UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of	)	
	)	Docket Nos. 50-259, 50-260 and 50-296
TENNESSEE VALLEY AUTHORITY	)	
	)	(License amendment to permit storage of low level radioactive waste)
(Browns Ferry Nuclear Plant, Unit Nos. 1, 2 and 3)	)	

AFFIDAVIT OF PETER LOYSEN

1. I, Peter Loysen, being duly sworn, state as follows: I am a Senior Chemical Engineer in the Advanced Fuel and Spent Fuel Licensing Branch, Division of Fuel Cycle and Material Safety, Office of Nuclear Materials Safety and Safeguards. I have been employed by the Nuclear Regulatory Commission since 1974 and had previous periods of employment with the Atomic Energy Commission. My responsibilities relate to the management of safety and environmental reviews for licenses for spent fuel storage, reprocessing facilities and waste processing and storage. I am the NRC project manager for the Browns Ferry Low Level Radioactive Waste Storage Facility licensing review and am fully familiar with this proceeding.

2. The authorization being sought by TVA for storage of LLRW at Browns Ferry involves storage of waste generated at Browns Ferry for a period of five years. No restriction has been requested or

is contemplated limiting the use of the modules only to interim use on a back-up basis. TVA's intention so to limit its use of the modules is consistent with NRC Generic Letter 81-38, a copy of which is Attachment 1 to this affidavit, and with the July 26, 1982 letter (and press release) from TVA to Harold R. Denton, Director of the Office of Nuclear Reactor Regulation, a copy of which is Attachment 2 to this affidavit.

3. TVA's amended application of November 3, 1981, Enclosure 2 at § 2.2.3, discusses spent resin containers and their integrity. Since the filing of the amended application, disposal requirements imposed by the Barnwell facility (to which Browns Ferry spent resins are normally shipped) have been changed to require the use of a container of a type different than that described in TVA's application for spent dewatered resins of higher activity levels. Similar disposal requirements for waste of certain characteristics are contained in the NRC's proposed rule (10 CFR Part 61) relating to LLRW disposal. TVA has established a plan for the evaluation of any new containers it might use in the Sequoyah Nuclear Plant LLRW Storage Facility and the results of these evaluations will be documented and maintained in TVA's record management system. It is possible that, should TVA decide to store waste at Browns Ferry in containers that differ from those described in its Browns Ferry amended application, an amendment to the Browns Ferry LLRW storage license now being sought would be required.

4. Three of the four modules constructed by TVA at Browns Ferry are designed and intended for storage of trash LLRW. The remaining module is designed and intended for storage of spent resin LLRW.

5. TVA's application is for authorization to store LLRW in up to 22 modules, at least five of which are planned to be for storage of spent resin LLRW and at least nine of which are planned to be for storage of trash LLRW. The Staff's June, 1982 Safety Evaluation Report and Environmental Impact Appraisal consider the safety and environmental impacts of a storage facility of up to 22 modules. TVA's application has not been amended to limit the number of modules in the facility to four.

6. The Staff's Environmental Impact Appraisal of June, 1982, in Table 1.1, provides historical data on monthly shipments of Browns Ferry LLRW between October, 1979 and August, 1981 and on past monthly allocations for TVA LLRW between January, 1980 and August, 1981. A copy of Table 1.1 is Attachment 3 to this affidavit.

7. Because good progress is being made toward creation of the Southeast Interstate Low-Level Radioactive Waste Management Compact and because a suitable facility already exists and will be available within the region at Barnwell, the Staff believes that adequate space will be available for offsite disposal of the wastes being generated at Browns Ferry as well as any placed in the onsite Browns Ferry LLRW Storage Facility.

8. A copy of the Low-Level Radioactive Waste Policy Act of 1980 (Pub. L. No. 96-573, 94 Stat. 3347 (1980)) is Attachment 4 to this affidavit.

9. A copy of the Commission's Policy Statement on Low-Level Waste Volume Reduction (46 F.R. 51100, October 16, 1981) is Attachment 5 to this affidavit.

10. The Staff is not aware of any additional information, beyond that provided in this affidavit and the affidavits of John R. McGrath

and Stephen N. Salomon and that provided in TVA's responses to the Appeal Board's question, which the Appeal Board should be apprised of in this matter.

Peter Loyson

Subscribed and sworn to before
me this 8 day of october, 1982.

