Department of Energy
Washington, DC 20585

APR 1 9 1990

Secretary
U.S. Nuclear Regulatory Commission
Attention: Chief, Docketing and
Service Branch
Washington, D.C. 20555

Dear Sir:

The U.S. Department of Energy believes that to facilitate the development and licensing of a geologic repository for high-level radioactive waste it is necessary to amend 10 CFR Part 60 to include a specific dose criteria for design basis accidents. Consequently, we are hereby submitting the enclosed petition for rulemaking under the provisions of 10 CFR 2.802. The subject of this petition has been previously discussed with the Commission's Division of High-Level Waste Management staff and with the Advisory Committee on Nuclear Waste.

We would appreciate your consideration and acceptance of this petition. Any questions regarding the petition may be addressed to Mr. Ralph Stein of my staff on 586-6046.

Sincerely,

John W. Bartlett

John W. Bartlett, Director
Office of Civilian Radioactive
Waste Management

Enclosure:
Petition of the U.S. Department of Energy for a Rulemaking to Establish an Accident Dose Criteria for a High-Level Radioactive Waste Repository

cc:

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PETITION OF THE U.S. DEPARTMENT OF ENERGY FOR A RULEMAKING TO ESTABLISH ACCIDENT DOSE CRITERIA FOR A GEOLOGIC REPOSITORY FOR HIGH-LEVEL RADIOACTIVE WASTE

Docket No. _____

1.0 INTRODUCTION

Title 10 of the Code of Federal Regulations, Part 60, "Disposal of High-Level Radioactive Wastes in Geologic Repositories," does not contain specific accident dose criteria. The Department of Energy (DOE) considers such criteria to be necessary and is hereby petitioning the Nuclear Regulatory Commission (NRC) to amend 10 CFR Part 60 to include accident dose criteria of 5 rem effective dose equivalent with a limit of 50 rem on the committed dose equivalent to any organ. These criteria would apply to any individual at the boundary of a newly defined "preclosure control area" at any time until repository closure is completed.

This petition addresses all the requirements of 10 CFR 2.802(c). The proposed amendments to the current rule, 10 CFR Part 60, are included in Section 2, the grounds for and DOE's interest in the action requested are described in Section 3, and a discussion of the specific issues involved, supporting arguments, relevant information, and the reasons why the current rule is deficient are provided in Section 4.

2.0 PROPOSED AMENDMENTS TO 10 CFR PART 60

This section provides a general description of the proposed amendments, followed by specific additions and modifications to the current rule to accomplish the amendments.

2.1 General Description of Proposed Amendments to 10 CFR 60

Amendments are proposed for both 10 CFR 60, Subpart A (General Provisions, Definitions) and Subpart E (Technical Criteria, Performance Objectives).

In Subpart A, definitions are proposed to be added to 10 CFR 60.2 for "preclosure control area", "committed dose equivalent", "committed effective dose equivalent" and "effective dose equivalent". The current version of 10 CFR Part 60 does not contain these definitions, and they are needed to support the application of accident dose criteria.

Also, a revised definition is proposed for the current definition of "important to safety" provided in 10 CFR 60.2. The current definition requires revision as a result of adding the new "preclosure control area" term, addition of new radiation dose terms, and to clarify that the mitigation of the radiological consequences of accidents is not required if doses resulting from these accidents are below the accident dose criteria.

In Subpart E, quantitative accident dose criteria are proposed for addition to 10 CFR 60.111 as a new performance objective under "Performance of the Geologic Repository Operations Area Through Permanent Closure". This includes the requirement that the calculation be applied at the nearest boundary of a newly defined preclosure control area.

Given the proposed new performance objective, it is proposed that the phrase "at all times" be deleted from the performance objective in 10 CFR 60.111(a), to clarify that the objective does not apply to exposures from accidents.

2.2 Specific Proposed Amendments to 10 CFR 60 Subpart A - General Provisions, Definitions

In 10 CFR 60.2, the following new definitions should be inserted:

"Preclosure control area," means the area immediately surrounding the repository facilities for which the licensee exercises authority over its use during the period up to completion of permanent closure. This area may be traversed by a highway, railroad, or waterway, so long as appropriate and effective arrangements are made to control traffic and to protect public health and safety.

"Committed dose equivalent," means the dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50 year period following the intake.

