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SUBJECT: Forwards preliminary response re justification for continued operation of FPS equipment,per IRs 590528,529,530/90-25.

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WILLIAM F. CONWAY
EXECUTIVE VICE PRESIDENT
NUCLEAR

161-03338-WFC/RAB
July 13, 1990

Docket Nos. STN 50-528/529/530

Mr. John B. Martin
Regional Administrator, Region V
U. S. Nuclear Regulatory Commission
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Reference: Letter from R. P. Zimmerman, NRC, to W. F. Conway, APS, dated July 5, 1990; Subject: NRC Inspection of Palo Verde Units 1, 2 and 3. Inspection Report Nos. 50-528/90-25, 50-529/90-25 and 50-530/90-25.

Dear Mr. Martin:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Evaluation of the Fire Protection System Equipment
File: 90-019-026; 90-056-026

Following the issuance of the referenced inspection report, an NRC/APS Enforcement Conference regarding emergency lighting was held on July 10, 1990. During the course of the meeting the NRC had questions regarding the application of quality assurance requirements to the PVNGS Fire Protection Systems. As a result, APS was requested to provide a justification for continued operation of the PVNGS Fire Protection System Equipment. In accordance with a telephone conference call between Messers. R. P. Zimmerman (NRC) and J. N. Bailey (APS) and others on July 13, 1990, we are providing a preliminary response, attached to this letter and will provide a detailed justification for continued operation by July 20, 1990.

If you have any questions concerning this information, contact Mr. R. A. Bernier, at (602) 340-4295.

Sincerely,

WFC/RAB/jle
Attachment

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cc: Document control Desk
S. R. Peterson
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ATTACHMENT

Preliminary Justification for Continued Operation

STATEMENT

NRC questioned the application of quality assurance requirements to the PVNGS Fire Protection Systems and equipment. The essence of these questions is that the Quality Assurance program for fire protection systems that are described in UFSAR Section 9.5.1 has been applied inconsistently. NRC has requested that APS provide a justification for continued operation which provides reasonable assurance that appropriate levels of quality have been applied to the PVNGS fire protection equipment.

SCOPE OF REVIEW CONDUCTED

The questions have been preliminarily evaluated through review of several topics. First, the PVNGS Operations Quality Assurance Criteria Manual has been evaluated for compliance with the NRC's Branch Technical Position on QA Criteria for Fire Protection. Second, the PVNGS Administrative Controls Program has been evaluated to assure that programmatic controls are in effect to implement the applicable QA criteria. Third, the equipment classification system used by PVNGS to determine components/equipment quality class has been reviewed and evaluated for completeness and accuracy of results. Fourth, the Fire Protection Program has been evaluated for completeness, scope and adequacy of compensatory measures for fire system impairments to ensure applicable equipment is covered. Finally, discrepancies in the equipment classification or application of controls that were identified as a result of these reviews are being evaluated. For discrepancies that appear to cause a potential nonconformance with the QA criteria for fire protection, the functionality of affected equipment is being evaluated and justifications for continued operation are being developed.

Evaluation of Implementation of BTP 9.5-1 Through the Operations Quality Assurance Criteria Manual

APS has conducted an evaluation of the Operations Quality Assurance Criteria Manual (OQACM) to ensure that the criteria contained therein adequately implement the requirements of Branch Technical Position 9.5-1, Appendix A for Fire Protection systems/equipment. This evaluation has concluded that the PVNGS OQACM does contain adequate criteria for fire protection system quality assurance. A detailed evaluation of each criteria is currently being prepared and will be included in our updated submittal by July 20, 1990. This will document program compliance with each element of the ten BTP 9.5-1, Appendix A quality assurance criteria.

Implementation of the Quality Assurance Program Criteria via the PVNGS Administrative Controls Program

PVNGS programs and associated administrative control procedures were evaluated and compared to each of the ten BTP 9.5-1 quality criteria to verify that adequate controls and instructions exist to implement the QA requirements.

The initial results of this review indicate that the required program documents, controls and instructions exist. Remaining efforts in this area are aimed at validating that proper scope is included and that adequate implementation of these controls exists. APS will provide the details of this review in the July 20, 1990 updated submittal.

Evaluation of Equipment Classification Program

A. History of Quality Classifications at PVNGS

The Palo Verde Nuclear Generating Station was designed and constructed using the terms "Q", "R", and "S", to identify the categories of structures, systems, and components from a Quality Assurance Program perspective. Items classified as "Q" were considered safety related and required the full implementation of the 10CFR50 Appendix B Quality Assurance Program. "S" was used to identify those items which would be designed, procured, and installed in accordance with industry practice. "R" items were those considered important to reliability, and certain quality assurance controls were applicable. These quality classifications were used only in the construction phase of PVNGS.

When PVNGS transitioned from construction to operations, the APS Operations Quality Assurance Program was applied to structures, systems, and components. Items previously classified as "Q" became "SR." Items previously classified as "R" became "ITS" or "NQR" depending on whether a specific commitment was identified in FSAR Table 3.2-1 requiring selective application of the QA Program.

