

WIPP Preliminary Documented Safety Analysis for TRUPACT-III

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Introduction

Several U.S. Department of Energy (DOE) sites have contact-handled (CH) transuranic (TRU) waste inventories that are packaged in standard large boxes (SLBs). These boxes are too large to be accommodated by the shipping packages currently licensed for CH-TRU waste shipment (i.e., TRUPACT-II and HalfPACT) to WIPP. The TRUPACT-III shipping package has been designed and developed primarily for the transportation of these SLBs.

The introduction of the TRUPACT-III shipping container and its SLB2 container payload introduces a new process and equipment to the WIPP disposal processes. To prepare for receipt and unloading of the TRUPACT-III shipping packages and disposal of the SLBs in the underground repository several modifications had to be made to the WIPP facility.

The project was considered to be a major modification in accordance with DOE-STD-1189-2008. As a result, a Preliminary Documented Safety Analysis (PDSA) was developed.

Challenges throughout the project included:

- Timely submittal of the PDSA – Although driven by an accelerated schedule, the PDSA could not be completed until enough of the design was finalized, and
- Maintaining configuration control – At the time the PDSA was being developed, one DSA revision (Rev. 2) was awaiting CBFO approval and another (Rev. 3) was being routed for comments. The PDSA could not be approved until Rev. 2 was approved.

Methodology

The project execution plan for the planned TRUPACT-III operation at WIPP was evaluated and it was determined a PDSA would be necessary. This decision was based on affirmative responses to DOE-STD-1189-2008, Table 8-1, Evaluation Criterion No. 3 and 4 and the potential for affirmative responses to Evaluation Criterion No. 5 and 6.

DOE-Standard - 1189 Major Modification Evaluation Criteria

Evaluation Criteria No.	Evaluation Criteria
3	Change an existing process or add a new process resulting in the need for a safety basis change requiring DOE approval?
4	Utilize new technology or government furnished equipment (GFE) not currently in use or not previously formally reviewed /approved by DOE for the affected facility?
5	Create the need for new or revised safety SSCs?

6	Involve a hazard not previously evaluated in the Documented Safety Analysis (DSA)?
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Prior to development of the PDSA, a Safety Design Strategy (SDS) was developed by URS and approved by DOE Carlsbad Field Office (CBFO). The SDS provided the roadmap for the PDSA scope which was to be built upon WIPP DSA Revision 2 and requested approval of limited procurement and construction activities associated with TRUPACT-III. The difficulty was WIPP DSA Revision 2 had not been approved yet. The SDS anticipated approval of Revision 2 prior to the PDSA for TRUPACT-III.

The PDSA referenced WIPP DSA Revision 2 as a basis for each of the chapters 1-6 and only developed additional text and analysis not already included. In this manner, the PDSA although individually numbered and controlled was for all practical purposes a supplement to the WIPP DSA Revision 2.

To facilitate procurement and construction authorization prior to development of the PDSA, the SDS conservatively assumed all TRUPACT-III process related equipment would be functionally classified as safety significant. This was based on worse case potential dose consequence only using the material at risk involved.

The schedule for the development and approval of the PDSA was accelerated by the need to begin TRUPACT-III disposal operations at WIPP. This is the reason a request to authorize limited procurement and construction was made in the SDS. Once the SDS was approved, procurement and construction activities proceeded in parallel with PDSA development.

Since the TRUPACT-III PDSA did not authorize operations, the PDSA information had to be integrated into the site DSA and approved before operations could begin. Therefore, the TRUPACT-III PDSA was essentially a supplement to WIPP DSA Revision 2 which was submitted but not yet approved and that had to be integrated into another revision of the WIPP DSA (Revision 3) before TRUPACT-III could be used at WIPP. As a result, URS was maintaining the facility to WIPP DSA Revision 1, and developing and responding to comments for three DSA revisions (WIPP DSA Revision 2, TRUPACT-III PDSA, and WIPP DSA Revision 3) at the same time.

To overcome the configuration control challenge and remain on schedule several things had to be done which include the following:

- Centralized configuration control. All the documents included comments, drafts, and final versions were maintained by one individual. Although, there were several analysts and text writer contributing, all the revisions were controlled and compiled in one master file location.

- Concurrent review on multiple documents. Technical lead was assigned to each document to capture comments common to all documents.
- Parallel DOE and URS comment resolution. The DSA revisions were distributed to both DOE and URS personnel for review at the same time with joint comment resolution discussions.
- Comment review cycles compressed. Realtime interactive comment resolution meetings were conducted with projected versions of the documents.

Results

Based on the completed hazard and accident analysis in the PDSA for TRUPACT-III operations, the TRUPACT-III process related equipment no longer needed to be functionally classified as safety significant. No new safety class or safety significant systems, structure or components, or specific administrative controls were required. All new and revised hazard analysis events were determined to be represented by the accidents already identified in the hazard analysis discussed in WIPP DSA Revision 2.

As a result of the configuration control challenge developing and revising three WIPP DSA revisions at the same time, URS has established a streamlined process for accelerated review and approval of DSAs.

In the end, with the help of a patient, dedicated staff, and significant cooperation with CBFO the TRUPACT-III site operation was authorized on time.