"Committed effective dose equivalent," means the sum of the products of the weighing factors applicable to each of the body organs or tissues which are irradiated and the committed dose equivalent.

"Effective dose equivalent," means the sum of the products of the dose equivalent to the organ or tissue and the weighing factors applicable to each of the body organs or tissues which are irradiated.

In 10 CFR 60.2 the current definition of "important to safety"* should be replaced with the following:

"Important to safety," with reference to structures, systems, and components, means those engineered structures, systems, and components the failure of which could result in a release of radioactive material that produces an effective dose equivalent of 0.5 rem or greater to an individual located at or beyond the nearest boundary of the preclosure control area for an accident that could occur at any time until the completion of permanent closure. All engineered safety features shall be included within the meaning of the term "important to safety."

2.3 Specific Proposed Amendments to 10 CFR 60 Subpart E - Technical Criteria, Performance Objectives

In 10 CFR 60.111, delete "at all times" from (a), Protection against radiation exposures and releases of radioactive materials, (2) move (b), Retrievability of waste, to (c), and (3) insert a new (b):

Accident analyses. The geologic repository operations area shall be designed such that any individual member of the public located at or beyond the nearest boundary of the preclosure control area shall not receive a radiation dose from direct exposure and inhalation greater than 5 rem effective dose equivalent or 50 rem committed dose equivalent to any organ from any accidents considered in the design of the repository that could occur at any time until the completion of permanent closure.

3.0 PETITIONER'S GROUNDS FOR AND INTEREST IN THE PETITION

This section describes the DOE's grounds for and interest in the action requested.

The Department of Energy will be the licensee for a geologic repository developed pursuant to the Nuclear Waste Policy Act, as amended. As such, it will be subject to the requirements in 10 CFR Part 60. Section 60.21(c)(3)(ii) requires that the Safety Analysis Report for a repository include a description and analysis that considers "the adequacy of structures, systems, and components provided for the prevention of accidents and mitigation of the consequences of accidents, including those caused by natural phenomena." However, 10 CFR Part 60 does not provide numerical dose criteria to use in identifying the need for engineered safety features and for determining their adequacy. Although the rulemaking record for 10 CFR Part 60[1]

[1] U.S. Nuclear Regulatory Commission, 1983. Staff Analysis of Public Comments on Proposed Rule 10 CFR Part 60, "Disposal of High-Level Radioactive Wastes in Geologic Repositories," NUREG-0804.

shows that some comments suggested such criteria[2], no such criteria were included in the final rule.

During the advanced conceptual design of the repository, DOE will explore design alternatives, ultimately arriving at firmly fixed and refined design criteria and concepts, with further detail to be provided in later design efforts. The absence of accident dose criteria creates uncertainty about how the adequacy of structures, systems, and components will be determined by the regulators at the licensing phase, and could result in major redirection of design efforts.

The regulatory uncertainties introduced by the absence of accident dose criteria in 10 CFR Part 60 are sufficient to warrant rulemaking, particularly when viewed in light of the NRC's commitment to provide sufficient guidance to protect public health and safety. Therefore, explicit accident dose criteria need to be included in the regulations.

Based on the reasons set out below, the DOE requests the NRC to amend 10 CFR Part 60 to include accident dose criteria of 5 rem effective dose equivalent, with a limit of 50 rem on the committed dose equivalent to any organ. Such criteria are generally consistent with NRC accident dose criteria for similar operations at other nuclear facilities and would provide adequate protection of public health and safety.

4.0 SUPPORTING INFORMATION

This section provides a discussion of the specific issue involved in the petition, supporting arguments, and other relevant information, and the reasons why the current rule is considered deficient. The specific issue is whether there is a need to amend 10 CFR Part 60 to include quantitative accident dose criteria and pertinent definitions to facilitate application of the criteria. The current rule is considered deficient simply because it does not specify quantitative criteria. The arguments supporting this position are based on the evaluation of current regulations for similar operations and are not based on an independent assessment of the accident risks associated with those operations or the consequences for potential accidents. Additional information is provided to support the contention that the proposed criteria are consistent with accepted radiological protection criteria. Also, other relevant information is provided to explain the need for the definition of a preclosure control area, and revision to the current definition of "important to safety".

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[2] U.S. Nuclear Regulatory Commission, 1983. Staff Analysis of Public Comments on Proposed Rule 10 CFR Part 60, "Disposal of High-Level Radioactive Wastes in Geologic Repositories," NUREG-0804, Comment Numbers 326-327.

