J. Zwick L- 109

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

OCT 2 2 2003

OFFICE OF
AIR AND RADIATION

Dr. Inés Triay, Manager
Carlsbad Area Office
U.S. Department of Energy
P.O. Box 3090
Carlsbad, NM 88221-3090

Dear Dr. Triay:

This letter provides the results of the U.S. Environmental Protection Agency's (EPA) inspections for EPA-WIPP-6.03-17a (Subpart A), EPA-WIPP-6.03-17b (waste emplacement), and EPA-WIPP-6.03-17c (parameter monitoring) of the Waste Isolation Pilot Plant (WIPP). EPA performed these inspections on June 17-18, 2003, under authority of 40 CFR 194.21.

During these inspections, EPA identified one observation for monitoring activities and one finding for the emplacement activities. For monitoring, Department of Energy (DOE) agreed to more clearly report the data for the specific parameters that DOE committed to monitor in the Compliance Certification Application (CCA). During the emplacement inspection, EPA could not determine that the waste was being emplaced in a random (i.e. homogeneous) manner. To resolve this finding, DOE must perform additional analysis to confirm that the actual emplaced waste loading does not adversely affect the long-term performance of the WIPP disposal system. We expect that such analyses can be completed as part of the recertification process, which would also provide updated inventory estimates based on waste already emplaced or characterized for WIPP disposal.

We also determined that DOE is in compliance with the requirements of 40 CFR Part 191, Subpart A.

If you have any questions regarding the enclosed reports, please call Betsy Forinash at (202) 564-9233.

Sincerely,

Frank Marcinowski, Director
Radiation Protection Division

UNIQUE #	DOE LPC	DATE REC'VD	ADDRESSEES
0306495	5486.00	OCT 29 2003	J. Triay G. Holland R. Patterson

C. Cadbury

Enclosures

cc: Ava Holland, CBFO
Russ Patterson, CBFO
Casey Gadbury, CBFO
Alton Harris, DOE/HQ
Matthew Silva, EEG
Steve Zappe, NMED
WIPP Docket

DOCKET NO: A-98-49
Item: II-B3-53

Subpart A Inspection Report

INSPECTION No. EPA-WIPP-6.03-17a
OF THE
WASTE ISOLATION PILOT PLANT
June 17-18, 2003

U. S. ENVIRONMENTAL PROTECTION AGENCY
Office of Radiation and Indoor Air
Center for Federal Regulation
1200 Pennsylvania Avenue, NW
Washington, DC 20460

October 2003

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Attachments

Attachment A — Inspection Plan and Checklist
-Plan File: 060403 2003 Subpart A Inspection Plan FINAL.wpd
-Checklist File: 071703 2003 Subpart A Checklist FINAL.wpd

Attachment B — Opening and Closing Sign Up Sheets

Attachment C — Documents Reviewed Tables
-File 1: 071703 2003 Subpart A Documents Reviewed A Final.wpd
-File 2: 071703 2003 Subpart A Documents Reviewed B Final.wpd
-File 3: 071703 2003 Subpart A Documents Reviewed C Final.wpd
-File 4: 071703 2003 Subpart A Documents Reviewed D Final.wpd
-File 5: 071703 2003 Subpart A Documents Reviewed E Final.wpd

Attachment D — Documents Reviewed
File(s) Received:
COB-A2003-AA, #29
COB-A2003-AA2, #30
COB-A2003-AB, #31
COB-A2003-AC, #32
COB-A2003-AD, #33
COB-A2003-AE, #34
COB-A2003-X11 to X15, #28
COB-A2003-V1 and V2, #27
COB-A2003-AG, #36
Document(s) Received:
COB-A2003-AA2, #30
COB-A2003-AD, #33
COB-A2003-X11 to X15, #28

1.0 Executive Summary

The U.S. Environmental Protection Agency (EPA) conducted an annual inspection of the Department of Energy (DOE) Waste Isolation Pilot Plant (WIPP) on June 17-18, 2003 as part of our continuing oversight program. This inspection was conducted under the authority of 40 CFR 191, Subpart A. The purpose of this inspection was to verify that DOE was in compliance with the dose release standard found at 40 CFR 191.03.

Inspectors reviewed DOE's ability to monitor radiation releases to the public due to normal waste disposal operations and any unplanned or accidental releases that might occur during disposal operations. There have been no such releases to date. Inspectors examined WIPP's emission control devices and methods used to estimate radiation doses to the public. In addition, we inspected radiation sample locations and equipment, sample processing, and reviewed the computational methods used to estimate doses.

We found that DOE continued to improve its air monitoring program during the past year, has an effective radiation sampling program, and can calculate both yearly and accidental dose estimates adequately. We have no findings, concerns, or observations.

2.0 Inspection Scope

The scope of this inspection was to verify that WIPP continues to capture, measure, and calculate radiation dose to members of the public during waste disposal operations effectively. Inspection activities included an examination of monitoring and sampling equipment both on and off site, and in the underground. This inspection was conducted under the authority of 40 CFR 191, Subpart A (Attachment A)

During this inspection the Agency selected the following areas: representativeness of samples acquired (COB-A2003-AA), salt loading of filters by continued mining operations (COB-A2003-AD), consequence dose assessment of any projected release of radioactive material(COB-A2003-X11 to X15), inspection and cleaning of Station A sample probes (COB-A2003-V1and V2), and calibration of Station A equipment (COB-A2003-AG).

3.0 Inspection Team, Observers, and Participants

The inspection team consisted of four representatives of the EPA Administrator. An observer from the Environmental Evaluation Group (EEG), Thomas Klein, was also present. (Attachment B).

Inspection Team Member	Position	Affiliation
Chuck Byrum	Inspection Team Leader	EPA
Nick Stone	Inspector	EPA
Tom Peake	Observer	EPA
Shankar Ghose	Observer	EPA

Numerous DOE staff and contractors participated in the inspection, below is a partial list.

DOE/Contractor Participates	Organization	Affiliation
Russ Patterson	PA Manager	DOE/CBFO
Linda Frank-Supka	S&H	WTS
Dave Kump	Rad Saf & Emerg Mgmt	WTS
Ed Flynn	OPS	WTS
Hung-Chen Chiou		WTS
Ricardo Sanchez	IWOP	WTS
Ernie Endes	IWHE	WTS
Jim Kenney		CTAC
Lisa Will	QA	WTS

The inspection began on Tuesday, June 17, 2003, with a presentation by Dave Kump about the present status of the WIPP radiation monitoring program. He discussed changes in the program (COB-A2003-AA) since the last EPA inspection. This discussion included the following changes to the program at WIPP during the past year:

Station A -

- The single differental pressure transmitter was replaced by individual pressure transmitters for each Fixed Air Sampler on each skid.
- A temperature and humidity sensor was added to each skid.
- A gauge pressure transmitter was added to measure the vacuum in the transport line on each skid.
- A personal computer based monitoring system was installed to log data provided by the

instrumentation installed on each skid.

- Motor-operated values added to Skids A-1 and A-2.
- Procedure that specifies the cleaning and inspection of shrouded probes at Station A has been modified to allow replacement of an encrusted shrouded probe tip with a clean tip, as opposed to cleaning in place.
- A semi-annual cleaning schedule was established for the Station D probe.
- DOE developed a new section of WP 12-HP3200 Radioactive Material Control describing the sample collection protocol during an actual release from the WIPP.
- Testing is underway of new RADOS CAMs (COB-A2003-AE) in the underground.

