STATE OF CALIFORNIA — RESOURCES AGENCY

EDMUND G. BROWN JR., Governor

DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY
DIVISION OF OIL AND GAS

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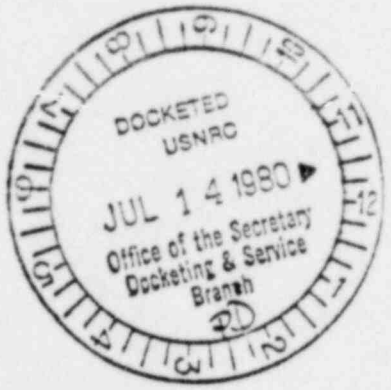
SACRAMENTO, CA 95814
1416 Ninth Street



July 7, 1980

Marshall E. Miller, Esq.
Presiding Officer
Waste Confidence Rulemaking Proceeding
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Generic Proceeding on Confidence in Storage and Disposal
of Nuclear Wastes
Docket No. PR 50-51
44 FR 61372

Dear Mr. Miller:

The California Department of Conservation, as participant in this proceeding, is sending you two copies of our Statement of Position.

Sincerely,

Priscilla C. Grew

Priscilla C. Grew
Director

Enclosures

model formulation and verification. DOC questions whether the results of these tests will be provided in time for the location of an acceptable repository.

5. On page II-187, DOE states, "A potential disadvantage of backfilling in the short term is a local increase in temperature... the increase in temperature due to backfilling is not expected to significantly impact the structural stability of the repository..." DOC finds that the potential effects of increased temperatures on the backfill and indirectly from possible changing conditions of the repository do not appear to be dealt with in assuring maintenance of the desirable backfill characteristics for the long term.

6. Studies of emplacement hole backfill materials described in pages II-147-149 have been in progress for many years, and the DOE report states, "Further work on these backfill barriers is in progress for better characterization and engineering development." But, at this time, no information appears to have been developed that specifies the type of backfill material best used in specific geologic media, and characteristics necessary to withstand thermal stress.

7. In the event of the need to retrieve the nuclear waste (e.g., to respond to unanticipated problems which may be detected during the monitoring process), the design of the backfill material and penetration seals should allow for safe re-entry, maintaining

the integrity of the repository. This concept does not appear to have been included in the DOE discussions on this subject.

Conclusion: The Department of Conservation concludes that, since tests on backfill material and penetration seals are still being conducted, DOE has not demonstrated the confidence necessary to assure the completion of these studies in time to develop the expertise and the design criteria prior to site construction.

Issue No. 7: Retrievability of nuclear wastes from the disposal repository is a critical capability that must be built into the repository site selection, design, construction, and operation. DOE has little or no discussion of this issue in DOE 1980.

Discussion: Retrievability is significant from two aspects: 1) If any departure is detected in the safe performance of the repository, it may be necessary to remove part or all of the waste emplaced there up to that time; 2) if, by reason of technological development, or political or military policy, the decision is made by some future administration to recycle any repository waste, it would be essential to be able to remove and reprocess it. The several site evaluation factors dealing with the permanence and the integrity of the repository site should include retrievability of stored, unreprocessed waste as a significant requirement. This consideration also should be applied in selection of the design of the waste storage containers, their placement within the repository site, and any backfill plans.

DOE/NE-0007

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF	)	
	)	
PROPOSED RULEMAKING ON THE STORAGE AND DISPOSAL OF NUCLEAR WASTE	)	**PR-50,51 (44 FR61372)**
	)	
(Waste Confidence Rulemaking)	)	

STATEMENT OF POSITION OF THE UNITED STATES DEPARTMENT OF ENERGY

15 April 1980

II.F.3.4 Emergency Response Planning

Emergency response plans will be developed in conjunction with proper siting and security arrangements to mitigate the impacts of unforeseen disruptive events on the public health and safety. The Department is following the development of requirements for radiological emergency plans for reactors which are currently being revised by the Nuclear Regulatory Commission (785). Although evaluations of on-site activities conducted to date have not identified events which require off-site emergency reponse plans, the Department recognizes that incorporation of additional precautions for protecting public health and safety is a prudent step. Consequently, emergency response plans will be developed in conjunction with State and local governments before authorization of construction so that there will be predetermined actions that can be taken in the event of unforeseen industrial or radiological accidents associated with repository operations. These activities will be coordinated with the Federal Emergency Management Agency (FEMA) and the Nuclear Regulatory Commission.

II.F.3.5 Waste Emplacement and Retrieval Considerations

Confidence in the suitability of the repository will be high at the time waste emplacement operations commence because of extensive review within the NWTS Program, peer reviews, and Commission licensing reviews. The verification of the suitability of the repository system will continue, however, throughout the waste emplacement period. Waste emplacement operation will allow for testing and monitoring during the first few years of repository availability.

