
Licensing of Alternative Methods of Disposal of Low-Level Radioactive Waste

Branch Technical Position
Low-Level Waste Licensing Branch

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ABSTRACT

This branch technical position statement identifies and describes specific methods of disposal currently being considered as alternatives to shallow land burial, provides general guidance on these methods of disposal, and recommends procedures that will improve and simplify the licensing process. The statement provides answers to certain questions that have arisen regarding the applicability of 10 CFR 61 to near-surface disposal of waste, using methods that incorporate engineered barriers or structures, and other alternatives to conventional shallow land burial disposal practices. This position also identifies a recently published NRC contractor report that addresses the applicability of 10 CFR 61 to a range of generic disposal concepts and which provides technical guidance that the staff intends to use for these concepts. This position statement combined with the above-mentioned NRC contractor report fulfills the requirements of Section 8(a) of Public Law 99-240, the Low-Level Radioactive Waste Policy Amendments Act of 1985.

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TECHNICAL POSITION STATEMENT ON LICENSING OF ALTERNATIVE METHODS
OF DISPOSAL FOR LOW-LEVEL RADIOACTIVE WASTE

1 INTRODUCTION

This technical position statement on alternative methods for the land disposal of low-level radioactive waste (LLW) is provided in response to the question of whether disposal methods employing engineered structures and barriers can be licensed under the existing requirements in Title 10 of the Code of Federal Regulations, Part 61 (10 CFR 61), "Licensing Requirements for Land Disposal of Radioactive Waste." The answer to the question is yes. The specific information contained in this technical position is intended to:

- clarify the scope of disposal methods included within the meaning of the term "near-surface disposal"
- identify alternative land disposal concepts considered to be within the framework of the existing regulatory requirements in 10 CFR 61, thus meeting the first part of the requirement of Section 8(a) of Public Law 99-240, Low-Level Radioactive Waste Policy Amendments Act of 1985
- provide general guidance (NUREG/CR-3774, Volumes 1-6) on the various components of the disposal system for alternative near-surface land disposal concepts that may present problems in light of the performance objectives of 10 CFR 61. This guidance meets the second part of the requirement of Section 8(a) of Public Law 99-240, Low-Level Radioactive Waste Policy Amendments Act of 1985
- encourage early and continuing interactions between potential license applicants, the LLW disposal service industry, States, other government agencies, and the NRC regarding efforts to develop and regulate new disposal capacity for LLW
- encourage design engineers, vendors, and prospective license applicants to submit detailed technical information on proposed disposal methods as far in advance of license application as possible
- encourage a focus on a limited number of approaches to ensure standardization and resultant ability to use limited NRC resources most effectively; NRC will focus its resources on alternative methods that utilize engineering material with earthen cover

The NRC staff concludes it is possible to complete reviews of disposal alternatives with an expectation of fully resolving the licensing questions that may arise in the review process provided that an adequate prelicensing dialogue is established.

2 BACKGROUND CONSIDERATIONS

As a part of its work in developing 10 CFR 61 and its supporting environmental impact statement, the NRC staff conducted a study of alternative LLW disposal methods. This was intended to help ensure that all viable disposal methods were considered and that the initial issuance of the regulation and subsequent amendments would be based on the disposal methods most likely to be used. The results of studies and public comments in response to the Advance Notice of Proposed Rulemaking for Part 61 (Federal Register, July 24, 1981) led the NRC staff to concentrate its efforts on developing regulations on land disposal methods.

Land disposal methods can readily be placed into two categories: those that take place near the earth's surface and those that involve deeper disposal. Near-surface disposal encompasses the full range of technology that can be applied to LLW disposal near the earth's surface, that is, shallow land burial, deeper burial at depths up to 30 meters, and the use of engineered structures, barriers, and other concepts, some of which may be partially above the surface.

Specific requirements for deeper land disposal methods such as mined cavities, either natural or engineered, were not considered in the initial rulemaking effort. This technology involves considerations for siting and facility design, operations, and closure that are sufficiently different from those for near-surface disposal, so that certain technical requirements in Subpart D of 10 CFR 61 do not apply. Such methods were left to be addressed in action on a specific application, subsequent guidance, and rulemaking effort, if rulemaking is warranted. It was also recognized that other disposal methods such as hydrofracture and deep-well injection have been used (e.g., by the Department of Energy in Oak Ridge, Tennessee). These two alternatives were not specifically addressed in the initial Part 61 rulemaking effort because they are suited to a very narrow range of waste types and require specific geologic and hydrogeologic conditions. Consequently, they also were left to be addressed at a later time, if necessary. A mined cavity could be sited and licensed on a facility-specific basis under existing regulatory provisions in 10 CFR 61.

3 TECHNICAL POSITION

3.1 Regulatory Framework

The regulatory framework established in 10 CFR 61 covers all phases of waste disposal from site selection through facility design, licensing, operations, closure, and postclosure stabilization, to the end of the period of active institutional control. This framework of regulations establishes the procedures, criteria, terms, and conditions forming the basis on which the NRC will issue and renew licenses for the land disposal of LLW.

Subparts of the rule covering general provisions and procedural licensing aspects, as well as those subparts covering performance objectives, financial assurances, State and tribal participation, and records, reports, tests and inspections apply to all methods of land disposal of LLW, both near-surface and at greater depths. The technical requirements in Subpart D are specified only for near-surface disposal methods with reserved sections for other than near-surface. As discussed in Section 3.5, the NRC staff believes that, except for the potential need to develop site-specific alternative waste form and classification requirements, the technical requirements in Subpart D apply to alternative methods of near-surface disposal using engineered barriers or structures. These alternative methods include, for example, disposal by emplacement in below-ground engineered vaults, partially above-ground engineered vaults, earth-mounded engineered bunkers, lined shafts or boreholes, caissons or pipes, and concrete-walled trenches.

3.2 Evaluation of Alternative Disposal Methods

This technical position is guided by the background of knowledge and experience reflected in the rulemaking that culminated in the issuance of 10 CFR 61. Both draft and final environmental impact statements for the rule address alternative disposal methods. Alternative disposal facility design and operating practices were also among the subjects covered in the background studies and information considered in the rulemaking.

Since the publication of 10 CFR 61 in December 1982, the staff has continued to evaluate alternative disposal methods. An NRC contractor report prepared by the U.S. Army Corps of Engineers entitled "Alternative Methods for Disposal of Low-Level Radioactive Wastes" (NUREG/CR-3774) was published in six volumes:

- Volume 1, published in April 1984, examined the applicability of 10 CFR 61 requirements--siting, design, operations and closure, and monitoring--to five generic design concepts for alternative disposal methods. The five design concepts are below-ground vaults, above-ground vaults, earth-mounded concrete bunkers, mined cavities, and augered holes.
- Volumes 2 through 5, published in October 1985, and Volume 6, published in October 1986, provide a more detailed assessment of the applicability of existing criteria for near-surface disposal (Subpart D, 10 CFR 61) to the five alternative disposal methods covered in Volume 1. The five methods

covered in the reports were below-ground vaults, above-ground vaults, earth-mounded concrete bunkers, shaft disposal, and mined cavity disposal.

The authors concluded that the siting, design, operations, closure, and monitoring criteria of Subpart D, 10 CFR 61, should apply to all the alternative disposal methods except mined cavity disposal. The staff agrees with those conclusions, differing with the contractor's report on only a few minor interpretive points of the regulation. The findings of these reports and clarification of the ways the criteria should be interpreted will be incorporated into future regulatory guidance. This guidance will be issued on the basis of any specific disposal alternatives that may be received for review and analysis of particular design features of the generic disposal concepts that have already been studied. The staff will issue the guidance as modifications to a standard format and content guide and the standard review plans being prepared for shallow land burial applications under 10 CFR 61.

The NRC staff's basis for selecting the conceptual designs for first study by the U.S. Army Corps of Engineers was that each method appears to be under practical consideration by other countries, U.S. agencies, or States. One of these concepts, mined cavities, does not appear to be under serious domestic consideration at this time. Further, as noted earlier, mined cavity disposal represents a significant departure from the experience, data and knowledge base used in formulating the requirements for 10 CFR 61.

Although it has studied design concepts for alternative disposal methods, the NRC staff cannot complete detailed design work or developmental research on new concepts or specific designs for facilities that would have the effect of establishing or developing their commercial potential. These activities are developmental rather than regulatory in nature and should be supported by the entities responsible for establishing new waste disposal capacity or, on the Federal level, by the Department of Energy.

3.3 General Guidance

Section 9 of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPA) requires that, to the extent practicable, the NRC staff complete all activities associated with the review and processing of any license application within 15 months of receipt of the application. The NRC staff is moving ahead to provide information that will help ensure the timely review of low-level waste disposal facility license applications. Both a standard format and content guide (NUREG-1199) and standard review plans (NUREG-1200) for the evaluation of license applications will be issued in January 1987. These documents provide the mechanism for the NRC staff to review a license application within 15 months and fulfill the requirements of Section 9 of the LLRWPA. However, the NRC staff will also evaluate innovative disposal designs that might later be reflected in a license application. To promote timely regulatory decisions, designers, vendors, and prospective license applicants are encouraged to submit detailed technical information on proposed disposal facility designs in advance of formal license applications. This will permit the NRC staff to evaluate fundamental safety and performance aspects and provide precicensing guidance. However, such information should only be submitted when the designs are a part of a specific application being prepared, represent work sponsored by a potential applicant, or are based on some other type of commitment by a potential

licensee. Advance review and, where feasible, approval of designs and related technical information can reduce considerably the time needed for license application review.

