Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

NOV 21 2002

Mr. Frank Marcinowski
U.S. Environmental Protection Agency
501 Third Street, N.W.
Washington, D.C. 20001

Dear Mr. Marcinowski:

On October 7, 2002 the Department of Energy (DOE) submitted a "Notification of Proposed Change to the EPA 40 CFR 194 Certification of the Waste Isolation Pilot Plant for Panel Closure System Design." The purpose of this letter is to keep you fully informed of DOE's current activities with regard to closure of Panel 1. As you know, the New Mexico Environment Department (NMED) Hazardous Waste Facility Permit (HWFP) prescribes a specific schedule for closure of Panel 1, while the EPA Final Rule does not contain such a requirement. Enclosed is a copy of a permit modification request (PMR) that is being submitted to the NMED to extend the closure schedule for Panel 1.

This PMR describes the DOE's intent to construct the 12-foot mortared concrete block explosion isolation wall portion of the approved Option D Panel Closure design specified in the HWFP and in Condition 1 of the EPA Final Rule. The PMR then requests approval to extend the time period for completing the remainder of closure activities for Panel 1 until the NMED and the EPA render their respective final decisions on the pending requests for the new WIPP Panel Closure System. Construction of the "explosion wall" will fully protect human health and the environment for the period necessary for the respective agencies to review the proposed redesign of the panel closure system.

As described in the attached PMR, testing of the Salado Mass Concrete (SMC) formulation specified by the HWFP and the EPA Final Rule has highlighted uncertainties relative to attaining the required target values of strength and workability, and thus, construction of the monolith portion of the approved Option D Panel Closure design is problematic.

If you require additional information, please contact Mr. Daryl Mercer at (505) 234-7462.

Sincerely,

Inés R. Triay
Manager

Enclosure

CBFO:ORC:HLP:VW:02-1354:UFC:5486

021128

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CBFO:ORC:HLP:VW:02-1354:UFC:5486

Class 1* Permit Modification Request

Change to Closure Schedule for Panel 1

Waste Isolation Pilot Plant
Carlsbad, New Mexico

WIPP HWFP #NM4890139088-TSDF

November 21, 2002

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Inés Triay

Dr. Inés R. Triay, CBFO Manager
U.S. Department of Energy

For

J.L. Lee, General Manager
Westinghouse TRU Solutions, LLC

Table of Contents

Acronyms and Abbreviations

CBFO	Carlsbad Field Office
CCA	Compliance Certification Application
CFR	Code of Federal Regulations
DOE	Department of Energy
EPA	Environmental Protection Agency
HWDU	Hazardous Waste Disposal Unit
HWFP	Hazardous Waste Facility Permit
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
PCS	Panel Closure System
PMR	Permit Modification Request
SMC	Salado Mass Concrete
VOC	Volatile Organic Compound
WPC	WIPP Panel Closure
WIPP	Waste Isolation Pilot Plant

Overview of the Permit Modification Request

This document contains a Class 1* Permit Modification Request (**PMR**) to the Hazardous Waste Facility Permit (**HWFP**) at the Waste Isolation Pilot Plant (**WIPP**), Permit Number NM4890139088-TSDF hereinafter referred to as the WIPP HWFP.

This PMR is being submitted by the U.S. Department of Energy (**DOE**), Carlsbad Field Office (**CBFO**) and Westinghouse TRU Solutions LLC (**WTS**), collectively referred to as the Permittees, in accordance with the WIPP HWFP, Condition I.B.1 (20.4.1.900 New Mexico Administrative Code (**NMAC**) incorporating 40 Code of Federal Regulations (**CFR**) §270.42(a)). This change does not reduce the ability of the Permittees to provide continued protection to human health and the environment.

The requested modification to the WIPP HWFP and related supporting documents are provided in this PMR. The proposed modification to the text of the WIPP HWFP has been identified using a double underline and revision bar in the right hand margin for added information, and a ~~strikeout~~ font for deleted information. All direct quotations are indicated by italicized text.

