INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATIONS FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY, NMSS
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS, IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIALS SAFETY SECTION B
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
NUCLEAR MATERIALS SAFETY SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
NUCLEAR MATERIALS SAFETY SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- [ ] A. NEW LICENSE
- [X] B. AMENDMENT TO LICENSE NUMBER _____
- [X] C. RENEWAL OF LICENSE NUMBER 41-08165-08

2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip Code)

Tennessee Valley Authority
Senior Vice President, Nuclear Power
1101 Market Street
Chattanooga, TN 37402-2801

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED.

Tennessee Valley Authority Power Service Shops, Muscle Shoals, Alabama, and at temporary job sites of the licensee anywhere in the United States.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

W. M. Belvin, Manager, Licensing Support, NLRA

TELEPHONE NUMBER: (615) 751-2693

SUBMIT ITEMS 5 THROUGH 11 ON 8½ x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY: N/A

AMOUNT ENCLOSED: $ N/A

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN, IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948, 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

SIGNATURE-CERTIFYING OFFICER	TYPED/PRINTED NAME	TITLE	DATE
W. M. Ray	M. J. Ray	Manager, Nuclear Licensing & Regulatory Affairs	OCT 17 1989

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS

AMOUNT RECEIVED	CHECK NUMBER

APPROVED BY _____ DATE _____

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Item 5

Radioactive Material

a. Element and Mass Number	b. Chemical and/or Physical Form	c. Maximum Amount Possessed At Any One Time
A. Any by-product material	A. Any, Mixed Fission and Activation Products	A. Not to Exceed 3 Curies total

Item 6

Purpose(s) For Which Licensed Materials Will Be Used

A. These materials will be possessed, stored, and used in activities associated with the repair, inspection, and testing of contaminated reactor system or related components.

Item 7

Individual(s) Responsible For the Radiation Safety Program and Their Training and Experience:

A. Licensed material shall be used by, or under the supervision of, B. Paul Bernauer, James L. Pierce, or Ralph G. Wallace. The qualifications of the above individuals are given in attachment 1.

B. The Radiation Protection Officer is Ralph G. Wallace.

The Radiation Protection Officer is a professional health physicist within TVA and is available to the Radiation Control Supervisor for consultation and advice. He also has the responsibility to periodically monitor or audit licensed activities and to provide radiological services when they are needed.

C. The Radiation Control Supervisor is James L. Pierce.

The Radiation Control Supervisor has the direct responsibility to ensure that all licensed activities under his direction are conducted safely and in accordance with license conditions and the ALARA philosophy.

Item 8

Training For Individuals Working In Or Frequenting Restricted Areas

The background and experience of supervisory personnel involved in the use of licensed material are identified in Item 7. In addition, all personnel shall receive a radiation protection orientation before their assignment to work in any controlled areas. The orientation will cover all pertinent radiation protection practices and procedures commensurate with the anticipated hazards involved so that the employee can perform his assignment without incurring unnecessary radiation exposure

Item 9

Facilities and Equipment

The Tennessee Valley Authority Power Service Shops in Muscle Shoals, Alabama, provide services for electric power plant maintenance activities which cannot be performed effectively in-plant. Some specialized functions may require that work be performed at other TVA or contractor shops. Maintenance of components from nuclear power plants present additional challenges because of the potential for radioactive contamination. In order to facilitate maintenance of contaminated equipment, work on this equipment will be performed at locations outside the nuclear power plants in accordance with the provisions of Item 10, Radiation Safety Program.

Item 10

Radiation Safety Program

Personnel

All work on contaminated equipment will be supported by health physics personnel. Health physicists will have a bachelor's degree and at least 2 years of experience in health physics work. They will be able to direct a comprehensive radiological hygiene program and have a full understanding of current regulatory procedures. Senior health physics technicians will have at least a high school education and 2 years of responsible experience in applied health physics. They will have a working knowledge of the professional aspects of health physics, chemistry, mathematics, and the operation of radiation protection instrumentation.

Duties and Responsibilities

The Radiation Control Supervisor (RCS) is the health physicist responsible for ensuring that activities are conducted in accordance with NRC regulations and license conditions. He shall ensure that all exposures are maintained As Low As Reasonably Achievable (ALARA). Specific responsibilities include:

1. Evaluate the suitability of conducting licensed activities at a specific location.

2. Determine the scope of essential radiation protection activities.

3. Direct the establishment of a Controlled Area, as necessary and appropriate, to effectively control radiation and radioactive materials.