Designs for alternative disposal methods should reflect both the benefits of significant research and development work and the experience gained from waste disposal operations in the United States and other countries. It is anticipated that alternative disposal methods may offer an enhanced margin of protection for the public and the environment. If the alternative design is coupled with innovative operations (e.g., automated handling and emplacement) or more conservative waste forms, content, or packaging, it may also offer an enhanced margin of protection for workers. Tradeoffs on worker exposure, operations, and waste form should be factored into designing as indicated in Section 3.4, which follows. The NRC staff particularly encourages design innovations that increase safety and reliability and that generally are supported by a proven technology or one that can be demonstrated by a satisfactory technology development program.

Early review of facility design can be requested on an individual applicant basis. However, the NRC staff believes that there are advantages to standardized approaches to waste disposal. Standard disposal design features can benefit public and environmental protection by concentrating the resources of waste management engineers and vendors on particular approaches and by stimulating standardized programs of construction practice and quality assurance. The use of standardized approaches and design concepts can also facilitate more effective and efficient licensing and inspection processes. To this end, the staff plans to give higher priority and focus resources on those approaches that are of greatest interest to States. As a result of comments received on the draft version of this statement and input from workshop meetings, the NRC staff considers that the primary focus should be on alternative methods that utilize engineering materials with soil cover (for example, below-ground vaults and earth-mounded concrete bunkers). The NRC staff will expend minimal resources on above-ground vaults and mined cavity disposal options. In addition, the NRC staff strongly encourages industry and the States to pursue standardization in developing alternative waste disposal methods. Procedures for reviewing standard designs could be patterned after the procedures for reviewing standard designs for reactors in Appendix O to 10 CFR 50.

The public should note that preapplication requests for NRC review that also request approval by NRC involve fees. There are two ways for NRC to grant approval. Both involve fees under 10 CFR 170. Requests that are suitable and submitted as topical reports involve a \$20,000 fee. If the request is not suitable and not submitted as a topical report, 10 CFR 170 requires full cost recovery as a special project (see 10 CFR 170.31, Item 12). Also see 10 CFR 170.11(b), which allows the Commission to consider exemptions from the fee requirements when consistent with law and the public interest.

The NRC intends, commensurate with its statutory responsibilities, to improve and simplify the licensing process and provide stability and predictability in the regulation of new LLW disposal facilities. To help accomplish this objective, the NRC staff encourages the earliest possible interaction between potential license applicants, the waste disposal service industry, States, other

government agencies, and the NRC. This should also serve to provide all interested parties, including the public, with timely and objective assessments of the public and environmental protection aspects of proposed alternative waste disposal methods.

3.4 Descriptions of Alternative Disposal Concepts

Each of the design concepts described below has either been evaluated as a waste disposal alternative to shallow land burial or is currently being used or considered for that purpose in other countries. Descriptions of these design concepts are included here to help define the range of design characteristics considered to be within the framework of the existing regulatory requirements of 10 CFR 61. The concepts are described in more detail in NUREG/CR-3774.

- Below-Ground Vaults: A below-ground vault is any enclosed engineered structure built at least partially below the original surface of the earth and used for disposal of low-level radioactive waste. No portion of the structure would protrude above the final surface grade. A below-ground vault could be fabricated from the engineering materials discussed below for above-ground vaults. The vault could be built with engineered walls and roof; the floor could be natural soil or rock, treated soil or rock, or engineered materials. The vault, as an integrated structure, also has the characteristic of limited access to its interior space, such as a doorway or portal or hatch opening. Operational access to the vault from the surface may be in the form of an excavated ramp, which is built and then covered over at closure. During operations, however, the vault may have more extensive access, depending on its design. See Volume 2 of NUREG/CR-3774 for a more complete description of variations in conceptual design and operation of below-ground vaults.
- Above-Ground Vaults: An above-ground vault disposal unit is an engineered structure or building with floor, walls, roof, and limited access openings on a foundation near the ground surface. At least some portion of the structure would be above the final postclosure surface grade. The vault would be built from engineered structural materials. Fabrication could be of masonry blocks, fabricated metal shapes, reinforced cast-in-place or sprayed concrete, pre-cast concrete, or plastic or fluid media molded into various solid shells. All of these materials have been used to construct vaults. There are no existing regulatory constraints on material selection or shape of the vault as long as it can be demonstrated by the license applicant that the performance objectives of 10 CFR 61 can be achieved. See Volume 3 of NUREG/CR-3774 for a more complete description of variations in conceptual design and operation of above-ground vaults.
- Earth-Mounded Concrete Bunkers: The design of earth-mounded concrete bunkers may include the features of trenches, below-ground vaults, and earth mounds. This disposal method may also rely on mandatory requirements on waste form or site operation, such as specialized packaging and encapsulation. The basic design of an earth-mounded concrete bunker currently used in France segregates wastes according to level of radioactivity. Wastes with higher levels of radioactivity are embedded in concrete below ground. Waste packages with lower levels of radioactivity are emplaced above ground at natural grade in earthen mounds (tumuli). Thus, an earth-mounded concrete bunker may involve both above-ground and below-ground

construction, and may include waste encapsulation and backfilling with both concrete and earth. See Volume 4 of NUREG/CR-3774 for a more complete description of variations in conceptual design and operation of earth-mounded concrete bunkers.

- Shaft Disposal: The term "shaft disposal" refers to a near-surface disposal alternative in which wastes would be disposed of in shafts or boreholes augured, bored, or sunk by conventional construction methods. The shafts could be lined or unlined and of various sizes. Lining could be concrete, metal, or other suitable structural material. See Volume 5 of NUREG/CR-3774 for a more complete description of variations in conceptual design, use, and operation of shaft disposal.

Mined Cavity: The term "mined cavity" for the purpose of this discussion includes enclosed cavities developed in the removal of natural resources. Open-pit mines and surface mines are excluded from consideration. Mines vary greatly in geologic setting, types of excavation, and manner of resources extracted. See Volume 6 of NUREG/CR-3774 for a more complete description of the mined cavities.

If specific disposal facility designs are brought to the NRC for evaluation, the NRC staff will provide prelicensing guidance to help ensure that key issues will be identified and resolved before licensing and that NRC's regulatory requirements are incorporated into the applicant's program. However, until such time as detailed technical information on designs is submitted, the NRC staff believes that regulatory guidance must be sufficiently general to avoid placing unnecessary constraints on the development of new design concepts. The nature of any new NRC regulatory requirements will be based on the extent to which an individual proposed disposal design is shown to conform to the existing technical requirements of 10 CFR 61 or is compatible with meeting the performance objectives set out in 10 CFR 61 when combined with other components of the disposal system.

The following general guidance is provided for features and characteristics of various alternative disposal concepts that may present problems in demonstrating compliance with the 10 CFR 61 performance objectives. Requirements to reassess and potentially modify other components of the disposal system are also discussed. This guidance is intended to assist waste disposal engineers, license applicants, and States in identifying a preferred waste disposal design.

3.5 Design Considerations

Land disposal facilities must be sited, designed, operated, closed, and controlled after closure to achieve the performance objectives set forth in Subpart C of 10 CFR 61. The combination of performance objectives and technical requirements establishes a systems approach to waste disposal. The components of the "system" include the site and its characteristics, the facility and disposal unit design, the waste, facility operations and closure, intruder barriers, and institutional controls. Environmental monitoring is used to assess the system's performance. Reliance is not placed on any one component of the system. Rather, all interact in achieving the performance objectives. Design of the facility and disposal units plays an important role in the performance of the waste disposal system.

- Siting: The disposal site suitability requirements of 10 CFR 61.50 are minimum common sense requirements and apply to siting of all near-surface alternative disposal methods. The first critical step, as with any disposal facility, is to select a site where natural conditions favor disposal.

Engineered structures and barriers should not be viewed as a planned substitute for a suitable site. Rather, in conjunction with other disposal system components, the engineered features should offer enhanced confidence in protection for the public and environment.

Thus, States are encouraged to proceed expeditiously with their disposal siting programs while NRC develops supplemental standard format and content guidance and standard review plans for alternative methods.

- Design of Disposal Units: The disposal site design requirements of 10 CFR 61.51 are sufficiently flexible to apply to alternative disposal methods that fall within the first four concepts described in Section 4 of this statement, mined cavities excluded. Although little experience concerning waste disposal in engineered structures is available, the technology exists to construct buildings and structures that will last for centuries. There are structures in use today that were built hundreds and even thousands of years ago. However, procedures are not well developed for obtaining assurance that structures will be left alone or will survive intact over the period required to safely isolate emplaced wastes from the human environment after the loss of institutional controls. Designs that actively rely on engineering should be evaluated for deterrence of intrusion and also the consequences of intrusion and failure of the structure sooner than expected.

Waste retrievability is not required or prohibited by 10 CFR 61. If waste retrievability is proposed as a design feature, several important factors should be considered. Retrievability should not compromise or otherwise lessen the ability of the combined features to meet the performance objectives of 10 CFR 61. The designer should be sure that retrievability measures do not result in increased problems in protecting the inadvertent intruder.

