

U.S. NUCLEAR REGULATORY COMMISSION

**MATERIALS LICENSE**

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

<p style="text-align: center;">Licensee</p> <p>1. Tennessee Valley Authority</p> <p>2. 3R-C Lookout Place 1101 Market Street Chattanooga, TN 37402</p>	<p>In accordance with the application dated February 19, 2014,</p> <p>3. License number 41-31424-01 is amended in its entirety to read as follows:</p> <hr/> <p>4. Expiration date February 28, 2021</p> <hr/> <p>5. Docket No. 03038395 Reference No.</p>
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<p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Any byproduct material with atomic numbers 1 through 83</p> <p>B. Cesium 137</p> <p>C. Uranium 234</p> <p>D. Uranium enriched to <math>\leq 95\%</math> by weight of the U-235 isotope</p> <p>E. Uranium 238</p> <p>F. Neptunium 237</p> <p>G. Californium 252</p>	<p>7. Chemical and/or physical form</p> <p>A. Any</p> <p>B. Sealed Sources (Eckert &amp; Ziegler Isotope Products dba Isotope Product Laboratories Model HEG-137 and Isotope Product Laboratories Model 301 Series)</p> <p>C. Any</p> <p>D. Fission Chamber</p> <p>E. Surveillance Capsule</p> <p>F. Surveillance Capsule</p> <p>G. Sealed Sources (Babcock and Wilcox Nuclear Energy Model No. BWSR1)</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 100 millicuries per radionuclide and 1000 millicuries total (See also License Condition 13)</p> <p>B. 100 millicuries per radionuclide and 110 millicuries total</p> <p>C. 0.08 milligrams</p> <p>D. 3.9 grams per fission chamber and 15.6 grams total</p> <p>E. 14 milligrams per capsule and 84 milligrams total</p> <p>F. 20 milligrams per capsule and 120 milligrams</p> <p>G. 286 micrograms per source and 572 micrograms total</p>
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9. Authorized use:

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SUPPLEMENTARY SHEET**

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- A. through C. Calibration and standardization of the licensee's instruments.  
 D. Source and intermediate range detectors  
 E. and F. Reactor surveillance capsules  
 G. Reactor startup source

CONDITIONS

10. Licensed material may be used or stored only at the licensee's facilities located at Tennessee Valley Authority, Watts Bar Nuclear Plant, Spring City, Tennessee.
11. The Radiation Safety Officer for this license is Anthony W. Hooks.
12. Licensed material shall be used by, or under the supervision of, Anthony W. Hooks or John W. Wikle.
13. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material to quantities below the minimum limits specified in 10 CFR 30.35(d) for establishing decommissioning financial assurance.
14. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
15. The licensee shall conduct a physical inventory every six months, or at other intervals approved by the U.S. Nuclear Regulatory Commission, to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for five years from the date of each inventory and shall include the radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.
16.
  - A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed six months or at the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State.
  - B. In the absence of a certificate from a transferor indicating that a leak test has been made within the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State, prior to the transfer, a sealed source received from another person shall not be put into use until tested and the test results received.
  - C. Sealed sources need not be tested if they contain only hydrogen-3; or they contain only a

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radioactive gas; or the half-life of the isotope is 30 days or less; or they contain not more than 100 microcuries of beta- and/or gamma-emitting material or not more than 10 microcuries of alpha-emitting material.

- D. Sealed sources need not be tested if they are in storage and are not being used; however, when they are removed from storage for use or transferred to another person and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.
- E. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(c)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations.
- F. Tests for leakage and/or contamination, including leak test sample collection and analysis, shall be performed by the licensee or by other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.
- G. Records of leak test results shall be kept in units of microcuries and shall be maintained for 5 years.
17. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

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18. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Application dated October 28, 2010 (ML103200128)
  - B. Letter dated February 2, 2011 (ML110350423)
  - C. Letter dated February 8, 2011 (ML110410121)



For the U.S. Nuclear Regulatory Commission

Date April 2, 2014

By

***Original signed by Dennis R. Lawyer***

Dennis R. Lawyer  
Commercial, Industrial, R&D and Academic Branch  
Division of Nuclear Materials Safety  
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King of Prussia, Pennsylvania 19406