equipment well above the conservatively estimated compartment water levels predicted for the LIP event. No credit was taken for operator action during the evaluation. As a result, no compensatory actions are considered necessary to protect safe shutdown equipment as a result of the initial LIP analysis.