- Waste Classification: Existing concentration limits for Class A, B, and C wastes are based on associated waste form and other components of the system to determine critical pathways. Certain disposal methods and associated operations may not accommodate all classes of LLW or parts of one or more classes. An alternative waste classification system may be proposed by the applicant because of the types of waste generated within the region served by the proposed facility, the specific design of disposal units, or other factors. The applicant may propose a waste classification system different from that described in 10 CFR 61.55, provided the system is compatible with the performance objectives of 10 CFR 61 and the concentrations of radionuclides in the system proposed do not exceed the values specified in 10 CFR 61.55 for Class C waste. Alternatives to current waste classification requirements can be considered under the flexibility allowed in 10 CFR 61.58. However, alternative waste classes have the potential to confuse waste generators. The staff believes that using other options such as more restrictive waste forms or packaging or alternative emplacement methods would minimize confusion on the part of waste generators.

- Intruder Barrier: 10 CFR 61 requires that Class C waste be disposed of in such a manner that the top of the waste is a minimum of 5 meters below the top surface of the cover over the waste or that intruder barriers are included that are designed to protect against an inadvertent intrusion for at least 500 years (10 CFR 61.42 and 61.52). Alternative disposal methods should provide a level of protection for the inadvertent intruder equivalent to the existing requirements.
- Waste Characteristics: The minimum requirements on waste characteristics specified in 10 CFR 61.56(a) will apply for alternative disposal methods. The applicant may use flexibility in conforming to the stability requirements in 10 CFR 61.56(b)(1) if waste stability is to be provided by the engineered structure in which the waste is emplaced. However, proposed designs may need more stringent minimum waste forms or packaging to protect workers or design features to accommodate planned operations (e.g., weight or size limits). Supplemental requirements should be reasonable enough so that generators and processors can be relied on to comply with the requirements. Alternatives to current waste characteristics requirements can be considered under 10 CFR 61.58.
- Facility Operations and Closure: The requirements for facility operations and closure in 10 CFR 61.52 will be applied to the first four alternative disposal methods described in this statement. The specific application of the individual requirements may vary with a particular alternative disposal design. Worker exposure and safe operations should obviously be a factor in developing operational programs or procedures and closure plans. Volumes 2 through 5 of NUREG/CR-3774 contain a more complete explanation and discussion of the individual requirements of 10 CFR 61.52 and their application than is included in this technical position.
- Environmental Monitoring: The requirements for monitoring specified in 10 CFR 61.53 will apply for the first four alternative disposal methods. The specific parameters to be monitored and the measurements and observations to be made may vary significantly between below-ground and above-ground disposal units and, for above-ground units, between earth-covered and uncovered units. Provisions for monitoring should be included in design considerations.
- Institutional Requirements: The land ownership and institutional control requirements of 10 CFR 61.59 will apply to alternative disposal methods. Existing requirements related to active institutional controls may have to be modified by license to accommodate some engineered structure disposal concepts, such as those built above ground without cover. For example, the wastes may be more readily available for exposure, so additional controls and a more comprehensive program to exclude the public from the site during the active institutional control period may be necessary. 10 CFR 61 provides that active institutional controls cannot be relied on for more than 100 years. 10 CFR 61 does not prohibit longer periods of active controls. However, longer periods should only provide additional assurances and should not be necessary to ensure long-term performance.

4 SUMMARY

In summarizing this statement, the following points highlight the major points presented in this technical position:

- 10 CFR 61 establishes the framework for licensing land disposal of low-level radioactive waste. It may be used to license any land disposal method, including those that use engineered barriers or structures.
- The Low-Level Radioactive Waste Policy Amendments Act of 1985 establishes schedules for the development of licensing procedures and technical guidance. Two major milestones that must be met are (1) the identification of methods of disposal other than shallow land burial and the establishment and publication of guidance regarding the use of such methods by January 1987, and (2) the publishing of technical information regarding such alternative methods by January 1988. An additional requirement is to establish procedures and to develop the technical capability to complete the review of a license application within 15 months of receipt by January 1987.
- The NRC has already met the first milestone by (1) publishing this final technical position, which identified five alternative concepts, and (2) publishing the six-volume NRC contractor report, NUREG/CR-3774.
- The second milestone will be met by publishing in January 1987 technical information regarding alternatives in the standard format and content guide (NUREG-1199) and the standard review plan (NUREG-1200), which are currently being developed for shallow land burial.
- Over the coming year, the NRC will focus on alternative methods that utilize cementitious materials with earthen cover (for example, below-ground vaults and earth-mounded concrete bunkers). NRC will expend minimal resources on above-ground vaults or mined cavities.
- The NRC encourages standardization because that will foster more efficient use of limited resources and thus will result in safe and environmentally sound disposal with significant time savings.
- Prelicensing consultation with the States, regional compacts, and other interested parties will continue. This will include the ongoing Outreach Program and regional workshops. In these and other forums, such as this one, the staff will be interested in receiving feedback on its plans.

5 REFERENCES

Low-Level Radioactive Waste Policy Amendments Act of 1985 (Public Law 99-240)

Code of Federal Regulations, Title 10, "Energy," U.S. Government Printing Office, Washington, DC, 1986.

U.S. Nuclear Regulatory Commission, "Licensing Requirement for Land Disposal of Radioactive Waste," Federal Register, Vol. 46, No. 142, pages 38031-38089, July 24, 1981.

---, NUREG-1199, "Standard Format and Content of a License Application for a Low-Level Radioactive Waste Disposal Facility," to be published.

---, NUREG-1200, "Standard Review Plan for Review of a License Application for a Low-Level Radioactive Waste Disposal Facility," to be published.

---, NUREG/CR-3774, "Alternative Methods for Disposal of Low-Level Radioactive Wastes," Vol. 1, "Task 1: Description of Methods and Assessment of Criteria," April 1984; Vol. 2, "Task 2a: Technical Requirements for Belowground Vault Disposal of Low-Level Radioactive Waste," October 1985; Vol. 3, "Task 2b: Technical Requirements for Aboveground Vault Disposal of Low-Level Radioactive Waste," October 1985; Vol. 4, "Task 2c: Technical Requirements for Earth Mounded Concrete Bunker Disposal of Low-Level Radioactive Waste," October 1985; Vol. 5, "Task 2e: Technical Requirements for Shaft Disposal of Low-Level Radioactive Waste," October 1985; Vol. 6, "Task 2d: Technical Requirements for Mined Cavity Disposal of Low-Level Radioactive Waste," October 1986.

APPENDIX A

PUBLIC LAW 99-240

LOW-LEVEL RADIOACTIVE WASTE POLICY AMENDMENTS ACT OF 1985

Public Law 99-240
99th Congress

An Act

Jan. 15, 1986
[H.R. 1083]State and local
governments.Low-Level
Radioactive
Waste Policy
Amendments
Act of 1985.
42 USC 2021b
note.42 USC
2021b-2021d,
2021b note.42 USC 2021b
note.

42 USC 2021b.

To amend the Low-Level Radioactive Waste Policy Act to improve procedures for the implementation of compacts providing for the establishment and operation of regional disposal facilities for low-level radioactive waste; to grant the consent of the Congress to certain interstate compacts on low-level radioactive waste; and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—LOW-LEVEL RADIOACTIVE WASTE POLICY
AMENDMENTS ACT OF 1985

SEC. 101. SHORT TITLE.

This Title may be cited as the "Low-Level Radioactive Waste Policy Amendments Act of 1985"

SEC. 102. AMENDMENT TO THE LOW-LEVEL RADIOACTIVE WASTE POLICY ACT.

The Low-Level Radioactive Waste Policy Act (42 U.S.C. 2021b et seq.) is amended by striking out sections 1, 2, 3, and 4 and inserting in lieu thereof the following:

"SECTION 1. SHORT TITLE.

"This Act may be cited as the 'Low-Level Radioactive Waste Policy Act'.

"SEC. 2. DEFINITIONS.

"For purposes of this Act:

"(1) AGREEMENT STATE.—The term 'agreement State' means a State that—

"(A) has entered into an agreement with the Nuclear Regulatory Commission under section 274 of the Atomic Energy Act of 1954 (42 U.S.C. 2021); and

"(B) has authority to regulate the disposal of low-level radioactive waste under such agreement.

"(2) ALLOCATION.—The term 'allocation' means the assignment of a specific amount of low-level radioactive waste disposal capacity to a commercial nuclear power reactor for which access is required to be provided by sited States subject to the conditions specified under this Act.

"(3) COMMERCIAL NUCLEAR POWER REACTOR.—The term 'commercial nuclear power reactor' means any unit of a civilian light-water moderated utilization facility required to be licensed under section 103 or 104b. of the Atomic Energy Act of 1954 (42 U.S.C. 2133 or 2134(b)).

"(4) COMPACT.—The term 'compact' means a compact entered into by two or more States pursuant to this Act.

"(5) COMPACT COMMISSION.—The term 'compact commission' means the regional commission, committee, or board established in a compact to administer such compact.

"(6) COMPACT REGION.—The term 'compact region' means the area consisting of all States that are members of a compact.

"(7) DISPOSAL.—The term 'disposal' means the permanent isolation of low-level radioactive waste pursuant to the requirements established by the Nuclear Regulatory Commission under applicable laws, or by an agreement State if such isolation occurs in such agreement State.

"(8) GENERATE.—The term 'generate', when used in relation to low-level radioactive waste, means to produce low-level radioactive waste.

"(9) LOW-LEVEL RADIOACTIVE WASTE.—The term 'low-level radioactive waste' means radioactive material that—

"(A) is not high-level radioactive waste, spent nuclear fuel, or byproduct material (as defined in section 11e.(2) of the Atomic Energy Act of 1954 (42 U.S.C. 2014(e)(2))); and

"(B) the Nuclear Regulatory Commission, consistent with existing law and in accordance with paragraph (A), classifies as low-level radioactive waste.

"(10) NON-SITED COMPACT REGION.—The term 'non-sited compact region' means any compact region that is not a sited compact region.

"(11) REGIONAL DISPOSAL FACILITY.—The term 'regional disposal facility' means a non-Federal low-level radioactive waste disposal facility in operation on January 1, 1985, or subsequently established and operated under a compact.

"(12) SECRETARY.—The term 'Secretary' means the Secretary of Energy.

"(13) SITED COMPACT REGION.—The term 'sited compact region' means a compact region in which there is located one of the regional disposal facilities at Barnwell, in the State of South Carolina; Richland, in the State of Washington; or Beatty, in the State of Nevada.

"(14) STATE.—The term 'State' means any State of the United States, the District of Columbia, and the Commonwealth of Puerto Rico.

"SEC. 3. RESPONSIBILITIES FOR DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTE.

"SECTION 3(a)(1) STATE RESPONSIBILITIES.—Each State shall be responsible for providing, either by itself or in cooperation with other States, for the disposal of—

"(A) low-level radioactive waste generated within the State (other than by the Federal Government) that consists of or contains class A, B, or C radioactive waste as defined by section 61.55 of title 10, Code of Federal Regulations, as in effect on January 26, 1983;

"(B) low-level radioactive waste described in subparagraph (A) that is generated by the Federal Government except such waste that is—

"(i) owned or generated by the Department of Energy;

"(ii) owned or generated by the United States Navy as a result of the decommissioning of vessels of the United States Navy; or

South Carolina.
Washington.
Nevada.

42 USC 2021c.

Vessels.

Research and
development.Post, pp. 1846,
1855.

Vessels.

Research and
development.Health.
Safety.42 USC 2011
note.

Report.

"(iii) owned or generated as a result of any research, development, testing, or production of any atomic weapon; and

"(C) low-level radioactive waste described in subparagraphs (A) and (B) that is generated outside of the State and accepted for disposal in accordance with sections 5 or 6.

"(2) No regional disposal facility may be required to accept for disposal any material—

"(A) that is not low-level radioactive waste as defined by section 61.55 of title 10, Code of Federal Regulations, as in effect on January 26, 1983, or

"(B) identified under the Formerly Utilized Sites Remedial Action Program.

Nothing in this paragraph shall be deemed to prohibit a State, subject to the provisions of its compact, or a compact region from accepting for disposal any material identified in subparagraph (A) or (B).

"(b)(1) The Federal Government shall be responsible for the disposal of—

"(A) low-level radioactive waste owned or generated by the Department of Energy;

"(B) low-level radioactive waste owned or generated by the United States Navy as a result of the decommissioning of vessels of the United States Navy;

"(C) low-level radioactive waste owned or generated by the Federal Government as a result of any research, development, testing, or production of any atomic weapon; and

"(D) any other low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the Commission for class C radioactive waste, as defined by section 61.55 of title 10, Code of Federal Regulations, as in effect on January 26, 1983.

"(2) All radioactive waste designated a Federal responsibility pursuant to subparagraph (b)(1)(D) that results from activities licensed by the Nuclear Regulatory Commission under the Atomic Energy Act of 1954, as amended, shall be disposed of in a facility licensed by the Nuclear Regulatory Commission that the Commission determines is adequate to protect the public health and safety.

"(3) Not later than 12 months after the date of enactment of this Act, the Secretary shall submit to the Congress a comprehensive report setting forth the recommendations of the Secretary for ensuring the safe disposal of all radioactive waste designated a Federal responsibility pursuant to subparagraph (b)(1)(D). Such report shall include—

"(A) an identification of the radioactive waste involved, including the source of such waste, and the volume, concentration, and other relevant characteristics of such waste;

"(B) an identification of the Federal and non-Federal options for disposal of such radioactive waste;

"(C) a description of the actions proposed to ensure the safe disposal of such radioactive waste;

"(D) a description of the projected costs of undertaking such actions;

"(E) an identification of the options for ensuring that the beneficiaries of the activities resulting in the generation of such radioactive wastes bear all reasonable costs of disposing of such wastes; and

"(F) an identification of any statutory authority required for disposal of such waste.

"(4) The Secretary may not dispose of any radioactive waste designated a Federal responsibility pursuant to paragraph (b)(1)(D) that becomes a Federal responsibility for the first time pursuant to such paragraph until ninety days after the report prepared pursuant to paragraph (3) has been submitted to the Congress.

"SEC. 4. REGIONAL COMPACTS FOR DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTE.

"(a) IN GENERAL.—

"(1) FEDERAL POLICY.—It is the policy of the Federal Government that the responsibilities of the States under section 3 for the disposal of low-level radioactive waste can be most safely and effectively managed on a regional basis.

"(2) INTERSTATE COMPACTS.—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) APPLICABILITY TO FEDERAL ACTIVITIES.—

"(1) IN GENERAL.—

"(A) ACTIVITIES OF THE SECRETARY.—Except as provided in subparagraph (B), no compact or action taken under a compact shall be applicable to the transportation, management, or disposal of any low-level radioactive waste designated in section 3(a)(1)(B)(i)-(iii).

"(B) FEDERAL LOW-LEVEL RADIOACTIVE WASTE DISPOSED OF AT NON-FEDERAL FACILITIES.—Low-level radioactive waste owned or generated by the Federal Government that is disposed of at a regional disposal facility or non-Federal disposal facility within a State that is not a member of a compact shall be subject to the same conditions, regulations, requirements, fees, taxes, and surcharges imposed by the compact commission, and by the State in which such facility is located, in the same manner and to the same extent as any low-level radioactive waste not generated by the Federal Government.

"(2) FEDERAL LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITIES.—Any low-level radioactive waste disposal facility established or operated exclusively for the disposal of low-level radioactive waste owned or generated by the Federal Government shall not be subject to any compact or any action taken under a compact.

"(3) EFFECT OF COMPACTS ON FEDERAL LAW.—Nothing contained in this Act or any compact may be construed to confer any new authority on any compact commission or State—

"(A) to regulate the packaging, generation, treatment, storage, disposal, or transportation of low-level radioactive waste in a manner incompatible with the regulations of the Nuclear Regulatory Commission or inconsistent with the regulations of the Department of Transportation;

"(B) to regulate health, safety, or environmental hazards from source material, byproduct material, or special nuclear material;

"(C) to inspect the facilities of licensees of the Nuclear Regulatory Commission;

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42 USC 2021d.

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Government organization and employees.

28 USC 2671 et seq.

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42 USC 2021e.

"(D) to inspect security areas or operations at the site of the generation of any low-level radioactive waste by the Federal Government, or to inspect classified information related to such areas or operations; or

"(E) to require indemnification pursuant to the provisions of chapter 171 of title 28, United States Code (commonly referred to as the Federal Tort Claims Act), or section 170 of the Atomic Energy Act of 1954 (42 U.S.C. 2210) (commonly referred to as the Price-Anderson Act), whichever is applicable.

"(4) **FEDERAL AUTHORITY.**—Except as expressly provided in this Act, nothing contained in this Act or any compact may be construed to limit the applicability of any Federal law or to diminish or otherwise impair the jurisdiction of any Federal agency, or to alter, amend, or otherwise affect any Federal law governing the judicial review of any action taken pursuant to any compact.

"(5) **STATE AUTHORITY PRESERVED.**—Except as expressly provided in this Act, nothing contained in this Act expands, diminishes, or otherwise affects State law.

"(c) **RESTRICTED USE OF REGIONAL DISPOSAL FACILITIES.**—Any authority in a compact to restrict the use of the regional disposal facilities under the compact to the disposal of low-level radioactive waste generated within the compact region shall not take effect before each of the following occurs:

"(1) January 1, 1986; and

"(2) the Congress by law consents to the compact.

"(d) **CONGRESSIONAL REVIEW.**—Each compact shall provide that every 5 years after the compact has taken effect the Congress may by law withdraw its consent.

"SEC. 5. LIMITED AVAILABILITY OF CERTAIN REGIONAL DISPOSAL FACILITIES DURING TRANSITION AND LICENSING PERIODS.

"(a) AVAILABILITY OF DISPOSAL CAPACITY.—

"(1) **PRESSURIZED-WATER AND BOILING WATER REACTORS.**—During the seven-year period beginning January 1, 1986 and ending December 31, 1992, subject to the provisions of subsections (b) through (g), each State in which there is located a regional disposal facility referred to in paragraphs (1) through (3) of subsection (b) shall make disposal capacity available for low-level radioactive waste generated by pressurized water and boiling water commercial nuclear power reactors in accordance with the allocations established in subsection (c).

"(2) **OTHER SOURCES OF LOW-LEVEL RADIOACTIVE WASTE.**—During the seven-year period beginning January 1, 1986 and ending December 31, 1992, subject to the provisions of subsections (b) through (g), each State in which there is located a regional disposal facility referred to in paragraphs (1) through (3) of subsection (b) shall make disposal capacity available for low-level radioactive waste generated by any source not referred to in paragraph (1).

"(3) ALLOCATION OF DISPOSAL CAPACITY.—

"(A) During the seven-year period beginning January 1, 1986 and ending December 31, 1992, low-level radioactive waste generated within a sited compact region shall be accorded priority under this section in the allocation of available disposal capacity at a regional disposal facility

referred to in paragraphs (1) through (3) of subsection (b) and located in the sited compact region in which such waste is generated.

"(B) Any State in which a regional disposal facility referred to in paragraphs (1) through (3) of subsection (b) is located may, subject to the provisions of its compact, prohibit the disposal at such facility of low-level radioactive waste generated outside of the compact region if the disposal of such waste in any given calendar year, together with all other low-level radioactive waste disposed of at such facility within that same calendar year, would result in that facility disposing of a total annual volume of low-level radioactive waste in excess of 100 per centum of the average annual volume for such facility designated in subsection (b); *Provided, however,* That in the event that all three States in which regional disposal facilities referred to in paragraphs (1) through (3) of subsection (b) act to prohibit the disposal of low-level radioactive waste pursuant to this subparagraph, each such State shall, in accordance with any applicable procedures of its compact, permit, as necessary, the disposal of additional quantities of such waste in increments of 10 per centum of the average annual volume for each such facility designated in subsection (b).

"(C) Nothing in this paragraph shall require any disposal facility or State referred to in paragraphs (1) through (3) of subsection (b) to accept for disposal low-level radioactive waste in excess of the total amounts designated in subsection (b).

"(4) **CESSATION OF OPERATION OF LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY.**—No provision of this section shall be construed to obligate any State referred to in paragraphs (1) through (3) of subsection (b) to accept low-level radioactive waste from any source in the event that the regional disposal facility located in such State ceases operations.

"(b) **LIMITATIONS.**—The availability of disposal capacity for low-level radioactive waste from any source shall be subject to the following limitations:

"(1) **BARNWELL, SOUTH CAROLINA.**—The State of South Carolina, in accordance with the provisions of its compact, may limit the volume of low-level radioactive waste accepted for disposal at the regional disposal facility located at Barnwell, South Carolina to a total of 8,400,000 cubic feet of low-level radioactive waste during the 7-year period beginning January 1, 1986, and ending December 31, 1992 (as based on an average annual volume of 1,200,000 cubic feet of low-level radioactive waste).

"(2) **RICHLAND, WASHINGTON.**—The State of Washington, in accordance with the provisions of its compact, may limit the volume of low-level radioactive waste accepted for disposal at the regional disposal facility located at Richland, Washington to a total of 9,800,000 cubic feet of low-level radioactive waste during the 7-year period beginning January 1, 1986, and ending December 31, 1992 (as based on an average annual volume of 1,400,000 cubic feet of low-level radioactive waste).

"(3) **BEATTY, NEVADA.**—The State of Nevada, in accordance with the provisions of its compact, may limit the volume of low-level radioactive waste accepted for disposal at the regional disposal facility located at Beatty, Nevada to a total of 1,400,000

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cubic feet of low-level radioactive waste during the 7-year period beginning January 1, 1986, and ending December 31, 1992 (as based on an average annual volume of 200,000 cubic feet of low-level radioactive waste).

"(c) COMMERCIAL NUCLEAR POWER REACTOR ALLOCATIONS.—

"(1) AMOUNT.—Subject to the provisions of subsections (a) through (g) each commercial nuclear power reactor shall upon request receive an allocation of low-level radioactive waste disposal capacity (in cubic feet) at the facilities referred to in subsection (b) during the 4-year transition period beginning January 1, 1986, and ending December 31, 1989, and during the 3-year licensing period beginning January 1, 1990, and ending December 31, 1992, in an amount calculated by multiplying the appropriate number from the following table by the number of months remaining in the applicable period as determined under paragraph (2).

"Reactor Type	4-year Transition Period		3-year Licensing Period	
	In Sited Region	All Other Locations	In Sited Region	All Other Locations
PWR.....	1027	871	934	685
BWR.....	2300	1951	2091	1533

"(2) METHOD OF CALCULATION.—For purposes of calculating the aggregate amount of disposal capacity available to a commercial nuclear power reactor under this subsection, the number of months shall be computed beginning with the first month of the applicable period, or the sixteenth month after receipt of a full power operating license, whichever occurs later.

"(3) UNUSED ALLOCATIONS.—Any unused allocation under paragraph (1) received by a reactor during the transition period or the licensing period may be used at any time after such reactor receives its full power license or after the beginning of the pertinent period, whichever is later, but not in any event after December 31, 1992, or after commencement of operation of a regional disposal facility in the compact region or State in which such reactor is located, whichever occurs first.

"(4) TRANSFERABILITY.—Any commercial nuclear power reactor in a State or compact region that is in compliance with the requirements of subsection (e) may assign any disposal capacity allocated to it under this subsection to any other person in each State or compact region. Such assignment may be for valuable consideration and shall be in writing, copies of which shall be filed at the affected compact commissions and States, along with the assignor's unconditional written waiver of the disposal capacity being assigned.

"(5) UNUSUAL VOLUMES.—

"(A) The Secretary may, upon petition by the owner or operator of any commercial nuclear power reactor, allocate to such reactor disposal capacity in excess of the amount calculated under paragraph (1) if the Secretary finds and states in writing his reasons for so finding that making additional capacity available for such reactor through this

paragraph is required to permit unusual or unexpected operating, maintenance, repair or safety activities.

"(B) The Secretary may not make allocations pursuant to subparagraph (A) that would result in the acceptance for disposal of more than 800,000 cubic feet of low-level radioactive waste or would result in the total of the allocations made pursuant to this subsection exceeding 11,900,000 cubic feet over the entire seven-year interim access period.

"(6) LIMITATION.—During the seven-year interim access period referred to in subsection (a), the disposal facilities referred to in subsection (b) shall not be required to accept more than 11,900,000 cubic feet of low-level radioactive waste generated by commercial nuclear power reactors.

"(d)(1) SURCHARGES.—The disposal of any low-level radioactive waste under this section (other than low-level radioactive waste generated in a sited compact region) may be charged a surcharge by the State in which the applicable regional disposal facility is located, in addition to the fees and surcharges generally applicable for disposal of low-level radioactive waste in the regional disposal facility involved. Except as provided in subsection (e)(2), such surcharges shall not exceed—

"(A) in 1986 and 1987, \$10 per cubic foot of low-level radioactive waste;

"(B) in 1988 and 1989, \$20 per cubic foot of low-level radioactive waste; and

"(C) in 1990, 1991, and 1992, \$40 per cubic foot of low-level radioactive waste.

"(2) MILESTONE INCENTIVES.—

"(A) ESCROW ACCOUNT.—Twenty-five per centum of all surcharge fees received by a State pursuant to paragraph (1) during the seven-year period referred to in subsection (a) shall be transferred on a monthly basis to an escrow account held by the Secretary. The Secretary shall deposit all funds received in a special escrow account. The funds so deposited shall not be the property of the United States. The Secretary shall act as trustee for such funds and shall invest them in interest-bearing United States Government Securities with the highest available yield. Such funds shall be held by the Secretary until—

"(i) paid or repaid in accordance with subparagraph (B) or (C); or

"(ii) paid to the State collecting such fees in accordance with subparagraph (F).

"(B) PAYMENTS.—

"(i) JULY 1, 1986.—The twenty-five per centum of any amount collected by a State under paragraph (1) for low-level radioactive waste disposed of under this section during the period beginning on the date of enactment of the Low-Level Radioactive Waste Policy Amendments Act of 1985 and ending June 30, 1986, and transferred to the Secretary under subparagraph (A), shall be paid by the Secretary in accordance with subparagraph (D) if the milestone described in subsection (e)(1)(A) is met by the State in which such waste originated.

"(ii) JANUARY 1, 1988.—The twenty-five per centum of any amount collected by a State under paragraph (1) for low-level radioactive waste disposed of under this section during the period beginning July 1, 1986 and ending Decem-

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ber 31, 1987, and transferred to the Secretary under subparagraph (A), shall be paid by the Secretary in accordance with subparagraph (D) if the milestone described in subsection (e)(1)(B) is met by the State in which such waste originated (or its compact region, where applicable).

"(iii) JANUARY 1, 1990.—The twenty-five per centum of any amount collected by a State under paragraph (1) for low-level radioactive waste disposed of under this section during the period beginning January 1, 1988 and ending December 31, 1989, and transferred to the Secretary under subparagraph (A), shall be paid by the Secretary in accordance with subparagraph (D) if the milestone described in subsection (e)(1)(C) is met by the State in which such waste originated (or its compact region, where applicable).

"(iv) The twenty-five per centum of any amount collected by a State under paragraph (1) for low-level radioactive waste disposed of under this section during the period beginning January 1, 1990 and ending December 31, 1992, and transferred to the Secretary under subparagraph (A), shall be paid by the Secretary in accordance with subparagraph (D) if, by January 1, 1993, the State in which such waste originated (or its compact region, where applicable) is able to provide for the disposal of all low-level radioactive waste generated within such State or compact region.