Attachment A

Description of the Class 1* Permit Modification Request

Table 1. Class 1* Hazardous Waste Facility Permit Modification Request

No.	Affected Permit Section	Item	Category	Attachment A Page #
1	a.1. Attachment I a.2. Attachment I, Table I-1	Change to Schedule for Panel Closure for Panel 1, Revise Table I-1 to update current anticipated operations end date, closure start date, and closure end date for Panel 1.	D.1.b	A-3

Item 1

Description:

This permit modification requests a change to the closure schedule for Panel 1.

Basis:

Panel 1 is the first hazardous waste disposal unit (**HWDU**) that will be closed under the Waste Isolation Pilot Plant's (**WIPP**) Hazardous Waste Facility Permit (**HWFP**). It is anticipated that the closure activities will not be completed within the 180 days provided in the Closure Plan (HWFP Attachment I).

20.4.1.900 New Mexico Administrative Code (**NMAC**) incorporating 40 Code of Federal Register (**CFR**) §270.42, Appendix I classifies changes to the closure schedule for any unit as a Class 1* in D.1.b consistent with 20.4.1.900 NMAC (incorporating 40 CFR §270.42(a)(2)).

Discussion:

The Closure Plan (Attachment I) provides a general schedule in Figure I-2 for closing each WIPP HWDU (i.e., panel). The schedule estimates closing each panel 180 days after the completion of waste disposal operations in the Panel. In addition, Attachment I, Table I-1, *Anticipated Earliest Closure Dates for the Underground HWDUs*, provides operations end, closure start, and closure end dates for each of the panels.

Based on current shipping schedules, the earliest date that disposal operations in Panel 1 will be completed is mid-February to mid-March 2003 (the date was previously estimated to be January 2003). Therefore, this Permit Modification Request (**PMR**) proposes to modify the Attachment I, Table I-1 to indicate the correct anticipated dates for the end of operations, the beginning of closure and the end of closure for Panel 1.

The panel closure system (PCS) installation is also subject to the regulatory authority of the U.S. Environmental Protection Agency (**EPA**), which issued the WIPP Compliance Certification Decision (**CCD**), 63 Fed. Reg. 27354 (May 18, 1998). The approved PCS, known as "Option D," requires emplacing a 12-foot explosion isolation wall and a 26-foot monolith composed of Salado Mass Concrete (**SMC**). The U.S. Department of Energy (**DOE**) developed a design for a new PCS and submitted the new design to both the NMED and the EPA on October 7, 2002. The new PCS, referred to as the WIPP Panel Closure (**WPC**), consists of a substantial 30-foot mortared concrete block explosion isolation wall and emplacement of 100 feet of run of mine salt (salt obtained from routine mining activities in the WIPP underground) as backfill. The new design is equally protective, less impactive to facility operations, and has a higher certainty of successful installation. In large part this new design has been developed to reduce the uncertainties associated with installing the SMC monolith.

The primary reason for the schedule change in this PMR is to revise the schedule to reflect the time required for NMED to review the Class 3 permit modification submitted on October 7, 2002, and for EPA to assess impacts of the new design on its CCD. The pending Class 3 permit modification (The Panel Closure PMR) asks for agency

authorization to install the new panel closure design in Panel 1, rather than the currently required closure design.

As noted above, and described in detail in the Panel Closure PMR, an important reason for seeking that modification is that testing by the Permittees has revealed a high degree of uncertainty involved in construction of the Option D design using the SMC specified in the HWFP.

A testing program has been ongoing to evaluate the use of SMC as required in the WIPP HWFP closure plan. The program includes a series of bench and field scale tests. In general, the tests reveal problems in simultaneously achieving the SMC strength of 4500 psi at 28 days and the required workability. A summary of these tests is set forth in the table below.

