



Department of Energy

Washington, DC 20585

October 20, 1999

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W.
Suite 700
Washington, D.C. 20004

Dear Mr. Chairman:

Enclosed are the compliance evaluation and the disposal authorization for the Nevada Test Site Area 3 Radioactive Waste Management Site performance assessment and composite analysis. The Low-Level Waste Disposal Facility Federal Review Group (LFRG) conducted their review of the performance assessment and the composite analysis and recommended that the Department authorize the continued operations of the DOE Nevada Test Site Area 3 Radioactive Waste Management Site subject to the conditions in the disposal authorization statement. The Department accepted the LFRG recommendation and signed the disposal authorization statement for the Nevada Test Site Area 3 low-level waste disposal facility.

The Department has completed the following actions related to commitments VII.B.5.b.1., 2., and 3 in the Defense Nuclear Facilities Safety Board Recommendation 94-2 Implementation Plan: "Complete Headquarters' Review of Nevada Test Site Area 3 Performance Assessment," "Complete Headquarters' Review of Nevada Test Site Area 3 Composite Analysis." and "Issue Disposal Authorization Statement for Nevada Test Site Area 3 Low-Level Waste Disposal Facilities." The Department proposes closure of these commitments. If you have any questions concerning this information, please contact me at (202) 586-7710 or Mark Frei at (202) 586-0370.

Sincerely,

A handwritten signature in black ink that reads "Carolyn L. Huntoon".

Carolyn L. Huntoon
Assistant Secretary for
Environmental Management

Enclosures



Printed with soy ink on recycled paper

memorandum

DATE October 21, 1999

REPLY TO
ATTN OF EM-35

SUBJECT Disposal Authorization for the Nevada Test Site Area 3 Low-Level Waste Disposal Facility

TO Kathleen Carlson, Manager, Nevada Operations Office

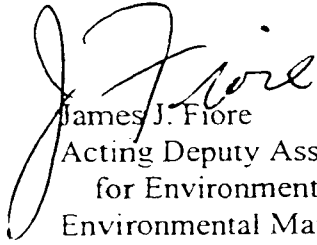
The Low-Level Waste Disposal Facility Federal Review Group (LFRG) has conducted a review of the performance assessment and composite analysis for the Nevada Test Site Area 3 Radioactive Waste Management Site disposal facility. The review of the Nevada Test Site Area 3 performance assessment and composite analysis was in accordance with the DOE Radioactive Waste Management Order requirement and the commitments made by DOE in response to Defense Board Recommendation 94-2, Conformance with Safety Standards at DOE Low-Level Nuclear Waste and Disposal Sites.

An independent review of the performance assessment and composite analysis was performed by a review team chartered by the LFRG. The compliance evaluation (attached) was prepared by the LFRG based on the input from the review team report and the expert opinions of the LFRG membership. The LFRG used the review team report and the compliance evaluation to develop the disposal authorization statement (attached) which contains the LFRG's recommended formal authorization for disposal operations and the conditions with which the Nevada Test Site Area 3 Radioactive Waste Management Site low-level waste disposal facility must comply.

We have accepted the LFRG recommendation. Therefore, the Nevada Operations Office is authorized to continue operations of the DOE Nevada Test Site Area 3 Radioactive Waste Management Site for low-level waste disposal subject to the conditions in the disposal authorization statement. Failure by the Nevada Test Site to comply with these conditions should be reported by the Nevada Operations Office to the LFRG chairmen, and based upon their recommendation to us, could result in the revoking of the authorization and the immediate shutdown of the disposal facilities.

Please note the conditions of approval defined in the disposal authorization statement which must be completed by Nevada Test Site to continue authorization of the facility.

If your staff have any questions regarding this action or the process for working with the LFRG on meeting the conditions, they should contact Jay Rhoderick (301) 903-7211 or Bill Murphie (301) 903-7216, co-chairs of the LFRG.



James J. Fiore
Acting Deputy Assistant Secretary
for Environmental Restoration
Environmental Management



Mark W. Frei
Acting Deputy Assistant Secretary
for Waste Management
Environmental Management

Attachments (2)

**Disposal Authorization Statement
for the
Department of Energy
Nevada Operations Office
Area 3 Radioactive Waste Management Site
Low-Level Radioactive Waste Disposal Facility**

Revision No.: 0

Effective Date: October 20, 1999

Background:

The DOE Radioactive Waste Management Order requires that a disposal authorization statement be obtained prior to construction of a new low-level waste disposal facility. Field Elements with existing low-level waste disposal facilities shall obtain a disposal authorization statement in accordance with the schedule in the Complex-Wide Low-Level Waste Management Program Plan. The disposal authorization statement shall be issued based on a review of the facility's performance assessment and composite analysis. The disposal authorization statement shall specify the limits and conditions on construction, design, operations, and closure of the low-level waste facility based on these reviews. A disposal authorization statement is a part of the required radioactive waste management basis for a disposal facility. Failure to obtain a disposal authorization statement shall result in shutdown of the disposal facility.