"(C) FAILURE TO MEET JANUARY 1, 1993 DEADLINE.—If, by January 1, 1993, a State (or, where applicable, a compact region) in which low-level radioactive waste is generated is unable to provide for the disposal of all such waste generated within such State or compact region—

"(i) each State in which such waste is generated, upon the request of the generator or owner of the waste, shall take title to the waste, shall be obligated to take possession of the waste, and shall be liable for all damages directly or indirectly incurred by such generator or owner as a consequence of the failure of the State to take possession of the waste as soon after January 1, 1993 as the generator or owner notifies the State that the waste is available for shipment; or

"(ii) if such State elects not to take title to, take possession of, and assume liability for such waste, pursuant to clause (i), twenty-five per centum of any amount collected by a State under paragraph (1) for low-level radioactive waste disposed of under this section during the period beginning January 1, 1990 and ending December 31, 1992 shall be repaid, with interest, to each generator from whom such surcharge was collected. Repayments made pursuant to this clause shall be made on a monthly basis, with the first such repayment beginning on February 1, 1993, in an amount equal to one thirty-sixth of the total amount required to be repaid pursuant to this clause, and shall continue until the State (or, where applicable, compact region) in which such low-level radioactive waste is generated is able to provide for the disposal of all such waste generated within such State or compact region or until January 1, 1996, whichever is earlier.

If a State in which low-level radioactive waste is generated elects to take title to, take possession of, and assume liability for

such waste pursuant to clause (i), such State shall be paid such amounts as are designated in subparagraph (B)(iv). If a State (or, where applicable, a compact region) in which low-level radioactive waste is generated provides for the disposal of such waste at any time after January 1, 1993 and prior to January 1, 1996, such State (or, where applicable, compact region) shall be paid in accordance with subparagraph (D) a lump sum amount equal to twenty-five per centum of any amount collected by a State under paragraph (1): *Provided, however,* That such payment shall be adjusted to reflect the remaining number of months between January 1, 1993 and January 1, 1996 for which such State (or, where applicable, compact region) provides for the disposal of such waste. If a State (or, where applicable, a compact region) in which low-level radioactive waste is generated is unable to provide for the disposal of all such waste generated within such State or compact region by January 1, 1996, each State in which such waste is generated, upon the request of the generator or owner of the waste, shall take title to the waste, be obligated to take possession of the waste, and shall be liable for all damages directly or indirectly incurred by such generator or owner as a consequence of the failure of the State to take possession of the waste as soon after January 1, 1996, as the generator or owner notifies the State that the waste is available for shipment.

"(D) RECIPIENTS OF PAYMENTS.—The payments described in subparagraphs (B) and (C) shall be paid within thirty days after the applicable date—

"(i) if the State in which such waste originated is not a member of a compact region, to such State;

"(ii) if the State in which such waste originated is a member of the compact region, to the compact commission serving such State.

"(E) USES OF PAYMENTS.—

"(i) LIMITATIONS.—Any amount paid under subparagraphs (B) or (C) may only be used to—

"(I) establish low-level radioactive waste disposal facilities;

"(II) mitigate the impact of low-level radioactive waste disposal facilities on the host State;

"(III) regulate low-level radioactive waste disposal facilities; or

"(IV) ensure the decommissioning, closure, and care during the period of institutional control of low-level radioactive waste disposal facilities.

"(ii) REPORTS.—

"(I) RECIPIENT.—Any State or compact commission receiving a payment under subparagraphs (B) or (C) shall, on December 31 of each year in which any such funds are expended, submit a report to the Department of Energy itemizing any such expenditures.

"(II) DEPARTMENT OF ENERGY.—Not later than six months after receiving the reports under subclause (I), the Secretary shall submit to the Congress a summary of all such reports that shall include an assessment of the compliance of each such State or compact commission with the requirements of clause (i).

Reports.

"(F) PAYMENT TO STATES.—Any amount collected by a State under paragraph (1) that is placed in escrow under subparagraph (A) and not paid to a State or compact commission under subparagraphs (B) and (C) or not repaid to a generator under subparagraph (C) shall be paid from such escrow account to such State collecting such payment under paragraph (1). Such payment shall be made not later than 30 days after a determination of ineligibility for a refund is made.

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"(G) PENALTY SURCHARGES.—No rebate shall be made under this subsection of any surcharge or penalty surcharge paid during a period of noncompliance with subsection (e)(1).

"(e) REQUIREMENTS FOR ACCESS TO REGIONAL DISPOSAL FACILITIES.—

"(1) REQUIREMENTS FOR NON-SITED COMPACT REGIONS AND NON-MEMBER STATES.—Each non-sited compact region, or State that is not a member of a compact region that does not have an operating disposal facility, shall comply with the following requirements:

"(A) By July 1, 1986, each such non-member State shall ratify compact legislation or, by the enactment of legislation or the certification of the Governor, indicate its intent to develop a site for the location of a low-level radioactive waste disposal facility within such State.

"(B) By JANUARY 1, 1988:—

"(i) each non-sited compact region shall identify the State in which its low-level radioactive waste disposal facility is to be located, or shall have selected the developer for such facility and the site to be developed, and each compact region or the State in which its low-level radioactive waste disposal facility is to be located shall develop a siting plan for such facility providing detailed procedures and a schedule for establishing a facility location and preparing a facility license application and shall delegate authority to implement such plan;

"(ii) each non-member State shall develop a siting plan providing detailed procedures and a schedule for establishing a facility location and preparing a facility license application for a low-level radioactive waste disposal facility and shall delegate authority to implement such plan; and

"(iii) The siting plan required pursuant to this paragraph shall include a description of the optimum way to attain operation of the low-level radioactive waste disposal facility involved, within the time period specified in this Act. Such plan shall include a description of the objectives and a sequence of deadlines for all entities required to take action to implement such plan, including, to the extent practicable, an identification of the activities in which a delay in the start, or completion, of such activities will cause a delay in beginning facility operation. Such plan shall also identify, to the extent practicable, the process for (1) screening for broad siting areas; (2) identifying and evaluating specific candidate sites; and (3) characterizing the preferred site(s), completing all necessary environmental assessments, and preparing a license application for

submission to the Nuclear Regulatory Commission or an Agreement State.

"(C) BY JANUARY 1, 1990.—

"(i) a complete application (as determined by the Nuclear Regulatory Commission or the appropriate agency of an agreement State) shall be filed for a license to operate a low-level radioactive waste disposal facility within each non-sited compact region or within each non-member State; or

"(ii) the Governor (or, for any State without a Governor, the chief executive officer) of any State that is not a member of a compact region in compliance with clause (i), or has not complied with such clause by its own actions, shall provide a written certification to the Nuclear Regulatory Commission, that such State will be capable of providing for, and will provide for, the storage, disposal, or management of any low-level radioactive waste generated within such State and requiring disposal after December 31, 1992, and include a description of the actions that will be taken to ensure that such capacity exists.

"(D) By January 1, 1992, a complete application (as determined by the Nuclear Regulatory Commission or the appropriate agency of an agreement State) shall be filed for a license to operate a low-level radioactive waste disposal facility within each non-sited compact region or within each non-member State.

"(E) The Nuclear Regulatory Commission shall transmit any certification received under subparagraph (C) to the Congress and publish any such certification in the Federal Register.

Federal Register, publication.

"(F) Any State may, subject to all applicable provisions, if any, of any applicable compact, enter into an agreement with the compact commission of a region in which a regional disposal facility is located to provide for the disposal of all low-level radioactive waste generated within such State, and, by virtue of such agreement, may, with the approval of the State in which the regional disposal facility is located, be deemed to be in compliance with subparagraphs (A), (B), (C), and (D).

Contracts.

"(2) PENALTIES FOR FAILURE TO COMPLY.—

"(A) By JULY 1, 1986.—If any State fails to comply with subparagraph (1)(A)—

"(i) any generator of low-level radioactive waste within such region or non-member State shall, for the period beginning July 1, 1986, and ending December 31, 1986, be charged 2 times the surcharge otherwise applicable under subsection (d); and

"(ii) on or after January 1, 1987, any low-level radioactive waste generated within such region or non-member State may be denied access to the regional disposal facilities referred to in paragraphs (1) through (3) of subsection (b).

"(B) BY JANUARY 1, 1988.—If any non-sited compact region or non-member State fails to comply with paragraph (1)(B)—

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"(i) any generator of low-level radioactive waste within such region or non-member State shall—

"(I) for the period beginning January 1, 1988, and ending June 30, 1988, be charged 2 times the surcharge otherwise applicable under subsection (d); and

"(II) for the period beginning July 1, 1988, and ending December 31, 1988, be charged 4 times the surcharge otherwise applicable under subsection (d); and

"(ii) on or after January 1, 1989, any low-level radioactive waste generated within such region or non-member State may be denied access to the regional disposal facilities referred to in paragraphs (1) through (3) of subsection (b).

"(C) BY JANUARY 1, 1990.—If any non-sited compact region or non-member State fails to comply with paragraph (1)(C), any low-level radioactive waste generated within such region or non-member State may be denied access to the regional disposal facilities referred to in paragraphs (1) through (3) of subsection (b).