Summary of Salado Mass Concrete (SMC) Tests

ID	Mix Date	Initial Slump (inch)	4 hour (inch)	28 Day Compressive Strength (pound per square inch)
Target Specifications		**Max 10**	**8 after 3 hours intermittent mixing**	**4500**
Bench Scale Tests				
SMC1	19Feb02	9.00	- (1)	- (3)
SMC2	26Feb02	7.90	8.40	690
SMC3	25Mar02	7.80	7.00	890
SMC7	11Apr02	4.75	1.00	3790
SMC5	16Apr02	7.50	2.00	5070
SMC6	16Apr02	8.25	1.50	4470
SMC4	17Apr02	8.00	3.25	4750
SMC3/2	07May02	7.75	3.50	3720
SMC3.5	08May02	8.25	5.00	4690
SMC3.5Hot	09Jul02	3.25	- (2)	3870
Batch Tests				
5yd batch	30Jul02	1.5	- (1)	3135

1yd batch	20Aug02	7.5	- (1)	3570
30yd batch (Poured in 6-yard batches)	24Sep02	- (4)	- (1)	See Table Below

(1) Not Measured
(2) Not Reported
(3) Did not set
(4) Slumps taken from each truck

30-Yard Test, Compressive Strengths

Batch	7-Day Compressive Strength (psi)	28-Day Compressive Strength (psi)
1	980	3,910
2	1,020	3,398
3	930	3,933
4	1,015	3,948
5	835	3,605

Current shipping schedules indicate that Panel 1 will likely be ready for closure in mid-February to mid-March 2003 (the date was previously estimated to be January 2003). To protect human health and the environment, the Permittees propose to install the 12-foot explosion isolation wall component of the approved closure design. This will protect human health and the environment until NMED issues a decision on the Panel Closure Design PMR by:

- preventing any access into Panel 1 and closing it to receipt of additional waste; and
- restricting the release of materials from the panel into the underground atmosphere.

A review of the analysis described in the HWFP Attachment I1, Executive Summary, indicates that an explosive atmosphere may occur after approximately 20 years, which is much greater than the estimated time for NMED to issue a decision on the Class 3 Panel Closure Design PMR. Moreover, the performance of the 12' explosion isolation wall is expected to be similar to that of other block walls in the WIPP underground that have remained intact for more than five years.

This explosion isolation wall will restrict ventilation in order to ensure minimal releases of VOCs and other materials from Panel 1. Additional assurance is given by the low concentration of VOCs in Panel 1. The average headspace gas concentration in Panel 1 is extremely low compared to the HWFP established VOC room-based concentration limits (see Table below based on November 1, 2002 WWIS data). In addition, the explosion isolation wall will satisfy the HWFP requirements to prevent entry into the filled panel.

Summary of Panel 1 Average Headspace Gas VOC Concentrations

November 1, 2002

VOC (9 Target Analytes)	Panel 1 Average Headspace Gas Concentration (ppmv)	VOC Room-Based Concentration Limit From HWFP Table IV.D.1 (ppmv)
Carbon Tetrachloride	1.7	9625
Chlorobenzene	0.37	13000
Chloroform	0.72	9930
1,1 - Dichloroethene	0.74	5490
1,2 - Dichloroethane	0.68	2400
Methylene Chloride	1.9	100000
1,1,2,2 - Tetrachloroethane	0.35	2960
Toluene	3.9	11000
1,1,1 - Trichloroethane	18	33700

Note that this modification only addresses changes to the Panel 1 closure schedule. It does not affect the closure schedule or design for any other panels. The new WPC, the schedule for the WPC, and updated throughput and waste volume information are discussed in the Class 3 PMR submitted to the NMED on October 7, 2002.

