



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 5, 2010

LICENSEE: Arizona Public Service Company

FACILITY: Palo Verde Nuclear Generating Station, Units 1, 2, and 3

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON AUGUST 31, 2010, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND ARIZONA PUBLIC SERVICE COMPANY, CONCERNING DRAFT REQUEST FOR ADDITIONAL INFORMATION PERTAINING TO THE PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3, LICENSE RENEWAL APPLICATION

The U.S. Nuclear Regulatory Commission (the staff) and representatives of Arizona Public Service Company (the applicant) held a telephone conference call on August 31, 2010, to discuss and clarify the staff's draft request for additional information (RAI) concerning the Palo Verde Nuclear Generating Station, Units 1, 2, and 3, license renewal application. The telephone conference call was useful in clarifying the intent of the staff's draft RAIs.

Enclosure 1 provides a listing of the participants and Enclosure 2 contains a listing of the draft RAIs discussed with the applicant, including a brief description of the status of the items.

The applicant had an opportunity to comment on this summary.

A handwritten signature in black ink, appearing to read "L. Regner", with a horizontal line extending to the right.

Lisa M. Regner, Sr. Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-528, 50-529, and 50-530

Enclosures:
As stated

cc w/encls: Distribution via Listserv

**TELEPHONE CONFERENCE CALL
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3
LICENSE RENEWAL APPLICATION**

**LIST OF PARTICIPANTS
AUGUST 31, 2010**

PARTICIPANTS

Lisa Regner

Cliff Doult

Angela Krainik

Glenn Michael

Mark Hypse

Eric Blocher

George Kyle

AFFILIATIONS

U.S. Nuclear Regulatory Commission (NRC)

NRC

Arizona Public Service Company (APS)

APS

APS

Strategic Teaming and Resource Sharing (STARS) Alliance

STARS

**DRAFT REQUESTS FOR ADDITIONAL INFORMATION
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3
LICENSE RENEWAL APPLICATION**

August 31, 2010

The U.S. Nuclear Regulatory Commission (the staff) and representatives of Arizona Public Service Company (the applicant) held a telephone conference call on August 31, 2010, to discuss and clarify the following draft request for additional information (RAI) concerning the Palo Verde Nuclear Generating Station, Units 1, 2, and 3 (PVNGS), license renewal application (LRA).

DRAFT RAI B2.1.26-3

Background:

NUREG-1801, Rev. 1, "Generic Aging Lessons Learned," (the GALL Report) addresses inaccessible medium voltage cables in Aging Management Program (AMP) XI.E3, "Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." The purpose of this program is to provide reasonable assurance that the intended functions of inaccessible medium-voltage cables (2 kV to 35 kV), that are not subject to environmental qualification requirements of 10 CFR 50.49 and are exposed to adverse localized environments caused by moisture while energized, will be maintained consistent with the current licensing basis. The scope of the program applies to inaccessible medium-voltage cables (those cables in conduits, cable trenches, cable troughs, duct banks, underground vaults or direct buried installations) within the scope of license renewal that are subject to significant moisture simultaneously with significant voltage.

The application of the GALL Report AMP to medium-voltage cables was based on the operating experience available at the time Revision 1 of the GALL Report was developed; however, recently identified industry operating experience indicates that the presence of water or moisture can be a contributing factor in inaccessible power cables failures at lower service voltages (480 V to 2 kV). Applicable operating experience was identified in licensee responses to Generic Letter (GL) 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients," which included failures of power cable operating at service voltages of less than 2 kV where water was considered a contributing factor. The staff has proposed changes to be included in the next revision of the GALL Report AMP XI.E3 to address recently identified operating experience concerning the failure of inaccessible low-voltage power cables, which includes general water intrusion as a failure mechanism and increases the scope of program to include power cables greater than or equal to 480 V.

Issue:

The staff has concluded, based on recently identified industry operating experience concerning the failure of inaccessible low-voltage power cables (480 V to 2 kV) in the presence of significant moisture, that these cables should be included in an AMP. The staff notes that your AMP does not address these low-voltage cables.