The inspection team observed various activities to verify effective implementation of procedures. The team reviewed consequence assessment procedures and implementation, interviewed site staff about the steps involved in an accidental response scenario, toured the radio chemical laboratory and reviewed the process used to inspect and clean sampling probes. This year the inspectors asked DOE/WTS staff to walk-through the steps necessary to calibrate the equipment at Station A, using procedure IC041072, Calibration of Effluent Monitoring Skids A-3, B-1, and B-2 (COB-A2003-AC, #32) implementation.

4.0 Performance of the Inspection

Calibration of Station A -

Ed Flynn (COB-A2003-AB, #31), Manuel Fierro and Randy Mason (See Figure 1) demonstrated the calibration of the Station A, A-3 sampling probe using procedure IC041072, Calibration of Effluent Monitoring Skids A-3, B-1, and B-2 Revision 4 (COB-A2003-AC, #32). COB-A2003-AG (#36) are examples of the documents produced during the calibration process. This calibration activity is performed once each year to assure that the air flow of the sampling system is operating effectively. These staff members were able to verify that they can implement the calibration procedure properly.

Figure 1 Station A Calibration

Consequence Assessment -

Hung-Cheng Chiou demonstrate the usage of procedure WP 12-ER4916, Consequence Dose Projection (COB-A2003-X, #25) in the event of an accidental release of radioactive materials. COB-A2003-X11 to X15 (#28) are examples of the computer code GXQ input files and the EXCEL spreadsheet used to calculate the final dose for various release scenarios. Dr. Chiou demonstrated that DOE/WTS is prepared to estimate potential radioactive releases if they

should happen.

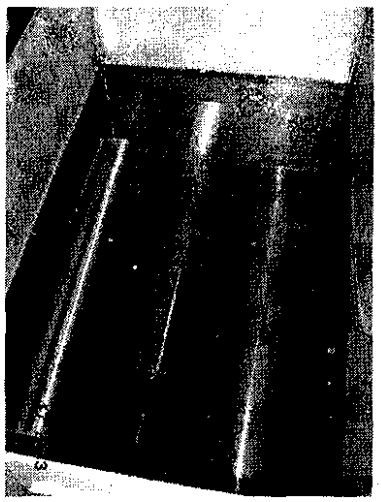

Figure 2 Probe Cleaning

Probe Inspection and Cleaning -

PM364005, Inspection and Cleaning of Station "A" Sample Probes (COM-A2003-V, #23, Section 8.1.12) states that the sampling probe is replaced during each inspection. Ernie Endes discussed the new approach to inspecting and cleaning sampling probes (COB-A2003-AA2, #30). Probes are now changed monthly rather than cleaned in-place as before. Probes exchanged monthly are soaked in a cleaning bath to remove salt deposits (Figure 2 and 3).

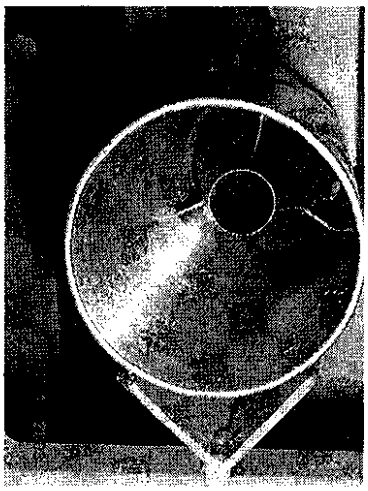

Figure 3 Cleaned Probe

RADOS CAM -

DOE has installed a number of RADOS continuous air monitors (CAMs) (Figure 4) in the waste handling building. These CAMs have a number of advantages over previous CAMs (COB-A2003-AE, #34), in particular the ability to automatically change filters when circumstances warrant, such as increased salt loading due to mining of new waste panels. The first underground test of the RADOS CAM appears encouraging. If this CAM can be shown to work effectively underground then this will be a significant improvement over previous CAMs used underground. The Agency strongly supports these program improvement efforts.

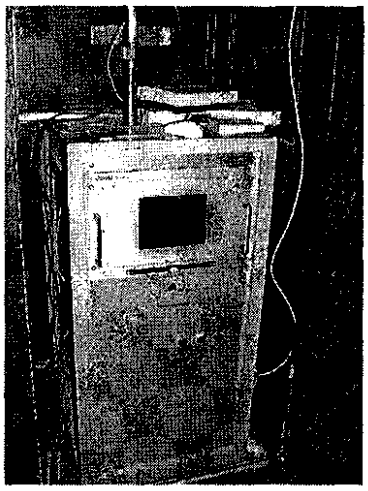

Figure 4 RADOS CAM

DOE/WTS was able to demonstrate, even though Station A continues to be a challenging sample location, that they are able to collect representative samples most of the time. Various underground CAMs provide an additional "defense-in-depth" that helps to assure that DOE/WTS will capture a release and be able to estimate its impact and calculate importance. The addition of RADOS CAMs may continue to enhance this effort.

5.0 Summary of Findings

Inspectors concluded that DOE adequately implemented a radiological monitoring and sampling program for WIPP disposal operations and appropriately performed calculations to estimate potential releases to the public. We have no findings, concerns, or observations.

Attachment A

Inspection Plan and Check list

-Plan File: 060403 2003 Subpart A Inspection Plan FINAL.wpd
-Checklist File: 071703 2003 Subpart A Checklist FINAL.wpd

WIPP Inspection Plan - 40 CFR 191, Subpart A for the year 2003.

Purpose: EPA will verify that the Department of Energy (DOE) has been monitoring and calculating possible radiation doses to members of the public due to both actual normal operations and any unplanned or accidental releases which may have occurred during the past year. This inspection is conducted under the authority of 40 CFR 191, Subpart A. This inspection is part of EPA's continued oversight to ensure that WIPP can, during the operational phase of management and storage of radioactive waste, comply with the limits expressed in Section 191.03 Standards.

Scope: The scope of this inspection activity is to verify that DOE at WIPP has measured and calculated any actual or potential radiation dose to members of the public during management and storage of radioactive waste during the past year of site operation. Inspection activities will include an examination of the description of monitoring and sampling equipment both on and off site, and in the underground.

The specific purpose of this inspection is to verify and confirm that DOE at WIPP has complied with the "Compliance reporting" expectations of EPA 402-R-97-001, Section 4.2, Page 15. In particular, EPA wishes to verify that DOE's "Compliance with the Subpart A standard is demonstrated by showing that the annual radiation dose to any member of the public in the general environment falls below the regulatory limits."

Location: This inspection will be held at the WIPP facility located twenty-six miles south east of Carlsbad, New Mexico and the surrounding vicinity as needed.

Duration: The EPA expects to complete its inspection in two days. Each day will begin with an opening meeting at 8:00 a.m. and end at 5:00 p.m. with a closeout session.

Expected Dates: June 17, 2003 to June 18, 2003.

Information Requested: Before the inspection provide the most recent annual Safety Analysis Report, information that describes how measurements are taken, and complete documentation that shows how compliance calculations are performed with an explanation of all input parameters and their derivation and all pertinent related to Subpart A requirements.