The current rule is considered deficient in that it does not contain the numerical dose criteria needed to determine design adequacy.

As indicated above in Section 3, 10 CFR 60.21(c)(3)(ii) requires an analysis that considers adequacy with respect to potential repository accidents considered. However, the current rule does not contain the numerical dose criteria to be used in determining such adequacy. The absence of quantitative accident dose criteria in 10 CFR Part 60 creates programmatic uncertainties associated with the design of the geologic repository operations area and the procurement of long lead-time items based on that design. This uncertainty could result in major redirection of design efforts and possibly affect the schedule for development of a geologic repository.

There exists a considerable body of knowledge and experience in the type of handling operations that will occur at a repository.

Activities at a geologic repository will be similar to activities that occur at other nuclear facilities, including several facilities licensed by the NRC, and others operated by DOE. These activities will include the receipt, handling, transfer, and storage of highly radioactive materials, principally spent nuclear fuel assemblies and canisters of vitrified high-level radioactive waste. Similar or identical operations with highly radioactive materials are, or have been performed routinely at facilities for independent storage of spent nuclear fuel, such as General Electric's Morris Operations, at commercial nuclear power plants, such as Virginia Power Company's Surry nuclear power plant and others, at commercial fuel cycle facilities, such as Nuclear Fuel Services (NFS) West Valley Reprocessing Plant, and at DOE facilities, such as Savannah River Plant (SRP), Hanford, Engine Maintenance and Disassembly Facility (EMAD), and Idaho National Engineering Laboratory (INEL).

Specific operational similarities include (1) cask handling and cask unloading, (2) spent fuel loading into casks and containers, (3) spent fuel storage, and (4) spent fuel transfers within facilities. Cask handling and unloading operations have been performed at commercial reactors and at such facilities as Morris, NFS, SRP, Hanford, and INEL. At a repository, it is anticipated that spent fuel assemblies will be removed from shipping casks and loaded into disposal containers under dry conditions. This has been done at EMAD. At Morris, spent fuel assemblies are removed from shipping casks and loaded into fuel storage baskets, which are then transferred to the storage basins. With the exception of the operations being conducted underwater, this fuel storage basket loading operation is similar to the fuel container loading operation expected to occur at a repository. The same is also true for the loading of spent fuel

assemblies into shipping casks at commercial nuclear power plants. Dry storage, such as would occur at the repository, has been performed at Surry, INEL and Carolina Power and Light's (CP&L) H. B. Robinson nuclear power plant. Similar spent fuel transfer operations have occurred at other nuclear facilities including fuel storage basket transfers at Morris and cask transfers to concrete storage pads at Surry. Thus, there exists a considerable body of knowledge and experience in the type of handling operations that will occur at a repository.

The repository accident dose criteria proposed by DOE are within the range of accident dose criteria established by the NRC for similar activities.

In view of the similarity between repository operations and operations at other nuclear facilities, it is reasonable that the accident dose criteria for the repository be generally consistent with existing dose criteria for these operations. The dose criteria proposed by DOE are consistent with the 5 rem criteria established by the NRC for accidents at facilities for independent storage of spent nuclear fuel and high-level radioactive waste[3] and even more conservative than the 6.25 rem criteria for nuclear power plant fuel handling accidents, including accidents involving drops of heavy loads on fuel assemblies or safety-related systems, components, or equipment[4]. For the repository, postulated accident scenarios similarly include crane failures and other waste handling accidents that may result in damage to the waste canister such that there is a breach of a confinement barrier[5].

5-rem effective dose equivalent accident dose criteria is supported by accepted radiological protection criteria.

Some of the postulated accident scenarios noted above may result in atmospheric release of radioactive particulates containing, among others, isotopes of cesium, strontium, plutonium, americium, and curium. The dominant exposure pathway for these radionuclides is atmospheric transport followed by inhalation. The potential doses from inhalation would be greatest in internal organs, with doses to the bone surface being the major concern

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[3] Code of Federal Regulations, Title 10, Part 72: Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste, Section 72.106(b), August 1988.

[4] U.S. Nuclear Regulatory Commission, 1981. Section 15.7.4 of the Standard Review Plan, "Radiological Consequences of Fuel Handling Accidents at Nuclear Power Plants," NUREG-0800; U.S. Nuclear Regulatory Commission, 1980. "Control of Heavy Loads at Nuclear Power Plants," NUREG-0612.