Revised Permit Text:

a. 1. Attachment I, Section I-1d(1) Schedule for Panel Closure

The anticipated schedule for the closure of ~~each of~~ the underground HWDUs known as Panels ~~1~~ 2 through 8 is shown in Figure I-2. This schedule assumes there will be little contamination within the exhaust drift of the panel. The following assumptions are made in estimating the time that closure will be initiated at each underground HWDU: waste operations are assumed to begin in July 1998 for planning purposes; throughput for CH waste is 784 drums per week (7 pallets per day, 4 days per week, 28 drums per pallet); and the capacity of a panel is 81,000 drums. Under these assumptions, a minimum of 104 weeks is needed to emplace the waste. Allowing a 25 percent contingency for maintenance delays and time to transition from one room to another, it is estimated that a panel will be filled 2.5 years after emplacement is initiated. This means that underground HWDUs will be ready for closure according to the schedule in Table I-1. These dates are estimates for planning and permitting purposes. Actual dates may vary

depending on the availability of waste from the generator sites. Waste availability at maximum throughput is not anticipated immediately as assumed here.

In the schedule in Figure I-2, notification of intent to close occurs thirty (30) days before placing the final waste in a panel. Once a panel is full, the Permittees will initially block ventilation through the panel as described in Permit Attachment M2 and then will assess the closure area for ground conditions and contamination so that a definitive schedule and closure design can be determined. If as the result of this assessment the Permittees determine that a panel closure cannot be emplaced in accordance with the schedule in this Closure Plan, a modification will be submitted requesting an extension to the time for closure.

The Permittees will initially block ventilation through Panel 1 as described in Permit Attachment M2 once Panel 1 is full to ensure continued protection of human health and the environment. The Permittees will then install the explosion isolation wall portion of the panel closure system that is described in Permit Attachment I1, Section 3.3.2, Explosion-and Construction-Isolation Walls. Construction of the explosion isolation wall is not to exceed 180 days after the last receipt of waste in Panel 1. Subsequent closure activities will take place in conformity with this Permit as it may or may not be amended by final NMED administrative action on the panel closure design modification request submitted to NMED on October 7,2002.

a.2. Table I-1

TABLE I-1
ANTICIPATED EARLIEST CLOSURE DATES FOR
THE UNDERGROUND HWMUS

HWDU	OPERATIONS START	OPERATIONS END	CLOSURE START	CLOSURE END
PANEL 1	3/99	~~1/02~~02/03	~~2/02~~03/03	~~6/02~~09/03 NOTE 5
PANEL 2	1/02	7/04	8/04	12/05
PANEL 3	7/04	1/07	2/07	6/07
PANEL 4	1/07	7/09	8/09	12/10
PANEL 5	7/09	1/12	2/12	6/12
PANEL 6	1/12	7/14	8/14	12/15
PANEL 7	7/14	1/17	2/17	6/17
PANEL 8	1/17	7/19	8/19	12/20

HWDU	OPERATIONS START	OPERATIONS END	CLOSURE START	CLOSURE END
PANEL 9	7/19	1/22	2/22	SEE NOTE 4
PANEL 10	1/22	7/24	8/24	SEE NOTE 4

NOTE 1: Only Panels 1 to 3 will be closed under the permit covered by this application. Closure schedules for Panels 4 through 10 are projected assuming new permits will be issued in 2009 and 2019.

NOTE 2: The point of closure start is defined as sixty (60) days following notification to the NMED of closure.

NOTE 3: The point of closure end is defined as one hundred eighty (180) days following placement of final waste in the panel.

NOTE 4: The time to close these areas may be extended depending on the nature and extent of the disturbed rock zone. The excavations that constitute these panels will have been opened for as many as forty (40) years so that the preparation for closure may take longer than the time allotted in Figure I-2. If this extension is needed, it will be requested as an amendment to the Closure Plan.

NOTE 5: The anticipated closure end date for Panel 1 is for installation of the 12' explosion isolation wall only. This date will be revised when the NMED issues a final decision on the October 7, 2002 Panel Closure Design permit modification request.