



R. M. Krich  
Vice President  
Nuclear Licensing

Tennessee Valley Authority  
1101 Market Street, LP 3R  
Chattanooga, Tennessee 37402-2801

L-3  
MS-16

July 30, 2010

10 CFR 30.6  
10 CFR 30.37

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

ATTN: Judith A. Joustra

Tennessee Valley Authority  
Material License No. 01-25284-01  
Docket No. 030-33440

RECEIVED  
JUL 30 2010 10:21

Subject: **Tennessee Valley Authority's By-Product Material License No. 01-25284-01 (Mail Control No. 144561)**

- Reference:
1. Letter from NRC to TVA, "Tennessee Valley Authority, Request for Additional Information Concerning Application for Renewal of License, Control No. 144561," dated June 9, 2010
  2. Letter from NRC to TVA, "Request for Extension to Respond to Request for Additional Information Concerning Application for Renewal of license, Control No. 144561," dated July 21, 2010

The purpose of this letter is to provide the Tennessee Valley Authority's (TVA's) response to the NRC's request for additional information dated June 9, 2010 (Reference 1) regarding Material License No. 01-25284-01. This response was requested within 30 calendar days from the date of Reference 1. TVA was granted an extension to July 30, 2010 as described in the NRC's letter dated July 21, 2010 (Reference 2).

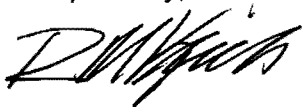
U.S. Nuclear Regulatory Commission  
Page 2  
July 30, 2010

The Enclosure to this letter provides an up-to-date renewal application as requested in Item 1 of Reference 1. TVA's financial assurance submission is not included in this submittal. TVA will provide the required financial assurance submission for this license renewal application by September 3, 2010.

As noted in Item 2 of Reference 1, the license name has changed from "VP, Energy Research & Technology Applications" to "VP, Environmental Science & Resources." The reason for this name change is due to reorganization within TVA. The reorganization resulted in a title change at the vice president level. No transfer of ownership or control has taken place as a result of the reorganization. To address Item 3 of Reference 1, the term "transplutronics" has been removed. The specific byproduct materials for which TVA is requesting authorization is provided as described in license application item no. 5 of the Enclosure.

If you have any questions regarding this information, please contact Kevin Casey at (423) 751-8523.

Respectfully,



R. M. Krich

Enclosure

cc (w/ Enclosure):

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

ENCLOSURE

TVA'S PROPOSED LICENSE RENEWAL APPLICATION

**NRC FORM 313**  
(3-2009)  
10 CFR 30, 32, 33,  
34, 35, 36, 39, and 40

**U.S. NUCLEAR REGULATORY COMMISSION**

**APPROVED BY OMB: NO. 3150-0120**

**EXPIRES: 3/31/2012**

### APPLICATION FOR MATERIALS LICENSE

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

**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.**

**APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:**

OFFICE OF FEDERAL & STATE MATERIALS AND ENVIRONMENTAL MANAGEMENT PROGRAMS  
DIVISION OF MATERIALS SAFETY AND STATE AGREEMENTS  
U.S. NUCLEAR REGULATORY COMMISSION  
WASHINGTON, DC 20555-0001

**ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:**

**IF YOU ARE LOCATED IN:**

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM  
DIVISION OF NUCLEAR MATERIALS SAFETY  
U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

03033440

**IF YOU ARE LOCATED IN:**

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

MATERIALS LICENSING BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
612 E. LAMAR BOULEVARD, SUITE 400  
ARLINGTON, TX 76011-4125

**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 JURISDICTIONS.**

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

- A. NEW LICENSE
- B. AMENDMENT TO LICENSE NUMBER
- C. RENEWAL OF LICENSE NUMBER 01-25284-01

2. NAME AND MAILING ADDRESS OF APPLICANT (Include ZIP code)

Tennessee Valley Authority  
VP, Environmental Science & Resources  
P.O. Box 1010  
Muscle Shoals, AL 35662-1010

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

TVA's Mixed Waste Facility  
Reservation Road on TVA Reservation  
Muscle Shoals, AL 35662-1010

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Kevin E. Casey

TELEPHONE NUMBER

(423) 751-8523

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 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 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	AMOUNT ENCLOSED	\$

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, 36, 39, 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.