[5] Nevada Nuclear Waste Storage Investigations Project Site Characterization Plan Conceptual Design Report, Vol. 4, Appendix F, SAND84-2641.

(i.e., bone is the critical organ) and uptake in the liver and retention in the lung being of lesser importance[6]. To account for the exposure of multiple organs, DOE proposes that the 5 rem accident dose criteria be expressed in the form of effective dose equivalent, as defined by the International Commission on Radiological Protection (ICRP)[7] and the National Council on Radiation Protection and Measurements (NCRP)[8], and be applied to the sum of the effective dose equivalent from external exposure and the committed effective dose equivalent from intake of radionuclides.

In addition, to avoid nonstochastic effects, DOE is proposing that the accident dose criteria include a limit of 50 rem on the committed dose equivalent to any organ.

For dosimetric purposes DOE recommends that the dose criteria be applied to a member of the public who is generally representative of the exposed population (i.e., reference man)[9], as is done with other NRC accident dose criteria.[10]

The exposure pathways to which the accident dose criteria would apply should be limited to direct irradiation and inhalation. Ingestion of contaminated foodstuffs should not be included because the primary determinant of exposure from this pathway is the effectiveness of public health measures taken after the accident (i.e., interdiction of land and foodstuffs) rather than the severity of the accident itself. Criteria for such measures typically fall within the scope of emergency response considerations.

The risk from 5 rem effective dose equivalent is very small. Based on risk coefficients recommended by the ICRP[11] and NCRP[12], a

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[6] Nevada Nuclear Waste Storage Investigations Project, Site Characterization Plan Conceptual Design Report, Vol. 4, Appendix F, SAND84-2641.

[7] International Commission on Radiological Protection, A Compilation of the Major Concepts and Quantities in Use by ICRP, ICRP Publication 42, Ann. ICRP, 14(4): 1-18 (1984).

[8] National Council on Radiation Protection and Measurements, Recommendations on Limits for Exposure to Ionizing Radiation, NCRP Report No. 91, Bethesda, Md., 1987.

[9] International Commission on Radiological Protection, Anatomical, Physiological and Metabolic Characteristics, ICRP Publication 23, Pergamon Press (1975).

[10] U.S. Nuclear Regulatory Commission, Regulatory Guide 3.34, Revision 1, "Assumption Used for Evaluating the Potential Radiological Consequences of Accidental Nuclear Criticality in a Uranium Fuel Fabrication Plant, U.S. Nuclear Regulatory Commission (July, 1979).

[11] International Commission on Radiological Protection, Recommendations of the International Commission on Radiological Protection, ICRP Publication 26, Ann. ICRP, 1(3): 1-53 (1977).

5 rem effective dose equivalent corresponds to an annual probability of 2×10^{-5} of fatality from radiogenic cancer or of a serious hereditary disease (within the first two generations) over a 50 year period following exposure of an individual. (This is the risk to an individual member of the public averaged over both sexes and all ages; the annual risk to any specific individual would depend on age at exposure and time after exposure, and other factors).

Recent reports (i.e., UNSCEAR-88[13] and BEIR-V[14]) indicate that the risk from exposure to low linear energy transfer (LET) radiation (e.g., gamma and beta rays) may be higher than thought previously. Based on those reports, the annual risk from an acute whole body dose of 5 rem of low LET radiation could be 8×10^{-5}. The risk would likely be lower if the doses were delivered at a low dose rate. The risk would still be very low, being only about 2% of the current baseline risk of death due to cancer in the United States.

The ICRP recommends that "...a risk in the range of 10^{-6} to 10^{-5} per year would likely be acceptable to any individual member of the public"[15]. The proposed accident dose criteria are not inconsistent with this range since the low probabilities of repository accidents which could lead to atmospheric radioactive releases would further reduce the overall calculated risk.[16]

For radionuclides of primary concern in potential repository accidents, most of the dose commitment to critical organs would be from high LET alpha particles rather than from low LET radiation[17]. For these radionuclides, the dose is likely to be controlled by the 50 rem cap on the dose to the bone surface rather than by the 5 rem effective dose equivalent limit. For

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[12] National Council on Radiation Protection and Measurements, Recommendations on Limits for Exposure to Ionizing Radiation, NCRP Report No. 91, Bethesda, Md., 1987.