Lois E. Snoots
Notary Public

My Commission expires: July 1, 1986

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

November 10, 1981

TO ALL HOLDERS OF AND APPLICANTS FOR OPERATING LICENSES AND CONSTRUCTION PERMITS

SUBJECT: STORAGE OF LOW-LEVEL RADIOACTIVE WASTES AT POWER REACTOR SITES
(Generic Letter 81-38)

Gentlemen:

As a result of a reduction in waste disposal availability in the United States, many nuclear power reactor licensees are taking or are planning to take steps to provide for additional onsite storage of low-level radioactive wastes generated onsite. These steps range from storing packaged wastes in unused space to construction of new facilities for volume reduction and extended storage. The NRC has been considering the variety of plans which are underway and how they should be reviewed and approved.

Actions on waste storage can influence the development and implementation of final disposal plans by states, acting individually or on a regional basis, to establish additional disposal capacity. Some states have indicated to NRC that utilization of disposal services by nuclear power plant licensees is essential if disposal sites are to be developed by states or regional compacts. Thus, it is important that the NRC not take deliberate action that would hinder the establishment of additional disposal capacity by the states and yet, consistent with NRC regulatory safety requirements, permit necessary operational flexibility by its licensees. It is with these points in mind that the following guidance is provided.

For proposed increases in storage capacity for low-level waste generated by normal reactor operation and maintenance at power reactor sites, the safety of the proposal must be evaluated by the licensee under the provisions of 10 CFR 50.59. If (1) your existing license conditions or technical specifications do not prohibit increased storage, (2) no unreviewed safety question exists, and (3) the proposed increased storage capacity does not exceed the generated waste projected for five years, the licensee may provide the added capacity, document the 50.59 evaluation and report it to the Commission annually or as specified in the license.

Radiological safety guidance has been developed by the staff for the design and operation of interim contingency low-level waste storage facilities. Necessary design features and administrative controls will be dictated by such factors as the waste form, concentrations of radioactive material in individual waste containers, total amount of radioactivity to be stored, and retrievability of waste. A copy of the guidance document is enclosed with this letter. This guidance shall be used in the design, construction and operation of your storage facility. In addition, the NRC will judge the adequacy of your 50.59 evaluation based on your compliance with the guidance. Please note also that IE Circular No. 80-19, dated August 22, 1980, provides information on preparing 50.59 evaluations for changes to radioactive waste treatment systems.

If you determine that an unreviewed safety question exists, authority for use should be requested through application to the Office of Nuclear Material Safety and Safeguards (NMSS) pursuant to 10 CFR 30, accompanied by an environmental evaluation that considers the incremental impact as related to reactor operations. Such application for a separate Part 30 license is for the administrative convenience of the Commission and is not intended to be substantively different than an application for amendment of the facility operating license. Application for use should also be accompanied by a showing that the storage provisions will not impact on the safety of reactor operations and will not foreclose alternatives for disposal of the wastes.

NMSS will notice the receipt of application in the Federal Register, offer an opportunity for public hearing if significant public interest is demonstrated, and will perform an environmental assessment to determine if the proposed activity will significantly affect the quality of the environment. Facility construction prior to the staff's determination would be carried out at the licensee's risk. Any license issued will be for a standard five-year term, renewable if continued need is demonstrated and if safety of continued storage is established. NRC licensing jurisdiction will be retained in Agreement States in accordance with 10 CFR 150.15(a)(1) for storage of low-level waste generated and stored onsite. Indemnity coverage will be provided under and in accordance with your existing indemnity agreement with the Commission.

If it is determined that the storage provisions could impact on the safety of reactor operations or an existing license condition or technical specification limit on the amount of waste storage, a change in the conditions of the reactor facility license may be necessary.

The provisions for added capacity should be used only for interim contingency storage, and low-level wastes should continue to be shipped to disposal sites to the extent practicable. The "Low Level Radioactive Waste Policy Act" of 1980 gives primary responsibility for the disposal of low-level waste to the states. Some states have initiated disposal plans, and we believe it is important that power reactor licensees, as major waste generators, work with and provide technical assistance and other support to assist individual states or regions in developing new disposal sites. You are encouraged to take an active role in the development of additional disposal sites.

Some licensees are considering the installation of major volume reduction processes, e.g., incineration, dehydration, or crystallization to substantially reduce the volume of waste for disposal. You are encouraged to examine the costs and benefits of such processes for your operations. However, notwithstanding the use of volume reduction, you are also encouraged to take an active role in the development of additional disposal sites.

For proposed increases in storage capacity for more than five years (long-term), the application and review procedures will be pursuant to 10 CFR 30 with consideration of container integrity and retrievability, volume reduction, influence on state planning for disposal, and implications of de facto onsite disposal. Any long-term license issued will be for a five-year, renewable term.

If you have any questions about these matters, please let us know.

