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SUBJECT: Application for amend to License NPF-41, revising Tech Spec section 3/4.11.1 to allow concentrations of sb-124 discharged from secondary sys liquid waste per 10CFR50.91. Fee forwarded to License Fee Mgt Coordinator.

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May 10, 1987
161-00204-JGH/DAL

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Docket No. STN 50-528 (License No. NPF-41)
Proposed Emergency Technical Specification
Change - Secondary System Liquid Waste
Discharges to Onsite Evaporation Pond
File : 87-F-005-419.05; 87-056-026

Reference: Letter to USNRC (Document Control Desk) from E. E. Van Brunt, Jr., (ANPP) dated March 23, 1987 (161-00100)-EEVB/JRP) Subject: Request for One Time Only Technical Specification Change.

Dear Sirs:

The purpose of this letter is to request an Emergency Technical Specification Change to the Unit 1 Technical Specification Section 3/4.11.1, Secondary System Liquid Waste Discharges to the Onsite Evaporation Pond, pursuant to 10 CFR 50.91. The request period for this proposed change is to begin at 2359 MST on May 23, 1987 and is to expire at 2400 MST on March 31, 1988. As of March 31, 1988, it is expected that Antimony in the secondary system will have undergone additional clean-up and radioactive decay to the point that discharges to the evaporation pond from Unit 1 would meet 5x10-7 uCi/ml. During this period of time, ANPP will actively pursue and evaluate alternatives for potential plant modifications. In addition, but certainly not as our first preference, ANPP will continue to pursue evaluation and preparation of a permanent Technical Specification change for discussion with the NRC.

The proposed change will allow the concentrations of Antimony-124 (Sb-124) discharged from the secondary system liquid waste to the onsite evaporation ponds, to exceed 5x10-7 uCi/ml. This discharge will be within the limits of 10 CFR 20, Appendix B, Table II, Column 2, concentrations for a period not to exceed 292 days. The continued operation of Unit 1 will not result in an unsafe condition because the proposed change is within the limits of 10 CFR 20.

Enclosed within this change request package are the following:

A. Description of the Proposed Change
B. Purpose of the Technical Specification
C. Need for the Technical Specification Change
D. Justification for the Emergency Classification
E. Basis for the No Significant Hazards Consideration
F. Environmental Impact Consideration Determination
G. Marked-up Technical Specification Change Pages

A001 1/1 Add: NRR/DREP/RPB 1 1 Ltr Encl

The referenced letter transmitted an emergency request for a one time only change to the PVNGS Unit 1 Technical Specification 3/4 3.11.1.1. The change submitted by the referenced letter allowed the concentration of radioactive materials discharged from the secondary liquid waste to the onsite evaporation ponds to exceed 5x10-7 uCi/ml (for gamma emitters with half-lives of less than 75 days) for a period not to exceed 60 days. The change became effective at 0800 MST on March 24, 1987 and will remain in effect until 2359 MST on May 23, 1987. During the week of April 27, 1987, ANPP determined the referenced Emergency Technical Specification Change Request would not afford adequate time for removal of the isotope Antimony-124 (Sb-124). ANPP herewith submits the attached proposed Emergency Technical Specification Change Request to allow additional time for removal of the isotope SB-124. If the NRC does not allow the request to be processed as an Emergency Technical Specification Change, we request this change be given a most expeditious review and approval by the NRC.

Pursuant to the requirements of 10 CFR 50.91(b)(1), and by copy of this letter, we have notified the Arizona Radiation Regulatory Agency of this request for an Emergency Technical Specification change. In accordance with the requirements of 10 CFR 170.12(C), the license amendment application fee of $150.00 has been forwarded to the USNRC Licensee Fee Management Coordinator.

Very truly yours,

J. G. Haynes
Vice President
Nuclear Production

JGH/DAL/ls
Attachment

cc: O. M. De Michele (all w/a)
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E. A. Licitra
R. P. Zimmerman
J. B. Martin
C. F. Tedford
A. C. Gehr
R. M. Diggs (with WFD $150)

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LCTS Coordinator

ATTACHMENT

A. DESCRIPTION OF THE PROPOSED CHANGE REQUEST

The proposed change request would modify Technical Specification 3.11.1.1 by changing the specification to allow (effective May 23, 1987) the concentration of Antimony-124 (Sb-124) discharged from the secondary liquid waste to the onsite evaporation ponds, to exceed 5x10-7 uCi/ml, but be limited to 10 CFR 20, Appendix B, Table II, Column 2 concentrations (2x10-5 uCi/ml) until 2400 hours on March 31, 1988.