Disposal Authorization Statement:

In fulfillment of the requirements of DOE Radioactive Waste Management Order this disposal authorization statement is hereby issued authorizing the Nevada Operations Office to transfer, receive, possess, and dispose of low-level radioactive waste at the Area 3 Radioactive Waste Management Site.

The Nevada Operations Office shall conduct its low-level waste disposal program in accordance with the requirements contained in the following documents.

Area 3 Radioactive Waste Management Site

Performance Assessment/Composite Analysis for the Area 3 Radioactive Waste Management Site at the Nevada Test Site, Nye County, Nevada, Revision 2.0, DOE/NV-491, September, 1997, G. J. Shott, et al.

Letter from J. Rhoderick and W. Murphie to Assistant Manager for Environmental Management, Nevada Operations Office dated October, 1999. Subject: Review of the Nevada Test Site Area 3 Radioactive Waste Management Site Performance Assessment and Composite Analysis.

This disposal authorization statement is subject to all applicable rules and Orders now or hereafter in effect and to all conditions specified below. Also, this authorization is applicable to any subsequent revisions and additions to the performance assessments and the composite analysis provided such revisions and additions are in accordance with the performance assessment and composite analysis maintenance program. Applicable permits and reports that comprise the Radioactive Waste

Management Basis shall be approved and continue to be maintained current according to the applicable DOE Orders and regulations.

Facility Construction and Design

The Area 3 Radioactive Waste Management Site consists of disposal units comprised of subsidence craters from underground nuclear testing described in the performance assessment. The design features of each disposal unit constructed in the field shall conform to the conceptual model used in the performance assessment or special analysis. Any changes in disposal technology, disposal unit, or waste form must be analyzed and authorized according to the performance assessment and composite analysis maintenance program and approved by DOE.

Radionuclide Limits, Waste Form, and Packaging

Each disposal unit within the Area 3 Radioactive Waste Management Site shall have waste acceptance criteria which provide specific radionuclide disposal limits, waste form restrictions, and descriptions of acceptable waste packages. The waste acceptance criteria shall be based on facility performance assessments, special analyses, and composite analyses as well as safety documentation and criticality considerations. Waste acceptance procedures shall be in place that describe requirements for waste characterization, waste certification and record keeping, as well as the process for authorizing deviations from the requirements. All waste received for disposal at these facilities must conform to the waste acceptance procedures. The waste acceptance criteria shall be reviewed and approved through the facility Radioactive Waste Management Basis.

Closure

Closure plans for the Area 3 Radioactive Waste Management Site shall be prepared within one year of the issuance of this disposal authorization statement and submitted to the Nevada Operations Office for review and approval. These closure plans must address any outstanding closure commitments from the review of the Area 3 performance assessment and composite analysis. Any deviations in the closure plan from the closure concept analyzed in the performance assessments must be analyzed and approved per the performance assessment and composite analysis maintenance program.

Monitoring

Monitoring plans for the Area 3 Radioactive Waste Management Site shall be written, approved by the Nevada Operations Office, and implemented within one year of the issuance of this disposal authorization statement. These plans shall be updated at least every five years to reflect changing facility conditions. The plans shall include monitoring frequencies and protocols for the existing data collection and any new data collection required to measure the continued performance of the disposal facilities. These plans shall also include a requirement for comparison with the performance assessment results and development of any corrective action necessary.

Performance Assessment and Composite Analysis Maintenance

Maintenance plans shall be written and approved by the Nevada Operations Office for the Area 3 Radioactive Waste Management Site performance assessment and composite analysis by June 30, 2000. Changes in the disposal facility operation (e.g., waste form, disposal unit design, radionuclide quantity) or in site policy (e.g., land use plan) or strategy (e.g., closure plans, remedial actions) and

Performance Assessment and Composite Analysis Maintenance

Maintenance plans shall be written and approved by the Nevada Operations Office for the Area 3 Radioactive Waste Management Site performance assessment and composite analysis by June 30, 2000. Changes in the disposal facility operation (e.g., waste form, disposal unit design, radionuclide quantity) or in site policy (e.g., land use plan) or strategy (e.g., closure plans, remedial actions) and consequent changes in disposal facility controls shall be managed per the performance assessment and composite analysis maintenance program.

An annual update of the adequacy of the performance assessment and the composite analysis under the Maintenance Program shall be provided to the Low-Level Waste Disposal Facility Federal Review Group (LFRG).

Area 3 Radioactive Waste Management Site Performance Assessment Conditions

Provide to the LFRG, within eight months of the date of issuance of this disposal authorization statement, a revision to the performance assessment that includes resolution of the following secondary issues identified in the review of the performance assessment:

Lack of justification for excluding particular intruder exposure scenarios based on exhumed waste.

Inadequate justification for omission of surface water.

Lack of sensitivity analysis regarding the assumed 250 years of institutional controls.

Need for clarification of RCRA/CERCLA regulatory involvement, if any, in low-level waste disposal at Area 3.

Need for clarification of the location of the point of maximum exposure.