"(D) BY JANUARY 1, 1992.—If any non-sited compact region or non-member State fails to comply with paragraph (1)(D), any generator of low-level radioactive waste within such region or non-member State shall, for the period beginning January 1, 1992 and ending upon the filing of the application described in paragraph (1)(D), be charged 3 times the surcharge otherwise applicable under subsection (d).

"(3) DENIAL OF ACCESS.—No denial or suspension of access to a regional disposal facility under paragraph (2) may be based on the source, class, or type of low-level radioactive waste.

"(4) RESTORATION OF SUSPENDED ACCESS; PENALTIES FOR FAILURE TO COMPLY.—Any access to a regional disposal facility that is suspended under paragraph (2) shall be restored after the non-sited compact region or non-member State involved complies with such requirement. Any payment of surcharge penalties pursuant to paragraph (2) for failure to comply with the requirements of subsection (e) shall be terminated after the non-sited compact region or non-member State involved complies with such requirements.

"(1) ADMINISTRATION.—Each State and compact commission in which a regional disposal facility referred to in paragraphs (1) through (3) of subsection (b) is located shall have authority—

"(A) to monitor compliance with the limitations, allocations, and requirements established in this section; and

"(B) to deny access to any non-Federal low-level radioactive waste disposal facilities within its borders to any low-level radioactive waste that—

"(i) is in excess of the limitations or allocations established in this section; or

"(ii) is not required to be accepted due to the failure of a compact region or State to comply with the requirements of subsection (e)(1).

"(2) AVAILABILITY OF INFORMATION DURING INTERIM ACCESS PERIOD.—

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"(A) The States of South Carolina, Washington, and Nevada may require information from disposal facility operators, generators, intermediate handlers, and the Department of Energy that is reasonably necessary to monitor the availability of disposal capacity, the use and assignment of allocations and the applicability of surcharges.

"(B) The States of South Carolina, Washington, and Nevada may, after written notice followed by a period of at least 30 days, deny access to disposal capacity to any generator or intermediate handler who fails to provide information under subparagraph (A).

"(C) PROPRIETARY INFORMATION.—

"(i) Trade secrets, proprietary and other confidential information shall be made available to a State under this subsection upon request only if such State—

"(I) consents in writing to restrict the dissemination of the information to those who are directly involved in monitoring under subparagraph (A) and who have a need to know;

"(II) accepts liability for wrongful disclosure; and

"(III) demonstrates that such information is essential to such monitoring.

"(ii) The United States shall not be liable for the wrongful disclosure by any individual or State of any information provided to such individual or State under this subsection.

"(iii) Whenever any individual or State has obtained possession of information under this subsection, the individual shall be subject to the same provisions of law with respect to the disclosure of such information as would apply to an officer or employee of the United States or of any department or agency thereof and the State shall be subject to the same provisions of law with respect to the disclosure of such information as would apply to the United States or any department or agency thereof. No State or State officer or employee who receives trade secrets, proprietary information, or other confidential information under this Act may be required to disclose such information under State law.

"(g) NONDISCRIMINATION.—Except as provided in subsections (b) through (e), low-level radioactive waste disposed of under this section shall be subject without discrimination to all applicable legal requirements of the compact region and State in which the disposal facility is located as if such low-level radioactive waste were generated within such compact region.

"SEC. 6. EMERGENCY ACCESS.

"(a) IN GENERAL.—The Nuclear Regulatory Commission may grant emergency access to any regional disposal facility or non-Federal disposal facility within a State that is not a member of a compact for specific low-level radioactive waste, if necessary to eliminate an immediate and serious threat to the public health and safety or the common defense and security. The procedure for granting emergency access shall be as provided in this section.

"(b) REQUEST FOR EMERGENCY ACCESS.—Any generator of low-level radioactive waste, or any Governor (or, for any State without a Governor, the chief executive officer of the State) on behalf of any generator or generators located in his or her State, may request that

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Nevada.

South Carolina.
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Government
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employees.
Commerce and
trade.

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Safety.
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security.

Prohibition.

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the Nuclear Regulatory Commission grant emergency access to a regional disposal facility or a non-Federal disposal facility within a State that is not a member of a compact for specific low-level radioactive waste. Any such request shall contain any information and certifications the Nuclear Regulatory Commission may require.

"(c) DETERMINATION OF NUCLEAR REGULATORY COMMISSION.—

"(1) REQUIRED DETERMINATION.—Not later than 45 days after receiving a request under subsection (b), the Nuclear Regulatory Commission shall determine whether—

"(A) emergency access is necessary because of an immediate and serious threat to the public health and safety or the common defense and security; and

"(B) the threat cannot be mitigated by any alternative consistent with the public health and safety, including storage of low-level radioactive waste at the site of generation or in a storage facility obtaining access to a disposal facility by voluntary agreement, purchasing disposal capacity available for assignment pursuant to section 5(c) or ceasing activities that generate low-level radioactive waste.

"(2) REQUIRED NOTIFICATION.—If the Nuclear Regulatory Commission makes the determinations required in paragraph

(1) in the affirmative, it shall designate an appropriate non-Federal disposal facility or facilities, and notify the Governor (or chief executive officer) of the State in which such facility is located and the appropriate compact commission that emergency access is required. Such notification shall specifically describe the low-level radioactive waste as to source, physical and radiological characteristics, and the minimum volume and duration, not exceeding 180 days, necessary to alleviate the immediate threat to public health and safety or the common defense and security. The Nuclear Regulatory Commission shall also notify the Governor (or chief executive officer) of the State in which the low-level radioactive waste requiring emergency access was generated that emergency access has been granted and that, pursuant to subsection (e), no extension of emergency access may be granted absent diligent State action during the period of the initial grant.

"(d) TEMPORARY EMERGENCY ACCESS.—Upon determining that emergency access is necessary because of an immediate and serious threat to the public health and safety or the common defense and security, the Nuclear Regulatory Commission may at its discretion grant temporary emergency access, pending its determination whether the threat could be mitigated by any alternative consistent with the public health and safety. In granting access under this subsection, the Nuclear Regulatory Commission shall provide the same notification and information required under subsection (c). Absent a determination that no alternative consistent with the public health and safety would mitigate the threat, access granted under this subsection shall expire 45 days after the granting of temporary emergency access under this subsection.

"(e) EXTENSION OF EMERGENCY ACCESS.—The Nuclear Regulatory Commission may grant one extension of emergency access beyond the period provided in subsection (c), if it determines that emergency access continues to be necessary because of an immediate and serious threat to the public health and safety or the common defense and security that cannot be mitigated by any alternative consistent with the public health and safety, and that the generator of low-

level radioactive waste granted emergency access and the State in which such low-level radioactive waste was generated have diligently though unsuccessfully acted during the period of the initial grant to eliminate the need for emergency access. Any extension granted under this subsection shall be for the minimum volume and duration the Nuclear Regulatory Commission finds necessary to eliminate the immediate threat to public health and safety or the common defense and security, and shall not in any event exceed 180 days.

"(f) RECIPROCAL ACCESS.—Any compact region or State not a member of a compact that provides emergency access to non-Federal disposal facilities within its borders shall be entitled to reciprocal access to any subsequently operating non-Federal disposal facility that serves the State or compact region in which low-level radioactive waste granted emergency access was generated. The compact commission or State having authority to approve importation of low-level radioactive waste to the disposal facility to which emergency access was granted shall designate for reciprocal access an equal volume of low-level radioactive waste having similar characteristics to that provided emergency access.

"(g) APPROVAL BY COMPACT COMMISSION.—Any grant of access under this section shall be submitted to the compact commission for the region in which the designated disposal facility is located for such approval as may be required under the terms of its compact. Any such compact commission shall act to approve emergency access not later than 15 days after receiving notification from the Nuclear Regulatory Commission, or reciprocal access not later than 15 days after receiving notification from the appropriate authority under subsection (f).

"(h) LIMITATIONS.—No State shall be required to provide emergency or reciprocal access to any regional disposal facility within its borders for low-level radioactive waste not meeting criteria established by the license or license agreement of such facility, or in excess of the approved capacity of such facility, or to delay the closing of any such facility pursuant to plans established before receiving a request for emergency or reciprocal access. No State shall, during any 12-month period, be required to provide emergency or reciprocal access to any regional disposal facility within its borders for more than 20 percent of the total volume of low-level radioactive waste accepted for disposal at such facility during the previous calendar year.

"(i) VOLUME REDUCTION AND SURCHARGES.—Any low-level radioactive waste delivered for disposal under this section shall be reduced in volume to the maximum extent practicable and shall be subject to surcharges established in this Act.

"(j) DEDUCTION FROM ALLOCATION.—Any volume of low-level radioactive waste granted emergency or reciprocal access under this section, if generated by any commercial nuclear power reactor, shall be deducted from the low-level radioactive waste volume allocable under section 5(c).

"(k) AGREEMENT STATES.—Any agreement under section 274 of the Atomic Energy Act of 1954 (42 U.S.C. 2021) shall not be applicable to the determinations of the Nuclear Regulatory Commission under this section.

Health,
Safety,
Defense and
national
security.

Ante, p. 1846.

Prohibition.

Health,
Safety,
Defense and
national
security.

Health,
Safety,
Defense and
national
security.

Prohibitions.

Ante, p. 1846.
Prohibition.

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42 USC 2021g.

"SEC. 7. RESPONSIBILITIES OF THE DEPARTMENT OF ENERGY.