File: 060403 2003 Subpart A Inspection plan FINAL.wpd

Part 191 Subpart A for year 2003 - Compliance Reporting Checklist

#	Question	EPA Citation	Comment (Objective Evidence)	Result
	40 CFR 191.03 Compliance Standard			
	Does DOE "...provide reasonable assurance that the combined annual dose equivalent to any member of the public in the general environment resulting from: (1) Discharges of radioactive material and direct radiation from such management and storage and (2) all operations covered by Part 190; shall not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other critical organ."	40 CFR 191.03 Subpart A - Environmental Standards for Management and Storage	DOE has demonstrated that they can capture, measure, and calculate releases to assure that they are and remain below these limits.	Sat.
	Scope of activities considered in determining compliance			
1	Does DOE demonstrate that all activities at the WIPP up until the point of disposal are considered in determining compliance?	EPA 402-R-97-001 Section 2.3, Page 4	The Site Environmental Report (COB-A2003-C) documents the results of DOE/WIPPs efforts to consider all activities that impact compliance.	Sat.
2	Does DOE demonstrate that radiation doses to the public due to 1) actual normal operation and 2) any unplanned or accidental releases are examined?	EPA 402-R-97-001 Section 2.3, Page 5	Section 3.2 of COB-A2003-A, documents the program planned to show how this requirement is examined. COB-A2003-F, documents the QA requirements for the sampling of emissions. COB-A2003-I demonstrate that normal operations are examined. COB-A2003-G documents DOE's review of potential accidents at WIPP. Procedure WP 12-HP4000 (COB-A2003-J) documents emergency responses.	Sat.
	Media considered in determining compliance			
3	Does DOE demonstrate that the air pathway is the credible release pathway?	EPA 402-R-97-001 Section 2.4, Page 5	COB-A2003-G, Chapter 5 page 5.2-11 of the SAR (DOE/WIPP-95-2065, Rev. 6) documents that the air pathway is the only credible release pathway.	Sat.
4	Does DOE demonstrate that other exposure mechanisms from an air release could include inhalation of contaminated air, immersion in a plume of radioactive particles, ingestion of soil on which contaminated particles have been deposited, swimming in ponds in which radionuclides have been deposited are considered?	EPA 402-R-97-001 Section 2.4, Page 5	Section 2.1 and 3.5 of COB-A2003-A documents the detailed plan for measurements these potential exposure mechanisms. COB-A2003-I demonstrates that these exposure mechanisms are included.	Sat.

#	Question	EPA Citation	Comments (Objective Evidence)	Results
	Media considered in determining compliance			
5	Is DOE monitoring the expected air exhaust pathway and performing environmental monitoring of other release points and exposure pathways to confirm air exhaust as the only release pathway?	EPA 402-R-97-001 Section 2.4, Page 5 and page 6.	Section 2.1 of COB-A2003-A explains DOE plan to fulfill this requirement. COB-A2003-C demonstrates that DOE implements a groundwater surveillance, biota sampling and off-site air monitoring programs.	Sat.
	Boundary of compliance			
6	Does DOE demonstrate compliance at the "exclusive use area" boundary? If not, does DOE justify changing this boundary?	EPA 402-R-97-001 Section 2.5, Page 6. EPA 402-R-97-001 Section 2.5, Page 7	Section 3.1 of COB-A2003-A states that the "Exclusive Use Area" will be used as the boundary for 40 CFR 191 Subpart A compliance.	Sat.
	Location of maximally exposed individual			
7	Does DOE examine radiation doses to individuals at any offsite point where there is a residence, school, business, or office? (Such as grazing, mining, or oil drilling in the vicinity.)	EPA 402-R-97-001 Section 2.6.1, Page 8	COB-A2003-I demonstrates that DOE does consider doses at appropriate offsite points, such as Smith Ranch located 7.5 km away in the WNW sector of WIPP.	Sat.
8	Does DOE analyze potential exposure pathways and examine demographic information and conduct field investigations to identify the location of actual individual who could be exposed via those pathways?	EPA 402-R-97-001 Section 2.6.1, Page 8	COB-A2003-I demonstrates that DOE does consider doses at appropriate offsite points, such as Smith Ranch located 7.5 km away in the WNW sector of WIPP.	Sat.
9	Does DOE conduct separate analyses of potential dose received from each exposure pathway? Then does DOE assume that a member of the public resides at the single geographic point on the surface where the maximum dose would be received?	EPA 402-R-97-001 Section 2.6.1, Page 8	COB-A2003-G Section 5.2.1.1 describes the selection of the MEI location. COB-A2003-I Section 6 demonstrates that DOE does consider doses at appropriate offsite points, such as Smith Ranch located 7.5 km away in the WNW sector of WIPP.	Sat.

#	Question	EPA Citation	Comments (Objective Evidence)	Results
	Personal parameters			
10	Does DOE assume that the individual exhibits personal characteristics of the "reference man" when evaluating radiation dose to the maximally exposed individual?	EPA 402-R-97-001 Section 2.6.2, Page 8	Section 3.2 of COB-A2003-A describes the "reference man" parameters as described in the CAP88-PC computer code. COB-A2003-I demonstrates that "reference man" is used to evaluate radiation doses.	Sat.
	Calculation of dose - Modeling - Parameters			
11	Does DOE provide both whole body radiation dose and critical organ radiation dose for the maximally exposed individual (or a hypothetical individual conservatively located at a point of higher exposure)?	EPA 402-R-97-001 Section 2.7.1, Page 8	COB-A2003-I demonstrates that DOE appropriately fulfills the requirements of #11.	Sat.
12	Does DOE calculate radiation doses including all release points and reflecting evaluation of all exposure pathways?	EPA 402-R-97-001 Section 2.7.1, Page 8	Section 2.1 COB-A2003-A states that the air pathway is the most credible but other exposure pathways will be monitored. COB-A2003-I demonstrates that all release points are evaluated.	Sat.
13	Does DOE use computer modeling to calculate radiation doses for compliance with the Subpart A standard?	EPA 402-R-97-001 Section 2.7.2, Page 9	Section 3.2 of COB-A2003-A states that a computer model will be used to calculate radiation doses. COB-A2003-I demonstrates that DOE is using computer modeling.	Sat
14	Does DOE use CAP88-PC to perform dose calculations?	EPA 402-R-97-001 Section 2.7.2, Page 9	Section 3.2 of COB-A2003-A states that CAP88-PC is used for dose calculations. COB-A2003-I demonstrates that DOE is using CAP88-PC.	Sat.
15	Does DOE use an alternate model for calculating radiation doses? If so, does DOE justify such usage?	EPA 402-R-97-001 Section 2.7.2, Page 10	Section 3.2 of COB-A2003-A states that DOE uses the atmospheric dispersion code (CXQ) to determine concentrations for accidental releases.	Sat.
16	Does DOE adequately support exposure parameters used in dose calculations?	EPA 402-R-97-001 Section 2.7.3, Page 10	COB-A2003-I demonstrates that DOE is using appropriate parameters in dose calculations.	Sat.

#	Question	EPA Citation	Comments (Objective Evidence)	Results
	Calculation of dose - Modeling - Parameters			
17	Does DOE document that "conservative simplifying assumptions" are used in the radiation dose calculations?	EPA 402-R-97-001 Section 2.7.3, Page 10	COB-A2003-I demonstrates that DOE is using conservative simplifying assumptions in dose calculations.	Sat.
18	Are DOE's exposure parameters as conservative as the following? For a maximally exposed individual located at a residence, assumed continuous exposure (24 hours per day). For a maximally exposed individual located at a business, office, or school, assume exposure of 8 hours per day. Assume individuals consume 3 liters per day of drinking water from an underground source of drinking water. Assume inhalation rate for air to be 9E+5 cm3/hr. Assume ingestion rate of meat to be 85 kg/yr. Assume ingestion rate of leafy vegetables to be 18 kg/yr. Assume ingestion of milk to be 112 liter/yr. Assume ingestion rate of produce to be 176 kg/yr.	EPA 402-R-97-001 Section 2.7.3, Page 10	Section 3.2 of COB-A2003-A states that DOE is using these values as exposure parameters. COB-A2003-I demonstrates that DOE is using these parameters in dose calculations.	Sat.

