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MEMORANDUM FOR: Richard E. Cunningham, Director
Division of Fuel Cycle and
Material Safety

FROM: Robert E. Browning, Director
Division of Waste Management

SUBJECT: TRANSPORTATION COMMENTS ON THE ENVIRONMENTAL ASSESSMENTS

The purpose of this memorandum is to request your concurrence in the Environmental Assessment (EA) comments on transportation. Your staff has provided us with comments on the transportation of the high level waste. Your staff, especially John Cook, was very helpful in not only writing comments but also answering questions on matters related to the transportation issue.

Enclosed are copies of the transportation comments used for the Yucca Mountain Site EA comment package. These are typical of the comments we used for transportation at all the sites. If you find these comments acceptable, we would like your concurrence in these comments. If there are any changes to the comments that are necessary to obtain your concurrence, please contact Bill Lilley (x74798). I would like to thank you and your staff for your assistance in this review.

Original Signed by
MICHAEL J. BELL

for Robert E. Browning, Director
Division of Waste Management

WM Record File 103

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EXECUTIVE SUMMARY

E-1

Section 2.2.2, Grouping of Sites by Geohydrologic Setting, Page 5, Paragraph 4

The term "dry unsaturated zone" is used. "Dry" has no precise meaning and may convey a misconception to non-technical readers.Suggest the term "dry" be omitted because water saturations (see, for example, page 2-5, paragraph 3) are greater than zero.
(Jeffrey Pohle 1/23/85)

E-2

Section 5, Regional and Local Effects of Repository Development, Page 13, Last Paragraph

This paragraph provides an explanation of the types of transportation effects from increased commuter traffic and the hauling of supplies and radioactive waste. The second sentence states that radiological risks result from routine waste shipments, but there is no mention of radiological risk from transportation accidents. It is suggested that this section discuss the radiological risk from transportation accidents.
(Cooke/2/8/85)

E-3

Section 6.3.3, Ease and Cost of Siting, Construction, Operation, and Closure, Page 17, Last Paragraph

This paragraph makes the assertion that there is "adequate vertical flexibility for designing and constructing the repository" at Yucca Mountain. In reviewing the cross-sectional diagrams by Scott (1984), it appears that there is marginally adequate flexibility in the vertical direction. The location of the repository has a maximum of 30 meters of upward flexibility (as constrained by the disqualifying condition under erosion, 10 CFR 960.4-2-5) and minimal downward flexibility due to increases in lithophysal cavity percentage and the basalt vitrophyre of the Topopah Spring Member.

Since the potential for variations in stratigraphy exists in the welded portions of the Topopah Spring Member and because adverse structural features may be encountered during repository construction, vertical flexibility will be necessary in order to provide the necessary space for waste disposal. The NRC suggests that the DOE consider "marginally adequate" flexibility at Yucca Mountain rahter than simply "adequate".
(Rice 2/1/85)

This section of the draft EA gives estimates of the annual worker exposure to radiation of about 70 man-rem and the collective worker radiation dose of about 2100 man-rem over the 30-year life of the repository. The basis for these estimates is only briefly described in the draft EA and a reference is made to Dennis et al. 1984. Examination of this reference reveals that the above worker exposure estimates are due only to working with spent fuel and high-level waste and do not include worker doses from handling transuranic waste. According to Dennis et al (1984, page 1-3) Volume II of the same report (which is to date unpublished and unavailable) will address respository worker exposure from transuranic (TRU) waste. It is suggested that this section should be revised so that the estimate of the worker exposure during normal operation include estimates of worker exposure to transuranic waste and documentation of the bases for the TRU dose estimate should be provided. (T. Mo 1/18/85)