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

R. M. Krich, Vice President, Nuclear Licensing

SIGNATURE

DATE

7/30/10

#### FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		
APPROVED BY				DATE	

LICENSE APPLICATION ITEM NO. 5

RADIOACTIVE MATERIAL

<u>Radioisotope</u>	<u>Chemical or Physical Form</u>	<u>Total Activity Requested</u>
A. Any byproduct material with atomic numbers 1 through 83	A. Any	A. 3 curies
B. Uranium 233	B. Any	B. 1 gram (9.5 millicuries)
C. Uranium 235	C. Any	C. 100 grams (210 microcuries)
D. Plutonium 238	D. Any	D. 100 microcuries
E. Plutonium 239	E. Any	E. 1 gram (61 millicuries)
F. Americium 241	F. Any	F. 0.1 millicurie
G. Curium 242	G. Any	G. 0.1 millicurie
H. Curium 243	H. Any	H. 0.1 millicurie
I. Curium 244	I. Any	I. 0.1 millicurie
J. Radium 226	J. Any	J. 0.1 millicurie
K. Thorium 232	K. Any	K. 0.1 millicurie
L. Neptunium 237	L. Any	L. 0.1 millicurie
M. Plutonium 240	M. Any	M. 0.1 millicurie
N. Plutonium 241	N. Any	N. 0.1 millicurie

## LICENSE APPLICATION ITEM NO. 6

### PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED

The purpose for this license is for possession and storage of mixed waste fission/activation products as low level radioactive waste and chemically hazardous constituents. The mixed waste will be received in sealed storage containers and stored prior to being transferred for final processing and disposal. The waste will be packaged in a form ready for transport and disposal when it arrives at this facility. The contents of each drum will be clearly labeled in accordance with NRC regulations. The sealed storage containers may be opened for visual inspection purposes as determined necessary by the Radiation Safety Officer; however, the mixed waste will not be processed or sorted.

Mixed waste is governed by both NRC and EPA. The low-level radioactive waste will be classified based on 10 CFR 61.55 regulations. The hazardous waste determination will be performed based on 40 CFR 261 requirements.

The mixed wastes presently held at TVA's nuclear sites that may be shipped to this facility are Class A low-level radioactive wastes mixed with hazardous wastes. The mixed wastes include, but may not be limited to:

1. Solid, characteristic waste (based on lead content), paint stripper, paint chips, and paint chips mixed with rags.
2. Liquid, characteristic waste (based on lead content); waste oil.
3. Liquid, flammable (ignitable); waste paint, paint thinner, waste oil, flammable liquid, Varsol, oil//water mixture, diesel fuel, waste liquid, alcohol, and scintillation fluid in glass vials.
4. Liquid, corrosive; citric acid and phosphoric acid.
5. Liquid, listed waste, grease and spent halogenated degreasing solvent.

**LICENSE APPLICATION ITEM NO. 7**

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

The proposed Radiation Safety Officer for this license is James B. Colagross.

Mr. Colagross is currently the Radiation Safety Supervisor (Non-Nuclear), in TVA's Radiation Safety (Non-Nuclear) group. Mr. Colagross has previously served as the Radiation Safety Officer for this license.

Mr. Colagross has over 30 years of radiological control experience and is also currently serving as the Radiation Safety Officer for Material License Nos. 41-08165-08, 41-08165-18, and 41-25370-01. His duties include taking radiation surveys, conducting leak tests, and providing radiation safety training classes. In addition to his current position, Mr. Colagross has held Radiation Safety Senior Technician, Project Manager Cleaning and Support Services, and Radiological Control Senior Technician positions at TVA since 1987. Prior to joining TVA, Mr. Colagross served as a Radiological Control Senior Technician between 1979 and 1987.