#	Question	EPA Citation	Comments (Objective Evidence)	Results
	Emissions and Environmental Monitoring - Air			
19	Does DOE demonstrate that effluent flow rate measurements are made using Reference Method 2 of Appendix A to 40 CFR Part 60 to determine velocity and volumetric flow rate for stacks and large vents?	EPA 402-R-97-001 Section 3.1, Page 11, (1(i))	COB-A2003-F Section 4.1 documents that this requirement is appropriately implemented at WIPP.	Sat.
20	Does DOE demonstrate that effluent flow rate measurements are made using Reference Method 2a of Appendix A to 40 CFR 60 to measure flow rates through pipes and small vents?	EPA 402-R-97-001 Section 31, Page 11, (1(ii))	Not applicable at WIPP. Duct diameter associated with WIPP exhaust point exceed the 40 CFR 60 requirements.	NA
21	Does DOE demonstrate that the frequency of flow rate measurements depend on the variability of the effluent flow rate? **Note:** For variable flow rates, continuous or frequent flow rate measurements are expected to be made. For relatively constant flow rates, only periodic measurements are expected.	EPA 402-R-97-001 Section 3.1, Page 11, (1(iii))	COB-A2003-A, Section 3 describe the continuous air monitoring requirements at WIPP.	Sat.
22	Does DOE demonstrate that radionuclides to be directly monitored or extracted, collected and measured using Reference Method 1 of Appendix A to 40 CFR Part 60 for selected monitoring or sampling sites?	EPA 402-R-97-001 Section 3.1, Page 11, (2(i))	DOE uses 40 CFR 61 Appendix B Method 114. COB-A2003-F documents in Section 4.1 the location of sampling sites.	Sat.

#	Question	EPA Citation	Comments (Objective Evidence)	Results
	Emissions and Environmental Monitoring - Air			
23	Does DOE demonstrate that radionuclides to be directly monitored or extracted, collected and measured continuously with an in-line detector capable of distinguish relevant radionuclides? As an acceptable alternative to direct radiation monitoring, the effluent air stream may be continuously sampled such that analysis of filters or other collectors will provide an accurate estimate of emissions from a known flow rate during a fixed sampling time.	EPA 402-R-97-001 Section 3.1, Page 11, (2(ii))	DOE uses periodic monitoring at WIPP to show compliance with 40 CFR 191 Subpart A.	NA
24	Does DOE demonstrate that radionuclides are collected and measured using procedures based on the principles of measurement described in Appendix B, Method 114 of 40 CFR 61? If not, does DOE demonstrate that the Administrator has approve the method used?	EPA 402-R-97-001 Section 3.1, Page 12, (2(iii))	COB-A2003-F page 10 documents that DOE used these principles.	Sat
25	If DOE is using the "Shrouded Probe", does DOE demonstrate that this alternative method is being used according to the guidance provide in "An Explanation of Particle Sampling in a Moving Gas Stream Within a Duct Using an Unshrouded and Shrouded Probe"?	EPA 402-R-97-001 Section 3.1, Page 12, (2(iii)(a))	An Assessment of the WIPP Shrouded Probe Against EPA Approval Criteria for Use of Single Point Sampling with the Shrouded Probe HA:98:0100 (Included in August 2000 Inspection Report, A-98-49, II-B3-12, COB 191A-AO-2000) documents DOE's evaluation of the Shrouded Probe and its compliance with the EPA criteria.	Sat.
26	Does DOE's quality assurance program meet the performance requirements described in Appendix, Method 114 of 40 CFR Part 61?	EPA 402-R-97-001 Section 3.1, Page 12, (2(iv))	COB-A2003-F documents DOE quality assurance requirements. These meet the requirements of 40 CFR 61.	Sat.

#	Question	EPA Citation	Comments (Objective Evidence)	Results
	Emissions and Environmental Monitoring - Air			
27	If it is impractical to measure the effluent flow rate in accordance with the method(s) in Section 3.1(1) or to monitor or sample extraction according to methods in Section 3.1(2) has DOE demonstrated that the use of alternative effluent flow rate measurement or site selection and sample extraction are appropriate and that the alternate method are used provided the following: (i) DOE shows that methods in Section 3.1(1) or (2) are impractical; (ii) DOE shows the alternative procedure will not significantly underestimate the emissions; (iii) DOE show the alternative procedure is fully documented; and (iv) DOE has received prior approval from EPA.	EPA 402-R-97-001 Section 3.1, Page 12, (3(i) to 3(iv))	See question #19, DOE uses Section 3.1 (1)(i) of EPA 402-R-97-001 page 11.	NA.
28	Does DOE demonstrate that radionuclide emission measurements are in conformance with the methods in Section 3.1(1) and (2) to be made at all release points which have a potential to discharge radionuclides into the air in quantities which could cause a combined annual dose equivalent in excess of 1% of the dose limit in Subpart A?	EPA 402-R-97-001 Section 3.1, Page 12 and page 13, (4(i))	Section 3.3.3 of COB-A2003-A documents DOE's compliance with this requirement.	Sat.
29	Does DOE demonstrate that all radionuclides which could contribute greater than 10% of the combined annual dose equivalent for a release point are being measured?	EPA 402-R-97-001 Section 3.1, Page 13, (4(i))	Section 3.3 of COB-A2003-A documents DOE's compliance with this requirement.	Sat.

#	Question	EPA Citation	Comments (Objective Evidence)	Results
	Emissions and Environmental Monitoring - Air			
30	If DOE uses alternative procedures to determine emissions, does DOE demonstrate that they have prior EPA approval?	EPA 402-R-97-001 Section 3.1, Page 13, (4(i))	DOE does not use alternative procedures at WIPP.	NA
31	Does DOE demonstrate that for other release points which have a potential to release radionuclides into the air it has performed periodic confirmatory measurements to verify the low emissions?	EPA 402-R-97-001 Section 3.1, Page 13, (4(i))	DOE does not have other release points which have a potential to release radionuclides. COB-A2003-G documents these conclusions.	NA
32	Does DOE demonstrate that an evaluation has been done to evaluate the potential for radionuclide emissions for that release point?	EPA 402-R-97-001 Section 3.1, Page 13, (4(ii))	Chapter 5 of COB-A2003-G documents this evaluation.	NA
33	Does DOE demonstrate that estimated radionuclide release rates are based on discharge of effluent stream that would result if all pollution control equipment did not exist, but the facilities operations were otherwise normal?	EPA 402-R-97-001 Section 3.1, Page 13, (4(ii))	Section 5.2 of COB-A2003-G documents this demonstration.	Sat.

