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 50-229 Yugoslavia Research Reactor, Josef Stefan Nuclear Ins 05000229
 STN-50-530 Palo Verde Nuclear Station, Unit 3, Arizona Publi 05000530
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 KNIGHTON, G. W. Division of Pressurized Water Reactor Licensing - B (post 8

SUBJECT: Request for approval of deviation from App R, Section III. G
 re seismic gap between diesel generator bldg & control bldg.
 Proposed FSAR change & no significant hazards consideration
 encl.

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Arizona Nuclear Power Project

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November 21, 1986
ANPP-39124-JGH/JKO/98.05

Director of Nuclear Reactor Regulation
Attention: Mr. G. W. Knighton, Project Director
PWR Project Directorate #7
Division of Pressurized Water Reactor Licensing - B
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Docket Nos. STN 50-528 (License NPF-41)
STN 50-529 (License NPF-51)
STN 50-530
Request for a Deviation to Appendix R, Section III.G.
File: 86-A-056-026; 86-A-005-419.05

- References: (A) Letter from E. E. Van Brunt, Jr., ANPP, to U.S. NRC Document Control Desk, dated January 27, 1986 (ANPP-34824). Subject: Licensee Event Report 86-096-00
- (B) Letter from E. E. Van Brunt, Jr., ANPP, to U.S. NRC Region V, dated March 21, 1986 (ANPP-35637). Subject: Final Report - DER 86-03

Dear Mr. Knighton:

In References (A) and (B), ANPP identified a deviation to Appendix R, Section III.G. In the seismic gap between the diesel generator building and the control building, there were some cables not properly separated.

We are hereby requesting approval for a deviation to Appendix R, Section III.G. Attachment 1 is the proposed FSAR change. Attachment 2 provides the no significant hazards consideration for your review and approval.

This change does not result in an unreviewed safety question per requirements of 10 CFR 50.59.

In accordance with the requirements of 10 CFR 170.12, the application fee of \$150.00 is also enclosed.

If you have any questions, please call.

Very truly yours,

J. G. Haynes

J. G. Haynes
Vice President
Nuclear Production

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PDR

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JGH/JKO/rw
Attachment

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Mr. G. W. Knighton
Request for a Deviation to Appendix R,
Section III.G.
ANPP-39124
Page 2

cc: O. M. De Michele
E. E. Van Brunt, Jr.
A. C. Gehr
E. A. Licitra
R. P. Zimmerman

Revisions to the following Sections of the PVNGS FSAR will be necessary to justify the proposed modification to achieve compliance with the intent of 10 CFR 50, Appendix R.

Section 9B.2.4.1.C Deviations from 10 CFR 50, Appendix R, Section III.G

1. A Deviation is requested to Section III.G.2 to the extent that it required three-hour fire rated barriers to separate circuits of redundant trains.

DISCUSSION:

The diesel generator building is separated from the control building by a six-inch seismic gap which is necessary to allow for relative seismic motion of the two buildings. The gap extends from 94.0 foot elevation to the roof at elevation 148.0. In essence, the seismic gap creates a closed space which adjoins A and B train fire areas associated with the diesel generator and control buildings. Control cables associated with the diesel generators are routed from the diesel generator building fire areas IV and V into the control building fire areas I and II. The train A and train B cables transverse the seismic gap through conduit expansion/deflection fittings and open cable trays. There is no fire-rated barrier providing vertical separation or fire detection and automatic suppression within the six-inch seismic gap. Cable routing outside of the seismic gap space, however, is in full compliance with the separation criteria of III.G.

This configuration is considered an acceptable deviation due to the following technical reasons:

