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KNIGHTON,G. Licensing Branch 3

SUBJECT: Forwards info on SSER 7,Section 9.3 re chemistry control & sampling sys per License Condition 2.C(23).

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Arizona Public Service Company

ANPP-31831-EEVB/WFQ/KLM
January 31, 1985

Director of Nuclear Reactor Regulation
Attention: Mr. George Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Chemistry Control and Sampling Systems
Docket No: STN-50-528; License No. NPF-34
File: 85-056-026; G.1.01.10

References:
1) Letter to G. W. Knighton, NRC, from E. E. Van Brunt, Jr, APS, dated December, 10, 1984; Subject: PVNGS FSAR Update - Nuclear Sampling System
2) Letter to G. W. Knighton, NRC, from E. E. Van Brunt, Jr., APS, dated December 18, 1984; Subject: Post-FDA Proposed CESSAR Changes
3) Letter to G. W. Knighton, NRC, from E. E. Van Brunt, Jr., APS, dated December 21, 1984; Subject: Justification for CESSAR Changes

Dear Mr. Knighton:

License No. NPF-34 for PVNGS Unit 1 in Section 2.C(23) is conditioned as follows:

> "Chemistry Control and Sampling Systems (Section 9.3, SSER 7)
>
> By February 1, 1985, APS shall provide details for staff review on: (1) the type of material used in the hydrazine transfer line in the containment spray system; (2) the pressure for relief protection in Nuclear Sampling System; (3) the water chemistry limits for the reactor coolant makeup water, the primary coolant water, the steam generator secondary water, the feedwater, condensate, and demineralizer effluent in the reactor makeup water system."

Attached, for your staff's review, are the details requested by the license condition. The submittal of this information meets the requirement of License Condition 2.C(23).

A001
1/1

Mr. George Knighton
Palo Verde Nuclear Generating Station (PVNGS) Unit 1
Chemistry Control and Sampling Systems

Please contact Mr. W.F. Quinn of my staff if you have any questions on this matter.

Very truly yours,

E E Van Brunt / DBK

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

EEVBJr/KLM/dlm
Attachment

cc: E.A. Licitra (w/attachment)
R.P. Zimmerman (w/attachment)
A.C. Gehr (w/attachment)

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Don B. Karner, represent that I am Assistant Vice President, Nuclear Production of Arizona Public Service Company, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, that I have read such document and know its contents, and that to the best of my knowledge and belief, the statements made therein are true.

Don Karner

Don B. Karner

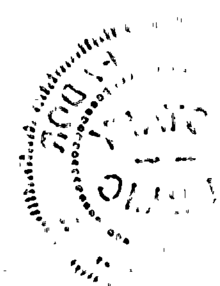
Sworn to before me this 31 day of January, 1985.

Nora E. Meador

Notary Public

My Commission Expires:

My Commission Expires April 6, 1987



ATTACHMENT

Item (1):

The type of material used in the Hydrazine transfer line in the containment spray system.

RESPONSE:

The Hydrazine transfer line in question is part of the Hydrazine Fill System which interfaces with the Containment Spray Iodine Removal System. The materials that will be utilized to transfer 35% Hydrazine to the containment spray iodine removal system will be 304 Stainless steel fittings and pump internals and either Lab Grade PVC tubing (Tygon) or Polyethylene. Tygon tubing has low amounts of leachable chloride and is subject to some slight degradation by Hydrazine over prolonged contact periods. This is not a problem because Hydrazine will be in contact with the tubing for short periods of time during the fill operation of the Spray Chemical Storage Tank (SCST) only, rinse lines are provided for the system and the tubing will be replaced as necessary. Polyethylene can also be used.

The pump assembly, fittings and tubing are utilized for maintenance purposes only and are not permanently installed in the Unit. The pump assembly, fittings and tubing will be brought to the SCST for fill operations and stored in a low or non-radiation zone.

ITEM (2):

The pressure for relief protection in Nuclear Sampling System.

