UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 19 2006

OFFICE OF
AIR AND RADIATION

David Moody, Manager
Carlsbad Field Office
U.S. Department of Energy
P.O. Box 3090
Carlsbad, New Mexico 88221-3090

Dear Dr. Moody:

During the week of June 19, 2006, the U.S. Environmental Protection Agency (EPA) performed inspections of the Waste Isolation Pilot Plant (WIPP) waste management and storage operations (EPA-WIPP-6.06-20a), waste emplacement (EPA-WIPP-6.06-20c) and the monitoring program (EPA-WIPP-6.06-20b). These inspections were performed under the authority of 40 CFR 194.21 and 40 CFR Part 191, Subpart A.

As a result of the inspection, EPA determined that the activities related to emissions monitoring during waste management and storage continue to comply with the requirements of 40 CFR Part 191, Subpart A. EPA also determined that DOE continues to adequately monitor the ten parameters that are important to the long-term containment of waste, as identified in EPA's 1998 Certification Decision and 2006 Recertification Decision. EPA's inspection also determined that waste is being appropriately emplaced in the repository and that the amount of magnesium oxide (MgO) is adequately calculated and tracked. In the emplacement inspection report and in the 2006 Recertification Decision, EPA noted that DOE needs to better understand the uncertainty range for the amount of cellulose, plastic and rubber material in repository. EPA will continue to work with DOE on this issue.

Copies of the enclosed inspection reports will be placed in the EPA public dockets. If you have any questions regarding the enclosed reports, please call Chuck Byrum at (214) 665-7555.

Sincerely,

Juan Reyes, Director
Radiation Protection Division

Enclosure

UNIQUE #	DOE UFC	DATE REC'VD	ADDRESSEES
0003133	3300.00	SEP 26 2006	See list on the back

cc: (Electronic Distribution)
Russ Patterson, DOE/CBFO
Daryl Mercer, DOE/CBFO
Steve Casey, DOE/CBFO
Steve Zappe, NMED
EPA Docket

DOCKET NO: A-98-49
Item: II-B3-97

Emplacement Inspection Report

EPA INSPECTION No. EPA-WIPP-6.06-20c
OF THE
WASTE ISOLATION PILOT PLANT
June 20-22, 2006

U. S. ENVIRONMENTAL PROTECTION AGENCY
Office of Radiation and Indoor Air
Center for the Waste Isolation Pilot Plant
401 M. Street, S. W.
Washington, DC 20460

September 2006

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2006 Emplacement Inspection Report

1.0 EXECUTIVE SUMMARY

In accordance with 40 CFR 194.21, the U.S. Environmental Protection Agency (EPA or the Agency) conducted an inspection of the U.S. Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico, from June 20 to June 22, 2006. The WIPP is a disposal system for defense-related transuranic (TRU) waste as defined by the WIPP Land Withdrawal Act.[1] EPA certified that the WIPP complies with the Agency's radioactive waste disposal regulations (Subparts B and C of 40 CFR Part 191) on May 18, 1998.

The purpose of this annual inspection was to determine if waste sent to WIPP during the past year has been emplaced in the underground facility in the manner specified in DOE's Compliance Certification and Recertification Applications and other approvals. A specific focus of this inspection was to determine if Magnesium Oxide (MgO) continues to be emplaced in the underground and appropriately tracked in the WIPP Waste Information System as required by EPA's letters (Docket A-98-49, Item II-B3-68, March 26, 2004 and Docket A-98-49, Item II-B3-72, May 20, 2004).

EPA examined objective evidence that additional MgO sacks used to control the impact of high CPR (cellulosic, plastic and rubber material) waste in the underground will perform as intended. "Objective evidence" is the documentation and observations that EPA can use to verify that DOE is conducting its operation appropriately.

EPA concluded that DOE's emplacement activities are adequate, that CPR is appropriately tracked and accounted, that additional MgO when needed is calculated properly (beginning with Panel 2, Room 1), and that all MgO is emplaced properly. While DOE does not necessarily maintain an MgO safety factor above 1.67 for operational efficiency while loading waste in a room, DOE does place enough MgO before the closure of a room as is required.

EPA did not identify any findings from this inspection. DOE did act on EPA's recommendation from the 2005 inspection that the MgO emplacement training manual be made a standard operating procedure. In November 2005, DOE "back-populated" the WIPP Waste Information System with the amount of MgO in the repository, by room, to facilitate future estimates of the total MgO emplaced.

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[1] WIPP Land Withdrawal Act, Public Law 102-579, Section 2(18), as amended by the 1996 WIPP LWA Amendments, Public Law 104-201.

2.0 INSPECTION PURPOSE AND SCOPE

The purpose of this inspection was to determine whether wastes sent to the WIPP have been emplaced in the underground facility in the manner specified in DOE's Compliance Certification and Recertification Applications and other approvals for the WIPP. EPA performed the inspection under authority of 40 CFR 194.21, which authorizes the Agency to inspect the WIPP during its operational period to verify continued compliance with EPA's WIPP Compliance Criteria and the certification decision of May 18, 1998 and recertification decision of March 29, 2006. Emplacement of waste, and backfill in particular, is relevant to compliance because the emplacement method supports models that DOE used in the WIPP performance assessment to understand the potential for transport of radionuclides out of the mined rooms.

The WIPP site is operated by Washington TRU-Solutions (WTS) under contract to DOE. The majority of waste related activities onsite are described by or controlled through WTS procedures. A list of primary WTS procedures examined for this inspection is provided in Table A. Additional materials were collected during and after the inspection.

Table A
Listing of WTS Procedures Examined During Inspection

- *Specification for Repackaged MgO Backfill*, Waste Isolation Pilot Plant Procedure D-0101, Revision 7, ECO Number 11280; Effective Date May 12, 2005
- *CH Waste Processing*, Technical Procedure WP 05-WH1011, Revision 23; Effective Date January 3, 2006
- *Waste Stream Profile Form Review and Approval Program*, WP 08-NT.03, Revision 7, June 15, 2005
- *WIPP Waste Handling Operations WWIS User's Manual,* WP 05-WH.01 Revision 0; Effective Date September 16, 2005. Drafts of Revisions 1 and 2, with no effective date were also examined.
- *WIPP Waste Information System User's Manual WWIS Version 5.0*, DOE/CBFO 97-2273, Rev. 9, December 12, 2005

Activities within the scope of this inspection included:

- demonstration of the site's ability to receive, process, and emplace TRU wastes within the repository,
- the use of magnesium oxide (MgO) backfill in appropriate amounts to fulfill CCA commitments,
- tracking of CPR and MgO, and calculation of the MgO safety factor,
- verifying that waste handling staff are trained and qualified to perform waste emplacement,

- maintenance of relevant waste packaging records, including the electronic WIPP Waste Information System (WWIS).