"(a) **FINANCIAL AND TECHNICAL ASSISTANCE.**—The Secretary shall, to the extent provided in appropriations Act, provide to those compact regions, host States, and nonmember States determined by the Secretary to require assistance for purposes of carrying out this Act—

Science and
technology.
Transportation.
Health.
Safety.

"(1) continuing technical assistance to assist them in fulfilling their responsibilities under this Act. Such technical assistance shall include, but not be limited to, technical guidelines for site selection, alternative technologies for low-level radioactive waste disposal, volume reduction options, management techniques to reduce low-level waste generation, transportation practices for shipment of low-level wastes, health and safety considerations in the storage, shipment and disposal of low-level radioactive wastes, and establishment of a computerized database to monitor the management of low-level radioactive wastes; and

"(2) through the end of fiscal year 1993, financial assistance to assist them in fulfilling their responsibilities under this Act.

Science and
technology.
Transportation.

"(b) **REPORTS.**—The Secretary shall prepare and submit to the Congress on an annual basis a report which (1) summarizes the progress of low-level waste disposal siting and licensing activities within each compact region, (2) reviews the available volume reduction technologies, their applications, effectiveness, and costs on a per unit volume basis, (3) reviews interim storage facility requirements, costs, and usage, (4) summarizes transportation requirements for such wastes on an inter- and intra-regional basis, (5) summarizes the data on the total amount of low-level waste shipped for disposal on a yearly basis, the proportion of such wastes subjected to volume reduction, the average volume reduction attained, and the proportion of wastes stored on an interim basis, and (6) projects the interim storage and final disposal volume requirements anticipated for the following year, on a regional basis.

42 USC 2021h.

"SEC. 8. ALTERNATIVE DISPOSAL METHODS.

Ante, p. 1842.

"(a) Not later than 12 months after the date of enactment of the Low-Level Radioactive Waste Policy Amendments Act of 1985, the Nuclear Regulatory Commission shall, in consultation with the States and other interested persons, identify methods for the disposal of low-level radioactive waste other than shallow land burial, and establish and publish technical guidance regarding licensing of facilities that use such methods.

"(b) Not later than 24 months after the date of enactment of the Low-Level Radioactive Waste Policy Amendments Act of 1985, the Commission shall, in consultation with the States and other interested persons, identify and publish all relevant technical information regarding the methods identified pursuant to subsection (a) that a State or compact must provide to the Commission in order to pursue such methods, together with the technical requirements that such facilities must meet, in the judgment of the Commission, if pursued as an alternative to shallow land burial. Such technical information and requirements shall include, but need not be limited to, site suitability, site design, facility operation, disposal site closure, and environmental monitoring, as necessary to meet the performance objectives established by the Commission for a licensed low-level radioactive waste disposal facility. The Commis-

PUBLIC LAW 99-240—JAN. 15, 1986

99 STAT. 1859

sion shall specify and publish such requirements in a manner and form deemed appropriate by the Commission.

"SEC. 9. LICENSING REVIEW AND APPROVAL

42 USC 2021i.

"In order to ensure the timely development of new low-level radioactive waste disposal facilities, the Nuclear Regulatory Commission or, as appropriate, agreement States, shall consider an application for a disposal facility license in accordance with the laws applicable to such application, except that the Commission and the agreement state shall—

"(1) not later than 12 months after the date of enactment of the Low-Level Radioactive Waste Policy Amendments Act of 1985, establish procedures and develop the technical capability for processing applications for such licenses;

Ante, p. 1842.

"(2) to the extent practicable, complete all activities associated with the review and processing of any application for such a license (except for public hearings) no later than 15 months after the date of receipt of such application; and

"(3) to the extent practicable, consolidate all required technical and environmental reviews and public hearings.

"SEC. 10. RADIOACTIVE WASTE BELOW REGULATORY CONCERN.

"(a) Not later than 6 months after the date of enactment of the Low-Level Radioactive Waste Policy Amendments Act of 1985, the Commission shall establish standards and procedures, pursuant to existing authority, and develop the technical capability for considering and acting upon petitions to exempt specific radioactive waste streams from regulation by the Commission due to the presence of radionuclides in such waste streams in sufficiently low concentrations or quantities as to be below regulatory concern.

"(b) The standards and procedures established by the Commission pursuant to subsection (a) shall set forth all information required to be submitted to the Commission by licensees in support of such petitions, including, but not limited to—

"(1) a detailed description of the waste materials, including their origin, chemical composition, physical state, volume, and mass; and

"(2) the concentration or contamination levels, half-lives, and identities of the radionuclides present.

Health.
Safety.
Regulation.

Such standards and procedures shall provide that, upon receipt of a petition to exempt a specific radioactive waste stream from regulation by the Commission, the Commission shall determine in an expeditious manner whether the concentration or quantity of radionuclides present in such waste stream requires regulation by the Commission in order to protect the public health and safety. Where the Commission determines that regulation of a radioactive waste stream is not necessary to protect the public health and safety, the Commission shall take such steps as may be necessary, in an expeditious manner, to exempt the disposal of such radioactive waste from regulation by the Commission."

TITLE II—OMNIBUS LOW-LEVEL RADIOACTIVE WASTE INTERSTATE COMPACT CONSENT ACT**SEC. 201. SHORT TITLE.**

This Title may be cited as the "Omnibus Low-Level Radioactive Waste Interstate Compact Consent Act".

Omnibus Low-Level
Radioactive
Waste
Interstate
Compact
Consent Act.
42 USC 2021d
note.

APPENDIX B

SUMMARY OF PUBLIC COMMENTS ON DRAFT TECHNICAL POSITION STATEMENT
(FEDERAL REGISTER, Vol. 51, No. 44, March 6, 1986,
pp. 7806-7811)

Commenter	Draft technical position	Questions 1-4	Waste classification	Policy questions
1 State of Illinois, Department of Nuclear Safety	Requested extension to respond; however, no response was provided			
2 State of Pennsylvania, Bureau of Radiation Protection	No specific comments (too early for State of Pennsylvania)	No comment	No comment	None
3 State of Texas, Radioactive Waste Disposal Authority	Supports/Agrees	1. Agrees 2. No specific additional guidance defined 3. Supports 4. Supports	No comment	NRC role with Agreement States (RES: State programs defined role at June 1984 workshop)
4&5 State of Iowa, Interagency Coordinating Council and Iowa State Commerce Commission	Supports	1. Agrees 2. No additional requirements 3. Agrees 4. Agrees	No comment	None
6 Edison Electric Institute	Supports	1. Agrees 2. No additional requirements 3. Agrees 4. Agrees	Current classification is adequate	None
7 RLD Consulting	Agrees	1. Agrees 2. Clarify NRC/contractor position (RES: Final Position Statement and future guidance) 3. Agrees 4. Agrees	Agrees	None

Commenter	Draft technical position	Questions 1-4	Waste classification	Policy questions
8 Nuclear Waste Technologies	Mined cavities should be addressed (RES: Mined Cavities Report issued October 1986)	No comment	No comment	None
9 Associated Technologies Incorporated	No comment	No comment	No comment	None
10 State of Nebraska	Mined cavities should be included (RES: Mined Cavities Report issued October 1986)	No comment	No comment	None
11 Southern CA Edison	Supports/Agrees	1. Agrees 2. Agrees 3. Agrees 4. Agrees	Supports current classification	None
12 Chem-Nuclear Systems	Supports shallow land burial (SLB)	1. Agrees 2. Suggests value/impact analysis to better support SLB (RES: All alternatives are licensable) 3. Agrees 4. Agrees	No comment	None
13. State of Washington	Supports	1. Agrees 2. Agrees 3. Agrees 4. Agrees	No comment	None

BIBLIOGRAPHIC DATA SHEET

NUREG-1241

SEE INSTRUCTIONS ON THE REVERSE.

2. TITLE AND SUBTITLE

Licensing of Alternative Methods of Disposal for
Low-Level Radioactive Waste
Branch Technical Position
Low-Level Waste Licensing Branch

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4. DATE REPORT COMPLETED

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December

1986

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1986

5. AUTHOR(S)

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Washington, DC 20555

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9. FIN OR GRANT NUMBER

10. SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)

Same as 7, above.

11a. TYPE OF REPORT

b. PERIOD COVERED (Inclusive dates)

12. SUPPLEMENTARY NOTES

Technical Position

13. ABSTRACT (200 words or less)

This branch technical position statement identifies and describes specific methods of disposal currently being considered as alternatives to shallow land burial, provides general guidance on these methods of disposal and procedures which will improve and simplify the licensing process. The statement provides answers to certain questions that have arisen regarding the applicability of 10 CFR Part 61 to near-surface disposal of waste, using methods that incorporate shallow land burial disposal practices. This position also identifies a recently published NRC contractor report that addresses the applicability of 10 CFR Part 61 to a range of generic disposal concepts and which provides technical guidance that the staff intends to use for these concepts. This position statement combined with the above mentioned NRC contractor report fulfills the requirements of Section 8(a) of P.L. 99-240, of the Low-Level Radioactive Waste Policy Amendments Act (LLRWPA) of 1985.

14. DOCUMENT ANALYSIS - a. KEYWORDS/DESCRIPTORS

shallow land burial
Low-Level Radioactive Waste Policy Amendments Act of 1985

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