Mr. Colagross's training has included environmental sampling, control and use of sealed sources, personnel monitoring, personnel decontamination, and maintaining records of shipment/receipt of radioactive material. He has also completed training in Radioactive Material Shippers Class and Hazardous Waste Training Program (HAZWOPER) 29 CFR 1910.120.

**LICENSE APPLICATION ITEM NO. 8**  
**TRAINING FOR INDIVIDUALS WORKING IN**  
**OR FREQUENTING RESTRICTED AREAS**

Before using licensed material, authorized users will receive TVA's Radiation Safety Training course. Classroom training is in the form of lecture, emphasizing practical subjects important to radiation safety. The training includes:

Radiation Safety:

- Radiation vs. contamination
- Internal vs. external exposure
- Biological effects of radiation
- Types and relative hazards of radioactive material possessed
- ALARA concept
- Use of time, distance, and shielding to minimize exposure

Regulatory Requirements:

- Applicable regulations
- License conditions, amendments, renewals
- Locations of use and storage for radioactive materials
- Material control and accountability
- Annual audit of radiation safety program
- Transfer and disposal
- Recordkeeping
- Handling incidents
- Recognizing and ensuring that radiation warning signs are visible and legible
- Licensing and inspection by regulatory agency
- Need for complete and accurate information
- Employee protection
- Deliberate misconduct



## LICENSE APPLICATION ITEM NO. 9

### FACILITIES AND EQUIPMENT

The mixed wastes authorized by this license will be stored in modular buildings that are specifically designed and built to store hazardous materials. The buildings are designed and built by Safety Storage Inc., 3 Dunwoody Park #103, Atlanta, Georgia 30338, and are widely used throughout the world to store hazardous wastes. Similar or equal buildings made by other manufacturers may be substituted if necessary.

The Mixed Waste Storage Buildings (MWSBs) are Factory Mutual (FM) approved, relocatable hazardous materials storage units. They are prefabricated and transported to the site. They are Underwriters Laboratory (UL) classified and constructed from UL-approved materials. Each MWSB is constructed from 10 gauge, corrosion protected steel sheet welded to 10 gauge, corrosion protected, formed steel studs. The roof/ceiling is constructed of noncombustible, 12 gauge, corrosion protected sheet continuously welded to 10 gauge, corrosion protected, formed steel purlins on 30-inch centers. The roof is sloped for rain water runoff. No mechanical fasteners penetrate the exterior walls or roof. No lightweight exterior steel skins, plywood, or rubber membranes are used in the wall or roof construction.

The MWSBs are designed to comply with national and regional codes that reflect the requirements of the Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), the National Fire Protection Association (NFPA), the Uniform Fire Code (UFC), the Standard Building and Fire Protection Codes, and the National Electrical Code (NEC).

Several models of MWSBs with capacities of from 5 to 45 55-gallon drums are available. Each of these MWSBs provides security, weather protection, fire safety, ventilation, and groundwater protection. The Tennessee Valley Authority may use several of these models to satisfy the requirements of this project.

Groundwater protection for the MWSBs is provided by integral, built-in sumps below the 55-gallon drums. They provide a volume of up to 30 percent of the cumulative volume of all of the drums. The sump is constructed of heavy gauge steel that is welded and corrosion protected. The sump is covered with a steel floor grating of rectangular design with cross bars welded at right angles to bearing bars. Metal sump covers will be corrosion protected. Non-metallic sump covers may be used if needed. If a drum leaks and radioactive material is found in a sump, then the material will be placed in a drum, the leaking drum will be placed in an overpack, and the sump and grating will be decontaminated or disposed of properly.

