

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

November 8, 1983

Director of Nuclear Reactor Regulation  
Attention: Ms. E. Adensam, Chief  
Licensing Branch No. 4  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of the Application of ) Docket Nos. 50-390  
Tennessee Valley Authority ) 50-391

NUREG-0737, item II.F.1, states that all potential accident release paths should be monitored to detect and measure concentrations of noble gas fission products in plant gaseous effluents during and following an accident.


Based upon the technical bases provided in the enclosure to this letter, it is TVA's position that no substantial increase in plant safety is realized by installing high-range noble gas monitors on the steam generator safety and PORV release lines at the Watts Bar Nuclear Plant. Therefore, we request that an exemption be granted for not installing these monitors.

We request that this matter be reviewed expeditiously and a meeting be scheduled as soon as practical to allow for more detailed discussions, if necessary.

If you have any questions concerning this matter, please get in touch with D. B. Ellis at FTS 858-2681.

Very truly yours,

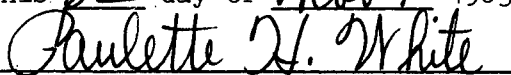
TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Licensing

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PDR ADOCK 05000390  
A PDR

Sworn to and subscribed before me  
this 8<sup>th</sup> day of Nov. 1983



Notary Public  
My Commission Expires 9-5-84

Enclosure

cc: U.S. Nuclear Regulatory Commission (Enclosure)  
Region II  
Attn: Mr. James P. O'Reilly, Regional Administrator  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30303

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## ENCLOSURE

### WATTS BAR NUCLEAR PLANT NUREG-0737, ITEM II.F.1 REQUEST FOR EXEMPTION TO INSTALL HIGH-RANGE NOBLE GAS EFFLUENT MONITORS ON THE STEAM GENERATOR SAFETY AND PORV RELEASE LINES

#### NRC Basis For This Monitor System

Based on discussions in NUREG-0660, -0578, -0737, and Regulatory Guide 1.97 and conversations with NRC staff members, there are two main functions of these monitors.

1. To provide information to the operator that will enable him to determine if a steam generator tube rupture has occurred;
2. To allow for early indication of the need to initiate actions necessary to protect the public and for an estimate of the magnitude of the impending threat.

TVA has adequate instrumentation at Watts Bar to detect a steam generator tube rupture. These include a radiation monitor which alarms in the main control room on high radiation in the blowdown line and a radiation monitor on the condenser vacuum exhaust which alarms in the main control room. Additionally, level instrumentation in the steam generators (i.e., unexpected high level) provides indication of a tube rupture.

TVA Radiological Emergency Plan implementing procedures at Watts Bar fully provide for immediate determination of the level of emergency associated with a steam generator tube rupture without the use of the subject monitors. As far as recommending any immediate actions to protect the public, that is based on the level of emergency determined above. By the time the necessary 'links' are in place to initiate further public action, more accurate measurements of discharges and actual site releases along with meteorological data will be available.

#### Accuracy of Available Monitoring Systems

NUREG-0737 states that the monitor read out must be converted to  $\mu\text{Ci/cc}$ ; however, the available detectors are designed to read in R/hr and, because the steam lines are about three feet in diameter and over one-inch thick with several more inches of insulation, a  $\mu\text{Ci/cc}$  conversion would be questionable (from Post Accident Monitoring of Radiation by Douglas J. Holloway of General Atomic, dated October 7, 1981).

NUREG-0737 also states that procedures or calculational methods shall be developed to convert from instrument readings to release rates per unit time based on exhaust flow and radionuclide spectrum distribution; however, available flow instrumentation does not allow direct steam flow measurement at the low flow associated with the opening of a safety valve. Additionally, the radionuclide spectrum is highly dependent upon a number of variables (i.e., fuel temperature, degree of cladding failure, degree of fuel failure, transfer mechanism from fuel to release point, etc.) which are constantly changing and cannot be directly measured; therefore, conversion to release rates cannot be made within the accuracy requirement of Regulatory Guide 1.97 (i.e., a factor of 2).

#### Design Basis Steam Generator Tube Rupture

As shown in chapter 15 of the Watts Bar FSAR, the site boundary and low population zone doses from a design basis steam generator tube rupture are insignificant. If we combine design basis accidents and assume we have a large-break LOCA coincident with a steam generator tube rupture, the primary side pressure decrease would result in secondary to primary flow. This would also result in a secondary side depressurization which would prohibit the opening of the steam generator safeties and thus negate that as a potential release pathway. If we consider a steam generator tube rupture coincidence with a small-break LOCA where the primary side pressure remains above the secondary side pressure, FSAR chapter 15 analysis shows that no cladding or fuel failure results; therefore, there is no significant radionuclide source. Thus, there is no mechanism in the design basis of the plant under which the steam generator safeties would serve as a pathway for significant radioactive releases.

#### Conclusion

No design basis or combination of design basis accident will result in significant radionuclide release through the steam generator safety valves. Additionally, we have adequate means available to detect and assess the steam generator tube rupture accident. Finally, methods for determining release rates with any reasonable accuracy are not presently available. Thus, we find that no significant increase in safety will result from the one and one-half to four million dollar expenditure involved with providing these monitors at Watts Bar.