4. Supervise radiation protection activities conducted under the license to ensure that adequate protective measures have been taken in respect to the following:

   a. Personnel monitoring, dosimetry, and protective clothing

   b. Radiation surveys

   c. Posting of areas

   d. Records, reports, and notifications

Item 10 (Continued)

Health physics technicians shall:

1. Work under the supervision of the health physicist.

2. Carry out all radiation protection activities as directed by the health physicist.

3. Maintain accurate and legible records of all radiation surveys and activities.

Personnel Monitoring Equipment

All personnel, including non-TVA personnel, using licensed material shall wear a thermoluminescent dosimeter (TLD). The TLDs used are part of TVA's personnel dosimetry system and are exchanged at least quarterly. For any non-TVA personnel badged under this license, an exposure report will be provided to the off-site company at the conclusion of the project or within 6 days after the completion of its work.

Radiation Detection Instrumentation

A wide variety of radiation detection instrumentation is available for use in support of the maintenance operations. The following radiation detection instruments, or similar, are examples of the instruments which may by used.

1. Ludlum Model 14C with an external GM detector.
2. Ludlum Model 3-99 with an external alpha detector.
3. Bicron Model RSC-5 with an ion chamber detector.
4. Bicron Surveyor 50 with a frisker probe.
5. Bicron Mirco Analyst micro R meter with a NaI detector.
6. Ludlum Model 2200 scaler with an external GM detector.

Survey instruments shall be calibrated at intervals not to exceed 6 months and after each instrument servicing. Records of each instrument calibration shall be maintained for a period of 2 years after the date of calibration. Each radiation survey instrument shall bear a current calibration tag stating the date of calibration and calibration due date.

Instrument calibration will be performed by the Environmental Radiological Monitoring and Instrumentation Department of TVA's Nuclear Assurance and Services. Each instrument will be calibrated so that a plus or minus 10-percent accuracy can be demonstrated at two or more widely separated points, other than zero, on each scale.

Item 10 (Continued)

Leak Testing

At the present time no sources are possessed under this license which require leak testing. Should such sources be acquired, the following provisions will apply.

Leak tests of sealed sources will be performed by or under the supervision of health physics personnel. The sources shall be tested for leakage at intervals not to exceed 6 months. The test shall be capable of detecting the presence of 0.005 microcuries of removable contamination. The test sample shall be taken from the source or from appropriate accessible surfaces of the device in which the source is mounted or stored. Records of leak test results shall be kept in units of microcuries and maintained for at least 2 years.

If the test reveals the presence of 0.005 microcuries or more of removable contamination, the source shall be withdrawn from use and shall be decontaminated, repaired, or disposed of in accordance with applicable regulations. Within 5 days after determining that a source has leaked, a report describing the equipment involved, the test results, and the corrective action taken shall be submitted to the Nuclear Regulatory Commission.

Any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material. The periodic leak test required by this section does not apply to sealed sources that are stored and not being used. Such sources shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within 6 months prior to the date of use or transfer.

Operating Procedures and Instructions

All activities shall be conducted in accordance with the requirements of 10 CFR 20, "Standards for Protection Against Radiation." Specific program activities include:

1. Radiation Safety Evaluation

   Before any facility is designated to receive radioactive materials or contaminated equipment from a plant, the RCS will perform an evaluation of the offsite maintenance facility to determine whether the physical aspects of that particular facility will allow adequate radiation protection measures to be instituted. This survey will especially address the feasibility of establishing radiation control areas around

Item 10 (Continued)

contaminated equipment or areas where radioactive materials will be handled. Work areas will be selected to minimize any disruption of the normal operating routine of the facility.

2. Controlled Area

Controlled Areas shall be established as appropriate at each temporary field location for the purposes of radiation protection. The Controlled Area shall encompass an area of the facility in which radioactive materials and contaminated components will be handled. All individuals who enter the controlled area will be monitored for contamination before leaving the controlled area.

a. Access Control

Access to the Controlled Area shall be limited to those persons specifically assigned to the activity by the facility management or TVA. Each individual assigned will have completed the training described in Item 8 and shall be authorized to enter the area by the health physics representative.

b. Preparation of the Area

Before beginning any licensed activity which could result in the spread of radioactive contamination, the area shall be adequately prepared to control and contain all radioactive materials. Consideration will be given to such measures as:

1. Covering of floors and other areas to contain radioactive materials and to facilitate decontamination at the completion of the activity.

2. Use of portable ventilation system to ventilate the area and contain airborne activity generated.

3. Covering of equipment surfaces to prevent unnecessary contamination of equipment.

c. Posting of Area

All areas within the Controlled Area shall be routinely surveyed for radiation. Criteria for classification and posting of areas shall be in accordance with the provisions of 10 CFR 20.

Item 10 (Continued)

d. Protective Clothing

All individuals entering the Controlled Area will be supplied with protective clothing commensurate with the hazards involved. The health physics representative shall specify the appropriate protective clothing requirements for each particular activity. Protective clothing may include coveralls, lab coats, shoe covers, gloves, and head covers.

e. Respiratory Protection

In cases where the potential for airborne contamination exists, the air will be monitored by the health physics representative and the necessary protective devices specified according to the concentration and the type of airborne contaminants present. Every precaution will be taken to keep airborne contamination to a minimum through the use of proper ventilation and prior decontamination.

3. Radiological Surveys

The radiation protection program shall include radiation surveys for air activity, removable surface contamination, and radiation levels. These surveys shall be conducted periodically within the Controlled Area to evaluate radiological conditions arising from handling of radioactive materials. The RCS will review all surveys and will recommend measures to control radiation exposure. These control measures may include:

a. Physical measures to provide such items as shielding, ventilation, respiratory protection, and protective clothing.

b. Procedural measures to provide access control, time limitations, and modifications of work procedures.

Any unusual conditions detected during a radiation survey shall be brought to the attention of the RCS.

4. Contamination Control Limits

At the completion of licensed activities at an offsite facility, all equipment and affected shop areas shall be surveyed for radioactive contamination and radiation dose rates. Surface contamination limits on equipment and shop areas released for general use shall not exceed the following:

Item 10 (Continued)

a. Transferable Radioactive Surface Contamination

1) 1000 dpm/100 cm^2, beta-gamma

2) 20 dpm/100 cm^2, alpha

b. Total Radioactive Surface Contamination

1) 100 cpm, beta-gamma, at about one-half inch as measured by a frisker type instrument with a pancake probe

2) 300 dpm/100 cm^2, alpha

Note: It is not necessary to routinely survey for alpha emitters unless there is an indication of their presence.

These values meet or exceed the limits of NRC's "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for By-Product, Source, or Special Nuclear Material," July 1982.

5. Transportation

Packaging and transport of licensed material will be carried out in accordance with Title 10, Code of Federal Regulations, Part 71.

6. Records

Records of all licensed activities shall be maintained at TVA's Western Area Radiological Laboratory in Muscle Shoals, Alabama. These records shall include:

a. Radioactive material receipt and shipment records

b. Radiation survey records

c. Personnel exposure records

d. Leak test records (as appropriate)

e. Instrument calibration records

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Item 11

Waste Management

All radioactive waste materials shall be appropriately packaged, surveyed, and labeled in accordance with applicable NRC and DOT regulations governing the transport of radioactive materials. Waste shall be transported to TVA nuclear plants, approved disposal sites, or other appropriate approved facilities for disposal.

Attachment 1

Qualifications of Supervisory Personnel

B. Paul Bernauer

Supervisor, Support Unit, Environmental Radiological Monitoring and Instrumentation Department

Mr. Bernauer has a B.S. degree in correctional psychology from the University of Alabama, Tuscaloosa, Alabama, an M.B.A. degree from the University of North Alabama, Florence, Alabama, and an M.S. degree in health physics from the Georgia Institute of Technology, Atlanta, Georgia. He has worked with TVA in the area of radiological health for more than 9 years, with primary responsibilities for the procurement of radioanalytical, dosimetry, and health physics instrumentation systems. Since September 1988, he has been supervisor of the Support Unit with additional responsibilities for dosimetry processing, environmental radiological monitoring, and offsite health physics support activities.

James L. Pierce

Mr. Pierce has a B.S. degree in business administration from the University of Nevada at Las Vegas. He also attended a 5-week applied health physics training course at Oak Ridge Associated Universities and a 1-week training course in environmental radiation surveillance at the Harvard University School of Public Health, Cambridge, Massachusetts. He has worked in radiological safety in the U.S. Army (1959-1962), at the Westinghouse Naval Reactor Facility in Idaho (1962-1964), at the Nevada Test Site (1964-1968 and 1969-1974), and at Auburn University, Auburn, Alabama (1969). In 1974 he joined TVA where he worked as a health physics technician at Browns Ferry Nuclear Plant and in the corporate office. Since 1976 he has worked as a health physicist with responsibilities in nuclear plant support, radiation protection training, dose assessment, emergency preparedness, and environmental radiological monitoring

Ralph G. Wallace

Health Physicist, Support Unit, Environmental Radiological Monitoring and Instrumentation Department

Mr. Wallace has a B.S. degree in chemistry and mathematics from the University of North Alabama, Florence, Alabama, and a MSPH degree in radiological hygiene from the University of North Carolina at Chapel Hill. He has worked with TVA in the area of radiological health for more than 20 years. During this period, he has worked in the radioanalytical laboratory, in dosimetry, emergency planning, environmental monitoring, and offsite health physics support. His primary responsibilities have been in the environmental radiological monitoring program.