Fire protection for each MWSB will be provided by built-in, dry chemical fire-suppression systems. These fire-suppression systems are designed for classes A, B, and C fires and are installed according to NFPA Standard No. 17, "Dry Chemical Extinguishing Systems." The agent tanks and releasing device are housed inside a weather and tamper proof enclosure located on an exterior wall of each building. Fusible links will be installed inside the buildings for automatic system actuation and detection. The handles on the control heads as well as a remote pull station are provided for manual system activation. Once the system is initiated, a multipurpose ABC dry chemical extinguishing agent is expelled from the pressurized agent cylinders through an interior pre-engineered piping network and out the discharge nozzles for

total flooding application. Simultaneously, an exterior UL-listed fire alarm sounds and the system is also equipped with remote annunciation capability. The likelihood of an accidental fire will be minimized to the extent possible. Smoking in or near the MWSBs will be prohibited.

The buildings will be located behind the Powers Service Center complex near Wilson Dam. The security of the radioactive materials against unauthorized removal will be ensured by locking the fences and the MWSBs whenever personnel are not working at the site. The MWSBs will be located inside two chain-link fences that are normally locked except during periods of active work. The inner fence will contain only the MWSBs and a hazardous waste storage building (see Figure 1). The area inside this inner fence will be dedicated to the mixed waste storage facilities and to the hazardous waste storage facility. These two facilities will share the same staff for non-radiological activities. The gate to the outer fence will be locked when work is not being conducted inside the fenced area; however, several work areas are located in the outer fenced area beside the hazardous waste storage facility and the MWSBs.

The current office of the hazardous storage building will also serve for the mixed waste storage activity. A calibrated and operable frisker will be kept there for surveys of personnel working with the mixed waste containers. Each MWSB containing mixed waste will be a radiologically controlled area. The frisker will be temporarily located near the MWSBs when workers enter them. All workers handling the mixed waste containers will be required to use the frisker to survey themselves for contamination. Radiation Safety (RS) will survey the restricted areas for dose rate and contamination at least quarterly. A frisker will not be permanently located near or in an MWSB.

Protective clothing will also be stored in the hazardous waste storage building. An emergency shower located there may be used if a worker becomes contaminated with mixed wastes. Shower effluent will be captured to prevent unmonitored radioactive release to the environment. The shower runoff will be analyzed for contamination concentrations and disposed of in accordance with appropriate regulations.

The area where the MWSBs are to be located is seismically stable and has not experienced a major earthquake in recorded history. The nearest major earthquake occurred over 170 years ago in New Madrid, Missouri, about 150 miles from Muscle Shoals. Thus, it is highly unlikely that this facility will be damaged by an earthquake.

The area is well drained and is over 20 feet above the mean elevation of Wilson Lake and over 100 feet above the mean elevation of Pickwick Lake. The building will be above the elevation of Wilson Dam less than a mile away. Thus, flooding of the facility is extremely unlikely.

On the basis of calculations reported in the Browns Ferry Nuclear Plant (about 40 miles east of Muscle Shoals) Final Safety Analysis Report, the mean recurrence interval for a tornado at any given location in this area is 1 in 600 years. Thus, it is unlikely that this facility will be damaged by a tornado.

The drums in this facility will not be stacked higher than two drums. Placement and stacking of the drums will be done in such a manner as to ensure the stability of the drums and to prevent damage or deformation of the drums.

The dose rates from most drums of waste are expected to be less than 1 mrem/hour at distances of 1 meter. Drums of waste with the higher dose rates will be placed in the center of the storage area and shielded by drums of lower activity material to the extent practical. If

necessary, portable shields of concrete blocks, lead, or other suitable material will be used to reduce dose rates to acceptable levels. The area outside the MWSBs will be a controlled area. Doses to members of the public (such as truck drivers or workers not trained to enter the buildings) will meet a dose limit of 2 mrem/hour as specified in 10 CFR 20.1301. Workers will be instructed to minimize the time spent in higher dose rate areas, and dose rates in the storage area will be reduced to the extent practical. There is no office or other high-occupancy area near the MWSBs.