Retrieval refers to the removal of the canisters from the repository if the long-term performance of the repository system were found to be unacceptable at some point prior to sealing. The initial waste emplacement will be conducted in a deliberate manner to allow for testing and monitoring during the first few years of repository availability. Instrumentation will be installed with the initial canisters. The details of this monitoring program will be developed in conjunction with the Commission licensing review.

such a program will allow for the collection of additional data that can aid in minimizing uncertainty and in further assessing the response of the geologic system to waste emplacement. The results of those evaluations will be compared to results from in situ testing during the subsurface construction period and throughout the operational phase of the repository to ensure site and design adequacy. From these types of activities, further data will continue to become available for use in assessing and verifying computational models that form the basis for long-term projections (II.F.1).

Design features will be provided to allow for the retrieval of emplaced canisters throughout the operating phase. Waste package design (II.E.1) and repository design (II.E.2) have been considered elsewhere in this statement. This section describes the present concept for retrieving wastes from the repository during the operational phase.

Conditions that could lead to a decision to retrieve emplaced waste have been considered. Three examples of these conditions can be outlined as follows:

1. The design of the repository will be based on data obtained and upon accepted thermal, mechanical, and hydrological models (II.F.1). As mentioned, conservative allowances will be made to accommodate design bases (II.A.2). Nevertheless, retrieval of the waste and abandonment of the repository could conceivably be required if tests and acquired data show that a sufficient degree of confidence could not be provided.

2. The testing program might show that certain waste packages have defects that could be corrected by retrieval, overpacking, and re-emplacement.

3. A portion of the repository might be found to be unsuitable, and the wastes could then be removed and re-emplaced in a different section of the repository.

The most difficult (and probably least likely) case would be imposition of a Type 1 condition (total waste retrieval) near the end of the operational phase. The repository would have been fully operational and, if permitted by Commission licensing requirements, certain waste disposal rooms would have been backfilled when filled. Some rooms could be only partially

filled with waste and therefore not backfilled, some rooms could be filled but not yet backfilled, and some rooms could be filled of waste and backfilled. Toward the end of the operating period an increased number of rooms could be in the latter condition.

Retrieval probably will not be based on an immediate threat to the repository but rather on loss of confidence in long-term containment. If it were decided to completely remove all waste from the repository because of lack of confidence in the natural system, there would be no further need to preserve the long-term integrity of the host rock. In such a situation, additional shafts could, if necessary, be constructed to facilitate retrieval. However, if only a partial removal were decided upon, precautions would still be taken to preserve the integrity of the remainder of the repository.

Sufficient testing would have been conducted to identify the preferred method of handling retrieved wastes. The waste package design should be compatible with the retrieval concept, and prototype retrieval equipment and procedures should be field tested and proven. (Some experience has already been gained in spent-fuel retrieval. In the Lyons, Kansas experiment, (116), 14 assemblies in stainless steel canisters, filled with helium and hermetically sealed, were retrieved and removed off site after about 6 months underground.) Retrieval operations would continue over a period of years. The retrieval process would probably involve two major phases: removal of the waste from the repository, and disposition of the waste packages.

Retrieval of the waste from the repository would involve the following steps:

1. Re-excavation of the backfill from the disposal rooms, if required.
2. Removal of the packages from the disposal holes.
3. Transfer of the waste to the surface.
4. Repackaging of damaged canisters, as necessary.
5. Placement into an alternate storage location or disposal site.

Engineering difficulties posed by emplacement and retrieval of canisters has received consideration, and alternative retrieval methods have been studied (766, 787). Mishaps owing to operator error (e.g., damage of waste containers through contact with heavy equipment) will be considered as part of the retrieval planning effort. For efficiency, the procedure could begin by removing the waste from open rooms and simultaneously removing backfill from any closed rooms. A number of canisters could become externally contaminated or damaged by equipment. Such canisters would be transferred to the surface and processed through the packaging facility for repackaging or overpacking.

During retrieval operations, waste removed from the repository could be transferred to temporary surface storage rather than to another repository. This approach significantly reduces problems associated with waste transport. Ultimately the waste will either be transported and disposed of in another repository, or it will be repackaged for re-emplacement.

Using presently known storage techniques (see Part IV), construction would be rapid and uncomplicated. The need for additional storage space would be determined when the decision for retrieval is made.

In summary, the following points are pertinent to the consideration of retrieval:

1. Both limited and total retrieval are unlikely events, the latter being less likely.

2. Mechanisms and procedures for retrieval are being developed.

3. Design criteria will incorporate retrieval considerations.

4. Retrieval operations would not require immediate action. They could be accomplished in an orderly and planned manner with adequate time for construction of alternate storage facilities.

5. Waste retrieval would be primarily an operational health physics concern (operator protection). Risks to the public health and safety due to retrieval would be very low due to repository and waste package design.