#	Question	EPA Citation	Comments (Objective Evidence)	Results
	Environmental Measurements (Page 1)			
34	Does DOE demonstrate that environmental measurements of concentrations of radionuclides in air at the critical receptor locations are used as an alternative to air dispersion calculations in demonstrating compliance with the standard?	EPA 402-R-97-001 Section 3.1, Page 13, (5)	Section 3.5, COB-A2003-A documents that DOE does not use environmental monitoring as an alternative.	NA
35	Does DOE demonstrate that air at the point of measurement is continuously sampled for collection of radionuclides if environmental measurements are used?	EPA 402-R-97-001 Section 3.1, Page 13, (5(i))	Section 3.3.3, COB-A2003-A documents that DOE uses periodic confirmatory monitoring because doses are below 1% of the standard.	NA
36	Does DOE demonstrate that the environmental measurement program is appropriately designed to collect and measure specifically those radionuclides which are major contributors to the annual radiation dose from the facility?	EPA 402-R-97-001 Section 3.1, Page 13, (5(ii))	COB-A2003-I documents the results DOE's environmental monitoring program. This report demonstrates that the results are based on major radionuclides.	Sat.
37	Does DOE demonstrate that radionuclide concentrations which would cause an annual dose equivalent of 10% of the standard are readily detectable and distinguishable from background?	EPA 402-R-97-001 Section 3.1, Page 13, (5(iii))	COB-A2003-D and COB-A2003-H describe the methods used by DOE to measure radionuclide concentrations. These methods will detect doses that are in compliance with this requirement.	Sat.
38	Does DOE demonstrate that a quality assurance program that meets the performance requirements described in 40 CFR Part 61, Appendix B, Method 114 is conducted for environmental measurements?	EPA 402-R-97-001 Section 3.1, Page 13, (5(iv))	COB-A2003-F documents that DOE's QA program meets these requirements.	Sat.

#	Question	EPA Citation	Comments (Objective Evidence)	Results
	Environmental Measurements (Page 2)			
39	Does DOE demonstrate that EPA has granted prior approval for the use of environmental measurements to demonstrate compliance with the standard?	EPA 402-R-97-001 Section 3.1, Page 13, (5(v))	DOE has not requested approval to use environmental measurements.	NA
	Emissions and Environmental Monitoring - Other Media			
40	Does DOE demonstrate that environmental monitoring of other release points or critical receptor locations to confirm air exhaust as the only release pathway?	EPA 402-R-97-001 Section 3.2, Page 14.	COB-A2003-C demonstrates that DOE's environmental program monitors other release points and critical receptor locations.	Sat.

#	Question	EPA Citation	Comments (Objective Evidence)	Results
	Compliance Reporting			
41a	Does DOE demonstrate compliance with the Subpart A standard by showing that the annual radiation dose to any member of the public in the general environment falls below the regulatory limits?	EPA 402-R-97-001 Section 4.2, Page 15.	Section 3.3.3 of COB-A2003-A documents that DOE's plans to report results yearly. COB-A2003-I demonstrates that DOE does report results yearly.	Sat.
41b	Does DOE report results of monitoring and the dose calculations for each reporting period?	EPA 402-R-97-001 Section 4.2, Page 15	Section 3.3.3 of COB-A2003-A documents that DOE's plans to report results yearly. COB-A2003-I demonstrates that DOE does report results yearly.	Sat.
41c	Does DOE demonstrate that monitoring is performed each calendar year of facility operation, and that radiation doses are calculated after the end of each year?	EPA 402-R-97-001 Section 4.2, Page 15	Section 3.3.3 of COB-A2003-A documents that DOE's plans to report results yearly. COB-A2003-I demonstrates that DOE does report results yearly.	Sat.
	Notification of construction or modification.			
42	Does DOE demonstrate that they have provided the EPA written notification of any planned construction or modification to the WIPP facility, prior to commencing any such activity, if it results in an increase in the rate of emissions of radionuclides during operation?	EPA 402-R-97-001 Section 4.3, Page 16.	Section 5.0 of COB-A2003-A documents that DOE's plans to report results yearly. COB-A2003-I, Section 8.0 demonstrates that DOE does report planned construction and modification during the year.	Sat.
43	Does DOE demonstrate that advanced notification was not needed for construction and modification if the radiation dose caused by all the emissions from the new construction or modification is less than 1% of the Subpart A dose limits?	EPA 402-R-97-001 Section 4.3, Page 16 and page 17.	Section 5.0 of COB-A2003-A documents that DOE's plans to report results yearly.	Sat.

Attachment B

Opening and Closing Meeting Attendance Sheets

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION OPENING MEETING

Date: Tuesday, June 17, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Kathi Dunbar	Sr Engineer/WRES	8199
Tom Klem	Scientist/EEG	885-9675
Leroy Bosnak	WTS/OPS	234-8066
Ed Flynn	WTS/OPS	8377
James McKinney	WTS/OPS	8857
S. J. Patchet	WTS/Mine Eng	8370
L. A. Pyatt	WTS/Mine Eng	8191
KATHY ZBRYK	Env. Scientist / WRES	8373
Fred Salness	Hydrogeologist/WRES	8966
MARK CRAWLEY	Sr. Scientist/WRES	8853
DAVID HUGHES	ENGINEER/WARS	7243
Don Galbraith	DOE/CBFO-OSO	8365
Jim Kenney	S.O. Specialist/CTAC	8128
Sandra Harrison	Safety Tech/CTAC	8310
SHANKAR GHOSE	EPA/HQ	202 564 9763
Russell Patterson	QA Manager-DOE/CBFO	505/234-7457

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION OPENING MEETING

Date: Tuesday, June 17, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Lisa Will	Ext Oversight / WTS/QA	8433
Nick Stone	EPA Region 6	214 665 7226
Richard Farrell	DOE / CBFO	505 234-8318
Dave Kump	WTS / Rad Safety & Emerg Mgmt	505-234-8486
Randy Elmore	WTS/IWHE	505-234-8019
Ernie Endes	WTS/IWHE	(505) 234-8684
Steve Kouba	EPA Compliance / WRES	234-7243
Stewart Jones	WRES/ Env. Monitoring	505.234.8293
Harold Johnson	DOE / CBFO	505 234-7349
Don Harward	WTS / S&H	234-8285
Mike Oliver	Acting Asst Mgr - Ops & Safety CBFO - DOE	505-234-8144
Chuck Byrum	EPA / HQ	2146657555
Tom Peake	EPA / HQ	202-564-9765
L Frank-Supka	WTS	(505) 234-8816
DAVID EMERY	OEC CBFO	(505) 234-7475
E.B. Nuckols	OEC/CBFO	(505) 234-7356

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION CLOSING MEETING

Date: Wednesday, June 18, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Lisa Will	Ext Oversight/WTS/QA	8433
Nick Stone	EPA Region 6	214 665 7226
Tom Klein	Sci/EEG	885-9675
Tom Peake	EPA/HQ	202 564 9765
Chuck Byrum	EPA/HQ	214 665 7555
Russ Patterson	DOE/CBFO	505-234-7457
Rey Carrasco	WTS/Geo Engr.	8698
Don Haward	WTS/S&H	8285
Jim Kenney	S.O./CTAC	8128
Larry Madl	P. Sci/WRES	7328
Steve B Jones	Env. Mon/WRES	8293
SHANKAR GHOSE	Geologist/EPA/HQ	202 564 9763
Dave Kump	Rel Saf + Emerg Mgmt/WTS	8486
S.J. Patchet	WTS Mine Eng	8370
Richard Farrell	DOE CBFO	8315