Attention will be given to the chemical compatibility of waste containers and their contents. Drums will be selected to not react with their contents. This selection will be made at the nuclear facilities where the drums are filled.

Attention will be paid to the chemical characteristics of the contents of different drums that are placed near each other. They will be sorted by hazard class. Containers of acids and flammable liquids will be placed in separated MWSBs.

If a 55-gallon container becomes damaged or shows signs of leaking or of serious deterioration, it will be placed in an overpack container without requiring that the container be opened. Both metal and polyethylene overpacks are available for optimum chemical compatibility with the drum contents to minimize possible degradation of the overpacks. Necessary equipment will be in place and readily available to place a drum in an overpack if necessary.

No area is expected to be radiologically or chemically contaminated. Therefore, under ordinary circumstances protective clothing will not be required. Personnel handling containers of radioactive materials will wear gloves. In the event of a spill or other emergency, additional protective clothing such as shoe covers, coveralls, and head covers will be required as determined by the responsible supervisor or by RS.

The ventilation system will be an explosion-proof, electro-mechanical system designed for maximum safety and regulatory compliance. The air exchange rate will exceed six changes per hour. It will automatically shut down in the event of a fire. The air intake will be located within twelve inches of the floor to minimize the accumulation on heavier-than-air hazardous vapors. The system exhaust will be located near the exterior roof-line to maximize hazardous vapor dispersion.

The waste will be packaged in a form ready for transport and disposal when it arrives at this facility. The contents of each drum will be clearly labeled in accordance with NRC regulations.

Mixed waste is governed by both NRC and EPA. The low-level radioactive waste will be classified based on 10 CFR 61.55 regulations. The hazardous waste determination will be performed based on 40 CFR 261 requirements.

