2552 Harris Avenue
Richland, Washington
March 12, 1991

Samuel J. Chilk Secretary,
U.S. NRC
Washington, DC 20555

Att: Docketing and Service Branch

SUBJECT: FR Vol 55, No. 242, 12/17/90, NRC Docket No. PRM 60-4, Definition of the Term "High-Level Radioactive Waste", Petition for Rulemaking.

Dear Sir:

INTRODUCTION

I am a Richland, WA resident, receiving drinking water from the Columbia River below the Hanford Reservation and living within 25 miles of existing high-level radioactive waste long-term storage facilities and disposal sites of the Department of Energy (DOE), as well as the proposed new high-level radioactive waste disposal facility, referred to as the "land-based grout vaults" by the petitioners in the subject petition for rulemaking.

BACKGROUND

It is my conclusion that the DOE is currently in violation of 10 CFR 30 requirements for a license since various near surface geologic repositories, referred to as cribs, ditches and single shell tanks, but meeting the definition of "geologic repository" in 10 CFR 60 have received and currently hold in "long-term storage" or "disposal" "high-level radioactive wastes." In some cases the specific activity of such wastes is low compared to much of the "high-level radioactive waste" at Hanford; however, the source of the wastes I refer to is consistent with the source-based definition intended by Congress in Section 202 of the Energy Reorganization Act (ERA) and reviewed by the petitioners. Definitions in Attachment A, a portion of the 1973 AEC Manual, further illuminate the source-based definition in use at the time the ERA was enacted. A key fact contributing to my conclusion is that DOE, ERDA or the AEC expressly authorized the "long-term storage" or "disposal" of

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1. It has been suggested that the Congress by Section 202 (4), regarding long-term storage facilities, in specifying "authorized for the express purpose" meant authorization by Congress. However, the more logical meaning is authorization by a Director of a Division of Waste Management and Transportation as provided by Chapter 0511.032 (c) of the AEC Manual in 1973--see Attachment A. It should be noted that Congress did not routinely authorize specific long-term storage facilities, but authorized general funding for waste management.

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these wastes by operations contractors. The operational definition of long-term storage, established by the AEC, is contained in ATTACHMENT A. This definition was being used by the AEC contemporaneously with the writing of the ERA and it can logically be concluded that this was the definition intended by Congress, consistent with the logic described by the petitioners in deducing the intent of Congress with respect to the source based definition for "high-level radioactive waste." As with the definition of "long-term storage", "storage" entails the capability to readily retrieve wastes. Disposal is defined as an operation that does not provide for recovery. (There was no concept of interim storage expressed in the AEC Manual in 1973.) (This can be seen from the definitions of Attachment A.)

The DOE and its predecessor entities have long recognized that the "stabilization" and "interim stabilization" of in-tank single shell wastes and the "storage" of waste in soil columns, and otherwise in non-retrievable earth and ground water <u>is</u> long-term storage and/or disposal. This can be seen from various historical documents concerning the decision in the early 1960's to proceed with solidification of wastes in single-shell tanks at Hanford in contrast to General Electric recommendations for a sound program of waste management at Hanford involving the calcination of tank wastes with storage in bins similar to the scheme currently used by the Idaho Chemical Reprocessing Facility.

The current immense problems associated with safely sampling, much less retrieving, waste, in single shell and some double shell tanks at Hanford attest to the "disposal" of the waste accomplished by DOE and its predecessor entities in the past.

COMMENTS

1. The NRC should not attempt to redefine the term "high-level radioactive waste", since this term was established by Congress. Only the courts can embellish this term in their roll of interpreting laws. The original source based definition should be maintained and compliance with the spirit and intent of the law achieved.

Therefore, the issue which NRC should be concerned with is the regulation and/or licensing of the Administration's (DOE's) long-term storage and/or disposal facilities. In this regard a definition of "long-term storage facility" should be incorporated into Part 60 or part 30 (see comments below) as a subcategory of "HLW facility". The definition of "long-term storage" in Attachment A should be used in developing the new term.

2. The <u>Purpose and Scope</u> of Part 60 does not apply to all DOE facilities for long-term storage of high-level radioactive waste, but only those subject to the Nuclear Waste Policy Act of 1982. Thus, if the subject petition is considered as a change to Part 60, the <u>Purpose and scope</u> must be changed. For example, this Section might be revised to the wording originally used in Part 60 to cover licensing at a geologic repository operations area. Other major changes would also be necessary.

3. Anticipating the modified scope indicated in comment 2. above, and reviewing the significant changes to Part 60 from the original version as a result of the NRC's action to implement the Nuclear Waste Policy Act, it appears unwarranted and potentially confusing to attempt to revise Part 60 to re-institute its previous general coverage for the licensing of DOE activities, stemming from authority of the Energy Reorganization Act alone.