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION OPENING MEETING

Date: Wednesday, June 18, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Lisa Will	Ext Oversight / WTS/QA	8433
Stewart Jones	Env. Mon. / WRES	8293
Ernie Endes	WTS / IWHE	8684
Jim Kenney	S.O. Specialist / CTAC	8128
Mark Dziansk	IWO / WTS	8154
John D. Guy	IWO / WTS	8906
Tom Klein	Sci / EES	885-9675
Ed Flynn	WTS / OPS	8377
Leroy Bosnic	WTS / OPS	8066
Chuck Byrum	EPA / HQ	2146657555
Tom Peake	EPA / HQ	202 564 9765
Don Harward	CWTS / S&H	8285
Dave Kump	WTS / RadSafe Emerg. Mgmt	8486
Phil Porter	WTS / OPS	8442
H.L. Jodi Plum	DOE / CBO / OGC	505.234.7462
Randy Elmore	WTS / IWHE	505-234-8019
S.J. Patchet	WTS / Mine Engineering	8370
L.A. Pyeatt	WTS / Mine Enc.	8191
Rey Carrasco	WTS / Geo Engr.	8698

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION OPENING MEETING

Date: Wednesday, June 18, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Larry Madl	Principal Scientist WRES	234-7328
SHANKAR GHOSE	Geologist/EPA/HQ	202 564 9763
Russ Patterson	PA Manager/DOE/CBFO	505-234-7457
Nick Stone	EPA Region 6	214 665 7226

Attachment C

Table of Documents Reviewed

-File 1: 071703 2003 Subpart A Documents Reviewed A Final.wpd
-File 2: 071703 2003 Subpart A Documents Reviewed B Final.wpd
-File 3: 071703 2003 Subpart A Documents Reviewed C Final.wpd
-File 4: 071703 2003 Subpart A Documents Reviewed D Final.wpd
-File 5: 071703 2003 Subpart A Documents Reviewed E Final.wpd

	Documents Reviewed and Copies Received	191.03 Subpart A Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
1	CCA, Appendix EMP; Waste Isolation Pilot Plant Environmental Monitoring Program. DOE/WIPP 96-2194. In particular pages 4-1, 5-1, 5-3, 5-4, 5-6.	Discussed DOE environmental monitoring plans at the WIPP site. COB-A2003-1	DOE, CCA, Appendix EMP (*Not included in this inspection report.)	No*
2	Implementation Plan for 40 CFR 191, Subpart A DOE/WIPP 00-3121, Revision 2, June 2001	Outlines program at WIPP to show compliance with 40 CFR 191, Subpart A. COB-A2003-A	DOE/WTS	File
3	Periodic Confirmatory Measurement Protocol for the Waste Isolation Pilot Plant DOE/WIPP 97-2238, Revision 6, June 2001	Used to explain the protocol to used preform periodic confirmatory measurements. COB-A2003-B	DOE/WTS	File
4	Waste Isolation Pilot Plant 2001 Site Environmental Report, DOE/WIPP 02-2225	Example of the results of the environmental monitoring program, in particular radiological measurements. COB-A2003-C	DOE/WTS	File
5	Airborne Radioactivity - Technical Procedure WP 12-HP3500, Revision 10, 12/30/02	Procedure provides instructions for analyzing, reporting, and trending results of air samples. COB-A2003-D	DOE/WTS	File
6	WTS Quality Assurance Program Description WP 13-1, Revision 23, 10/15/02	WTS minimum quality requirements for WIPP. COB-A2003-E	DOE/WTS	File
7	Quality Assurance Program Plan for Sampling Emissions of Radionuclides to the Ambient Air at the Waste Isolation Pilot Plant WP 12-RC.01, Revision 6, 06/16/00	QA program for sampling air emissions at WIPP. COB-A2003-F	DOE/WTS	File

	Documents Reviewed and Copies Received	191.03 Subpart A Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
8	WIPP CH SAR Pages 5.2-11, Chapter 5 of DOE/WIPP-95-2065 Rev. 6.	This selection verifies that the air pathway is the only pathway of concern at the WIPP. COB-A2003-G	DOE/WTS.	File
9	Instructions for Periodic Confirmatory Sampling Compliance Reporting WP 12-HP3125, Revision 7, 06/15/01	This procedure provides instructions for Radiological Engineers of the Radiological Controls Department to fulfill the requirements of NESHAPs. COB-A2003-H	DOE/WTS	File
10	Letter from Inez Triay (DOE) to Carl Edlund (EPA). June 24, 2002	References the attached Annual Periodic Confirmatory Measurement Compliance Report for the U.S. Department of Energy's Waste Isolation Pilot Plant for calendar year 2001. COB-A2003-I	DOE/WTS	File
11	Emergency Radiological Control Responses, Emergency and Alarm Response Procedure, WP 12-HP4000, Revision 2, 06/19/00	Section 3.0 documents actions to be taken in the event of and "ON-SITE AIRBORNE RADIOACTIVITY EVENT". COB-A2003-J	DOE/WTS	File
12	Fixed Air Monitoring Equipment - Technical Procedure WP 12-HP1305, 12/30/02	Instructions for the operation of fixed air monitoring equipment. COB-A2003-K	DOE/WTS	File
13	Portable Canberra Air Monitor - Technical Procedure WP 12-HP1306, 01/15/02	Instructions for operating the Canberra continuous air monitor equipment. COB-A2003-L	DOE/WTS	File

	Documents Reviewed and Copies Received	191.03 Subpart A Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
14	Portable Instrument and Portal Monitor Operability Checks - Technical Procedure WP 12-HP1307, 11/25/02	Instructions for operational checks of portable contamination instruments. COB-A2003-M	DOE/WTS	File
15	Portable Alpha-6 Continuous Air Monitors - Technical Procedure WP 12-HP1308, 04/07/03	Instructions for operation of Portable Alpha-6 continuous air monitor. COB-A2003-N	DOE/WTS	File
16	Radiological Event Response, Emergency Response Procedure, WP 12-ER4903, Revision 5, 01/18/01	Procedure documents actions taken if a potential or actual radioactive release takes place. COB-A2003-O	DOE/WTS	File
17	WIPP Air Monitoring Status First Quarter 2003, May 2003	Procedure documents reporting of radiological events. COB-A2003-P	DOE/WTS	File
18	Radiological Event Reporting - Management Control Procedure WP 12-HP3700, Revision 2, 12/26/01	Documents the 'first' estimate of a possible release. COB-A2003-Q	DOE/WTS	File
19	Calibration of Effluent Monitoring Skids A-3, B-1 and B-2 Maintenance Procedure - Continuous Use IC041072, Revision 3,	Instructions for calibration of FAS skids A3, B1 and B2 flow instrumentation. COB-A2003-R, Replaced by COB-A2003-AC	DOE/WTS	File
20	Calibration of Effluent Monitoring Station C CAM Skid - Maintenance Procedure IC041097, Revision 1	Instructions for calibration of Station C flow instrumentation. COB-A2003-S	DOE/WTS	File
21	U/G Exhaust Mass Flow Measurement system for Fans 700A, B & C - Maintenance Procedure IC041098, Revision 4	Documents calibration verification test and alignment of U/G exhaust. COB-A2003-T	DOE/WTS	File