The inspectors observed waste being emplaced in the underground and waste that had been recently placed in the repository. The inspectors also reviewed records documenting that waste emplacement and MgO tracking were conducted in accordance with procedures. To date, the waste received at the repository is contact-handled (CH) transuranic wastes from Argonne National Laboratory- East (ANL-E) in Illinois, Los Alamos National Laboratory (LANL) in New Mexico, Idaho National Laboratory (INL), Hanford Site in Washington, Rocky Flats Environmental Technology Site (RFETS) in Colorado, Savannah River Site (SRS) in South Carolina, and the Nevada Test Site (NTS) in Nevada. These wastes are in one of several configurations: Standard Waste Boxes (SWBs), 55-gallon (208 liter) drums assembled in groups of seven called a Seven Pack, and Ten Drum Overpacks (TDOP). In 2005 WIPP began receiving supercompacted waste in 100-gallon (416 liter) drums from INL. The SWB and Seven Pack have the same "footprint" — that is, they occupy equivalent floor space — and can be stacked in vertical columns as described in this report. The TDOPs have a different footprint and must be placed at the bottom of a column. A list of waste containers emplaced in the repository as of the date of this inspection is provided in Attachment A.

3.0 PERFORMANCE OF THE INSPECTION

The EPA inspectors were Chuck Byrum and Tom Peake from the Office of Radiation and Indoor Air. Nick Stone and Barnes Johnson from EPA were observers. Steve Casey, DOE/CBFO, was the chief DOE contact for the inspection. A list of inspection participants is provided in Table B.

The inspection took place on June 20-22, 2006, at DOE's Carlsbad Office and at the WIPP facility, which is located approximately 26 miles south east of Carlsbad, New Mexico. The opening meeting with CBFO and WTS personnel was held in the morning of June 20, 2006. Several DOE and WTS staff provided an overview presentation.

The EPA inspectors accompanied CBFO and WTS personnel into the underground repository on the afternoon of June 20, 2006 in order to view waste packages that had been emplaced. Inspectors selected several shipments and noted their numbers; the records for these containers were examined later in the WWIS computer database to verify correct waste information. The WTS personnel explained how waste packages are handled and emplaced and answered questions from the EPA inspectors. The inspection continued the next day at the WIPP site with an examination of records and an interview with Hardy Bellows (WTS).

Lastly, EPA inspectors reviewed the WWIS with Steve Offner, a Data Adminstrator with WTS and Mike Strum also a WWIS Data Adminstrator. These discussions took place at the Carlsbad Field Office. A closeout meeting was held on June 22, with no findings identified at that time.

Table B
Inspection Participants

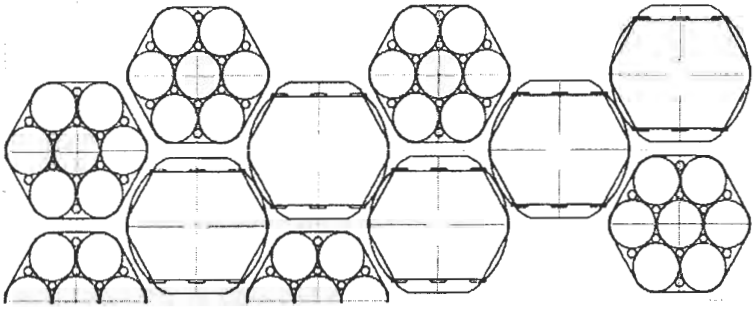
INSPECTION TEAM MEMBER	POSITION	AFFILIATION
Chuck Byrum	Inspector	EPA ORIA
Tom Peake	Inspector	EPA ORIA
Nick Stone	Observer	EPA Region 6
Barnes Johnson	Observer	EPA ORIA
CBFO / WTS PERSONNEL	**POSITION**	**AFFILIATION**
Steve Casey	General Engineer	DOE/CBFO
Daryl Mercer	Physical Scientist	DOE/CBFO
Dave Kump	WTS WWIS Manager	WTS
Hardy Bellows	Waste Operations Program Manager	WTS
Steve Offner	WWIS Data Adminstrator	WTS

3.1 WASTE EMPLACEMENT/WWIS

The repository is subdivided into panels, each panel consisting of seven (7) rooms. At the time of the inspection , waste was being emplaced in Room 3 of Panel 3.

Waste containers are stacked in columns (waste stacks) combining SWBs, drum packs, and TDOPs. TDOPs are always placed on the floor of the room, using the bottom and middle position of a waste column. When only TDOPS are being emplaced because of the lack of waste in other waste containers, empty dunnage drums are placed on top of TDOPs and the MgO sacks are then placed on the dunnage drums. SWBs and Seven Packs are emplaced in no particular order with most wastes emplaced as received. The waste columns are in a series of staggered rows, with a row consisting of three columns that span the distance of a disposal room from left to right [Figure 1].

Figure 1. Example of Rows of Waste. Source: Attachment 2, Payload Assembly Positioning, *CH Waste Processing*, Technical Procedure WP 05-WH1011, Revision 23, Attachment 2; Effective Date January 3, 2006. A stack of MgO takes up one payload location.



Some (1-2 feet) space between the repository wall and the waste column may be left open, however, waste packages may be placed touching or nearly touching the repository wall. A second row of three columns is emplaced parallel to the first, with each column placed between two columns from the previous row to minimize unusable space. MgO is placed on top of each column in 4,200 pound super sacks. When additional MgO is needed before room closure, DOE will place stacks of five MgO supersacks in a column on BRTs (big red things). See Figure 2.

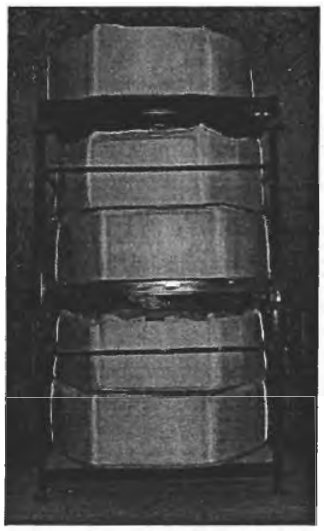


Figure 2. Additional MgO is placed in stacks five supersacks high in BRTs in order to assure an MgO safety factor above 1.67 before room closure. (Figure is from the 2005 inspection).