4. The Purpose and Scope of 10 CFR 30 clearly applies to the licensing of DOE long-term storage (including disposal) facilities for high-level radioactive waste. Section 30.12 points out that such facilities are not exempt from the requirements of Part 30. It appears that modification of Part 30 and/or the addition of a new Part 36 pertinent to the near surface long-term storage and disposal facilities at Hanford and other DOE sites is more reasonable than modifying Part 60 to accommodate the subject petition request for regulation of DOE at Hanford. This conclusion reflects the limited scope of Part 60 to deep geological repositories as a result of changes to invoke the Nuclear Waste Policy Act, which applies only to deep geological repositories.[2]

5. A substantive standard for near surface disposal of waste is required, particularly for those long lived and short-lived mobile isotopes such as I-129, Tc-99, Se-79. C-14, Cs-135, Cs-137, Sr-90, Co-60 and the actinides. Even small quantities of I-129, if it pollutes ground water at concentrations of 10xE-12 ci/l or greater, would render the water resource useless. Much of the Hanford groundwater already exceeds this EPA limit for drinking water, and cleanup of the affected aquifers will be very expensive.

For example, for any given site out to the accessible environment or boundary of the site, the inventory of any given long-lived isotope disposed of in that site, if mixed with 1/10 of the volume of water determined to exist in the unconfined aquifer or first confined aquifer, whichever is highest, under the specified surface area of the site, should not exceed the drinking water standard for that isotope. For example, if the first aquifer under a disposal site were determined to have 10xE13 liters of water, then 1 curie of I-129 could be disposed of in that site, assuming the drinking water standard of 10xE-12 ci/l.

As an alternative, performance based criteria such as those specified in 10 CFR 60 for a deep geological repository could be specified for the near surface long-term storage site or disposal

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2. The term "repository" as defined in the Nuclear Waste Policy Act includes systems for the permanent deep geological disposal of high-level radioactive wastes. Thus, shallow land disposal such as that accomplished and planned at Hanford are not covered by the Nuclear Waste Policy Act and hence outside the Purpose and Scope of Part 60.

site. In such a case the engineered barrier system would necessarily have long-term performance requirements out to 10,000 years. Given the near surface disposal of the waste, substantial waste forms would be necessary and various land use scenarios, including nearby farming and other human activities, would necessarily have to be considered in determining hydrologic conditions for the wastes. Containment for a 1000 years or more would be indicated, since in contrast to a deep repository, geologic isolation is not provided with the near-surface placement of wastes.

I would agree with the petitioners desire to minimize the amount of waste to be incorporated in grout. However specific design requirements should be specified with an ALARA type criterion applied in addition to the specific requirements. If grout is an insufficient waste form to accomplished specified design requirements for the waste form performance, then a better waste form should be developed.

6. Licensing proceedings should be conducted to obtain public input and adjudication of technical issues as suggested by the petitioner in his conclusions. In addition, for existing facilities subject to licensing, DOE should submit license applications with all due haste, since they and some of their contractors are in violation of 10 CFR 30. The NRC should notify DOE of this requirement to submit license applications for existing facilities. NRC should establish licensing conditions that assure safety of the facilities and otherwise protect the environment, the public and the workers from undue risk. For critical safety issues such as those associated with single shell tank wastes that are not readily retrievable, an ongoing licensing proceeding should be conducted to allow for continued adjudication of design issues and access by the public of pertinent technical information.

All operations at the applicable facilities should be subject to NRC regulation. For example, the sampling of wastes and geologic media and the mitigation of existing radioactive pollution should be subject to licencing and subsequent NRC oversight. Implementation of other environmental laws, for example, RCRA, CERCLA and SARA should be a condition of the license.

7. Construction and operation activities, including design activities and site characterization, should be subject to NRC oversight and regulation. Therefore, the requirement for submitting a license application, or a separate construction permit before the initiation of any of these activities, should be established. Such formal interaction with DOE and its contractors will allow effective and timely resolution of technical issues associated with long-term storage and disposal.

8. I would point out that the petitioners conclusion that the definition of high-level radioactive waste must derive from NWPA is incorrect. In fact the operative definition of high-level radioactive waste pertinent to the DOE facilities at Hanford derives from the ERA as suggested above. The use of the term in the NWPA only applies to deep geologic repositories which are the subject of NWPA.

Thus, as suggested by foot note #4 on page 51732 of the Federal Register Notice, the petitioners discussion of the NWPA is not relevant to delimiting NRC's authority to license and otherwise regulate the DOE's long-term storage and disposal facilities at Hanford. The concept of "sufficient concentrations" although applying to the determination of waste for disposal in a deep repository, does not exempt dilute high-level radioactive wastes from NRC's regulatory authority.

Sincerely,

F. Robert Cook
(509-375-3207)

ATTACHMENT: A U.S. Atomic Energy Commission AEC Manual, Chapter 0511, Radioactive Waste Management, September 19, 1973. (10 pages)