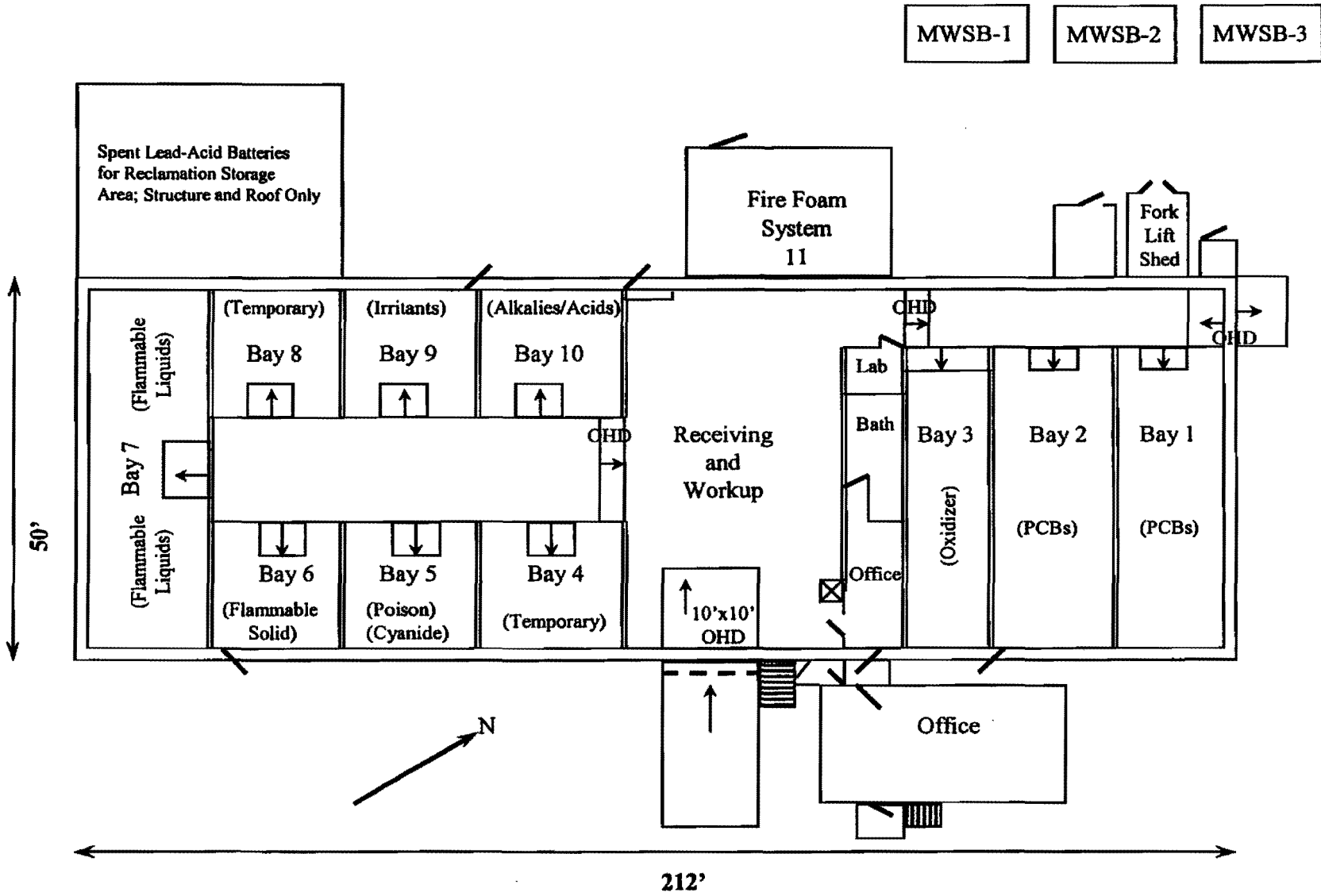
The mixed wastes presently held at TVA's nuclear sites that may be shipped to this facility are Class A low-level radioactive wastes mixed with hazardous wastes. The mixed wastes include, but may not be limited to:

1. Solid, characteristic waste (based on lead content), paint stripper, paint chips, and paint chips mixed with rags.
2. Liquid, characteristic waste (based on lead content); waste oil.

3. Liquid, flammable (ignitable); waste paint, paint thinner, waste oil, flammable liquid, Varsol, oil//water mixture, diesel fuel, waste liquid, alcohol, and scintillation fluid in glass vials.
4. Liquid, corrosive; citric acid and phosphoric acid.
5. Liquid, listed waste, grease and spent halogenated degreasing solvent.

Some of the wastes described above may be shipped directly to an approved vendor for disposal instead of to this facility for storage. Some of the wastes described above may be reclassified based on future testing and may not be shipped to this facility.

Figure 1  
 Hazardous Waste Storage Building and Mixed Waste Storage Buildings (MWSB)  
 (Note: MWSB-3 is a concrete pad only for future expansion if 3rd building needed)



## LICENSE APPLICATION ITEM NO. 10

### RADIATION SAFETY PROGRAM

The radiological safety expertise for this license will be supplied by TVA's Radiation Safety (RS) group. RS will provide radiation surveys for direct radiation and for contamination. Typical radiation monitoring instruments available to RS include the Bicron RSO-5 and RSO-50; the Bicron Surveyor 50 usually equipped with a pancake probe; and the W. W. Johnson Model RML-2 with a pancake probe. Other similar instruments may be substituted if desired. These instruments are repaired and calibrated by TVA's Environmental Radiological Monitoring and Instrumentation Staff (ERMI) located in the Western Area Radiological Laboratory on the TVA Reservation in Muscle Shoals using the same personnel, equipment, and procedures as for the repair and calibration of radiation survey instruments used in TVA's nuclear power plants. Commercial vendors with adequate abilities may be utilized in this repair and calibration if necessary.

