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4.0 "Storage, Emplacement and Disposal Technologies"


Basis for originality: Both authors were involved with the design and operation of the WIPP. One was the Cognizant Engineer and other was the Waste Handling Manager. Today one author is the lead mechanical engineer for the MGDS surface facilities and the other author is still at WIPP and involved with the WIPP operation. It is clear to the authors when the MGDS is ready to start up, it will face the same issues of waste handling that WIPP faced, WIPP being the first of a kind facility in the country. Using WIPP to test and demonstrate equipment and operations and train personnel for MGDS could be beneficial to both projects. Before this paper little consideration has been given to combining DOE resources of both projects because the projects have been managed under different DOE programs.

Audience Interest: The paper is already of interest to people involved with MGDS equipment, operations, and licensing. The paper is also of interest to those involved with the future uses of WIPP for technology transfer. The interest stems from the possibility of WIPP helping to offset some of the costs of disposing of RH TRU waste while helping the MGDS get started on the right foot.

Conclusion: Both WIPP and MGDS are similar enough in design and function to provide a useful test bed for the MGDS. By using WIPP to prove designs and operations and train MGDS personnel, the MGDS could save money and start up sooner.

Abstract: The Department of Energy (DOE) is studying a site known as Yucca Mtn. near Las Vegas, Nevada for the disposal of two waste forms: spent fuel assemblies (SFAs) and defense high level waste (DHLW) canisters. The DOE is also preparing to begin operation of the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. Both projects are mined geological
disposal systems (MGDS). The two projects are similar in nature and thus could be mutually beneficial to each other.

At the MGDS in Nevada, waste forms arrive in shielded shipping casks. From the shipping casks, the waste forms are remotely transferred in a hot cell to disposal containers. The disposal containers are then delivered to the underground transporter for subsequent disposal. The unloaded shipping cask is closed, inspected, and dispatched to bring another shipment. At WIPP Remote Handled (RH) Transuranic (TRU) Wastes also arrive in shielded shipping casks. From the shipping cask, the RH TRU canister is remotely transferred to a facility cask. The transfer is done in the WIPP's Hot Cell complex. The unloaded shipping cask is inspected, closed, and dispatched to bring another shipment.

Clearly, the equipment and functions of WIPP and MGDS are similar. In fact, WIPP was originally designed for handling waste forms that included Spent Fuel and DHLW. Today WIPP’s mission is to handle only RH and CH TRU mixed wastes, but the facilities to handle the original mix of waste are built and functional. The RH TRU side of WIPP is unused and is not expected to be used in the near future.

This paper explores the possibility of using the RH TRU side of WIPP to test and demonstrate MGDS equipment and concepts of operation, and to train MGDS personnel. The authors believe that the experience gained from this interaction could lead to significant saving for both the WIPP and MGDS. The paper compares the operations at both facilities; identifies MGDS operations that can be duplicated without change at WIPP; identifies MGDS operations that can be simulated at a smaller scale at WIPP; identifies MGDS operations that require modifications at WIPP and determines the extent of modifications required and whether the modifications impact WIPP’s mission of disposing of RH TRU wastes; and finally the paper estimates the cost of using WIPP for the above testing, demonstration, and training.

The paper concludes that using WIPP for the benefit of the MGDS is feasible without impacting WIPP’s mission and suggests a schedule for implementation.

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