5-17

Section: 5.2.9.2.3, Accidental Exposure During Operation, page 5-59, Paragraph 1

The draft EA provides various accident scenarios (page 5-60, Table 5-27) that could lead to radioactive releases and exposure to the general public and repository personnel. However, one important accident scenario has not been considered, viz., the potential hazard associated with retrieval and subsequent disposal of breached waste-canisters. Some of the canisters may breach during the pre-closure period of repository life (USNRC, 1984a). In the event that retrieval becomes necessary, special equipment and safeguards may be required to extract the breached canisters from the emplacement holes, transport them through the repository, and send them off for repackaging. Considerable dose commitments to restricted and unrestricted areas may accompany such operations. Therefore, it is suggested that the final EA address this potential accident scenario and evaluate corresponding release probabilities and dose commitments. (Dinesh Gupta 2/1/85)

5-18

Section 5.2.9.2.3, Accidental Exposure During Operation, Page 5-60, Table 5-27

No information is provided on diffusion analyses utilized to evaluate the radiological consequences of accidental releases during operation. It is suggested that the DOE provide the details of these diffusion analyses so that the validity of the radiological impact of accidents can be assessed. (Irwin Spickler 1/31/85)

5-19

Section 5.3, Expected Effects of Transportation Activities, Page 5-62

The impacts from transportation accidents, including the estimated dose to the maximally exposed individual and the estimated number of latent cancer fatalities, are not discussed. It is suggested that the final EA should include either an explanation of the use of existing analyses and studies to substantiate the assertion that transportation accident impacts are small, or an analysis of the consequences, probabilities, and risks for a severe transportation accident en route to the site.
(Cook 2/8/85)

5-20

5-21

5-22

Section 5.3.2.1, Radiological effects of nuclear waste transportation, Page 5-72, Paragraph 3

The paragraph states that under accident free operating circumstances, no radioactive material would be released from the shipping containers during transport. While this may be true for the contents of the package, there have been cases of contamination being released from the package surface during transport. It is suggested that the potential radiation doses to radiation workers involved in the close proximity decontamination efforts be addressed in the final EA's.
(Cook 2/1/85)

5-23

Section 5.3.2.1, Radiological effects on nuclear waste transportation, Page 5-75, Table 5-36

This table provides estimated collective radiation doses associated with the 30-year operating lifetime of a repository. It is suggested that the table list the exposures for the occupational and non-occupational population subgroups.
(Cook 2/1/85)

5-24

Section 5.3.2.1, Radiological effects of nuclear waste transportation, Page 5-75, Continuing Paragraph

It is stated in this paragraph if a transportation accident involving high-level radioactive waste were to occur, that experimental evidence suggests that the consequences would not be great. The consequences of a transportation accident en route are not specifically analyzed in the draft EA or appendices. It is suggested that the cost of cleanup for transportation accidents be addressed in the EA and that the cost of cleanup be included.

(Cook 2/1/85)

5-25

Section 5.3.2.1, Radiological effects of nuclear waste transportation, Page 5-76, Table 5-37

This table provides total and average radiation doses to a maximally exposed individual (member of the general public) resulting from routine transportation to the repository. It is suggested that the table also include maximum exposure that is likely to occur in a transportation accident.
(Cook 2/1/85)

5-26

Section 5.3.2.1, Radiological effects of nuclear waste transportation, Page 5-79, Table 5-41

This table lists factors used to calculate non-radiological effects of transportation. It is suggested that an explanation of the factors used for rural and suburban area analyses be provided.
(Cook 2/1/85)

5-27

Section 5.3.2.3, Costs of radioactive waste transportation, Page 5-80

Certain transportation corridors along the routes to the sites, those with high accident frequency or high waste traffic volume, or adverse weather conditions for example, are a potentially important issue. Although the radiological risks along these special corridors are estimated to be small, such corridors may be subject to increased state and local emergency response actions. This response may be costly and could be disruptive to communities. It is suggested that this type of consideration be included in the assessment of transportation impacts.
(Cook 2/8/85)

5-28

Section 5.3.2.1, Radiological effects of nuclear waste transportation, Page 5-80, Continuing Paragraph

This paragraph discusses non-radiological effects of transportation. The basis for the truck and rail fatality comparisons should be clarified.
(Cook 2/1/85)

5-29

Section 5.4.1.1, Labor, Page 5-85 through 5-86