In 1988 and 1989 a program was completed to review the classifications of structures, systems, and components; and concurrent with this classification review project, a new classification procedure and system was put in place. This system defined "SR" items as "Q", "ITS" items as "QAG" and "NQR" items remained "NQR".

The program was initiated to provide a detailed evaluation of each component at PVNGS. The component contribution to safety would be defined, as well as whether it was to be an active or passive item. This effort was a significant upgrade in design output information.

B. Classification of Fire Protection Equipment (1988 and 1989)

At the time of the classification review, the following criteria were utilized in the classification of fire protection equipment. "Non component" fire protection items such as hoses, self-contained breathing apparatus (SCBA), fire extinguishers, cable, fireproofing, radiant energy shields, and thermolag were not classified as part of this effort.

Quality class QAG was applied to systems and components which perform a fire protection function and are used or installed in the safety-related areas of the "Power Block". Buildings which are included in this definition are the Containment Building, Control Building, Auxiliary Building, Fuel Building, Radwaste Building, Main Steam Support Structure, Condensate Storage Tank Pump Building, Essential Spray Pond Pump House, and tunnels connecting these locations. Systems and equipment included in this definition are:

1. Fire suppression carbon dioxide and detection systems protecting or installed in the buildings defined above.

   Fire suppression systems include automatic suppression systems and manual hose stations, The water suppression systems also include portions of the fire water supply system including water storage, fire pumps, and piping supplying these systems.

2. Features of the fire area and fire zone barriers are defined in the Fire Protection Evaluation Report, PVNGS FSAR Appendix 9B. These features include:

   - Fire walls
   - Fire dampers
   - Fire rated penetration seals
   - Fire rated seismic gap seals
   - Fireproofing installed to insure the integrity of fire barriers (e.g., structura steel fireproofing, cabletray support fireproofing and HVAC support fireproofing)

3. Barriers (both fire rated and non-fire rated) installed for 10CFR50 Appendix R redundant safe shutdown circuit as identified in the Fire Protection Evaluation Report, PVNGS FSAR Appendix 9B.

4. The lube oil collection system for the reactor coolant pumps.

5. Emergency lighting and communications systems and components required to meet 10CFR50 Appendix R safe shutdown requirements.

C. Resulting Three Categories of Classifications for Fire Protection Equipment

As a result of the application of these criteria, some items previously classified as NQR were reclassified to QAG. The fire protection equipment that is the subject of this evaluation may fall into one of these categories:

1) The equipment is QAG and was treated as QAG prior to the recent project to review the classification of all components. (QAG)

2) The equipment is QAG now but was NQR prior to completion of the classification review project. (QAG*)

3) The equipment is NQR now. (NQR)

D. Fire Protection Equipment Classification

The following table is the list of systems/equipment that APS has determined should be governed by the Operations Quality Assurance Criteria Manual, based on the classification requirements reviewed above. Along with this list, is the current classification for that equipment.

Equipment	Quality Class
Fire Suppression	QAG(1)
Detection and Actuation	QAG(2)
Fire Zone Barriers	QAG*
Lube Oil Collection System for RCPs	QAG*
Emergency Lighting	QAG*
Communications	NQR
Lightning Protection	NQR
Control Building HVAC (exhaust section)	NQR
Manually operated (non-fixed) equipment	NQR

- Hoses and Nozzles
- SCBA
- Fire Extinguishers
- Portable Fire Protection Equipment

(1) With the exception of floor drains, trips, and alarms, fire hydrants, and water storage tanks which are NQR.

(2) With the exception of security system portions of the alarm system.

Evaluation of Status of PVNGS Fire Protection Equipment

Due, in part, to the fact that Fire Protection Technical Specifications were at one time in place for Palo Verde with corresponding surveillance testing requirements, the implementation of controls for fire systems quality assurance were more comprehensive for the affected systems/equipment. These systems and equipment are primarily those whose function it is to detect, contain and extinguish fires (e.g., fire detection and actuation, fire barriers and fire suppression). Thus the most direct acting equipment features for fire control have tended to be more rigorously treated in the past than those systems/equipment that are less directly related to fire control (e.g., communications, lighting, etc.).

A. Systems and equipment identified as QAG

Those systems and fire protection equipment identified as QAG historically are in compliance with the Operations Quality Assurance Criteria Manual at PVNGS, and the implementation of administrative controls to ensure adherence to the QA criteria are well established.

B. Systems and equipment identified as QAG*

Those systems and fire protection equipment identified as QAG* have been recently upgraded to QAG. Although this equipment is governed by the Operations Quality Assurance Criteria Manual and associated quality programs, the status of implementation of administrative controls to ensure adherence to the QA criteria needs to be established.

C. Systems and equipment identified as NQR

The systems and fire protection equipment identified as NQR have not been upgraded to QAG. Further review indicates that this may not be in compliance with the PVNGS Quality Assurance Program since various aspects of program implementation rely on the equipment classification code to trigger invocation of the required quality controls. However, the following discussion presents a description of the difference between the QAG program and NQR controls.

D. Description of PVNGS Treatment of NQR Equipment vs. QA Program Criteria

The discussion below indicates that the controls provided for NQR fire protection equipment are similar in most instances to those for QAG equipment, thus increasing our confidence that NQR equipment will remain functional and be capable of providing fire protection.

1. OQACM Criterion 3 Design Control

Design Control measures applied to NQR items are equivalent to those applied to Quality Related except that NQR design change documents do not require review by the QA organization.

2. OQACM Criterion 4 Procurement Document Control

The procurement document control measures applied to NQR items do not fully comply with those described in the OQACM. Review by Procurement Engineering and QA to assure that changes to the original technical requirements are properly evaluated is not required for NQR procurement documents. Responsibility for these determinations is assigned elsewhere in the organization. QA and documentation requirements are typically not included in NQR procurement documents.

3. OQACM Criterion 5 Instructions, Procedures, and Drawings

NQR fire protection activities are accomplished in accordance with approved procedures, instructions, and drawings. However, the review and approval cycle for NQR procedures may not comply with OQACM requirements.

4. OQACM Criterion 7 Control of Purchased Material, Equipment, and Services

The control measures applied to NQR are proceduralized but items do not fully comply with the OQACM in the following respects:

1. Vendor selection is not based on the criteria established in the OQACM Criterion 7.

2. QA/QC involvement is not required for the receipt of NQR items although receipt inspections are performed by other organizations.

5. OQACM Criterion 10 Inspection

Fire protection inspection activities are performed by the Fire Protection Department on those items that have been classified NQR. These inspections do not fully comply with the OQACM, because the inspection procedures and independence of the inspector have not been approved by the QA Department as required by the OQACM and the inspection personnel have not been certified per ANSI N45.2.6 as required by the OQACM.

6. OQACM Criterion 11 Test Control

Test control measures applicable to NQR items are equivalent to those applied to Quality Related except that the QA Department may not be given the opportunity to review NQR test procedures as would be required by the OQACM Criterion 11.

7. OQACM Criterion 14 Inspection Test and Operating Status

Inspection, test, and operating status control measures applicable to NQR items are equivalent to those applied to Quality Related.

8. OQACM Criterion 15 Nonconforming Items

NQR nonconformances may be documented using the same documents and procedures as used for Quality Related. However, work requests or Engineering Evaluation Requests (EERs) are typically used for NQR activities.

9. OQACM Criterion 16 Corrective Action

Applicable corrective action programs (e.g., work requests, EERs, CARs, Audit Findings, Quality Deficiency Reports) are applied to NQR items and activities.

10. OQACM Criterion 17 Records

NQR records are stored and maintained in a manner equivalent to Quality Related.

11. OQACM Criterion 18 Audits

Audits are and have been performed on the NQR portions of the fire protection program.

It should be noted that the above identified differences in proper application are based on data review to date and may not be all inclusive. Any further identified differences will be identified in the July 20, 1990 submittal.

E. Results of Quality Audits and Monitoring

As mentioned above, the APS Quality Assurance organization has performed detailed audits and periodic monitorings of NQR portions of the Palo Verde fire protection program. The results of these audits have generally confirmed that administrative controls are effective in assuring that quality programs for NQR equipment are properly executed. This provides confidence that the quality programs are effective in assuring the proper functioning of Palo Verde fire system equipment.

F. Compensatory Measures

The PVNGS fire system impairment program provides for compensatory measures to be provided in the event that fire protection equipment is found to not be functional. APS has reviewed this program to ensure its applicability to fire system equipment and has found that additional guidance must be provided to ensure impairments are identified and compensatory measures established when needed for selected equipment. However, most items pertaining to detecting, containing and extinguishing the fire are specifically covered and compensated by the program.

During the course of the further validation efforts should fire system impairments be identified, compensatory measures will be promptly implemented and NRC notified.

G. Justifications for Continued Operation

Our preliminary review has identified that most equipment closely related to detecting, containing and extinguishing a given fire has received programmatic oversight since initial licensing. The Palo Verde fire department personnel are dedicated to provide fire equipment readiness. The emergency lighting program has been extensively reviewed and is capable of supporting safe shutdown. Our review of Quality Assurance Program requirements has demonstrated that quality assurance has been applied to the fire protection program, although in varying degrees. As a result, APS has confidence based on the preliminary reviews that the Fire Protection System at Palo Verde will function when required.

APS is concurrently developing detailed justifications for continued operations (JCOs) for fire systems/equipment classified as NQR and selected systems classified as QAG*. These JCOs are currently under detailed review and validation. However, in each case, preliminary results indicate no evident concerns for current system equipment functional status and no additional compensatory measures for impairments which have been identified. APS intends to continue this review and will provide detailed JCOs for affected equipment in the July 20, 1990 updated submittal.