

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

SEP 12 1988

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

Gentlemen:

In the Matter of the Application of )  
Tennessee Valley Authority )

Docket No. 030-12988

WATTS BAR NUCLEAR PLANT (WBN) - BYPRODUCT MATERIAL LICENSE NO. 41-17572-01 -  
REQUEST FOR AMENDMENT

TVA hereby requests an amendment to the Byproduct Materials License No. 41-17572-01 Item 8.E for WBN. This amendment is needed to increase the total maximum amount of Uranium-235 that may be possessed at any one time, from 0.99 grams to 25.0 grams, because of the upgrades to the excore neutron monitoring system with detectors that comply with the guidance provided in Regulatory Guide 1.97. Each detector is comprised of 2 fission chambers, with a total of 8 grams of Uranium-235 for each detector. This increase in the total maximum amount will allow the procurement of three detectors. These detectors will be in addition to the receipt of the incore fission chambers specified in Amendment 11 of the materials license.

For your convenience, markups of the proposed changes to the license and the license application are enclosed. Your prompt attention to this matter would be appreciated. If there are any questions, please telephone T. W. Horning, WBN Site Licensing, at (615) 365-3381.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*W. J. Ray Jr.*  
Manager, Nuclear Licensing  
and Regulatory Affairs

Enclosures  
cc: See page 2

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U.S. Nuclear Regulatory Commission

cc (Enclosures):

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U. S. Nuclear Regulatory Commission (2)  
Material Radiation Protection Section  
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NRC Resident inspector  
Watts Bar Nuclear Plant  
P.O. Box 700  
Spring City, Tennessee 37381

MATERIALS LICENSE


Amendment No. 11

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, 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 by-product, 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.

Licensee 1. Tennessee Valley Authority Senior Vice President, Nuclear Power  2. 6N 38A Lookout Place, 1101 Market Street, Chattanooga, Tennessee 37402-2801		In accordance with letter dated August 30, 1988, 3. License number 41-17572-01 is amended in entirety to read as follows:
		4. Expiration date September 30, 1993
		5. Docket or Reference No. 030-12988
6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount the licensee may possess at any one time under this license
A. Any byproduct material with Atomic Numbers 1 through 83, inclusive	A. Any	A. Not to exceed 100 millicuries per radionuclide and 1 curie total
B. Cesium 137	B. Sealed sources	B. Not to exceed 450 curies per source and 500 curies total
C. Americium 241	C. Any	C. 10 millicuries
D. Americium 241:Be	D. Sealed neutron sources (Monsanto Model 2721B)	D. Not to exceed 60 millicuries per source 25.0 ←
E. Uranium 235	E. Sealed sources	E. <del>0.99</del> grams
F. Americium 241:Be	F. Sealed neutron sources (Monsanto Model 2723A, Modified)	F. Not to exceed 880 millicuries per source, 1760 millicuries total
G. Neptunium 237	G. Sources (Irradiation Specimens)	G. Not to exceed 15 microcuries per source, 0.5 millicuries total
H. Uranium 238	H. Sources (Irradiation Specimens)	H. Not to exceed 1 microcurie per source, 0.050 millicuries total
I. Californium 252	I. Sealed sources (Westinghouse Custom Made Dwg. No. 1189F43)	I. Not to exceed 300 millicuries per source, 1800 millicuries total



## ITEM 5. RADIOACTIVE MATERIAL

A. Element and Mass Number	B. Chemical and/or Physical Form	Name of Manufacturer and Model Number (if applicable)	C. Maximum Amount Which will be Possessed At Any One Time
(1) Any byproduct material with Atomic Numbers 1 through 83 inclusive	Any		Not to exceed 100 millicuries per radionuclide and 1 curie total
(2) Cesium 137	Sealed Sources (See Item 10F)		Not to exceed 450 curies per source and 500 curies total
NOTE: Sealed sources under (2) are <u>in addition to</u> quantities under (1).			
(3) Americium 241	Any		Not to exceed 10.0 millicuries total
(4) Americium 241:Be	Sealed Sources	Monsanto Model 2721B	Not to exceed 60 millicuries per source
(5) Uranium 235	Fission Chambers		Not to exceed <del>0.99</del> 25.0 grams total 
(6) Americium 241:Be	Sealed Sources	Monsanto Model 2723A, Modified	Not to exceed 880 millicuries per source, 1760 millicuries total
(7) Neptunium 237	Irradiation Specimens		Not to exceed 0.015 millicuries per source 0.5 millicuries total
(8) Uranium 238	Irradiation Specimens		Not to exceed 0.001 millicuries per source 0.050 millicuries total
NOTE: (7) and (8) are encapsulated together.			
(9) Californium 252	Startup Sources	Monsanto per Westinghouse Drwg. No. 1789F43	Not to exceed 300 millicuries per source, 1800 millicuries total

## ITEM 10E. (continued)

- (6) Any indication of intake greater than 5 percent of the MPOB for the critical organ shall require the calculation of MPC-hrs and the inclusion of this exposure estimate in the individual's exposure records.
- (7) If  $\geq 10$  percent of an MPOB is detected, a diagnostic analysis shall be initiated and the dose equivalent for the organ of interest calculated and placed in the individual's personal exposure history. The individual's dose shall be assessed and recorded on an annual basis. This process will continue until the organ burden is less than 10 percent MPOB.

## ITEM 10F. STORAGE OF SOURCES

The Watts Bar Nuclear Plant facility is designed to accommodate safe storage and use of all sources required to support an operating nuclear plant. Facilities to house radioactive material, such as the spent fuel pit, the source locker in the Radiochemical Laboratory, and the filter vault, are constructed and usable for storage areas normally inaccessible to personnel. Approval of source storage locations will be under the direct control of the Radiation Protection Officer. Several small sealed sources are to be housed in various monitors as the monitors are installed throughout the site. All of the activity under source (2) is in sealed sources in various irradiators designed for instrument calibration and/or response check. The source containers are either approved shipping containers or containers designed to house the source when used as an irradiator. Specific containers in which sealed sources of major activity under item 5(2) are housed are listed below.

<u>Source Activity</u>	<u>Source Encapsulation</u>	<u>Storage Container</u>
400 curies	J. L. Shepherd & Assoc. Type 6810	J. L. Shepherd Model 78-2M Calibrator
130 millicuries	Amersham Type X.8	J. L. Shepherd Model 78-2M Calibrator
1.2 curies	Amersham Type X.9	J. L. Shepherd Model 142 Panoramic Ring Source
120 millicuries	Isotope Prod. Type 225	J. L. Shepherd Model 28-5 Calibrator
100 millicuries		Gulf Atomic Model RT-11 Calibrator
10 millicuries		Gulf Atomic Model RT-10 Calibrator

Source (4) is housed in an acrylic-lined box. Source (4) is a response check source for neutron survey instruments. Neutron levels external to the box are not quantifiable using Eberline PNR-4. Source (5) (multiple items) are fission chamber detectors. Prior to installation in the ~~in-core~~ monitoring system, these devices are stored in approved shipping containers. Source (6) (multiple items) will be either stored in approved shipping containers or installed in process monitors. Sources (7) and (8) are irradiation specimens. They will be either stored in approved shipping containers or installed in the reactor vessel.

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