ENCLOSURE 2

Request:

1. Provide a summary of your evaluation of recently identified industry operating experience and any plant-specific operating experience concerning inaccessible low-voltage power cable failures within the scope of license renewal (not subject to 10 CFR 50.49 environmental qualification requirements), and how this operating experience applies to the need for additional aging management activities at your plant for such cables.
2. Provide a discussion of how PVNGS will manage the effects of aging on inaccessible low-voltage power cables within the scope of license renewal and subject to an aging management review considering recently identified industry operating experience and any plant-specific operating experience. The discussion should include assessment of your AMP description, program elements (i.e., scope of program, parameters monitored or inspected, detection of aging effects, and corrective actions), and Updated Final Safety Analysis Report summary description, to demonstrate reasonable assurance that the intended functions of inaccessible low-voltage power cables subject to adverse localized environments will be maintained consistent with the current licensing basis through the period of extended operation.

Discussion:

Following discussions with the applicant and further evaluation of industry operating experience by the staff, the question was modified by the staff as follows. The changes were discussed and agreed to by the applicant. The RAI will be issued formally to the applicant.

DRAFT RAI B2.1.26-3 [revised]

Background:

NUREG-1801, Revision 1, "Generic Aging Lessons Learned," (the GALL Report) addresses inaccessible medium-voltage cables in aging management program (AMP) XI.E3, "Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." The purpose of this program is to provide reasonable assurance that the intended functions of inaccessible medium-voltage cables (2 kV to 35 kV), that are not subject to environmental qualification requirements of 10 CFR 50.49 and are exposed to adverse localized environments caused by moisture while energized, will be maintained consistent with the current licensing basis. The scope of the program applies to inaccessible (in conduits, cable trenches, cable troughs, duct banks, underground vaults or direct buried installations) medium-voltage cables within the scope of license renewal that are subject to significant moisture simultaneously with significant voltage.

The application of the GALL Report AMP to medium-voltage cables was based on the operating experience available at the time Revision 1 of the GALL Report was developed; however, recently identified industry operating experience indicates that the presence of water or moisture can be a contributing factor to inaccessible power cable failures at lower service voltages (480 V to 2 kV). Applicable operating experience was identified in licensee responses to Generic Letter (GL) 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients," which included failures of power cables operating at service voltages of less than 2 kV where water was considered a contributing factor.

The industry operating experience provided by licensees in response to GL 2007-01, has shown that there is an increasing trend of cable failures with length in service beginning in the 6th through 10th years of operation and also that moisture intrusion is the predominant factor contributing to cable failure. The staff has determined, based on the review of the cable failure distribution, that annual inspection of manholes and cable testing frequency of at least every six years is a conservative approach to ensuring the operability of power cables and, therefore, should be considered.

In addition, the recent operating experience has shown that some licensees may experience events, such as flooding or heavy rain, that subject cables within the scope of the GALL Report AMP to significant moisture. The staff has determined that event driven inspections of manholes, in addition to a 1-year periodic inspection frequency, is a conservative approach and, therefore, should be considered.

PVNGS has experienced cases where medium-voltage cable splices have been subjected to water intrusion resulting in low megger readings. The applicant stated that during manhole walkdowns in 2009, one was found to contain water with submerged cables. Subsequent inspections of connected manholes found additional water. The applicant also stated that a review of these manholes and the connected manholes found recurring instances of water intrusion.

Issue:

Based on recently identified industry operating experience concerning the failure of inaccessible low-voltage power cables in the presence of significant moisture, the staff concludes that these cables can potentially experience age related degradation. The staff noted that the applicant's inaccessible medium-voltage cables program does not address inaccessible low-voltage power cables [400 V (nominally 480 V) to 2 kV inclusive]. In addition, increased cable testing and manhole inspection frequencies should be evaluated to ensure that the inaccessible medium-voltage cables program test and inspection frequencies reflect industry and plant-specific operating experience.

