Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

February 8, 2011 10 CFR 30.6

MS16
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Licensing Assistance Team
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

ATTN: Dennis R. Lawyer

Watts Bar Nuclear Plant, Unit 2
Material License No. 41-31424-01
Docket No. 30-38395

Subject: **Response to Request for Additional Information Concerning Application for New License, Control No. 573898**

Reference: TVA letter to NRC dated November 24, 2010, "Tennessee Valley Authority, Request for Additional Information Concerning Application for New License, Control No. 573898"

The purpose of this letter is to provide Tennessee Valley Authority's (TVA's) response to Request for Additional Information received during the February 7, 2011 telephone call with Dennis Lawyer (NRC Reviewer) pertaining to his review of the referenced letter. The enclosure provides TVA's response and supporting information.

If you have any questions, please contact Bill Crouch at (423) 365-2004.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 8th day of February, 2011.

Respectfully,

Marie Gillman
Acting Watts Bar Unit 2 Vice President

573898

NMSS/RGN1 MATERIALS-002

Enclosure:

Response to Request for Additional Information Concerning Application for New License No. 41-31424-01

cc (Enclosure):

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

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Director, Office of Federal and State Materials and
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Washington, D.C. 20555-0001

NRC Resident Inspector Unit 2
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, TN 37381

ENCLOSURE

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION CONCERNING APPLICATION FOR NEW LICENSE NO. 41-31424-01

1. ***NRC Request:***

   Provide the Model Number and Manufacturer for the CA-252 Start-up Source.

   TVA Response:

   SOURCE TYPE: General Neutron Source

   MODEL No.: FTC Yodel 100 Series

   MANUFACTURER/DISTRIBUTOR: Frontier Technology Corporation
   1641 Burnett Drive
   Xenia, Ohio 45385

2. ***NRC Request:***

   Are the irradiation specimen surveillance capsules that contain Neptunium (NP- 237) and Uranium (U-238) considered "special form" radioactive materials in accordance with 10 CFR 71.4? Are these capsules opened on site or shipped to a facility?

   TVA Response:

   Discussions held with Westinghouse Electric Corporation, LLC, the supplier of the irradiation specimen surveillance capsules, confirmed that the capsules are not "special form" radioactive materials as defined in 10 CFR 71.4.

   There are six irradiation specimen surveillance capsules that will be installed internal to the reactor vessel and removed on a pre-defined schedule to obtain information on the effects of radiation on the reactor vessel material under operating conditions. Once removed, the irradiation specimen surveillance capsules cannot be opened on site but instead must be shipped to a "Hot Cell" facility for analysis.

3. ***NRC Request:***

   Provide additional information regarding the disposal process for sealed and non-sealed sources and byproduct materials. If effluent pathways are used to dispose of non-sealed source and byproduct materials, provide assurance that the requirements of 10 CFR Part 50 are met. Also discuss sealed source disposal by offsite vendors.

TVA Response:

Watts Bar Nuclear Plant (WBN) Unit 2 will utilize the same guidance currently provided for WBN Unit 1 for the release of radioactive effluent.

Liquid Effluent

WBN does not utilize "Sanitary Sewage Systems" as defined in NUREG-1556, Vol. 7, "Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope, dated December 1999." However, WBN does utilize approved waste streams to release radioactive materials to unrestricted areas.

Control is provided to ensure that the concentration of radioactive materials released in liquid waste effluents to UNRESTRICTED AREAS will be less than 10 times the concentration values specified in Appendix B, Table 2, Column 2 to 10 CFR 20.1001-20.2402. It provides operational flexibility for releasing liquid effluents in concentrations to follow the Section II.A and II.C design objectives of Appendix I to 10 CFR 50. This limitation provides reasonable assurance that the levels of radioactive materials in bodies of water in UNRESTRICTED AREAS will result in exposures within (1) the Section II.A design objectives of Appendix I, 10 CFR 50, to a MEMBER OF THE PUBLIC, and (2) restrictions authorized by 10 CFR 20.1301(e). The concentration limit for dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its concentration in air (submersion) was converted to an equivalent concentration in water. This specification does not affect the requirement to comply with the annual limitations of 10 CFR 20.1301(a). This Control applies to the release of radioactive materials in liquid effluents from all reactors at the site. The required detection capabilities for radioactive materials in liquid waste samples are tabulated in terms of the lower limits of detection (LLDs).

Gaseous Effluents

Control provides reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a MEMBER OF THE PUBLIC in an UNRESTRICTED AREA in excess of the design objectives of Appendix I to 10 CFR 50. This Control is provided to ensure that gaseous effluents from all units on the site will be appropriately controlled. It provides operational flexibility for releasing gaseous effluents to satisfy the Section II.A and II.C design objectives of Appendix I to 10 CFR 50. For MEMBERS OF THE PUBLIC who may at times be within the CONTROLLED or RESTRICTED AREAS, the occupancy of that MEMBER OF THE PUBLIC will usually be sufficiently low to compensate for the reduced atmospheric dispersion relative to that for the UNRESTRICTED AREA BOUNDARY. Examples of calculations for such MEMBERS OF THE PUBLIC, with the appropriate occupancy factors, shall be given in the ODCM. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to a MEMBER OF THE PUBLIC at or beyond the UNRESTRICTED AREA BOUNDARY to ≤500 mrem/y to the total body or to ≤3000 mrem/y to the skin. These limits also restrict, at all times, the corresponding thyroid dose rate above background to a child via the inhalation pathway to ≤1500 mrem/y. This Control does not affect the requirement to comply with the annual limitations of 10 CFR 20.1301(a). This requirement applies to the release of radioactive material in gaseous effluents from all reactors at the site. The required detection capabilities for radioactive materials in gaseous waste samples are tabulated in terms of the LLDs.

Sealed Source Disposal

In accordance with RCI-127, "Byproduct and Source Material Control", the WBN Byproduct and Source Material (BSM) Controller coordinates the offsite disposal and/or transfer of sealed source material to another licensee with the concurrence and support of the Radwaste Section. The source material can also be stored onsite for shipment at a later date.

The radioactive waste shipment procedure (RWTP-100) used in conjunction with the Radioactive Material Shipment Manual outlines the responsibilities of site personnel in meeting TVA's commitments and ensuring that the shipments meet U.S. Nuclear Regulatory Commission and U.S. Department of Transportation criteria. This procedure is applicable to all radioactive material and radioactive waste shipped from TVA nuclear sites including samples, sources, non-irradiated incore detectors, laundry, contaminated plant hardware, etc.