Need for better explanation of the borehole and field data within the framework of the no-recharge conceptual model.

Area 3 Radioactive Waste Management Site Composite Analysis Conditions

Provide to the LFRG, within eight months of the date of issuance of this disposal authorization statement, a revision to the composite analysis that includes: (1) a qualitative assessment including an options analysis of the effect of groundwater contamination resulting from underground nuclear testing. The qualitative assessment is expected to show that the potential dose would effectively be mitigated by the control of land in the vicinity of the Area 3 Radioactive Waste Management Site. Before any portion of the Nevada Test Site is considered for a reduction in institutional controls, Nevada Operations Office will have quantified the potential dose from the underground testing residues and taken measures to mitigate the dose, as appropriate.

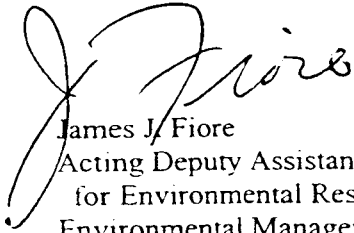
(2) Resolution of the following secondary issues identified in the review of the composite analysis:

Need for a better explanation of the borehole and field data within the framework of the no-recharge conceptual model.

All other issues noted during the performance assessment and composite analysis review shall be considered as the performance assessment and composite analysis is maintained.

Violations of Operational Requirements

Performance assessment and composite analysis commitments that are not met will result in the review of the applicability of continued disposal authorization.



James J. Fiore
Acting Deputy Assistant Secretary
for Environmental Restoration
Environmental Management



Mark W. Frei
Acting Deputy Assistant Secretary
for Waste Management
Environmental Management

Date:

**Compliance Evaluation of the Performance Assessment and Composite Analysis
for the Disposal of Low-Level Waste in the Nevada Operations Office
Area 3 Radioactive Waste Management Site**

The Low Level Waste Disposal Facility Federal review group (LFRG) concludes from its review of the performance assessment and composite analysis for the Nevada Test Site Area 3 Radioactive Waste Management Site and the review team reports that the performance assessment and the composite analysis were found generally acceptable and it was determined that continued waste management operations be approved with specific conditions as delineated in the disposal authorization statement.

On August 20, 1999, the performance assessment/composite analysis for the Nevada Test Site Area 3 Radioactive Waste Management Site disposal facility was conditionally approved. The primary conditions for approval are the development and incorporation of additional information and analysis into the performance assessment/composite analysis by issuance of a revision.

The base case analysis results in the following calculated doses relative to the performance measures:

Performance Assessment for the Nevada Operations Office Area 3 Radioactive Waste Management Site

PA Component	Measure	Area 3 Radioactive Waste Management Site Disposal Facility Projected Maximum Dose or flux
All pathways	≤ 25 mrem/yr	4×10^{-5} mrem/yr
Air pathway	≤ 10 mrem/yr	3×10^{-5} mrem/yr
Radon flux	an average flux of ≤ 20 pCi/m ² /s	0.01 pCi/m ² /s
Hypothetical inadvertent intruder	100 mrem/yr from chronic exposure 500 mrem/yr from a single event	0.04 mrem/yr from chronic exposure <0.04 mrem/yr from a single event
Groundwater resource protection	Established consistent with laws, agreements or groundwater protection management program Nevada Test Site adopted the State of Nevada Drinking Water Standards	No Release to Aquifer in 1,000 years

Sensitivity/uncertainty analyses were conducted by performing Monte Carlo simulations. All simulation results for the all-pathways, atmospheric pathway, and radon flux density analyses were less than the performance objectives, indicating that there is a greater than 99.9 percent probability of compliance with the performance objectives.

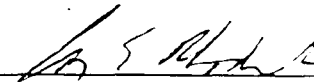
Composite Analysis for the Nevada Operations Office Area 3 Radioactive Waste Management Site


Composite Analysis Component	Measure	Nevada Test Site Area 3 Radioactive Waste Management Site Projected Maximum Dose
All pathways	Composite Analysis dose constraint of 30 mrem/yr	10* mrem/yr

* This dose does not include the potential dose from the underground testing residues.

The effect of parameter uncertainty on the composite analysis results was investigated using Monte Carlo simulations. The results indicate that there is a better than 99.9 percent probability that the dose in the composite analysis is less than 30 mrem/year, neglecting the potential dose from the underground testing residues. The bounding analysis provided by Nevada Operations Office shows that the potential dose from the underground testing residues is very uncertain and Nevada Operations Office cannot demonstrate that the dose will not exceed the 100 mrem/year primary dose limit. However, the qualitative assessment is also expected to show that this potential dose is effectively mitigated by the control of land in the vicinity of the Area 3 Radioactive Waste Management Site. Before any portion of the Nevada Test Site is considered for a reduction in institutional controls, Nevada Operations Office will have quantified the potential dose from the underground testing residues and taken measures to mitigate the dose, as appropriate.

LFRG Co-Chairs:


 Jay E. Rhoderick, Co-Chair


 William E. Murphy, Co-Chair

Date: