



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JAN 24 1985

MEMORANDUM FOR: Ronald L. Ballard, NRR Environmental Coordinator
and Chief, Environmental and Hydrologic Engineering
Branch, DE

FROM: Frank J. Congel, Chief
Radiological Assessment Branch, DSI

SUBJECT: REVIEW OF DRAFT ENVIRONMENTAL ASSESSMENT OF REFERENCE
REPOSITORY LOCATION, HANFORD SITE, WASHINGTON

As requested we have reviewed the radiological assessment portion (excepting transportation) of the Department of Energy's Draft Environmental Assessment for locating a high-level waste repository at the Reference Repository Location Hanford Site, Washington, DOE/RW-0017, December 1984. Our comments on DOE's environmental assessment are enclosed.

This review was performed by J. Swift.

Frank J. Congel
Frank J. Congel, Chief
Radiological Assessment Branch
Division of Systems Integration

Enclosure:
As stated

cc: R. Bernero
D. Muller
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COMMENTS ON RADIOLOGICAL ASSESSMENT PORTIONS OF "DRAFT
ENVIRONMENTAL ASSESSMENT FOR REFERENCE REPOSITORY LOCATION,
HANFORD SITE, WASHINGTON", DOE/RW-0017, (December 1984)

GENERAL COMMENTS

The radiological assessment portions (excepting transportation) of the draft environmental assessment (EA) are contained in the following sections:

3.4.2.7 Radiological Conditions, 4.2.1.3.6 Radiological Impacts, 5.2.1.3.6 Radiological Impacts, 6.2.1.5 Offsite Installations and Operations, 6.2.2.1, Preclosure Radiological Safety, 6.4.1.4 Evaluation of Preclosure Repository Performance, and 7.3.1, Preclosure Radiological Safety.

The EA contains estimates of doses to the maximum-exposed individual within the vicinity of the site. Doses are estimated for exposure to potential releases during the operation phase, and for the hoist drop accident. Estimated doses to individual members of the public are within the guidelines.

3-1

Section 3.4.2.7.5 Radiation Exposures page 3-109

At the top of page 3-109 the statement is made that soil and vegetation assays taken from the Hanford Site environs have disclosed no discernable differences in the levels of radionuclide concentrations across the geographical area. This statement apparently conflicts with the radiological assay information in the report RHO-CD-1530, October 1981, titled "Site Ecology and Radiological

Descriptions for the Basalt Waste Isolation Project Site Characterization Report" by D.S. Landeen and R. M. Mitchell of Rockwell Hanford Operations. Section 3.4.2.7.5 should be supplemented with a summary of the radiological assay information from RHO-CD-1530, plus an explanation of the difference between the statement on page 3-109 and the information on RHO-CD-1530.

(Swift 1/22/85 X27541)

6-1

Section 6.4.1, Preclosure System Guidelines Analyses page 6-217.

This section provides evaluations of the preclosure offsite radiological conditions. This section fails to evaluate the radiation doses of occupationally-exposed individuals who will be working at the repository site. This evaluation is necessary for determining the total radiological impacts of normal operation of the site. Consequently, this section should estimate the number of occupationally-exposed individuals, the maximum individual doses, and the total worker population dose, and document the bases for the estimates.

(Swift 1/22/85 X27541)

6-2

Section 6.4.1, Preclosure System Guidelines Analyses page 6-217

Section 6.4.1.3, 40 CFR 191 Calculations, discusses doses to the maximum-exposed individual from normal operation of the repository. The discussion is sufficient to determine compliance with 40 CFR 191. However, a complete radiological assessment should also determine the doses and the potential consequent health effects to the population from normal operations. This

determination is usually made by using population doses and health effects estimators. Consequently, another section (e.g., 6.4.1.5) should be added to discuss the overall health effects of normal operation of the repository.

(Swift 1/22/85 X27541)

6-3

Section 6.4.1.4, Evaluation of Preclosure Repository Performance, page 6-222

This section calculates the ^{dose to the} maximum-exposed individual from abnormal operational occurrences to people in the vicinity of the repository. However, a complete radiological assessment should also determine the potential health effects to the population from accidents that may occur at the repository.

(Swift 1/22/85 X27541)

6-4

Section 6.4.1.4.2 Analysis of Releases Under Routine Operations, page 6-222

The source term presented for routine operational releases (spent fuel pin leaks that occur while fuel assemblies are being disassembled on the repository site) is only one of the source terms expected from the various operations indicated in the facility description, Section 5.1. There will be other source terms associated with cleaning and decontamination of shipping casks, with the handling of DHLW containers and TRU packages, with the processing of 17000 gallons per day of radioactive liquid wastes (Table 5-1) and with the management of the solid low-level radioactive wastes generated on site. Spent fuel when removed from the reactor has a layer of radioactive crud on its outer surfaces that provides a source term for fuel handling operations even if no leaky fuel pins are present. Leaky fuel pins are present in most spent fuel pools and must also be disposed of also. In the contamination found in spent fuel pool water the predominant radionuclides are usually Cesium-134, Cesium-137, Cobalt-58, Cobalt-60, and Ruthenium-106, depending upon the history of the spent fuel and the pool water. The Final Environmental Assessment should present a Preclosure Radiological Assessment that addresses the source terms originating in the various cleaning, handling,

packaging, and processing operations that might be conducted in the Waste Handling and Packaging Facility, the expected emissions after cleanup in the HVAC and any other gaseous waste handling systems, and the resulting radiological impacts in the environment (cf NUREG-0695, "Environmental Impact Appraisal Related to the Renewal of Materials License SNM-1265 for the Receipt, Storage, and Transfer of Spent Fuel," June 1980, concerning the Morris Operation).

(Swift 1/22/85 X27541)