B. PURPOSE OF THE TECHNICAL SPECIFICATION

This specification is provided to ensure that at any time during the life of the nuclear station, the annual total body dose due to ground contamination of an UNRESTRICTED AREA, arising from transportation and deposition by wind of the accumulated activity discharged to the pond from the secondary system of plant (if the pond gets dried up) on the UNRESTRICTED AREA, is within the guidelines of 10 CFR 20 for the above mentioned postulated event.

Restricting the concentrations of the secondary liquid wastes discharged to the onsite evaporation ponds will restrict the quantity of radioactive material that can get accumulated in the ponds. This, in turn, provides assurance that in the event of an uncontrolled release of the pond's contents to an UNRESTRICTED AREA, the resulting total body annual exposure from ground contamination to a MEMBER OF THE PUBLIC at the nearest exclusion area boundary will be within 0.5 rem.

This specification applies to the secondary system liquid waste discharges of radioactive materials from the reactor unit to the onsite evaporation pond. Since the chemical neutralizer tank concentrations will bound concentrations in other secondary waste discharges, requirements stipulate that sampling and analysis of other secondary waste discharges need be performed only if the sampling and analysis of the concentration exceeds the specified LLD.

C. NEED FOR THE TECHNICAL SPECIFICATION CHANGE

The purpose for the requested Technical Specification change is to allow power operation of the unit following the recent repair of a steam generator tube leak and while contamination from the tube leak is being flushed from the secondary system. On January 20, 1987, Unit 1 was brought to cold shutdown to repair steam generator tube leaks. At that time efforts were begun to remove radioactive contaminants from the secondary system which entered the secondary as a result of the tube leak. On March 5, 1987, the unit was returned to power operations and ANPP continued its efforts to remove secondary system contamination.

Secondary system demineralization at PVNGS consists of the following methods:

1. Steam Generator Blowdown Demineralization.

2. Condensate Demineralization and resultant resin bed regeneration waste transfer to the radwaste system.

3. Condensate Demineralization resin bed change out - no regeneration of ion beds.

4. Condensate Demineralization and resultant resin bed regeneration wastes with additional mobile purification added with wastes eventually transferred to the evaporation pond per Technical Specifications.

These are discussed further as follows:

The blowdown demineralizers are shown in figure 1. The blowdown demineralizers are used during periods of off-normal steam generator chemistry to remove impurities from the steam generator blowdown as described in the PVNGS FSAR Section 10.4.6.2.2. The blowdown demineralizers were able to remove normal PWR fission and corrosion products and is removing some of the Antimony-124 (Sb-124). Sb-124 is "hiding" in the steam generator system and "hideout return" is occurring over time. Due to the small rate of flow through the blowdown deminerlizers and the occurrence of hideout return, the rate of clean-up is small. Steam generator blowdown concentrations for Sb-124 are on the order of 5x10-7 uCi/ml.

The blowdown demineralizer resins are being changed out and shipped as radwaste rather than being regenerated. Such change out has been required only infrequently.

The condensate demineralizers are shown in figure 1 and are described in the PVNGS FSAR, Section 10.4.6.2.1. The condensate demineralizers serve to maintain feedwater purity during periods of startup and condenser leakage. Additionally, at PVNGS the condensate demineralizers are operated continuously to maintain secondary system chemistry within the EPRI Steam Generator Owners Group Guidelines. The Guidelines provide high quality steam generator feedwater and help assure integrity of the steam generator tubes. ANPP chemistry is observing Sb-124 steam carryover to the condenser. This carryover is being concentrated on the resin when the condensate is pumped to the condensate demineralizers. When a condensate demineralizer bed becomes fully loaded with impurities (which it has removed from secondary water) it must be regenerated. The regeneration process concentrates both the radioactivity and impurites which the demineralizers have removed. This impurity solution is subsequently pumped to the chemical waste neutralizer tanks (figure 1). Condensate demineralizer regenerate waste has shown Sb-124 concentrations on the order of 1x10-5 uCi/ml prior to dilution in the chemical waste neutralizer tanks (NOTE: The releases to onsite evaporation ponds have been limited to activities of between 5x10-6 uCi/ml and 5x10 -7 uCi/ml because of additional cleanup from contracted mobile purification units, MPU figure 1). ANPP then transferred condensate demineralizer regenerate waste to the radwaste system (via the pathway shown in figure 1) in a further attempt to remove Sb-124.

Because of the high dissolved solids content of these regenerate wastes from normal plant operation, the radwaste system processing capacity proved inadequate to support full power operation. Currently, Unit 1 operation at 100% power requires the normal regeneration of approximately one condensate demineralizer bed per day, in the absence of condenser tube leaks. Reduction of this rate of regeneration would require minimization of demineralizer throughput and hence, reduction of plant power levels. Under the current operating conditions, the radwaste system could support power operation to only about 20% of full power. The radwaste system was not designed to the radwaste volumes required for normal full flow demineralization resulting from meeting the EPRI chemistry requirements.

In an additional cleanup attempt, spent condensate demineralizer resins were exchanged for fresh resins (without regeneration) to avert the problems associated with demineralizer regenerate wastes. The consumption of fresh resin in this mode of operation was so high that ANPP resin suppliers were unable to keep up with orders.

Finally, mobile purification units MPU's figure 1, were contracted from Pacific Nuclear Systems and Ecolochem, and connected to the chemical waste neutralizer tanks to attempt in situ removal of Sb-124 from the chemical waste neutralizer tanks. A variety of resins, filters, and filter aids were used and no method was found which could reduce the Sb-124 concentration rapidly enough to allow continued demineralizer operations. In conjunction with these efforts, KLM and Duratech companies were contracted for technical support on Antimony removal.

Presently ANPP is using the blowdown demineralizer, the condensate demineralizer, the waste neutralizer tanks with the MPU's, and subsequent discharge to the evaporation ponds for the cleanup effort. No reasonable alternative presently exists other than this method.

D. JUSTIFICATION FOR THE EMERGENCY CLASSIFICATION

Justification for the emergency classification for a proposed Technical Specification change must establish the following:

1) That immediate action is required or the unit will be derated or shutdown.

2) The date the problem was discovered (timeliness); and

3) Demonstration that there is no alternative available to ANPP other than the Emergency Technical Specification Change Request and that every effort was made to avoid this circumstance.

This Emergency Technical Specification Change Request meets the foregoing provisions as follows:

1) The current Technical Specification allows for only a 60 day time period (ending May 23) to cleanse the secondary system of Sb-124. This Emergency Technical Specification Change Request is necessary to avoid severe derating and subsequent loss of power generation for PVNGS Unit 1 by avoiding a severe reduction in total flow through the condensate

demineralizers. This reduction would require a forced power reduction to allow Sb-124 cleanup after the current Technical Specification time limit is exceeded. Derating would be necessary because, as discussed above, continued Sb-124 cleanup would involve diverting condensate demineralizer regenerate to the radwaste system. The radwaste system capacity for these regenerates is sufficient to support power operation at only 20% of full power. Therefore, this Emergency change request is required to avoid a severe loss of power generation.

2) ANPP has monitored the secondary side cleanup effort over the last 30 day period. During the week of April 27, 1987, ANPP concluded that complete cleanup of the Sb-124 could not be completed as expected within the 60 day time frame of the previously referenced Emergency Technical Specification Change Request. Up until that time ANPP fully expected, and had no reason to believe otherwise, that the Sb-124 would be removed by May 23, 1987. Therefore, this Emergency Change Request is being made in a timely manner. It is evident from our conversations with other nuclear personnel that there has been very little experience with Sb-124 in the United States. Also, ANPP has contacted German plants and suppliers and has continued discussion on Sb-124 removal experience.

3) There is no alternative available to ANPP other than this Emergency Technical Specification Change Request. All known available technology has been applied to remove Sb-124 from the PVNGS Unit 1 secondary system as previously discussed. None of the methods applied have decontaminated the Unit 1 secondary of Sb-124 within the alloted 60 days of the referenced Emergency Technical Specification Change Request. This Emergency Technical Specification Change Request is necessary to avoid derating and shutdown of PVNGS Unit 1. In order to achieve this, a suspension of the pre-noticing requirements of 10 CFR 50.91 is required and expeditious granting of the proposed change under emergency conditions is respectfully requested. ANPP will continue to evaluate other design methods as a long term resolution to increase the radwaste system capacity.

E. BASIS FOR THE NO SIGNIFICANT HAZARDS CONSIDERATION

1. The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with a proposed amendment would not: (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) Involve a significant reduction in a margin of safety.

A discussion of these standards as they relate to the amendment request follows:

Standard 1--Involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated, because the proposed change does not alter the current design of the facility. The Technical Specifications are being changed to allow continued operation of the unit while the concentration of Sb-124 discharged from secondary system liquid waste to the onsite evaporation ponds is above the lower limit of detectability but within the limits of 10 CFR Part 20, Appendix B, Table II, Column 2. This allows for cleanup (decontamination) activities of radioactive liquids resulting from a primary to secondary leak, while maintaining the unit in an operational condition. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Standard 2--Create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated because the proposed amendment does not vary, effect, or provide any physical changes to the facility. This proposed change allows for discharge of Sb-124 which has been generated during processing/ regeneration of condensate demineralizer resins. The small amounts (5x10-6 uCi/ml to 5x10-7 uCi/ml) of total Sb-124 activity present in regeneration wastes, which will be discharged into the onsite evaporation ponds, are within the limits of 10 CFR Part 20, Appendix B, (2x10-5 uCi/ml) Table II, Column 2. (The current inventory of Antimony in the secondary system is estimated to be less than 1 Curie.) For these reasons, it has been determined that the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3--Involve a significant reduction in a margin of safety.

The requested amendment does not involve a significant reduction in a margin of safety, because the proposed change does not affect the design basis of the plant. The existing limits for concentrations of radioactive material discharged from secondary system liquid waste to the onsite evaporation ponds will remain at 5x10-7 uCi/ml for principal gamma emitters, except Sb-124. Releases of Sb-124 may be allowed to exceed 5x10-7 uCi/ml but will be limited to 10 CFR 20, Appendix B, Table II, Column 2 concentrations for the period of this Technical Specification (which expires at 2400 hours on March 31, 1988.) This will allow PVNGS to maintain a dose to the public of less than 500 mrem per year from accumulated particulates in the evaporation ponds after the three units have been operating for 40 years. The current inventory of Sb-124 in the

secondary system will have decayed to below minimum detectable activity in 292 days. Therefore, the contribution of Antimony to the post-40 year accident analysis dose would be negligible relative to the dose from the isotopes of the original analysis on which this Technical Specification is based. This is consistent with the design basis of the facility. For these reasons, it has been determined that the change does not involve a significant reduction in the margin of safety.

2. The proposed change matches one of the examples given in 51 FR 7751 of amendments that do not involve a significant hazards consideration. Specifically, the proposed amendment is a change which in someway may reduce the safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system, (Example VI).

F. SAFETY ANALYSIS OF THE PROPOSED CHANGE REQUEST

The proposed Technical Specification change will not increase the probability of occurrence, or the consequences of an accident or malfunction of equipment import to safety previously evaluated in the FSAR. This change will not affect the operation of the facility, it will increase the allowable limits of concentration of discharge of Sb-124 into the evaporation ponds from secondary system liquid waste.

The proposed Technical Specification change will not create the possibility for an accident or malfunction of equipment of a different type than any evaluated previously in the FSAR. No physical changes are being made to the facility and this change is within the previously evaluated design and operation of the facility. The proposed Technical Specification change will not reduce the margin of safety as defined in the basis for any Technical Specification. The basis for specification 3.11.1.1 uses the guidelines of 10 CFR 20 which, as noted by the footnote to the specification, will be the limiting factor for Sb-124.

This provides assurance that the resulting total body annual exposure from ground contamination on to a member of the public at the nearest exclusion area boundary will be within the limits of 10 CFR 20.

G. ENVIRONMENTAL IMPACT CONSIDERATION DETERMINATION

The proposed change request does not involve an unreviewed environmental question because operation of PVNGS Units 1 and 2, in accordance with this change, would not:

1. Result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Statement (FES) as modified by the staff's testimony to the Atomic Safety and Licensing Board; or

2. Result in a significant change in effluents or power levels; or

3. Result in matters not previously reviewed in the licensing basis for PVNGS which may have a significant environmental impact.

H. MARKED-UP TECHNICAL SPECIFICATION PAGES

(see page 3/4 11-1)