Sincerely,

William J. Dircks
Executive Director
for Operations

Enclosure:
Guidance Document

Enclosure

RADIOLOGICAL SAFETY GUIDANCE FOR ONSITE CONTINGENCY STORAGE CAPACITY

I. Introduction

The objective of this technical position is to provide guidance to licensees considering additional onsite low level radioactive waste storage capabilities. While it may be prudent and/or necessary to establish additional onsite storage capability, waste should not be placed in contingency storage if the ability to dispose of waste at a licensed disposal site exists. The shipping of waste at the earliest practicable time minimizes the need for eventual waste reprocessing due to possibly changing burial ground requirements, reduces occupational and non-occupational exposures and potential accident consequences, and in the event of burial ground closure, maximizes the amount of storage space available for use.

The duration of the intended storage, the type and form of waste, and the amount of radioactive material present will dictate the safeguards and the level of complexity required to assure public health and safety, and minimal risk to operating personnel. The longer the intended storage period, the greater the degree of controls that will be required for radiation protection and accident prevention. For purposes of this document, the duration of temporary waste storage is to be up to five (5) years. The magnitude of the onsite storage safety hazard is predicated on the type of waste being stored, the amount of radionuclides present, and how readily they might be transported into the environment. In general, it is preferable to store radioactive material in solid form. Under some circumstances, however, temporary storage in a liquid form may be desirable or required. The specific design and operation of any storage facility will be significantly influenced by the various waste forms, consequently, this document addresses wet waste, solidified wet waste and dry low level radioactive waste.

Guidance similar to that provided in this enclosure has been incorporated in NUREG-0800, NRC/NRR Standard Review Plan, July 1981, as Appendix 11.4-A to SRP 11.4, Solid Waste Management Systems.

II. General Information

Prior to any implementation of additional onsite storage, substantial safety review and environmental assessments should be conducted to assure adequate public health and safety and minimal environmental impact. The acceptance criteria and performance objectives of any proposed storage facility, or area, will need to meet minimal requirements in areas of design, operations, safety considerations and policy

considerations. For purposes of this technical position, the major emphasis will be on safety considerations in the storing, handling and eventual disposition of the radioactive waste. Design and operational acceptability will be based on minimal requirements which are defined in existing SRPs, Regulatory Guides, and industry standards for proper management of radioactive waste. Considerations for waste minimization and volume reduction will also have to be incorporated into an overall site waste management plan and the onsite storage alternative. Additional waste management considerations for ALARA, decontamination, and decommissioning of the temporary storage facility, including disposal, should be performed as early as possible because future requirements for waste forms may make stored wastes unacceptable for final disposition.

Facility design and operation should assure that radiological consequences of design basis events (fire, tornado, seismic event, flood) should not exceed a small fraction (10%) of 10 CFR Part 100, i.e., no more than a few rem whole body dose.

The added capacity would typically extend storage to accommodate no more than an amount of waste generated during a nominal five-year period. In addition, waste should not be stored for a duration that exceeds five-years. Storage of waste in excess of the quantities and duration described herein requires Part 30 licensing approval. The design capacity (ft^3, Ci) should be determined from historical waste generation rates for the station, considering both volume minimization/reduction programs and the need for surge capacity due to operations which may generate unusually large amounts of waste.

The five-year period is sufficient to allow licensees to design and construct additional volume reduction facilities (incinerators, etc.), as necessary, and then process wastes that may have been stored during construction. Regional state compacts to create additional low-level waste disposal sites should also be established within the next five years.

III. Generally Applicable Guidance

(a) The quantity of radioactive material allowed and the shielding configurations will be dictated by the dose rate criteria for both the site boundary and unrestricted areas onsite. The 40 CFR 190 limits will restrict the annual dose from direct radiation and effluent releases from all sources of uranium fuel cycle and 10 CFR Part 20.105 limits the exposure rates in unrestricted areas. Offsite doses from onsite storage must be sufficiently low to account for other uranium fuel cycle sources (e.g., an additional dose of $\leq$ 1 mrem/year is

not likely to cause the limits of 40 CFR 190 to be exceeded). Onsite dose limits associated with temporary storage will be controlled per 10 CFR Part 20 including the ALARA principal of 10 CFR 20.1.

(b) Compatibility of the container materials with the waste forms and with environmental conditions external to the containers is necessary to prevent significant container corrosion. Container selection should be based on data which demonstrates minimal corrosion from the anticipated internal and external environment for a period well in excess of the planned storage duration. Container integrity after the period of storage should be sufficient to allow handling during transportation and disposal without container breach.

Gas generation from organic materials in waste containers can also lead to container breach and potentially flammable/explosive conditions. To minimize the number of potential problems, the waste form gas generation rates from radiolysis, biodegradation, or chemical reaction should be evaluated with respect to container breach and the creation of flammable/explosive conditions. Unless storage containers are equipped with special vent designs which allow depressurization and do not permit the migration of radioactive materials, resins highly loaded with radioactive material, such as BWR reactor water cleanup system resins, should not be stored for a period in excess of approximately one year.