Dose rate survey instruments are calibrated, operable, and can measure at least 1 through 200 millirems per hour. Instruments will be calibrated so that readings are  $\pm 20$  percent or fewer of the actual values over the range of the instrument. The date of the last calibration and the date the next calibration is due will be placed on each survey meter. Survey meters will be calibrated annually or more often and after each repair. Calibration records will be maintained for a minimum of three years after calibration.

All personnel dosimeters (TLDs) used under this license are the Panasonic Model UD802 badges and Model 702 and 710 readers. Equivalent equipment may be substituted in the future if necessary. This overall TLD system has been accredited by the National Volunteer Laboratory Accreditation Program. When routinely used, TLDs will be exchanged quarterly.

A frisker will be located at the exit of the restricted area, and workers will be required to survey themselves for radiological contamination prior to exiting. RS will survey the restricted area for dose rates and radiological contamination at least quarterly.

The restricted area is not expected to be a contaminated area. The radionuclides in the mixed waste are generally nonvolatile. Therefore, airborne radioactivity is not expected, and monitoring for airborne radioactivity will not be routinely conducted. In the event of an emergency, monitoring for airborne radioactivity may be conducted at the discretion of RS. Routine air samples will be taken anytime contamination greater than 0.005  $\mu\text{Ci}$  is detected and workers are present.

Workers are not expected to have any intake of radioactive materials either from contamination or from airborne radioactive materials as a result of work conducted under this license. Therefore, a bioassay program will not be required for routine work. In the event of a radiological spill or other incident involving radiological contamination, RS may recommend a bioassay program, as required.

Leak testing and monitoring for contamination will be performed by members of RS using standard smear techniques. The smear shall be taken using an appropriate media and shall be taken from appropriate surfaces where contamination may be found, such as the sides and tops

of storage drums, floors, walls, etc. Test sensitivity will permit detection of 0.005  $\mu\text{Ci}$  or less. Smears will be counted at ERMI using a low background gas proportional counter or by RS using a Ludlum Model 2200 scalar rate meter with an appropriate detector.

Sample calculation:

$$A = C/EF$$

Where;

A = Activity on the smear ( $\mu\text{Ci}$ )

C = Count rate (counts/minute)

E = Counter efficiency (counts/minute per disintegration/minute)

F = Conversion factor ( $2.22 \times 10^6$  disintegrations/minute per  $\mu\text{Ci}$ )

Records of leak tests shall be maintained for inspection for a period of no less than three years.

All operations under this license shall follow NRC regulations and other applicable regulations of the Department of Transportation (DOT), the Environmental Protection Agency (EPA), and any other necessary agencies. Doses to workers and the public, contamination, and releases to the environment shall follow ALARA principles.

RS shall be contacted in the event of an incident where radioactive material is unaccounted for or in the event of a fire at the mixed waste storage facility or if an incident occurs where a storage container is ruptured. In the event of such a radiological incident, the on-site responsible individual will immediately contact RS to begin mitigative actions.

The quantities of material authorized by this license will not exceed those listed in Schedule C of 10 CFR 30.72 for mixed fission products (1,000 curies); therefore, a detailed emergency plan is not required.

Emergency and routine telephone numbers for RS are:

- Secretary during work hours - (256) 386-3758
- |                 | <u>Home numbers:</u> | <u>Work numbers:</u> |
|-----------------|----------------------|----------------------|
| James Colagross | (256) xxx-xxxx*      | (256) 386-3019       |
| John Young      | (256) xxx-xxxx*      | (256) 386-2304       |
- The on-site responsible person named in item 7 will also be notified.

The mixed waste storage facility is equipped with a built-in dry chemical fire suppression system. Further details on this fire suppression system are provided in Item 9. In the event that this fire suppression system is automatically triggered, the on-site responsible individual will contact RS.

Direct visual inspections of the containers in storage will be conducted at least quarterly.

\* - phone numbers considered personal privacy information and not provided in the license application