APPENDIX B

SELECTED EPA CONCERNS ABOUT PICS

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The following discussion is derived from: EPA, 1996a, *Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations Background Information Document for 40 CFR 191*, EPA 402-R-96-002.

1. Section 12.2.5.2, last paragraph of the section on page 12-33 "EPA did not review the Markers Panel Team's results in order to apply numerical values to credit for PICs or even develop a credit methodology. Instead, EPA noted the great variability and uncertainty in the efforts of the two teams."

Response: The designs proposed by the two marker teams contained many of the same elements. These similarities do not support the EPA's claim of great variability. The estimates by each team of the duration and effectiveness of the marker components were relatively close with the markers being most effective in early times and the effectiveness decreasing in later times as the uncertainty about future societies and technologies increases. In the future-state assumptions of 40 CFR Part 194, the EPA has eliminated the speculation about the uncertainties in how societies and technologies may evolve. If the EPA had established these future-state assumptions in 40 CFR Part 191, the marker teams would not have had to deal with "great uncertainty."

2. Section 12.2.5.3, last sentence of the section on page 12-37 "Status of site markings at the other NTS off-site locations is not well documented and is currently being investigated (DOE94b)." DOE94b is "Communication with R. Navarro, Nevada Operations Office, Las Vegas, NV, January 14, 1994."

Response: Mr. Navarro was contacted regarding this topic on March 11, 1996, by the PTF (Rodriguez, 1996c). He did not recall any conversation concerning the topic of investigating the marking of Plowshare Projects. Further conversation with Ms. Roxanne Danz, a supervisor in the Restoration Health Physics group at the DOE's Las Vegas office (Rodriguez, 1996d), confirmed that all Plowshare Projects are marked. However, there is no record of any criteria or design basis being established with respect to what these markings are intended to convey or accomplish. Ms. Danz stated that all of the project sites she has visited have different configurations of markers.

Considering the variation of current marking configurations at the various Plowshare sites and the lack of any criteria for their marking design, it is not reasonable to make a comparison between Plowshare markers (for example the marker indicating Project Gnome) and the criteria established for the WIPP markers in 40 CFR Part 191 and 40 CFR Part 194. Furthermore, the conceptual design for the WIPP permanent markers system and worldwide information distribution is virtually in a class of markers and knowledge distribution unprecedented in history. Although some of the historical analogues are substantial in volume and mass, none of history's enduring markers were associated with an intent to distribute information worldwide to ensure their lasting knowledge in the mind of the public. Neither the analogues nor the Plowshare Projects took the additional step to ensure identification on maps and charts as a means of conveying information.

3. Section 12.3.1.1, page 12-45 "On November 24, 1992, BLM published a description of the WIPP in the *Federal Register* as required by the LWA (57 FR 55277) [BLM, 1992]. BLM also submitted the required documentation to various governmental organizations on November 16, 1992. . . . [Woodard, 1996] (While this information was supplied to the Archivist of the United States and presumably has been filed, the existence and location within the Archives have not been uncovered in spite of numerous inquiries.)."

Response: The archival specialist working with the PTF recommended that the DOE should establish a filing code that the national archives will use when archiving documents and records received from the DOE related to the WIPP Project and that all documents submitted to the archive will contain this filing code. The DOE has an official archivist, and this archivist will be consulted in the development of this filing code.

4. Section 12.3.2, page 12-46, last paragraph "Even so, Tannenbaum has observed that storage materials may not last for the required 10,000 years; therefore, records must be periodically reproduced and perhaps translated into contemporary language (TAN84)."

Response: The records are not required to last for the entire 10,000 years of regulatory concern. The assurance requirements mandate that the PICs are the most permanent practicable. The DOE has developed a PICs system that contains redundant components so that the failure of a single component does not compromise the effectiveness of the PICs system. The PTF believes that future generations will reproduce these documents provided that they are perceived to be important. No credit was taken for the reproduction of information in estimating the effectiveness of the PICs system for PA calculations.

5. Section 12.3.2, page 12-47, second paragraph "Gillis mentions a downside to record-keeping redundancy (GIL85). Dispersal of the information to ensure its survivability may reduce detectability by persons at the site for whom it is most relevant."

Response: This is not a logical conclusion. Dispersal of information does not impact the detectability by persons at or near the site when that same information is provided at a number of locales near the site. The response to this concern is to make a sufficient number of copies that copies can be stored both locally and regionally.

6. Section 12.3.4.1, page 12-57 cites failure of the DOE to document the presence of an oil and gas well under the southwestern corner of the land-withdrawal area.

Response: As mentioned in Chapter 7, the DOE refutes this unfounded claim.

7. Section 12.4.1, page 12-64, last paragraph provides a discussion ending with "Institutions frequently outlive the governments which inaugurate them."

Response: This statement further supports the EPA's future-state assumptions in § 194.25.

8. Section 12.5.1.1, page 12-66, the EPA makes the statement "It is highly unlikely that a drilling crew would detect the presence of the markers."

Response: Surface preparation for drilling crew setup using today's technology make extremely likely the discovery of buried markers positioned at intervals selected randomly between 4.6 and 12.2 meters (15 to 40 feet), and 0.6 to 1.8 meters (2 to 6 feet) below ground, while the drilling crew is preparing a mud pit, which typically is of the dimensions of 30.5 meters by 61 meters (100 feet by 200 feet). This assertion of detection was confirmed by discussions with members of the WIPP Inadvertent Intrusion Advisory Panel and New Mexico Junior College (1995) on May 26, 1995. Their report of September 5, 1995, stated that intervals of 12 meters (40 feet) and 0.3 to 1.8 meters (1 to 6 feet) deep would ensure some markers are seen during excavation.

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