- a) The diesel generator building and the control building are separated by two independent 3-hour fire-rated walls. All penetrations through the walls are sealed with materials of equivalent fire resistance. This configuration assures that a fire originating in either the control building or diesel generator building will not propagate into the seismic gap.
- b) The doorway penetrations through the seismic gap (100 and 120 foot elevations) have been sealed with a 1-hour fire-rated assembly. The purpose for the addition of fire-rated seals at the door penetrations, is to eliminate fire exposure to safe-shutdown circuits due to transient combustibles. The corridor and stairway area where the seals are installed is void of fixed combustibles. The only fire exposure to the seal would be due to transient combustibles. Using the criteria in Section 9B.1.3.2.F, combustible loading, anticipated fires due to transient combustibles would have a duration much less than one-hour. The installation of a one-hour fire-rated assembly, therefore, will provide adequate protection against fires occurring in the corridor and stairway area.
- c) The area within the seismic gap contains minimal exposed combustibles. There are two train-A and two train-B cable trays which transverse the gap. The horizontal separation between the tray stacks is approximately 23'-1". The total weight of cable insulation is approximately six pounds. The cables are IEEE-383 qualified and meet an additional criteria of resisting 210,000 BTU/HR of heat for the flame test. Conduits which penetrate the two fire walls, utilize an expansion/deflection fitting to transverse the gap. The fittings consist of a tin/copper braided bonding jumper, bronze end couplings, molded neoprene rubber sleeve, and stainless steel bands. The neoprene rubber sleeve has a high chlorine content which makes it naturally flame resistant. Neoprene rubber is also used as a weather shield across the top of the gap. The spacial configuration of the trays and conduits in conjunction with limited combustibles will eliminate the potential for fire spread.

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- d) The expansion/deflection fittings used to transverse the seismic gap will provide a significant level of fire resistance. Since the assembly is not a fire-tested device, a rating cannot be claimed. Based on the natural fire resistant characteristics of neoprene rubber, however, it is reasonable to assume that some degree of resistance to heat transfer will be obtained. The wall thickness of the neoprene sleeve is greater than $\frac{1}{2}$ inch for all fittings and is tightly secured over the end couplings by stainless steel bands.
- e) There are no exterior fixed combustibles to present an exposure hazard to the seismic gap. The openings of the gap at the exterior walls are provided with sheet metal flashing. In addition, sidewalks on both sides of the gap opening provide effective curbing against liquid spills.
- f) Flammable liquid spills from within the diesel generator building will not expose the seismic gap. This condition has been previously evaluated and documented in the response to question 9A-119 in Appendix 9A.
- g) There are no credible ignition sources within the seismic gap. The gap is effectively sealed against external sources and the cables are provided with circuit protection to prevent autoignition due to fault conditions. In addition, the buildings are provided with lightning protection.
- h) The configuration of the conduit and tray penetrations through the seismic gap provides adequate separation between redundant circuits and protection from a hot gas layer below the roof seal. Since there are no fixed or transient combustibles below the penetrations, fire propagation is not a credible event. All safe shutdown circuits are routed through the gap at approximately the 110 foot elevation. The horizontal distance between train A and B cables, routed through expansion/deflection fittings, is approximately 11'-3" and the distance between redundant trays is approximately 23'-1". The vertical distance from the highest cable to the roof seal is approximately 35 feet. With the limited fixed combustibles within the gap and elimination of transient combustibles, the development of a thermal gas layer over 35 feet thick is highly unlikely. In essence, the cable separation in conjunction with the vertical distance to the roof provides reasonable assurance that if a fire occurred, one train of cables will remain undamaged.

Section 9B.2.5.1.C Deviations from 10 CFR 50 Appendix R, Section III.G

1. See Section 9B.2.4.1.C for Deviation concerning the seismic gap separating the diesel generator building and control building.
2. See Section 9B.2 Introduction for Generic Deviations.

Attachment 2

Description of Change:

This proposed change will be a deviation to Appendix R, Section III.G.2 in the form of FSAR change (Section 9B.2.4.1.C). The diesel generator building is separated from the control building by a six-inch seismic gap which is necessary to allow for relative seismic motion of the two buildings. The gap extends from 94.0 foot elevation to the roof at elevation 148.0. In essence, the seismic gap creates a closed space which adjoins A and B train fire areas associated with the diesel generator and control buildings. Control cables associated with the diesel generators are routed from the diesel generator building fire areas IV and V into the control building fire areas I and II. The train A and train B cables transverse the seismic gap through conduit expansion/deflection fittings and open cable trays. There is no fire-rated barrier providing vertical separation or fire detection and automatic suppression within the six-inch seismic gap. Cable routing outside of the seismic gap space, however, is in full compliance with the separation criteria of III.G. By adding one-hour fire-rated seismic gap seals at the two doors between the diesel generator and the control buildings, this seismic gap will be an enclosure with minimal fixed combustibles and void of credible ignition sources and transient combustibles.