RESPONSE:

During pre-core hot functional testing, the nuclear sampling system obtained less than the required 1.0 gpm purge flow from the Reactor Coolant System (RCS) to the volume control tank (VCT). It was determined that piping frictional head losses were large enough that the system, at its design pressure of 75 psig, yielded only about a 0.6 gpm purge flow.

The sampling system pressure is controlled by a needle valve and was limited only by the low pressure relief valves setpoints and pressure instrument capabilities. The other components are designed to operate at system pressure in excess of 140 psig. By increasing the maximum system design pressure to 140 psig and changing the relief valve setpoints and the pressure instruments accordingly, adequate purge flow can be obtained even at the most restrictive (60 psig) VCT back pressure.

ITEM (3):

The water chemistry limits for the reactor coolant makeup water, the primary coolant water, the steam generator secondary water, the feedwater, condensate, and the demineralizer effluent in the reactor makeup water system.

RESPONSE:

For ease of understanding, Item (3) will be discussed as six separate items below.

Item 3a:

(CESSAR Table 9.2-1): Should suspended solid limits be retained at the demineralizer effluent to determine that demineralizer resin is functioning properly?

RESPONSE:

Water quality measurements, including conductivity, taken of the demineralizer effluent will detect makeup system mal-operation which could result in resin release or suspended solids release.

The quality of the Reactor Coolant makeup water is controlled at the Reactor Makeup Water Tank (RMWT) to meet the limits specified in Table 9.3-1.

The quality of the secondary system water is controlled at the condensate and feedwater, and steam generator to meet the limits specified in CESSAR Table 10.3.4-2 and 10.3.4-1, respectively.

Therefore, the suspended solid limits need not be retained in CESSAR Table 9.2-1 for the demineralizer effluent.

[illegible] 23 AM [illegible]

Item 3b:

(CESSAR Table 9.3-1): Why was the abnormal limit column on Reactor Makeup Water deleted?

RESPONSE:

The abnormal limits were deleted for the Reactor Makeup Water since the abnormal limits for the reactor coolant makeup water were less restrictive than normal limits, of Table 9.3-1. Prudent control of reactor coolant impurities, also in Table 9.3-1 is now based on the more restrictive normal limits alone.

Item 3c:

(CESSAR Tables 10.3.4-1 and 10.3.4-2): Are the changes to secondary chemistry limits consistent with current industry guidance?

RESPONSE:

The changes in secondary system chemistry limits and control points, Tables 10.3.4-1 and 10.3.4-2, are within the PWR secondary water chemistry guidelines generated by the EPRI Steam Generator Owners Group. These changes reflect the consensus opinion of utility and industry experts as being necessary and achievable chemistry control limits for secondary system integrity.

Item 3d:

(CESSAR Table 9.3-1): Are there any sources of Reactor Makeup Water other than the demineralizer which could introduce SiO_2 or Conductivity to the Reactor Makeup Water Storage Tank?

RESPONSE:

Yes, however, the limits of Table 9.2-1 are applicable to the external sources of water used to supply the Reactor Makeup Water Storage Tank (RMWT). Thus, SiO_2 and conductivity are appropriately controlled at the RMWT.

Item 3e:

(CESSAR Table 9.3-1): Can 30-50 ppm Hydrazine be maintained in the reactor coolant system at less than 150°F?

RESPONSE:

With RCS recirculation provided by shutdown cooling system operation, there should be no difficulty in maintaining 30-50 ppm Hydrazine at low temperatures. As an example, steam generator wet layup chemistry utilizes Hydrazine in concentrations of 75-200 ppm, a specification which is routinely achieved.

ATTACHMENT (Cont'd)

Item 3f:

(CESSAR Table 9.3-1): Should note (10) to this table be extended to whenever reactor coolant system temperature is less than 150°F?

RESPONSE:

Note (10) to Table 9.3-1 applies to operation below 150°F. Oxygen is controlled prior to exceeding 150°F during heatup by either maintaining the oxygen concentation below 0.1 ppm or by having a Hydrazine residual present at a concentration of 1.5 times the oxygen concentration.