While underground in Room 3, Panel 3, the EPA inspectors selected recently emplaced waste packages for later review. These shipments included one type of each waste package. The inspectors read the shipment identification numbers directly off the emplaced containers. The containers selected are identified in Table C below.

Table C
Waste Containers Reviewed During Inspection

Site of Origin	Waste Container Identifier	Container Type
INL	BN10103189	Standard Waste Box
INL	BN10103086	100-gallon drum
SRS	SRTP01508	Ten Drum Overpack
LANL	LAS851751	55-gallon drum

The EPA inspectors examined the following modules:

- Characterization Module, linked to the Waste Container Data Report
- Certification Module, linked to the Acceptance/Rejection Report
- Shipping Module, linked to the Shipment Summary Report
- Inventory Module, linked to the Nuclide Report, Waste Emplacement Report and the MgO safety factor calculation on the Emplaced Containers Underground Form 0420.

All records were found to contain the required information.

3.2 MAGNESIUM OXIDE BACKFILL

Magnesium oxide (MgO) is used in the repository as backfill, as specified in DOE's Compliance Application (CCA) and most recent application. EPA requires DOE to maintain an MgO safety factor of 1.67 or greater, which means that at least 1.67 times the needed MgO will always be in the repository to control chemical conditions and remove carbon dioxide gas. Only since 2005 has DOE had the capability to track the MgO and determine the safety factor on a room basis. Since EPA required DOE to track MgO in the WWIS, DOE has found out that many of disposal rooms have MgO safety factors greater than three, although some rooms with INL supercompacted waste have had to have significant amounts of MgO added to maintain the required safety factor. When average CPR amounts are included in the waste, the safety factor is well above the minimum. In the opening presentations, Hardy Bellows (WTS) identified that Room 1, Panel 2 required 30 MgO columns to achieve an MgO safety factor of 1.72 while Room 7, Panel 3 had an MgO safety factor of 4.03. DOE started specific tracking of MgO emplaced in Room 1, Panel 2 and Room 7, Panel 3.

WTS Technical Procedure WP 05-WH1011, *CH Waste Processing*, Section 5 requires MgO placement on top of the waste. Section 6.2 of the *CH Waste Processing* (WP 05-WH1011) document states the Waste Handling Engineer is to verify that the safety factor is greater than or equal to 1.67. Attachments to WP 05-WH1011 have been developed for recording the emplaced MgO underground or later entry into the WWIS. At the end of each shift the Waste Handling Engineer (WHE) inputs the emplaced waste and MgO information into the WWIS according to the WIPP Waste Handling Operations WWIS User's Manual (WP 05-

WH.01 Revision 0). The EPA inspectors observed that MgO had been placed properly in each row that was visible. The MgO is placed on top of each waste column in supersacks [Figure 3] or on the BRTs [Figure 2] when additional MgO is needed.

Checklist items 8-10 deal specifically with the issue of MgO management and the objective evidence that demonstrates DOE has the appropriate process for ensuring that the MgO is properly emplaced. In addition to the requirement in WTS Technical Procedure WP 05-WH1011, *CH Waste Processing,* DOE uses training notes that describe the decision process on how, when and where additional MgO is placed. DOE plans to put this training information in a revised WIPP Waste Handling Operations WWIS User's Manual (WP05-WH.01, Revision 2). The training notes are provided as Attachment C and the draft decision tree/flowchart is provided as Attachment D. In addition, and example of the MgO safety factor evolution is provided for Room 3, Panel 3 in emails from DOE staff to EPA staff and in Figures 4-7.

Figure 3. DOE is emplacing waste stacked 2-3 containers high topped with MgO Supersacks. This picture shows all container types being shipped to date. Large drums are Ten Drum Overpacks (TDOPs), black barrels are 100-gallon drums with supercompacted waste, standard waste boxes, and standard 55-gallon drum 7-packs.

3.3 COMPARISON WITH INVENTORY LIMITS

EPA has established limits for certain important waste components at WIPP by approving a performance assessment. Some limits, such as for iron and other metals, are minimum limits. The amount of iron base metal alloys is approximately 3.22×10^6 kg of the 2×10^7 kg needed by closure, but steel provides an additional 7.99×10^6 kg, so that WIPP has attained over two-thirds of the iron needed. With over 270,000 kg of aluminum and other non-ferrous metals, the WIPP has already exceeded the minimum amount for the limit DOE identified in the CCA and CRA.

Other waste component limits are maximum limits. Of special concern is the maximum limit on the total amount of cellulosic, plastic and rubber materials (CPR). In the CCA, DOE identified that the limit for CPR was 2.2×10^7 kg. However, during the first WIPP recertification process, DOE added packaging materials to the calculations, so that the CPR limit for WIPP is now 2.4×10^7 kg.

As of July 31, 2006 the WIPP contained 2.1×10^6 kg of CPR in waste and 0.8×10^6 kg of CPR in packaging material for a total of approximately 2.9×10^6 kg of CPR (from WWIS query in Attachment B). Most of this is split between the cellulosic and plastic materials; the mass of rubber materials accounts for about 7% of the total mass of CPR. Thus, the WIPP contains about 13% of the CPR limit with two of the ten planned panels complete.

4.0 UNCERTAINTIES

In the March 2006 recertification decision, EPA could not identify that DOE characterized the uncertainty in the CPR amounts in the inventory (CARD 194.24). EPA stated in the recertification decision that the use of point estimates for waste components (i.e., CPR) was acceptable for now, and identified that DOE needs to better demonstrate knowledge of the measurement uncertainty for the next recertification and include these uncertainties into the PA process. In the waste characterization process, radionuclide measurement errors are noted and included in the WWIS. CPR is an important component, but in this inspection, EPA confirmed that DOE does not track the uncertainty in the CPR amounts according to the requirement in 40 CFR 194.24 (c)(1). EPA does not consider this issue to currently be a finding and is discussing the issue with DOE outside of the inspection process. However, EPA will be looking to DOE for an appropriate resolution of this issue.