[13] United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), Sources, Effects and Risks of Ionizing Radiation, Report to the General Assembly, with Annexes, New York, United Nations. (1988).

[14] National Research Council, Committee on the Biological Effects of Ionizing Radiation (BEIR-V), Health Effects of Exposure to Low Levels of Ionizing Radiation, Washington, D.C., National Academy Press (1990).

[15] International Commission on Radiological Protection, Recommendations of the International Commission on Radiological Protection, ICRP Publication 26, Ann. ICRP, 1(3): 1-53 (1977).

[16] Nevada Nuclear Waste Storage Investigation Project, Site Characterization Plan Conceptual Design Report, Vol. 4, Appendix F SAND84-2641.

[17] Nevada Nuclear Waste Storage Investigations Project, Site Characterization Plan Conceptual Design Report, Vol. 4, Appendix F, SAND84-2641.

example, if the doses to various organs resulting from inhalation of a radionuclide mixture characteristic of 10 year old spent fuel were normalized to 5 rem effective dose equivalent, the corresponding dose to the bone surface would be about 72 rem. Since this would exceed the 50 rem organ dose limit, the latter would be controlling.

Based on risk coefficients for high LET radiation developed by the National Academy of Sciences (BEIR-IV)[18], a committed dose equivalent of 50 rem to the bone surface from alpha particles is estimated to result in an annual risk of fatality from bone cancer of about 2×10^{-5}. This risk is also consistent with that suggested by the NCRP and the ICRP as acceptable criteria for establishing radiological protection criteria for the public.[19,20]

It should also be noted that the application of ICRP recommendations regarding acceptability of risk to accident situations is conservative because the recommendations are intended to limit risk from exposures that are expected to occur,[21] whereas exposure from accidents is highly unlikely.

<u>The accident dose criteria should be applied at the boundary of a newly defined preclosure control area.</u>

The regulations for nuclear facilities typically require that there be an area established over which control can be exercised in case of an accident (see 10 CFR 72.106(a)). These regulations usually define a different area to which access is controlled during normal operations to provide for radiation protection measures on a routine basis[22]. In case of a radiological accident, the area within which public access is to be controlled is desired to be large, since the distance provides added

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[18] National Research Council, Committee on Biological Effects of Ionizing Radiation (BEIR-IV), Health Risks of Radon and Other Internally Deposited Alpha-Emitters, Washington D.C., National Academy Press (1988).

[19] National Council on Radiation Protection and Measurements, Recommendations on Limits for Exposure To Ionizing Radiation, NCRP Report No. 91, Bethesda, Md., (1987).

[20] International Commission on Radiological Protection Recommendations of the International Commission on Radiological Protection ICRP Publication 26, Ann. ICRP 1(3): 1-53 (1977).

[21] International Commission on Radiological Protection, Recommendation of the International Commission on Radiological Protection, ICRP Publication 26, Ann. ICRP, 1 (3): 1-53 (1977).

[22] 10 CFR 20 defines a restricted area for this purpose.

protection independent of design features[23]. In contrast, for practical purposes pertaining to ensuring proper controlled access and radiation monitoring, the area controlled during normal operations is usually maintained as small as practicable. However, the restricted area defined in 10 CFR 60.2 is used for both of these purposes[24], which has led the DOE to size a restricted area based on accident considerations. Such an area is unnecessarily large for application of normal access controls and radiological monitoring. To enable DOE to reduce the size of this area to a more appropriate size, it is necessary to establish separate boundaries for the two controlled zones (i.e., accident and routine access control). By making this distinction, the DOE will be in a better position to apply the controls needed to ensure a proper and practical level of radiation protection for routine operations.

The need for separate boundaries was recognized by the NRC when 10 CFR Part 72 was promulgated. In discussing the newly defined "controlled area" for application of the accident dose limit, the NRC stated that "while the terminology used in 10 CFR Part 20, specifically, 'restricted' and 'unrestricted' areas, applies to all nuclear facilities, it is limited to radiation protection concerns associated with normal operations and the means used by the licensee to control the access to areas of potential radiation exposure . . .the term 'unrestricted' used in 10 CFR Part 20 is too narrow in meaning for applications to areas beyond the boundaries of the licensee's property"[25].