Basis for No Significant Hazards Determination:

The proposed change does not involve a significant hazards consideration because operation of Palo Verde Units 1, 2 and 3 in accordance with this change would not:

- (1) Increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety. This based on the following:
 - a) The diesel generator building and the control building are separated by two independent three-hour fire rated walls. All penetrations through the walls are sealed with material of equivalent fire resistance. This configuration assures that a fire originating in either the control building or diesel generator building will not propagate in the seismic gap.
 - b) The doorway penetrations through the seismic gap (100 and 120 foot elevations) are sealed with a one-hour fire rated assembly. The corridor and stairway area where the seals are installed are void of fixed combustibles. The only fire exposure to the seal would be due to transient combustibles. Using the criteria in Section 9B.1.3.2.F, combustible loading, anticipated fires due to transient combustibles would have a duration much less than one-hour. The addition of fire rated seals at the door penetrations, therefore, would eliminate fire exposure to safe-shutdown circuits due to transient combustibles.
 - c) The area within the seismic gap contains minimal exposed combustibles. There are two Train-A and two Train-B cable trays which transverse the gap. The Total weight of cable insulation is approximately six pounds. The cables are IEEE-383 qualified and meet an additional criteria of resisting 210,000 BTU/HR of heat for the flame test.

Conduits which penetrate the gap, utilize an expansion/deflection fitting to transverse the gap. The fittings consist of a tin/copper braided jacket, bronze end couplings, neoprene rubber sleeve, and stainless steel bands. The neoprene rubber sleeve has a high chlorine content which makes it naturally flame resistant. Neoprene rubber is also used as a weather shield at the top of the gap. The spatial configuration of the trays and conduits in conjunction with limited combustibles will eliminate the potential for fire spread.

- d) The expansion/deflection fittings used to transverse the seismic gap will provide a significant level of fire resistance. Since the fitting assembly is not a fire-tested device, a rating cannot be claimed. Based on the natural fire resistant characteristics of neoprene rubber, however, it is reasonable to assume that some degree of resistance to heat transfer will be obtained. The wall thickness of the neoprene sleeve is greater than 1/2 inch for all fittings and is tightly secured over the end couplings by stainless steel bands.
- e) There are no exterior fixed combustibles to present an exposure hazard to the seismic gap. The edges of the gap at the exterior walls are enclosed by two independent gauge galvanized steel covers. One cover is attached to the control building and the other cover is attached to the diesel generator building. These covers are interlocked in a way to permit movement between the buildings. In addition, sidewalks on both sides of the gap opening provide effective curbing against liquid spills.
- f) Flammable liquid spills from within the diesel generator building will not expose the seismic gap. This condition has been previously evaluated and documented in the response to questions 9A-86c and 9A-119 in Appendix 9A PVNGS FSAR.
- g) There are no credible ignition sources within the seismic gap. The gap is effectively sealed against external sources and the cables are provided with circuit protection to prevent autoignition due to fault conditions. In addition, the buildings are provided with lightning protection.
- h) The configuration of the conduit and tray penetrations through the seismic gap provides adequate separation between redundant circuits and protection from a hot gas layer below the roof seal. The vertical distance from the highest cable to the roof seal is approximately 35 feet. With the limited fixed combustibles within the gap and elimination of transient combustibles, the development of a thermal gas layer over 35 feet high is unlikely. In essence, the cable separation in conjunction with the vertical distance to the roof provides reasonable assurance that, if a fire occurred, one train of cables will remain undamaged.

Based on these reasons, this seismic gap will be an enclosure with minimal fixed combustibles and void of credible ignition sources and transient combustibles.

- (2) Create the possibility for an accident or malfunction of a different type than any evaluated previously in the FSAR. This change represents a discrepancy between the actual plant as-built condition and the configuration described in the FSAR. The seismic gap between the diesel generator building and the control building was never analyzed in the Fire Hazards Analysis. Since this change represents a correction in the FSAR, the possibility for an accident or malfunction of a different type than previously evaluated has not been created.
- (3) Reduce the margin of safety. The diesel generators are the components which would be affected if a fire were to occur in this area. However, a fire inside this area is not a credible event based upon the justification given under Section (1). This seismic gap is an enclosure with minimal fixed combustibles and void of credible ignition sources and transient combustibles.

This request for deviation meets the requirements of 10 CFR 50.12. Our request has circumstances most like part (a)(c)(ii) and (iii) of the regulation. ANPP can meet the intent of Appendix R Section III.G with no safety significant effects and not incur excessive costs with our proposed deviation. Therefore, based on the above considerations, ANPP has determined that this change does not involve a significant hazards consideration.