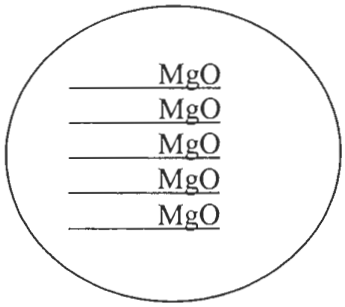
5.0 SUMMARY OF RESULTS

The inspectors reviewed the TRU waste emplacement operation and the associated documentation for selected shipments. EPA determines that DOE is adequately emplacing waste in the repository as specified in DOE's procedures and EPA requirements. EPA also determines that DOE is fulfilling commitments made in the CCA and CRA related to waste and MgO emplacement. EPA concluded from this inspection that DOE's emplacement activities are adequate, the CPR is appropriately tracked, the safety factor is calculated properly along with the additional MgO needed (since DOE began to track the MgO), and that the MgO is emplaced properly. DOE calculated that the current safety factor is above the mandated 1.67 for closed rooms since the tracking officially began with Room 1, Panel 2 and Room 7, Panel 3. EPA did not identify any findings during this inspection.

2006 EPA Emplacement Inspection Checklist

#	Question: Waste Emplacement	Comments and Objective Evidence		Results
1	Is waste being emplaced in the underground facility in the manner specified in DOE's Compliance Certification Application (CCA)?	Yes. Procedure WP 05-1011, Rev. 23, *CH Waste Processing*, steps 4 -7, pages 21 through 26 describe the emplacement process. Our visual observation of actual waste being put into Panel 3, Room 3 (See Figure 3 of main report) verify that waste is being emplaced appropriately.		Satisfactory
2	Are waste containers stacked in columns appropriately given the type of container?	Yes. Procedure WP 05-1011, Rev. 23, *CH Waste Processing*, Attachment 2, Payload Assembly Positioning. Our visual observation of actual waste being put into Panel 3, Room 3 (See Figure 3 of main report) verify that waste is being emplaced appropriately.		Satisfactory
3	Are records adequate? Randomly select three waste containers to verify records for waste approval, shipment, and receipt.	Shipment Number IN060376 IN060381 SR060038 LA060070	Container Number BN10103189 (SWB) BN10103086 (100-gal) SRTP01508 (TDOP) LAS851751 (55-gal)	Satisfactory
4	Does the WWIS adequately document waste shipment and emplacements information for waste containers selected item 3 above?	Yes. In the Waste Emplacement Report, the WWIS adequately documents waste shipment and emplacement information. DOE produced a Waste Emplacement Report (TP_WEP_6_21_2006) indicating container number, shipment number, and emplacement information in the underground (emplacement date, site generator identification, panel, room, row, column, and location within a column). Also, the information used in the WWIS is from the underground emplacement data and Attachment 4 of WO 05-WH1011 which is how the emplacement staff records the location in the underground. (TP_CHWPDS_6_21_2006)		Satisfactory

#	**Question: Waste Emplacement**	**Comments and Objective Evidence**	**Results**
5	Verify documentation for the containers listed in item 4 - waste generator site transmittal of waste to WIPP, WIPP approval, shipment certification for transport to WIPP, shipment initiation documentation, shipment received at WIPP records, waste emplaced in the underground, and placement of backfill [MgO].	Procedure WP 05-1011, Rev. 23, *CH Waste Processing Attachments* 3, 4, 5, and 6 document how waste containers and MgO are actually emplaced underground. *Waste Stream Profile Form Review and Approval Program* Inspector examined shipment reports and container reports generated by the WWIS computer based database system. Inspector verified that the WWIS documented that the generator site transmitted waste information to WIPP, WIPP reviewed and approved the waste for shipment, that waste was placed underground, and that MgO was properly emplaced.	Satisfactory
6	Is DOE properly emplacing backfill material (magnesium oxide [MgO]) with the waste packages?	Yes. Visual observation (See Figure 3 of main report). Procedure WP 05-1011, Rev. 23, *CH Waste Processing* Section 5.0, page 25, requires MgO to be emplaced.	Satisfactory
6a	Is the acceptance of the MgO backfill material from the supplier documented?	Yes. DOE gets a bill of lading and a chemical determination of content. (TP_MGO_1)	Satisfactory
7	Are Super Sacks placed on top of waste stacks as described in Volume 1, Section 3.3.3 of the CCA; approximately 4,000 lbs, multi-wall construction with a vapor and moisture barrier?	Yes. Visual observation (See pictures below).	Satisfactory
8	For the MgO needed for high CPR, are there procedures or documentation for the WHE or WHM (or other appropriate personnel) identifying **when** additional MgO is needed?	In the WIPP Waste Handling Operations WWIS User's Maual, WP-WH.01, Revision 0, 9/16/05. Data is input and then the MgO factor is calculated. Deficits (safety factor < 1.67) are highlighted in red, and surpluses are highlighted in green. 2005 Training notes address this. See Attachment C. The training notes will be superseded by the update WIPP Waste Handling Operations WWIS User's Manual (Attachment D).	Satisfactory

#	Question: Waste Emplacement	Comments and Objective Evidence	Results
9	Is there documentation that identifies, for the WHE or WHM (or other appropriate personnel), **where** the additional MgO should be placed?	DOE uses Big Red Things (BRTs) to hold columns of MgO when extra is needed. BRTs are noted in the underground map as a stack of 5 MgO layers as diagrammed below.  2005 Training notes address this. See Attachment C. The training notes will be superseded by the update WIPP Waste Handling Operations WWIS User's Manual (Attachment D).	Satisfactory
10	Is there documentation that identifies **how** the MgO should be placed with high CPR waste?	2005 Training notes address this. See Attachment C. The training notes will be superseded by the update WIPP Waste Handling Operations WWIS User's Manual (Attachment D).	Satisfactory
11	Is DOE properly tracking the MgO backfill so that the MgO safety factor can be accurately calculated?	Yes. WWIS Version 5.1 Software Validation Test, MgO Emplacement Process and Safety Factor Calculation, Revision 0, March 2, 2005 verifies that the WWIS software works as expected.	Satisfactory
12	Is DOE assuring that the 1.67 safety factor being maintained on a room basis? What methodology (equations) are being used to calculate the safety factor?	Yes. Procedure WP 05-1011, Rev. 22, *CH Waste Processing* Section 5.0 states the requirement that the safety factor of 1.67 must be maintained. Inspector examined screenshots in Supplemental Instructions for MgO Emplacement in WWIS, for the completed Panel 3, Room 4 that shows room MgO safety factor > 1.67. Screen shots below indicate that the MgO safety factor fluctuates with time. At the time of inspection, Panel 3, Room 3 had an MgO safety factor 1.51. Over a period of several weeks, the MgO safety factor changed. As of July 30, 2006, the safety factor had been increased to 1.79 with an excess of 20 MgO supersacks (see emails from Steve Casey to Tom Peake). DOE provided the source code for the calculation of the MgO safety in the file MgO SF Function.pdf.	Satisfactory