	Documents Reviewed and Copies Received	191.03 Subpart A Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
22	Station B Mass Flow Measurement System, Loop 41A001W2001 - Maintenance Procedure IC413000, Revision 4	Documents calibration of Station B mass flow measurement system. COB-A2003-U	DOE/WTS	File
23	Inspection and Cleaning of Station "A" Sample Probes Bldg. 364 - Maintenance Procedure PM364005, Revision 8	Documents steps to inspect and clean Station A probes. COB-A2003-V	DOE/WTS	File
24	WIPP ALARA Program Manual WP 12-2, Revision 9, 09/24/02	Describes organization and responsibilities of ALARA committee and coordinator. COB-A2003-W	DOE/WTS	File
25	Consequence Assessment Dose Projection - Technical Procedure WP 12-ER4916, Revision 4, 04/21/03	Documents procedure for estimating the potential dose consequence from a release or suspected release of radioactive material. COB-A2003-X	DOE/WTS	File
26	Radiological Engineering Off-site Air Sampling - Technical Procedure WP 12-RE3002, Revision 0, 12/18/02	Instructions for collecting and documenting Low-Volume filter retrieval in response to a potential release. COB-A2003-Y	DOE/WTS	File
27	Sample Attachment 1 of probe inspection and cleaning procedure #23 above.	Documents the inspection and cleaning of probes at Station A. COB-A2003-V1 and V2	DOE/WTS Attachment D.4	No*
28	Samples of GXQ input files and Attachment 1 Dose Projection spreadsheet (#25 above) for consequence assessment.	Documents the calculation of projected dose from a possible release of materials. COB-A2003-X11 to X15	DOE/WTS Attachment D.4	Yes

	Documents Reviewed and Copies Received	191.03 Subpart A Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
29	Presentation - WIPP Effluent Monitoring Program, 40 CFR 191, Subpart A by Dave Kump	Program of program status. COB-A2003-AA	DOE/WTS	File
30	Presentation - WIPP Station A inspection and cleaning by Erne Endes..	COB-A2003-AA2	DOE/WTS	Yes
31	Presentation - Flow Calibration of Effluent Monitoring Skids at Stations A and B by Ed Flynn	Outlines implementation of procedure IC041072 (#19, replaced by #32) COB-A2003-AB	DOE/WTS	File
32	Latest version of Calibration of Effluent Monitoring Skids A-3, B-1 and B-2 Flow Instrumentation IC041072, Revision 4 06/16/03	Replaces Revision 3, #19. COB-A2003-AC	DOE/WTS	File
33	Low Flow Occurrences As Reported in the WIPP Air Monitoring Status Reports - compared to mining activity.	Attachment D COB-A2003-AD	DOE/WTS	Yes
34	Presentation - WIPP Test Plan Report on the RADOS CAM System by Ricardo Sanchez	Discusses testing of new RADOS CAM system. COB-A2003-AE	DOE/WTS	File
35	Sample of Laboratory documents used during the chemical processing of filter sample.	Background Report, Alpha and Beta Efficiency Report, Data Package, Chain-of-Custody, Lab Notebook, Sample Counting Log COB-A2003-AF	DOE/WTS	File
36	Sample of records produced during Station A calibration using procedure IC041072	COB-A2003-AG	DOE/WTS	File

Attachment D

Documents Reviewed

File(s) Received:
COB-A2003-G, #8
COB-A2003-AA, #29
COB-A2003-AB, #31
COB-A2003-AC, #32
COB-A2003-AE, #34
COB-A2003-AG, #36

Document(s) Received:
COB-A2003-AA2, #30
COB-A2003-AD, #33
COB-A2003-X11 to X15, #28

WIPP 12-ER 4916 Sample

```
G  WIPP Site STATION C RELEASE Setup
c  GXQ Version 4.0 Input File
c   Mode
    2
c
c LOGICAL CHOICES:
c   ifox  inorm icdf  ichk  isite ipop
    f     f     f     f     f     f
c
c X/Q AND WIND SPEED ADJUSTMENT MODELS:
c   ipuff idep  isrc  iwind
    0     0     0     0
c DIFFUSION COEFFICIENT ADJUSTMENT MODELS:
c   iwake ipm   iflow ientr
    0     0     0     0
c EFFECTIVE RELEASE HEIGHT ADJUSTMENT MODELS:
c  (irise igrnd)iwash igrav
    0     0     0     0
c
c PARAMETER INPUT:
c                  reference                        frequency
c   release        anemometer      mixing           to
c   height         height          height           exceed
c   hs(m)          ha(m)           hm(m)            Cx(%)
c   ____________   ____________    _____________    ____________
    20             10              500              0
c   initial        initial                                       gravitational
c   plume          plume           release          deposition   settling
c   width          height          duration         velocity     velocity
c   Wb(m)          Hb(m)           trd(hr)          vd(m/s)      vg(m/s)
c   ____________   ____________    _____________    ____________ ____________
    0              0               0                0.00         0.00
c                  initial         initial                       convective
c   ambient        plume           plume            release      heat release
c   temperature    temperature     flow rate        diameter     rate(1)
c   Tamb(C)        T0(C)           V0(m3/s)         d(m)         qh(w)
c   ____________   ____________    _____________    ____________ ____________
    0              0               0                2.6          0
c   X/Q                Wind
c   scaling            Speed
c   factor             Exponent
c   c                  a(?)
c   ____________       ____________
    0                  0
c
c VARIABLE ID Section
c  (i class)              (Ua)              (x)              (y)              (z)
c  Stability Class     Wind               Receptor         Lateral          Receptor
c     (1-7)            Speed (m/s)        distance (m)     offset (m)       height (m)
      2                4.5                100              0                1
      2                4.5                300              0                1
      2                4.5                1000             0                1
      2                4.5                3000             0                1
      2                4.5                378              0                1
□
```

TNCOB

HANG-CHENG CH104 CG17031.001

COB-A-2003-X 11

0617031.OUT

Current Input File Name: 0617031.IN

GXQ Version 4.0A
December 19, 1994

General Purpose Atmospheric Dispersion Code
Produced by Westinghouse Hanford Company

Users Guide documented in WHC-SD-GN-SWD-30002 Rev. 1.
Validation documented in WHC-SD-GN-SWD-30003 Rev. 1.
Code Custodian is: Brit E. Hey
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352
(509) 376-2921

Run Date = 06/17/03
Run Time = 10:49:05.14

INPUT ECHO:

```
G  WIPP Site STATION C RELEASE Setup
c  GXQ Version 4.0 Input File
c   Mode
    2
c
c LOGICAL CHOICES:
c   ifox  inorm icdf  ichk  isite ipop
    F     F     F     F     F     F
c
c X/Q AND WIND SPEED ADJUSTMENT MODELS:
c   ipuff idep  isrc  iwind
    0     0     0     0
c DIFFUSION COEFFICIENT ADJUSTMENT MODELS:
c   iwake ipm   iflow ientr
    0     0     0     0
c EFFECTIVE RELEASE HEIGHT ADJUSTMENT MODELS:
c  (irise igrnd)iwash igrav
    0     0     0     0
c
c PARAMETER INPUT:
c                 reference                       frequency
c   release       anemometer    mixing            to
c   height        height        height            exceed
c   hs(m)         ha(m)         hm(m)             Cx(%)
c   ____________  ____________  ____________      ____________
    2.00000E+01   1.00000E+01   5.00000E+02       0.00000E+00
c   initial       initial                                       gravitational
c   plume         plume         release           deposition    settling
c   width         height        duration          velocity      velocity
c   Wb(m)         Hb(m)         trd(hr)           vd(m/s)       vg(m/s)
c   ____________  ____________  ____________      ____________  ____________
```

COB-A-2003-X12

```
    0.00000E+00     0.00000E+00     0.00000E+00     0.00000E+00     0.00000E+00
c                   initial         initial                         convective
c   ambient         plume           plume           release         heat release
c   temperature     temperature     flow rate       diameter        rate(1)
c   Tamb(C)         T0(C)           V0(m3/s)        d(m)            qh(w)
c   ____________    ____________    ____________    ____________    ____________
    0.00000E+00     0.00000E+00     0.00000E+00     2.60000E+00     0.00000E+00
c   X/Q                   Wind
c   scaling               Speed
c   factor                Exponent
c   c                        a(?)
c   ____________    ____________
    0.00000E+00     0.00000E+00
c
c VARIABLE ID Section
c  (i class)             (Ua)              (x)             (y)             (z)
c  Stability Class     Wind              Receptor        Lateral         Receptor
c     (1-7)          Speed (m/s)     distance (m)    offset (m)      height (m)
```

MODE:
X/Q calculated by stability class and wind speed.

