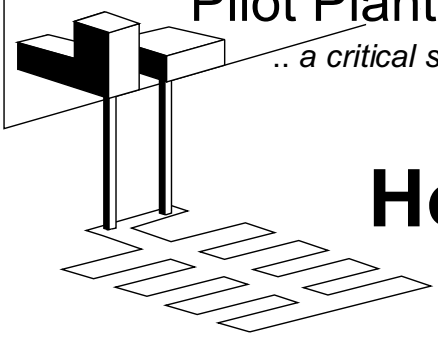
Waste Isolation
Pilot Plant

.. a critical step toward solving the nation's nuclear waste disposal problem



How Will Future Generations Be Warned?

What are Passive Institutional Controls?
Passive Institutional Controls (PICs) are markers and methods designed to warn and inform future generations and civilizations about the location and purpose of the Waste Isolation Pilot Plant (WIPP).

U.S. Environmental Protection Agency regulations require that waste disposal sites use markers and other controls to indicate dangers and locations of waste.

The Department of Energy has identified a PIC conceptual design for the WIPP site that is expected to communicate the location, design, and contents of the disposal system during the regulatory time frame of 10,000 years.

The objective of the design is to tell our descendants that the area at the WIPP site location is not totally in a natural state, that man has clearly marked the area for good reason.

What steps were taken to develop the design?
Two groups of experts, the Futures Panel and the Markers Panel, were established to examine issues related to designing an effective system of permanent markers.

Panels of linguists, scientists, science-related writers, and anthropologists studied potential scenarios of human intrusion to the WIPP site and brain stormed about the most efficient way to retain WIPP knowledge over thousands of years. Their reports provided the foundation for the final conceptual design of control.

What PICs are planned for the WIPP site?
The design is based on a concept called "defense in depth," one that provides numerous layers of information and warnings with redundant messages. The conceptual design comprises a number of such strategically located components, each bearing its own message and method of communication. They include:

- A large berm (earthen hill)
- Perimeter monuments
- An information center
- Two information storage rooms

- Buried warning markers
- Archives stored in various locations around the world

Berm

A large earthen berm will edge the surface "footprint" of the underground disposal facility, measuring 2,858 feet x 2,354 feet. The berm's base is 100 feet wide; it reaches 33 feet high and is sloped at an angle to best minimize the effects of erosion.

Buried in the berm will be specially configured metal objects designed to reflect radar. A total of 128 of these objects placed 294 feet apart around the footprint perimeter will provide a unique radar signature for the berm. Permanent magnets also will be buried to provide a distinctive magnetic signature.

Perimeter monuments

Granite monuments, 25 feet high, will stand along two perimeters at the WIPP site: the boundary of the four-square-mile controlled area, and just inside the berm surrounding the repository's 120-acre footprint. Each monument will be made of 20 tons of solid materials. The monuments will display engraved messages in seven languages with warnings and information about the buried waste.

Information center

The information center will be a 40-foot x 32-foot x 15-foot high surface structure that sits in the center of the repository footprint. Its granite interior and exterior walls will be engraved with many messages, some in words and some in pictures. It has no roof, in order to provide natural lighting.

Storage rooms

Two rooms will store the same information as the surface information center. Neither room will be visible. One will be covered by the footprint berm, and the other will be buried 20 feet below the surface just outside of the berm. Each will have a two-foot in diameter, plugged access hole in one wall.

The external and internal walls, floor and roof will be solid granite slabs. The room under the berm will be referenced in the information center; the existence of the buried room will not be identified anywhere on site, but it will be documented in archives at other locations.

Buried markers

Small warning markers will be randomly buried two to six feet deep throughout the repository footprint, in the berm, and in the shaft sealing system. These nine-inch-diameter discs will be made of granite, aluminum oxide, and fired clay. Each will carry a warning message in one of seven languages.

Archives

Extensive WIPP records will be stored, controlled, and maintained in many locations around the world. The information will include data important to defining the location, design, content, and hazards associated with the WIPP. The volume of archived material will be so large that it would be impractical to provide adequate space in any of the on-site components.

The DOE will develop a WIPP summary, distinctively bound, and sent to an archival organization that will ensure its availability to the public, especially to potential natural resource investigators, historians, and archaeologists. The summary will be available in the six recognized United Nations languages on archival-quality paper.

Each volume of the summary will be clearly labeled with warnings that they must be preserved for the 10,000-year regulatory period, and will explain why. The government plans to conduct periodic audits of selected archival locations to verify retention and retrievability of the information.

Additional passive institutional controls include incorporation of WIPP's location on various maps and road atlases, description of WIPP's location and content in encyclopedias, identification of WIPP as a geographical name in dictionaries, and descriptions of WIPP in educational text references.

The WIPP is a deep geologic repository, designed and constructed to provide underground disposal for the department's defense-generated transuranic waste. Located 2,150 feel below the earth's surface in an ancient bedded salt formation, the WIPP site occupies 16 square miles in southeastern New Mexico, 26 miles east of the city of Carlsbad.

Transuranic waste to be disposed of at the WIPP comes from the department's nuclear weapons programs. This waste consists primarily of clothing, tools, rags, debris, residues and other non-liquid disposable items contaminated with trace amounts of radioisotopes.

For more information:

http://www.wipp.ws or call 1-800-336-WIPP

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