#	**Question: Waste Emplacement**	**Comments and Objective Evidence**	**Results**
13	Is DOE maintaining records of waste shipments and emplacement properly?	Yes, through the underground emplacement map and various WWIS reports.	Satisfactory
14	Do the characterization module, certification module, shipping module, and inventory module adequately record the required information?	Yes. DOE staff queried the WWIS for this information and demonstrated (via waste container reports, shipment reports and container approval rejection reports) that they adequately recorded the required information. Example documents produced: Shipment IN060381.pdf 55G Drum HBL040182.pdf Cntr App Rej 2006-06-18.pdf	Satisfactory
15	Characterization Module - Review a WWIS Waste Container Data Report. Does this report adequately record the Waste Stream Profile Form information?	Yes. See TDOP SRTP01508.pdf or 55G Drum HBL040182.pdf	Satisfactory
16	Characterization Module - Does the data administrator verify that DOE/CBFO has granted certification and transportation authority to the generator/shipper site prior to review of generator/shipper characterization data?	Yes. DOE provided documentation that the data administrator verifies the waste generator has approval to ship waste to WIPP. The procedure, Waste Stream Profile For Review and Approval Program WP08-NT.03 Revision 7, describes what a database administrator's duties are, and WWIS Review WSPF BN836.pdf is an example of the implementation of section 5 of that procedure generated by Mike Strum (WTS).	Satisfactory
17	Certification Module - Examine an Acceptance/ Rejection Report. Does this adequately record waste information?	Yes. It identifies the container and shipment information and the person who approved the shipment.	Satisfactory
18	Is the generator/shipper denied any further write access to certification information after the data passes the limit, edit check, and a review by the WWIS data administrator?	Yes. Users have different levels of authorization and privileges. WIPP Waste Information System User's Manual WWIS Version 5.2 identifies multiple processes and data checks.	Satisfactory

#	**Question: Waste Emplacement**	**Comments and Objective Evidence**	**Results**
19	Shipping Module - Review the Shipment Summary Report. Does the report correctly record the containers shipped?	Yes. Compared shipment data (from Shipment IN060381.pdf) to Waste Emplacement Report and the information is consistent.	Satisfactory
20	Inventory Module - Review the Waste Emplacement Report. Does this report adequately record the date of receipt, and disposal locations of containers?	Yes. The Waste Emplacement Report records container number, shipment number, emplacement data and underground location, and several other pieces of information. The data for containers viewed underground appear consistent with the Waste Emplacement Report.	Satisfactory
21	Does the WWIS properly track MgO emplaced quantity and location? Where is this described?	Yes. WO 05-WH1011, *CH Waste Processing*, Section 5.0 states that the required information is to be recorded in Attachment 6. Attachment 6 records the actual amount of MgO and its location in the waste room. This information is input by the waste handling engineer into the WWIS computer database in the Emplace Containers Underground screen.	Satisfactory
22	Does the WWIS accurately calculate the 1.67 safety factor and recommend the proper amount of MgO to emplace? Where has this been verified?	Yes. WWIS Software Validation Test, MgO Emplacement Process and Safety Factor Calculation Revision 0, March 2, 2005 documents the testing of the new modules added to WWIS to track MgO and calculate the safety factor on an ongoing basis room by room. At the time of the inspection (June, 2006), Panel 3, Room 3 was partially filled. The MgO Safety Factor was 1.51. As of July 31, 2006, the MgO Safety Factor was 1.79, according to Steve Casey (DOE). See emails and Figures 4-7below. Recently completed Panel 3, Room 4 had a 1.79 MgO Safety Factor as identified in a query performed for the inspectors.	Satisfactory

#	**Question: Waste Emplacement**	**Comments and Objective Evidence**	**Results**
23	Is MgO implementation appropriately documented? Where is it described?	The WWIS MgO SF calculation procedure is in section 6.2, WP 05-WH.01 (WIPP Waste Handling Operations WWIS User's Manual)	Satisfactory
24	Is there documentation that describes how the site will use and implement the MgO module of the WWIS?	WP 05-WH.01 WIPP Waste Handling Operations WWIS User's Manual identifies that the waste handling engineer is to input MgO data into the WWIS. This MgO safety factor calculation, performed at the end of each shift, is then used to determine whether additional MgO is necessary. (WP 05-1011, Rev. 23, *CH Waste Processing*)	Satisfactory
25	Does the WWIS capture measurement uncertainty for radioactivity? How is it calculated?	Yes. It is input by the sites and tracked in the WWIS.	Satisfactory
26	Does the WWIS capture measurement uncertainty for cellulosic, plastic and rubber materials? Other materials? How is it calculated?	The WWIS does not capture measurement uncertainty except for radioactivity and container mass. This checklist item was to confirm EPA's understanding that uncertainty was only tracked for radioactivity. This was raised in EPA's 2006 recertification of WIPP. EPA is separately reviewing this item and will identify, separately from this inspection, the importance of this topic.	Not satisfactory

Attachment A
Number of Contact Handled TRU Waste Containers
Underground at WIPP As of July 31, 2006

Site	100-gallon Drums	55-gallon Drums	Pipe Overpack	S100 Pipe Overpack	SWB	TDOP	85-Gal Overpack	Dunnage Drums	Dunnage SWBs	**2006 Total**	2005 Total
ANL-E	0	318	0	0	0	12	0	4	0	**334**	334
Hanford	0	3772	2093	0	8	208	0	78	0	**6159**	4566
INL	4842	16044	0	0	753	1400	0	525	0	**23564**	15949
LANL	0	4025	218	11	168	0	0	618	0	**5040**	1706
LLNL	0	678	0	0	2	0	0	8	0	**688**	688
NTS	0	1805	0	0	14	0	0	8	0	**1827**	1394
RFETS	0	15460	21174	0	3910	4	0	529	0	**41077**	41077
SRS	0	2268	0	0	350	1555	0	0	0	**4173**	3757
WIPP	0	2	0	0	0	0	2	2989	13	**3006**	731
Total	4842	44372	23485	11	5205	3179	2	4759	13	**85868**	70202

NOTE: The drums listed for WIPP consist of two drums of site generated waste, two drums from RFETS that were overpacked on site, with primarily empty dunnage drums but with some salt-filled dunnage drums.