A program of at least periodic (quarterly) visual inspection of container integrity (swelling, corrosion products, breach) should be performed. Inspection can be accomplished by use of TV monitors; by walk-throughs if storage facility layout, shielding, and the container storage array permit; or by selecting waste containers that are representative of the types of waste and containers stored in the facility and placing them in a location specifically designed for inspection purposes. All inspection procedures developed should minimize occupational exposure. The use of high integrity containers (300 year lifetime design) would permit an inspection program of reduced scope.

(c) If possible, the preferred location of the additional storage facility is inside the plant protected area. If adequate space in the protected area is not available, the storage facility should be placed on the plant site and both a physical security program (fence, locked and alarmed gates/doors, periodic patrols) and a restricted area for radiation protection purposes should be established. The facility should not be placed in a location that

requires transportation of the waste over public roads unless no other feasible alternatives exist. Any transportation over public roads must be conducted in accordance with NRC and DOT regulations.

(d) For low level dry waste and solidified waste storage:

1. Potential release pathways of all radionuclides present in the solidified waste form shall be monitored as per 10 CFR 50, Appendix A. Surveillance programs shall incorporate adequate methods for detecting failure of container integrity and measuring releases to the environment. For outside storage, periodic direct radiation and surface contamination monitoring shall be conducted to insure that levels are below limits specified in 10 CFR 20.202, 20.205, and 49 CFR 173.397. All containers should be decontaminated to these levels or below before storage.

2. Provisions should be incorporated for collecting liquid drainage including provisions for sampling all collected liquids. Routing of the collected liquids should be to radwaste systems if contamination is detected or to normal discharge pathways if the water ingress is from external sources and remains uncontaminated.

3. Waste stored in outside areas should be held securely by installed hold down systems. The hold down system should secure all containers during severe environmental conditions up to and including the design basis event for this waste storage facility.

4. Container integrity should be assured against corrosion from the external environment; external weather protection should be included where necessary and practical. Storage containers should be raised off storage pads where water accumulation can be expected to cause external corrosion and possible degradation of container integrity.

5. Total curie limits should be established based on the design of the storage area and the safety features provided.

6. Inventory records of waste types, contents, dates of storage, shipment, etc., should be maintained.

IV. Wet Radioactive Waste Storage

(a) Wet radioactive waste will be defined as any liquid or liquid/solid slurry. For storage considerations, wet waste is further defined

as any waste which contains free liquid in amounts which exceed the requirements for burial as established by the burial ground licensing authority.

(b) The facility supporting structure and tanks should be designed to prevent uncontrolled releases of radioactive materials due to spillage or accident conditions.

(c) The following design objectives and criteria are applicable for wet radioactive waste storage facilities:

1. Structures that house liquid radwaste storage tanks should be designed to seismic criteria as defined in Standard Review Plan (Section 11.2). Foundations and walls shall also be designed and fabricated to contain the liquid inventory which might be released during a container/tank failure.

2. All tanks or containers should be designed to withstand the corrosive nature of the wet waste stored. The duration of storage under which the corrosive conditions exist shall also be considered in the design.

3. All storage structures should have curbs or elevated thresholds with floor drains and sumps to safely collect wet waste assuming the failure of all tanks or containers. Provisions should be incorporated to remove spilled wet waste to the radwaste treatment systems.

4. All tanks and containers shall have provisions to monitor liquid levels and to alarm potential overflow conditions.

5. All potential release pathways of radionuclides (e.g., evolved gases, breach of container, etc.) shall be controlled, if feasible, and monitored as per 10 CFR 50, Appendix A (General Design Criteria 60 and 64). Surveillance programs should incorporate adequate methods for monitoring breach of container integrity or accidental releases.

6. All temporarily stored wet waste will require additional reprocessing prior to shipment offsite; therefore, provisions should be established to integrate the required treatment with the waste processing and solidification systems. The interface and associated systems should be designed and tested in accordance with the codes and standards described in Standard Review Plan Section 11.

V. Solidified Radioactive Waste Storage

(a) Solidified radwaste for storage purposes shall be defined as that waste which meets burial site solidified waste criteria. For purposes of this document, resins or filter sludges dewatered to the above criteria will be defined under this waste classification/criteria.

(b) Any storage plans should address container protection as well as any reprocessing requirements for eventual shipment and burial.

(c) Casks, tanks, and liners containing solidified radioactive waste should be designed with good engineering judgment to preclude or reduce the probability of occurrence of uncontrolled releases of radioactive materials due to handling, transportation or storage. Accident mitigation and control for design basis events (e.g., fire, flooding, tornadoes, etc.) must be evaluated and protected against unless otherwise justified.

(d) The following design objectives and criteria are applicable for solidified waste storage containers and facilities:

1. All solidified radwaste should be located in restricted areas where effective material control and accountability can be maintained. While structures are not required to meet seismic criteria, protection should be afforded to insure the radioactivity is contained safely by use of good engineering judgment, such as the use of curbs and drains to contain spills of dewatered resins or sludges.

2. If liquids exist which are corrosive, proven provisions should be made to protect the container (i.e., special liners or coatings) and/or neutralize the excess liquids. If deemed appropriate and necessary, highly non-corrosive materials (e.g., stainless steel) should be used. Potential corrosion between the solid waste forms and the container should also be considered. In the case of dewatered resins, highly corrosive acids and bases can be generated which will significantly reduce the longevity of the container. The Process Control Program (PCP) should implement steps to assure the above does not occur; provisions on container material selection and precoating should be made to insure that container breach does not occur during temporary storage periods.

3. Provision should be made for additional reprocessing or repackaging due to container failure and/or, as required for

final transporting and burial as per DOT and burial site criteria. Contamination isolation and decontamination capabilities should be developed. When significant handling and personnel exposure can be anticipated, ALARA methodology should be incorporated as per Regulatory Guides 8.8 and 8.10.

4. Procedures should be developed and implemented for early detection, prevention and mitigation of accidents (e.g., fires). Storage areas and facility designs should incorporate good engineering features and capabilities for contingencies so as to handle accidents and provide safeguard systems such as fire detectors and suppression systems, (e.g., smoke detector and sprinklers). Personnel training and administrative procedures should be estabished to insure both control of radioactive materials and minimum personnel exposures. Fire suppression devices may not be necessary if combustible materials are minimal in the area.

V. Low Level Dry Waste Storage

(a) Low level dry waste is classified as contaminated material (e.g., paper, trash, air filters) which contains radioactive material dispersed in small concentrations throughout large volumes of inert material and contains no free water. Generally, this consists of dry material such as rags, clothing, paper and small equipment (i.e., tools and instruments) which cannot be easily decontaminated.

(b) Licensees should implement controls to segregate and minimize the generation of low level dry waste to lessen the impact on waste storage. Integration of Volume Reduction (VR) hardware should be considered to minimize the need for additional waste storage facilities.

(c) The following design objectives and criteria are applicable for low level dry waste storage containers and facilities.

1. All dry or compacted radwaste should be located in restricted areas where effective material control and accountability can be maintained. While structures are not required to meet seismic criteria, protection should be afforded to insure the radioactivity is contained safely by use of good engineering judgment.

2. The waste container should be designed to insure radioactive material containment during normal and abnormal occurrences. The waste container materials should not support combustion. The packaged material should not cause fires through spontaneous chemical reactions, retained heat, etc.

3. Containers should generally comply with the criteria of 10 CFR 71 and 49 CFR 170 to minimize the need for repackaging for shipment.

4. Increased container handling and personnel exposure can be anticipated, consequently, all ALARA methodology should be incorporated per Regulatory Guides 8.8 and 8.10.

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

July 26, 1982

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Denton:

In my letters to you dated November 17 and November 24, 1980 concerning authorization to store low-level radioactive waste (LLRW) at the Browns Ferry and Sequoyah Nuclear Plants, we requested approval of onsite storage for five years. The letters further stated that we were considering requesting approval for life-of-plant LLRW storage at a later date. This is to inform you that we no longer intend to pursue life-of-plant storage.

Enclosed for your information is a TVA press release that provides additional information concerning the direction of TVA's plan for disposal of LLRW.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Licensing

Enclosure
cc (Enclosure):
Dr. John H. Buck
Atomic Safety and Licensing
Appeal Board
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Washington, DC 20555

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Mr. Gary J. Edles
Atomic Safety and Licensing
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Washington, DC 20555

ATTACHMENT 2

Mr. Harold R. Denton, Director July 26, 1982

Mr. Stephen J. Eilperin, Chairman
Atomic Safety and Licensing
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For immediate release

TVA To Support Regional Program For Disposal Of Low-Level Radioactive Waste

TVA expects to participate in a regional compact among Southeastern states to dispose of low-level radioactive waste at a regional disposal facility, the agency said today. The compact will help provide TVA and other nuclear waste producers in the Southeast with a longterm solution to their low-level radioactive waste management needs.

Previously, because of limited space available to TVA and no assured space for permanent storage, TVA had planned to provide the capability to manage its own waste by storing it in concrete modules at its plants. Now, because of the new compact among Southeastern states, TVA will use a smaller number of the onsite modules for emergency storage only.

The change in TVA's plans for disposal of the waste was brought about by recent action by several Southeastern states to form a regional compact for radioactive waste disposal. The compact was made possible by the Low-Level Radioactive Waste Policy Act, passed by Congress in 1980.

TVA's environmental assessment indicates there will be less radiation exposure through direct shipments of the waste to the regional disposal site than there would be if the agency temporarily stored the waste in modules at the plant and later moved it a second time for tranportation to a permanent disposal facility.

Once the regional compact is in full operation, TVA anticipates that most, if not all, of its low-level radioactive wastes will be accommodated at the regional facility.

--MORE

(Mailed July 2, 1982)

Until the compact is effective, restrictions are being placed on the amount of waste that TVA can dispose of at the Barnwell, South Carolina, facility where TVA has been shipping its low-level waste. To dispose of the excess waste, TVA will make periodic shipments to the U.S. Ecology disposal facility near Richland, Washington.

TVA will continue to send most of its waste to Barnwell, but the additional shipments to Richland will be made as necessary. As with the shipments to Barnwell, the shipments to Richland will comply with all applicable Department of Transportation, Nuclear Regulatory Commission, and individual State regulations. The appropriate State and Federal agencies will be notified before each shipment to ensure that applicable regulations are met.

The waste includes paper, wood, plastic, and disposable clothing used in the operation and maintenance of TVA nuclear plants.

TVA presently operates two nuclear power plants, the three-unit Browns Ferry plant near Athens, Alabama, and the two-unit Sequoyah plant near Chattanooga, Tennessee. Two other plants, Watts Bar near Spring City, Tennessee, and Bellefonte near Scottsboro, Alabama, are under active construction.

# # #

Table 1.1 Historical data - TVA allocations and total volumes shipped (ft^3)

Month	Allocation	First-Come First-Served Pool	Total Shipped BFNP	SNP
October 1979	-	-	7,506	-
November 1979	-	-	5,936	-
December 1979	-	-	4,434	-
January 1980	4,102	-	4,095	-
February 1980	3,293	-	3,286	-
March 1980	3,293	924	4,217	-
April 1980	2,828	15,839	18,667	-
May 1980	2,827	2,732	5,559	-
June 1980	2,827	4,967	7,794	-
July 1980	6,607	-	5,294	240
August 1980	5,948	3,310	8,858	400
September 1980	5,948	-	5,606	-
October 1980	5,463	5,914	11,377	-
November 1980	5,463	1,707	7,170	-
December 1980	5,463	1,076	6,539	-
January 1981	4,999	1,055	6,054	-
February 1981	4,999	921	5,920	-
March 1981	4,999	1,480	6,479	-
April 1981	4,535	3,266	7,481	320
May 1981	4,535	2,272	5,430	1,377
June 1981	4,535	962	5,497	-
July 1981	4,050	3,580	5,510	2,120
August 1981	4,050	1,615	5,665	-

Source: NRC STAFF'S
ENVIRONMENTAL IMPACT APPRAISAL
OF LOW-LEVEL RADIOACTIVE WASTE
STORAGE AT TENNESSEE VALLEY
AUTHORITY BROWNS FERRY
NUCLEAR PLANT

Docket No. 30-19102
June, 1982

ATTACHMENT 3

§ 2021a. Storage or disposal facility planning

(a) Any person, agency, or other entity proposing to develop a storage or disposal facility, including a test disposal facility, for high-level radioactive wastes, non-high-level radioactive wastes including transuranium contaminated wastes, or irradiated nuclear reactor fuel, shall notify the Commission as early as possible after the commencement of planning for a particular proposed facility. The Commission shall in turn notify the Governor and the State legislature of the State of proposed situs whenever the Commission has knowledge of such proposal.

(b) The Commission is authorized and directed to prepare a report on means for improving the opportunities for State participation in the process for siting, licensing, and developing nuclear waste storage or disposal facilities. Such report shall include detailed consideration of a program to provide grants through the Commission to any State, and the advisability of such a program, for the purpose of conducting an independent State review of any proposal to develop a nuclear waste storage or disposal facility identified in subsection (a) of this section within such State. On or before March 1, 1979, the Commission shall submit the report to the Congress including recommendations for improving the opportunities for State participation together with any necessary legislative proposals.
Pub.L. 95–601, § 14, Nov. 6, 1978, 92 Stat. 2953.

§ 2021b. Definitions respecting low-level radioactive waste policy

As used in sections 2021b to 2021d of this title—

(1) The term "disposal" means the isolation of low-level radioactive waste pursuant to requirements established by the Nuclear Regulatory Commission under applicable laws.

(2) The term "low-level radioactive waste" means radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section 2014(e)(2) of this title.

(3) The term "State" means any State of the United States, the District of Columbia, and, subject to the provisions of Public Law 96–205, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, the Northern Mariana Islands, the Trust Territory of the Pacific Islands, and any other territory or possession of the United States.

(4) For purposes of sections 2021b to 2021d of this title the term "atomic energy defense activities of the Secretary" includes those activities and facilities of the Department of Energy carrying out the function of—

(i) Naval reactors development and propulsion,
(ii) weapons activities, verification and control technology,
(iii) defense materials production,
(iv) inertial confinement fusion,
(v) defense waste management, and

(vi) defense nuclear materials security and safeguards (all as included in the Department of Energy appropriations account in any fifscal year for atomic energy defense activities).
Pub.L. 96–573, § 2, Dec. 22, 1980, 94 Stat. 3347.

ATTACHMENT 4

§ 2021c. Low-level radioactive waste compacts; applicability, etc.

(a) Compacts established under sections 2021b to 2021d of this title or actions taken under such compacts shall not be applicable to the transportation, management, or disposal of low-level radioactive waste from atomic energy defense activities of the Secretary or Federal research and development activities.

Legislative History. For legislative history and purpose of Pub.L. 96-573, see 1980 U.S.Code Cong. and Adm.News, p. 6933.

(b) Any facility established or operated exclusively for the disposal of low-level radioactive waste produced by atomic energy defense activities of the Secretary or Federal research and development activities shall not be subject to compacts established under sections 2021b to 2021d of this title or actions taken under such compacts.

Pub.L. 96-573, § 3, Dec. 22, 1980, 94 Stat. 3347.

Codification. Section was not enacted as part of the Atomic Energy Act of 1954 which comprises this chapter but as part of the Low-Level Radioactive Waste Policy Act.

Legislative History. For legislative history and purpose of Pub.L. 96-573, see 1980 U.S.Code Cong. and Adm.News, p. 6933.

§ 2021d. Low-level radioactive waste disposal; policy, implementation, report, etc.

(a)(1) It is the policy of the Federal Government that—

(A) each State is responsible for providing for the availability of capacity either within or outside the State for the disposal of low-level radioactive waste generated within its borders except for waste generated as a result of defense activities of the Secretary or Federal research and development activities; and

(B) low-level radioactive waste can be most safely and efficiently managed on a regional basis.

(2)(A) To carry out the policy set forth in paragraph (1), the States may enter into such compacts as may be necessary to provide for the establishment and operation of regional disposal facilities for low-level radioactive waste.

(B) A compact entered into under subparagraph (A) shall not take effect until the Congress has by law consented to the compact. Each such compact shall provide that every 5 years after the compact has taken effect the Congress may by law withdraw its consent. After January 1, 1986, any such compact may restrict the use of the regional disposal facilities under the compact to the disposal of low-level radioactive waste generated within the region.

(b)(1) In order to assist the States in carrying out the policy set forth in subsection (a)(1) of this section, the Secretary shall prepare and submit to Congress and to each of the States within 120 days after December 22, 1980, a report which—

(A) defines the disposal capacity needed for present and future low-level radioactive waste on a regional basis;

(B) defines the status of all commercial low-level radioactive waste disposal sites and includes an evaluation of the license status of each such site, the state of operation of each site, including operating history, an analysis of the adequacy of disposal technology employed at each site to contain low-level radioactive wastes for their hazardous lifetimes, and such recommendations as the Secretary considers appropriate to assure protection of the public health and safety from wastes transported to such sites;

(C) evaluates the transportation requirements on a regional basis and in comparison with performance of present transportation practices for the shipment of low-level radioactive wastes, including an inventory of types and quantities of low-level wastes, and evaluation of shipment requirements for each type of waste and an evaluation of the ability of generators, shippers, and carriers to meet such requirements; and

(D) evaluates the capability of the low-level radioactive waste disposal facilities owned and operated by the Department of Energy to provide interim storage for commercially generated low-level waste and estimates the cost associated with such interim storage.

(2) In carrying out this subsection, the Secretary shall consult with the Governors of the States, the Nuclear Regulatory Commission, the Environmental Protection Agency, the United States Geological Survey, and the Secretary of Transportation and such other agencies and departments as he finds appropriate.

Pub.L. 96-573, § 4, Dec. 22, 1980, 94 Stat. 3348.