For other nuclear facilities, the area within the boundary where the accident dose limit is applied is typically on land controlled by the licensee such that the licensee has authority to exclude or remove personnel and property from the area. This area is called the "exclusion area" at reactor sites (see 10 CFR 100.11) and the "controlled area" at facilities for independent storage of spent nuclear fuel and high-level radioactive waste (see 10 CFR 72 106(a)). For a repository, DOE is proposing to define the location for application of the accident dose criteria and the "important to safety" threshold as the "preclosure control area" boundary. Figure 1 illustrates the differences between the boundaries which would be proposed and the current

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[23] For nuclear reactors the licensee is required by 10 CFR 100.11 to provide an "exclusion area" which is large enough to limit doses from any credible accident to a specified value. Facilities licensed under 10 CFR Part 72 are required to establish a "controlled area" large enough to limit doses from a design basis accident to a specified value. A minimum size for the controlled area is specified.

[24] 10 CFR 60.2 specifies that the 0.5 rem threshold for identifying structures, systems, and components important to safety should be applied at or beyond the nearest boundary of the restricted area. 10 CFR 60.111 applies the requirements of 10 CFR 20 which defines restricted and unrestricted areas for normal operations use.

[25] 45 Federal Register 74696 (1980) (codified at 10 CFR Part 72).

boundaries defined in 10 CFR Part 60. It should be noted that the boundary of the preclosure control area does not necessarily have to coincide with the boundary of the postclosure controlled area defined in 10 CFR 60.2. The shapes of the controlled area and the boundary for accident dose calculation are based on different considerations. For the controlled area, the geohydrologic conditions (e.g. direction of groundwater flow) are important. For the preclosure control area, the meteorological conditions (e.g. predominant wind direction) and population distribution are important.

Establishment of accident dose criteria would not change the intent of the 0.5-rem "important to safety" threshold for classification.

The 0.5 rem threshold in 10 CFR 60.2 for classifying items important to safety is intended to assure the reliability of structures, systems, or components whose failure could result in significant exposures to the public. The desired reliability is obtained by applying the design criteria in 10 CFR 60.131(b) and the quality assurance (QA) requirements in 10 CFR Part 60, Subpart G.

For an accident whose projected consequences exceed 0.5 rem but do not exceed the 5 rem effective (or 50 rem committed) dose equivalent accident dose criteria, the structure, system, or component the failure of which would result in the accident would be designed according to 10 CFR 60.131(b) and subject to Subpart G requirements. Mitigation would not be required within this dose range. However, if analyses indicate that the accident dose criteria would be exceeded, the structure, system, or component in question would not only be designed according to 10 CFR 60.131(b) and would be subject to Subpart G requirements, but also, engineered safety features would be applied to mitigate the accident consequences to below the accident dose criteria. The engineered safety features applied would also be classified as "important to safety."

As indicated above, the establishment of accident dose criteria would not change the intent of the "important to safety" classification. However, the current definition of "important to safety" needs to be modified to be consistent with other changes described in this petition. The current definition could be interpreted to mean that an accident resulting in a radiation dose of 0.5 rem or greater must be mitigated: "those engineered structures, systems, and components essential to the prevention or mitigation of an accident..." (10 CFR 60.2, emphasis added). The threshold for determining the need for mitigation through the use of engineered safety features is the accident dose criteria, not the "important to safety" threshold.

Additional modification of the current definition of "important to safety" is needed to make it consistent with the proposed accident dose criteria by incorporating the effective dose equivalent concept and the new preclosure control area boundary.

5.0 CONCLUSION

Accident dose criteria are needed to establish objective requirements for determining whether 10 CFR 60.21 has been met i.e., to determine the need for and the adequacy of structures, systems, and components provided to prevent or mitigate accidents. The current version of 10 CFR Part 60 does not contain specific accident dose criteria. The absence of such critera unnecessarily creates programmatic uncertainty associated with the design of the geologic repository operations area and the procurement of long lead-time items based on that design. This uncertainty can best be eliminated through rulemaking by amending 10 CFR Part 60 to include specific accident dose criteria, and pertinent definitions to facilitate application of the criteria.

Based on the information presented above, DOE petitions the Commission to amend 10 CFR Part 60 to include accident dose criteria of 5 rem effective dose equivalent, with a limit of 50 rem on the committed dose equivalent to any organ. Such criteria are generally consistent with the Commission's dose criteria for similar accidents at other nuclear facilities and would provide adequate protection of public health and safety.