Request:

1. Provide a summary of your evaluation of recently identified industry operating experience and any plant-specific operating experience concerning inaccessible low-voltage power cable failures within the scope of license renewal (not subject to 10 CFR 50.49 environmental qualification requirements), and how this operating experience applies to the need for additional aging management activities at PVNGS.
2. Discuss how PVNGS will manage the effects of aging on inaccessible low-voltage power cables within the scope of license renewal and subject to an aging management review with consideration of recently identified industry operating experience and any plant-specific operating experience. The discussion should include assessment of your AMP description, program elements (i.e., scope of program, parameters monitored or inspected, detection of aging effects, and corrective actions), and Updated Final Safety Analysis Report summary description to demonstrate reasonable assurance that the intended functions of inaccessible low-voltage power cables subject to adverse localized environments will be maintained consistent with the current licensing basis through the period of extended operation.

3. Evaluate whether the inaccessible medium-voltage cables program test and inspection frequencies, including event driven inspections, incorporate recent industry and plant-specific operating experience for both inaccessible low- and medium-voltage cables. Discuss how the inaccessible medium-voltage cables program will ensure that future industry and plant-specific operating experience will be incorporated into the program.

October 5, 2010

LICENSEE: Arizona Public Service Company

FACILITY: Palo Verde Nuclear Generating Station, Units 1, 2, and 3

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON AUGUST 31, 2010, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND ARIZONA PUBLIC SERVICE COMPANY, CONCERNING DRAFT REQUEST FOR ADDITIONAL INFORMATION PERTAINING TO THE PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3, LICENSE RENEWAL APPLICATION

The U.S. Nuclear Regulatory Commission (the staff) and representatives of Arizona Public Service Company (the applicant) held a telephone conference call on August 31, 2010, to discuss and clarify the staff's draft request for additional information (RAI) concerning the Palo Verde Nuclear Generating Station, Units 1, 2, and 3, license renewal application. The telephone conference call was useful in clarifying the intent of the staff's draft RAIs.

Enclosure 1 provides a listing of the participants and Enclosure 2 contains a listing of the draft RAIs discussed with the applicant, including a brief description of the status of the items.

The applicant had an opportunity to comment on this summary.

/RA/

Lisa M. Regner, Sr. Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-528, 50-529, and 50-530

Enclosures:
As stated

cc w/encls: Distribution via Listserv

DISTRIBUTION:
See next page

ADAMS Accession No.: **ML102430338**

OFFICE	PM:RPB2:DLR	LA:RPOB:DLR	BC:RPB2:DLR	PM:RPB2:DLR
NAME	LRegner	YEdmonds	DWrona	LRegner
DATE	9/28/10	9/28/10	9/29/10	10/05/10

OFFICIAL RECORD COPY

Memorandum to Arizona Public Service Company from L. Regner dated October 5, 2010

**SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON
AUGUST 31, 2010, BETWEEN THE U.S. NUCLEAR REGULATORY
COMMISSION AND ARIZONA PUBLIC SERVICE COMPANY, CONCERNING
DRAFT REQUEST FOR ADDITIONAL INFORMATION PERTAINING TO THE
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3,
LICENSE RENEWAL APPLICATION**

DISTRIBUTION:

HARD COPY:

DLR RF

E-MAIL:

PUBLIC

RidsNrrDlr Resource
RidsNrrDlrRpb1 Resource
RidsNrrDlrRpb2 Resource
RidsNrrDlrRarb Resource
RidsNrrDlrRasb Resource
RidsNrrDlrRapb Resource
RidsNrrDlrRpob Resource
RidsNrrDciCvib Resource
RidsNrrDciCpnb Resource
RidsNrrDciCsgb Resource
RidsNrrDraAfpb Resource
RidsNrrDraApla Resource
RidsNrrDeEmcb Resource
RidsNrrDeEeeb Resource
RidsNrrDssSrxb Resource
RidsNrrDssSbpb Resource
RidsNrrDssScvb Resource
RidsOgcMailCenter Resource
RidsOpaMail Resource

LRegner
DDrucker
RHall
BMizuno, OGC
RTreadway, RIV
GPick, RIV