Commission has revised those procedures in a way designed to improve the licensing process. 46 FR 28627 (May 28, 1981). In this issue of the Federal Register, the Commission is publishing final rules which retain to the Commission itself the decision of whether or not an applicant will be granted authority for commercial operation, i.e., full power operation. These final rules will permit fuel loading and low power (up to 5 percent of rated power) testing to be authorized by the Director of Nuclear Reactor Regulation after a favorable decision by a Licensing Board in a contested case. This Statement announces the Commission's intention that in future uncontested cases full power operation will be authorized by the Commission. However, in such cases, the Director shall authorize fuel loading and low power testing without the need to obtain prior Commission approval.

Dated at Washington, D.C. this 24th day of September, 1981.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

≫ 46 FR 51100

Published 10/16/81

Policy Statement on Low-Level Waste Volume Reduction

AGENCY: Nuclear Regulatory Commission.

ACTION: Policy statement on low-level waste volume reduction.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) has established a policy regarding the volume reduction of low-level radioactive waste. The policy statement addresses: (1) The need for volume reduction policy; and (2) the need for waste generators to minimize the quantity of waste produced. The policy also states that NRC will take expeditious action on requests for licensing of volume reduction systems. (A copy of this notice is bing sent to all licensees and state authorities to advise them of this policy.)

EFFECTIVE DATE: October 16, 1981.

FOR FURTHER INFORMATION CONTACT: Robert E. Browning, Deputy Director, Division of Waste Management, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; Phone 301/427-4200.

SUPPLEMENTARY INFORMATION:

Policy Statement

The Commission has established the following policy:

The Commission hereby adopts a policy calling on all generators of low-level radioactive waste to reduce the volume of waste for disposal; licensees are encouraged to establish programs commensurate with good volume reduction practices.

The Nuclear Regulatory Commission (NRC) considers it desirable that licensees reduce the volume of low-level radioactive waste generated and shipped to commercial waste disposal sites. Such action would:

1. Extend the operational lifetime of the existing commercial low-level disposal sites;
2. Alleviate concern for adequate storage capacity if there are delays in establishing additional regional sites;
3. Reduce the number of waste shipments.

The Commission acknowledges the active role taken by some nuclear industry groups to encourage volume reduction practices among their membership. The increased awareness of the industry is reflected in stepped-up efforts to reduce the volumes of waste generated and by applications to implement waste processing systems by a growing number of licensees. The Commission believes that a positive statement of policy will add greater impetus and encouragement to the industry efforts already underway.

The Commission is encouraging licensees to adopt procedures that will reduce the volume of waste being transferred to disposal facilities. NRC believes it is in the best interest of licensees and the public that licensees extensively explore means by which waste volume may be reduced. The NRC views volume reduction activities as a two-step system. The first, volume minimization, is capable of immediate implementation, since it requires only a strict system of administrative controls on the part of licensee management to accomplish. The costs for an administrative controls program should be small, and these costs largely should be offset by reductions in shipping and disposal costs. The second step, if needed, would be installation of advanced equipment to achieve even greater reduction in volume than is possible through the use of administrative controls.

There are a number of means by which licensees may reduce volume through application of strict administrative controls. Some of these are: (1) Planning of laboratory and process activities prior to the actual operations; (2) provision of management control over the generation of waste to assure that all operations and plant equipment usage are conducted so as to minimize leakage, spills, and volume of waste generated; (3) improved segregation of radioactive and non-radioactive materials activities; and (4) provision of training programs to assure that personnel are thoroughly knowledgeable with laboratory and plant equipment and maintenance so as to minimize conditions which result in increased waste generation.

Apart from efforts to reduce waste volumes by administrative controls, licensees may benefit further by applying advanced volume reduction equipment to their processes.

A number of volume reduction techniques are in varying stages of development. These include, but are not limited to: (1) Incinerators; (2) evaporator-crystallizers; (3) fluidized bed dryers; (4) thin-film evaporators; (5) extruder evaporators; and (6) compactors. Waste compactors are in general use at many nuclear facilities. Extruder evaporators are being installed in some power plants, while several utilities are looking into incineration as a volume reduction process.

Treatment or disposal of licensed material by incineration requires Commission approval under 10 CFR 20.305. Other modifications required to install volume reduction equipment at reactor plants can be accomplished without prior Commission approval under 10 CFR 50.59, unless the proposed modification involves a change in the technical specifications incorporated in the license or an unreviewed safety question. Non-reactor licensees who wish to apply volume reduction equipment to their wastes should contact the appropriate NRC licensing staff for guidance regarding licensing requirements.

The NRC staff is available to consult with licensees regarding volume reduction practices. NRC staff will cooperate with licensees in assessing the state-of-the-art of methods for achievement of volume reduction, and will take expeditious action on requests for licensing volume reduction systems.

Dated at Washington, D.C., this 12th day of October 1981.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.