Respectfully Submitted,

John W. Bartlett

John W. Bartlett, Director
Office of Civilian Radioactive
Waste Management

DATED: April 19, 1990

UNDER CURRENT 10 CFR 60

PROPOSED REVISIONS IN DOE PETITION FOR RULEMAKING

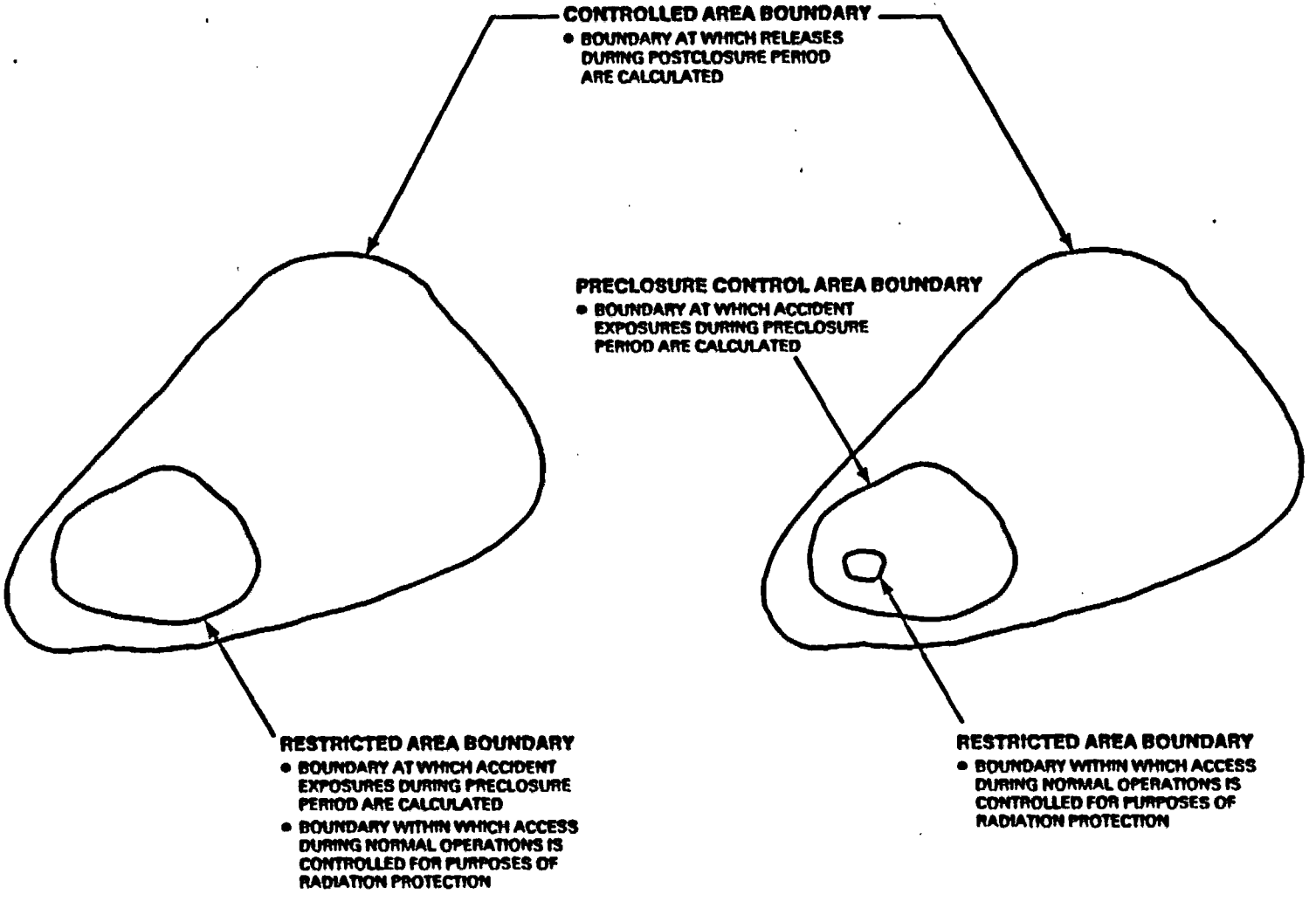

Figure 1. Comparison of Current and Proposed Boundaries