Argonne National Laboratory - East (ANL-E)
Idaho National Laboratory (INL)
Lawrence Livermore National Laboratory (LLNL)
Nevada Test Site (NTS)
Waste Isolation Pilot Plant (WIPP)

Hanford Site (Hanford)
Los Alamos National Laboratory (LANL)
Rocky Flats Environmental Technology Site (RFETS)
Savannah River Site (SRS)

Drums = 55 gallon (208 liter or 0.208 m^3) steel drums
SWB = Standard Waste Box
Dunnage = inert drums used to complete waste assemblies

Pipe Overpack = 55 gallon drum pipe overpack except for the S100
TDOP = ten drum overpack

Attachment B
Weight (Mass) of Materials Emplaced in WIPP as of July 31, 2006*

HA	WASTE_MATL_PARM	TYPE	DESCRIPTION	MATL_WGT (kg)
	16	Emplacement	MAGNESIUM OXIDE	15643875.1
	18	Emplacement	CELLULOSIC EMPLACEMENT MATERIAL	59351.87
	20	Emplacement	PLASTIC EMPLACEMENT MATERIAL	224400.35
CH	1	Waste	IRON BASE METAL ALLOYS	3217775.55
CH	2	Waste	ALUMINUM BASE METAL/ALLOYS	30779.09
CH	3	Waste	OTHER METAL/ALLOYS	244174.78
CH	4	Waste	OTHER INORGANIC MATERIALS	902337.45
CH	6	Waste	CELLULOSICS	661553.94
CH	7	Waste	RUBBER	141711.42
CH	8	Waste	PLASTICS	1336459.69
CH	9	Waste	SOLIDIFIED INORGANIC MATERIAL	3973468.03
CH	10	Waste	SOLIDIFIED ORGANIC MATERIAL	210192.67
CH	12	Waste	SOILS	9156.86
CH	13	Steel Packaging	STEEL CONTAINER MATERIALS	7985540.67
CH	14	Plastic Packaging	PLASTIC/LINERS CONTAINER MATERIALS	460803.85
CH	15	Cellulosic Packaging	CELLULOSICS PACKAGING MATERIALS	822714

*From an August 14, 2006 email from Dave Speed (WTS) to Tom Peake (EPA)

Inspection Checklist Appendix
Emails Related to MgO Safety Factor History for Room 3, Panel 3

7/31/06 email from Steve Casey (DOE) to Tom Peake (EPA)
Tom,
The decision is still a human judgment determination - the two documents WP 05-WH.01 and WH1011 are used as standard practices for most situations. Prior to making the call on whether or not to add additional MgO, it is important to know the next two weeks or more of shipments from the various sites. As we stated previously, no room will be closed until the safety factor is at, or above the required amount (currently 1.67).
Steve

7/31/06 email from Steve Casey (DOE) to Tom Peake (EPA)
Tom,
As of July 30, Room 3 of Panel 3 is at Row 102, with a calculated MgO SF= 1.79 (20 excess sacks; no BRTs emplaced).
Steve

7/12/06 email from Steve Casey (DOE) to Tom Peake (EPA)
Attached is a screen shot from the WWIS showing where we're at as of last night...

SF = 1.64
Sacks needed = 4

Room 3 is still being filled - today we're emplacing containers at and beyond row 64. While it shows a 'deficit' of 4 sacks, we anticipate with the lower-CPR waste that is coming in the next two weeks that we will not need to emplace a "BRT" any time soon.
Steve

Attachment C

2005 Training Notes For Waste Handling Engineers

The purpose of this training is to provide information for Waste Handling Managers, Superintendents and Engineers to effectively evaluate changes in repository room Safety Factor (S.F.), and make informed decisions related to Magnesium Oxide (MgO) emplacement activities required for the disposal of Supercompacted Waste, including:

1) Requirements related to the EPA mandated Safety Factor of 1.67, waste stream Cellulosics, Plastics, and Rubber (CPR) contents, and impacts to long term repository performance.
2) Administrative steps to be performed to support maximizing the existing disposal volume in the Underground while maintaining compliance with EPAs minimum specified disposal room safety factor of 1.67.

As stated in WP05-WH1011, section 5.0, CH Waste Processing, once waste/MgO emplacement is performed, the information is uploaded to the WWIS and room safety factors are calculated. The result of the calculation will be one of two conditions:

- Room Safety Factor (S.F.) $\geq$ **1.67**
  1) Activities continue for emplacement of waste and MgO.

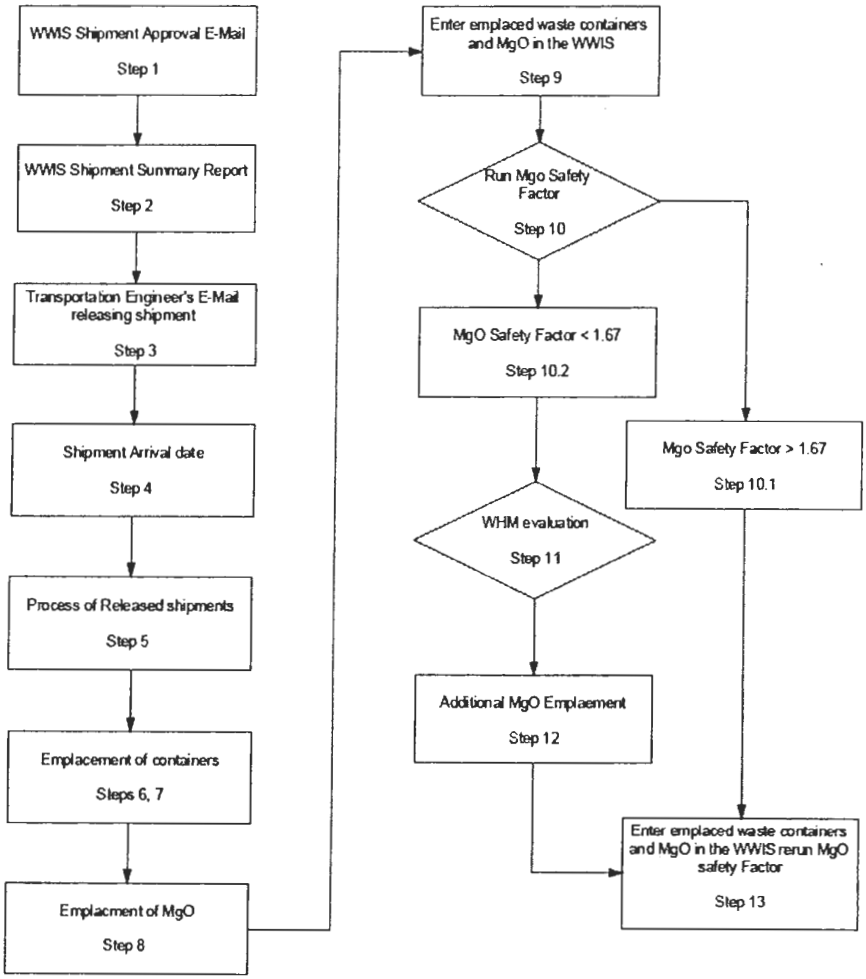
- Room Safety Factor (S.F.) $<$ **1.67**
  1) The Waste Handling Manager (WHM) is notified and the following conditions are evaluated:
     A) Current emplacement location and remaining volume in the disposal room;
     B) Near future waste stream expectations for CPR content, including which generator sites are shipping to WIPP at what rates;
     C) Number of additional supersacks currently required;
  2) From the responses to these questions decisions are made to initiate emplacement of additional MgO. The emplacement of additional MgO may occur immediately, or be planned for future shifts.
  3) If additional MgO is emplaced, it is performed utilizing the existing emplacement racks for purposes of personnel safety related to stacking the supersacks. MgO will normally be emplaced in complete rows to obtain the most efficient repository geometry, but may be emplaced in single columns at the discretion of the WHM.
  4) Once the emplacement activities are completed, the data is uploaded to the WWIS. At that point more MgO emplacements may be planned if necessary or operations may continue to emplace additional waste.

Attachment D
Draft Procedure Flowchart for Adding MgO

DRAFT

WIPP Waste Handling Operations WWIS User's Manual
WP 05-WH.01, Rev. 2

Attachment 1 - Special Requirements for Additional MgO



Figures Illustrating the MgO Safety Factor Evolution for Room 3, Panel 3

Figure 4. Room 3, Panel 3 MgO Safety Factor Calculation for June 5, 2006

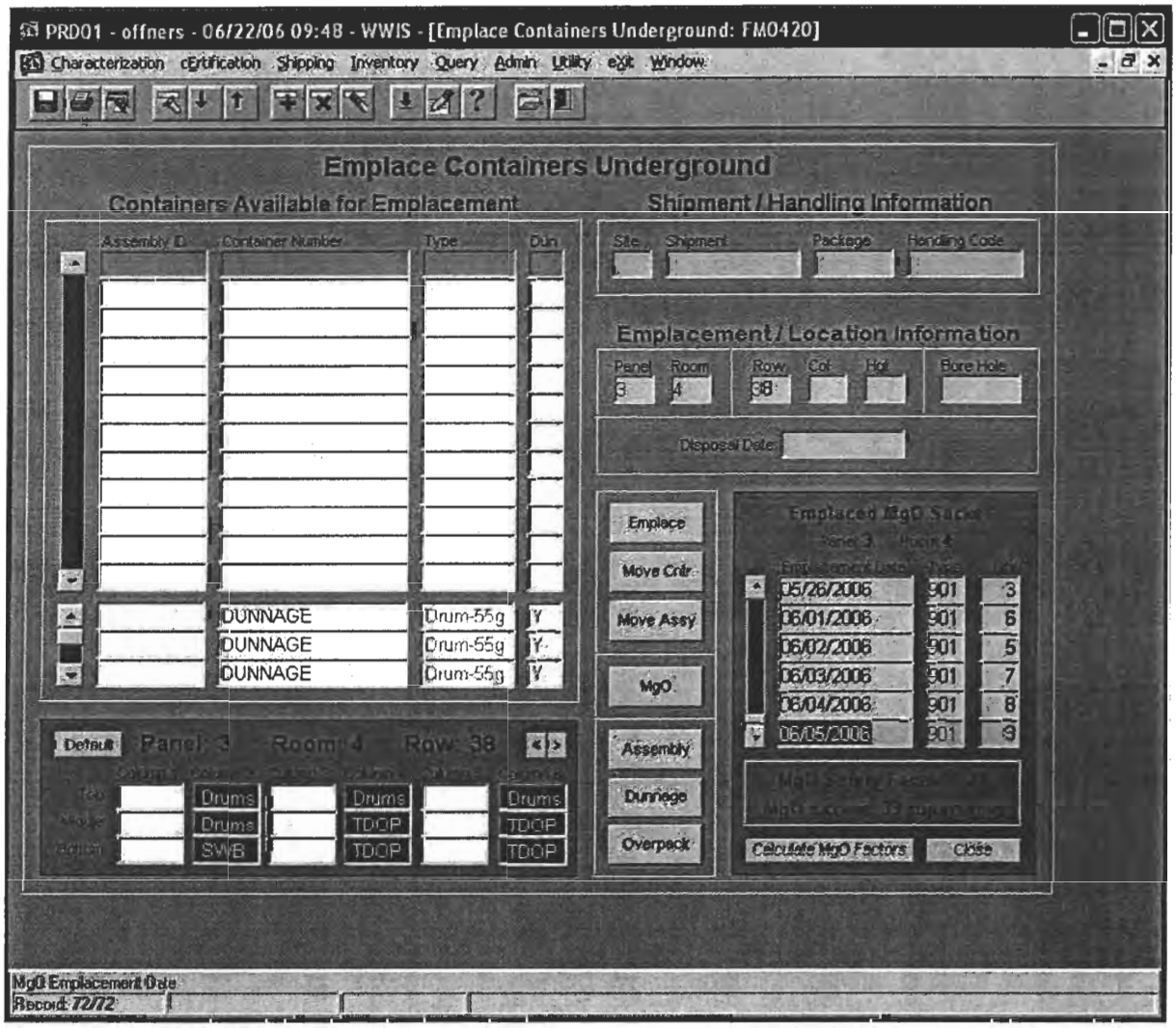


Figure 5. Room 3, Panel 3 MgO Safety Factor Calculation for June 21, 2006

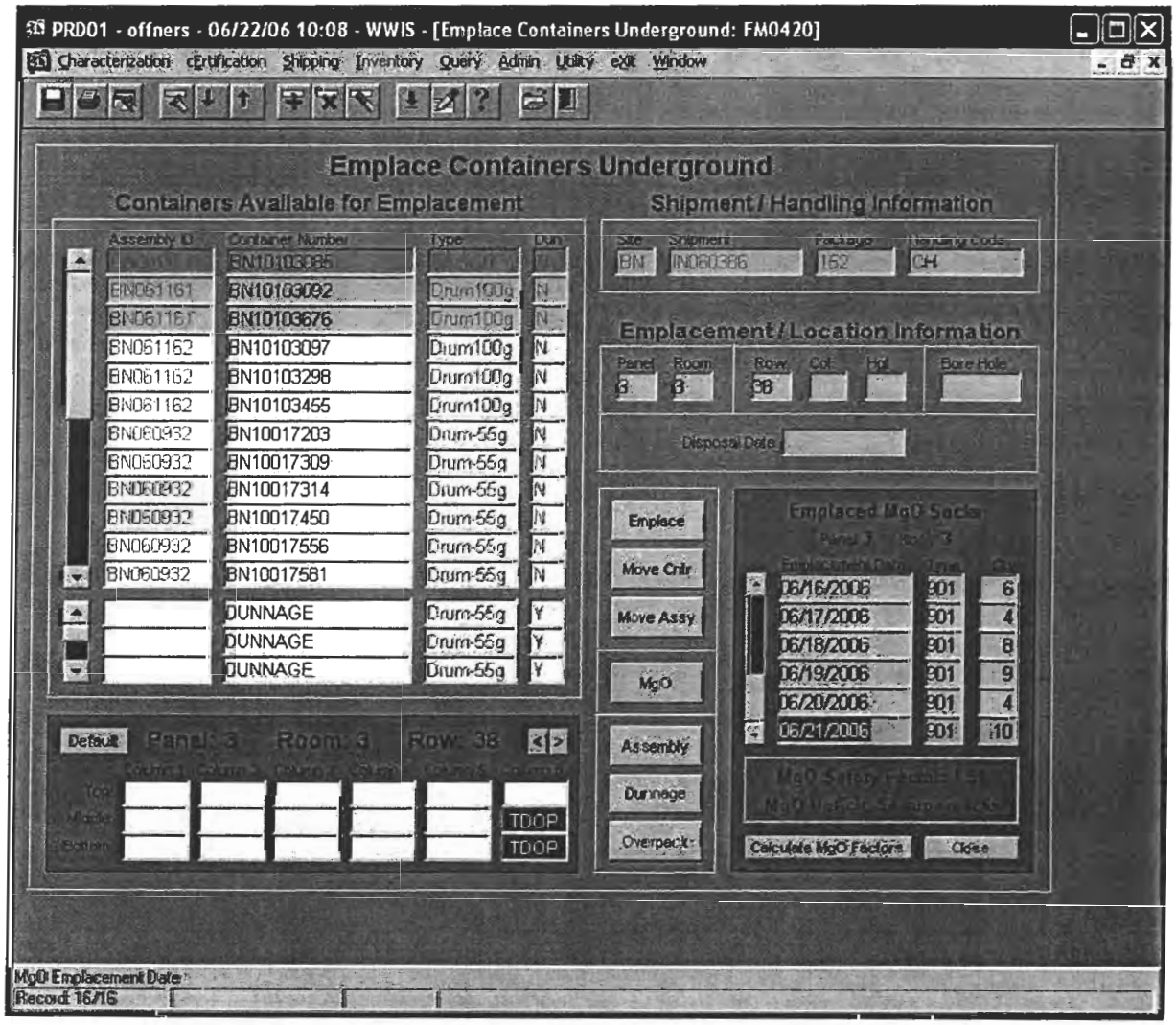


Figure 6. Room 3, Panel 3 MgO Safety Factor Calculation for July 11, 2006

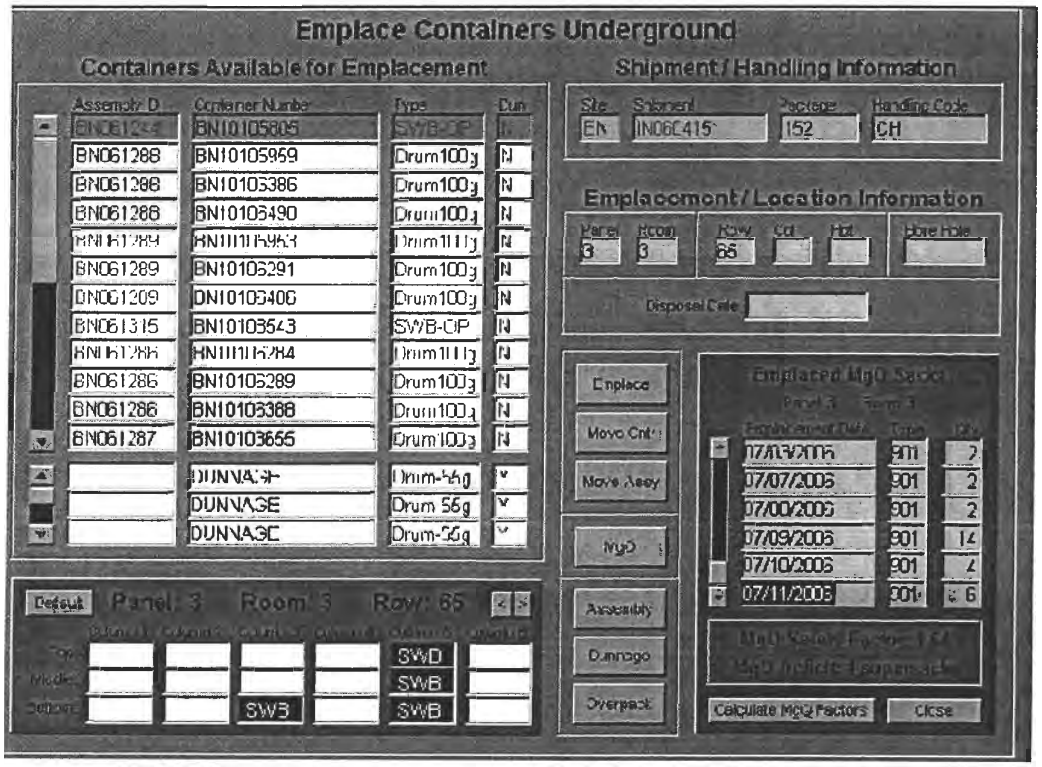


Figure 7. Room 3, Panel 3 MgO Safety Factor Calculation for August 27, 2006