LOGICAL CHOICES:

MODELS SELECTED:
Default Gaussian plume model selected.

WARNING/ERROR MESSAGES:

G WIPP Site STATION C RELEASE Setup

ATM. STAB. CLASS	WIND SPEED (m/s)	DISTANCE (m)	OFFSET (m)	RECEPTOR HEIGHT (m)	SCALED X/Q (s/m3)
B	4.50	100	0	1	6.89E-05
B	4.50	300	0	1	3.97E-05
B	4.50	1000	0	1	4.48E-06
B	4.50	3000	0	1	5.35E-07
B	4.50	378	0	1	2.76E-05

6/17/03

WP 12-ER4916 Attachment 1-DOSE PROJECTION

10:59 AM

DESCRIPTION: Spread Sheet Used to find DOSE. Drop of Waste Container in WMB.

Speed 4.5 m/s
Direction From East
Stability Class: B

SOURCE TERM DETERMINATION
Reduced Material at Risk

R MAR PE Ci	MAR PE Ci	DR	ARF	RF	HEPA	
1.30E-10	1.30E+02	1.00E-02	1.00E-03	1.00E-01	1.00E-06	Use 1 if no HEPA

Filter DPM to Ci Calculation

Q= (Ci)	F (cfm)	FAS/ (dpm)	R (cfm)	CF (Ci/dpm)
#VALUE!	?	?	?	2.22E+12

DOSE CALCULATIONS Distance (meters)	DOSE (mrem)	DOSE = (rem)	X/Q (s/m^3)	Q (Ci)	B X F (m^3 rem/ s Ci)		
100	1.52E-06	1.52E-09	6.89E-05	1.30E-10	1.70E+05		
300	8.77E-07	8.77E-10	3.97E-05	1.30E-10	1.70E+05		
1000	9.90E-08	9.90E-11	4.48E-06	1.30E-10	1.70E+05		
3000	1.18E-08	1.18E-11	5.35E-07	1.30E-10	1.70E+05		
378	6.10E-07	6.10E-10	2.76E-05	1.30E-10	1.70E+05	Optional	distance

Comments:

Print name/Signature

CAB-A2003-X13

CONVERSIONS

MPH to m/s mph*0.447

mph	m/s
10.0	4.5

TBq to Curies TBq/27

TBq	Ci
840	31.1

Red cells are formula cells - DO NOT CHANGE
Blue cells are input cells - INPUT APPROPRIATE VALUES
Black cells contain specific information - DO NOT CHANGE

DEFAULT X/Q VALUES

Sta. A or	Sta. C	
4.50E-03	5.07E-03	100 meters
8.15E-04	6.42E-04	300 meters
1.24E-04	1.24E-04	1000 meters
3.63E-05	3.63E-05	3000 meters

TYPICAL FLOW
Sta. A flow 4.25E5
Sta. B flow 6E3
Sta. C flow 1.6E4
FAS Flow Sta. A & B = 2
FAS Flow Sta. C = 0.6

Station A FAS (dpm) = 3 X underground CAM Pu (cpm)

DESCRIPTION:

7 drums drop off from folkloft at WHB

Malevolent Act / Aircraft into WHB

Speed 4.5 m/s
Direction From East
Stability Class: B

SOURCE TERM DETERMINATION
Reduced Material at Risk

R MAR PE Ci	MAR PE Ci	DR	ARF	RF	HEPA	
1.30E-01	1.30E+02	1.00E+00	1.00E-03	1.00E+00	1.00E+00	Use 1 if no HEPA

Filter DPM to Ci Calculation

Q= (Ci)	F (cfm)	FAS/ (dpm)	R (cfm)	CF (Ci/dpm)
#VALUE!	?	?	?	2.22E+12

DOSE CALCULATIONS Distance (meters)	DOSE (mrem)	DOSE = (rem)	X/Q (s/m^3)	Q (Ci)	B X F (m^3 rem/ s Ci)		
100	1.52E+03	1.52E+00	6.89E-05	1.30E-01	1.70E+05		
300	8.77E+02	8.77E-01	3.97E-05	1.30E-01	1.70E+05		
1000	9.90E+01	9.90E-02	4.48E-06	1.30E-01	1.70E+05		
3000	1.18E+01	1.18E-02	5.35E-07	1.30E-01	1.70E+05		
378	6.10E+02	6.10E-01	2.76E-05	1.30E-01	1.70E+05	Optional	distance

Comments:

Print name/Signature

COB-A2003-X14

Underground Roof Fall

Current Input File Name: 0617032.IN Input to GXQ

GXQ Version 4.0A
December 19, 1994

General Purpose Atmospheric Dispersion Code
Produced by Westinghouse Hanford Company

Users Guide documented in WHC-SD-GN-SWD-30002 Rev. 1.
Validation documented in WHC-SD-GN-SWD-30003 Rev. 1.
Code Custodian is: Brit E. Hey
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352
(509) 376-2921

Run Date = 06/17/03
Run Time = 11:17:54.03

INPUT ECHO:

```
G  WIPP Site STATION A RELEASE Setup
c  GXQ Version 4.0 Input File
c   Mode
    2
c
c LOGICAL CHOICES:
c   ifox  inorm icdf  ichk  isite ipop
    F     F     F     F     F     F
c
c X/Q AND WIND SPEED ADJUSTMENT MODELS:
c   ipuff idep  isrc  iwind
    0     0     0     0
c DIFFUSION COEFFICIENT ADJUSTMENT MODELS:
c   iwake ipm   iflow ientr
    0     0     0     0
c EFFECTIVE RELEASE HEIGHT ADJUSTMENT MODELS:
c  (irise igrnd)iwash igrav
    0     0     0     0
c
c PARAMETER INPUT:
c                 reference                    frequency
c   release       anemometer     mixing        to
c   height        height         height        exceed
c   hs(m)         ha(m)          hm(m)         Cx(%)
c   ------------  -------------  ------------  ------------
    7.70000E+00   1.00000E+01    5.00000E+02   0.00000E+00
c   initial       initial                                   gravitational
c   plume         plume          release       deposition    settling
c   width         height         duration      velocity      velocity
c   Wb(m)         Hb(m)          trd(hr)       vd(m/s)       vg(m/s)
c   ------------  -------------  ------------  ------------  ------------
```

COB-A 2003-X14

```
    0.00000E+00     0.00000E+00     0.00000E+00     0.00000E+00     0.00000E+00
c                   initial         initial                         convective
c   ambient         plume           plume           release         heat release
c   temperature     temperature     flow rate       diameter        rate(1)
c   Tamb(C)         T0(C)           V0(m3/s)        d(m)            qh(w)
c
    0.00000E+00     0.00000E+00     0.00000E+00     5.20000E+00     0.00000E+00
c   X/Q                 Wind
c   scaling             Speed
c   factor              Exponent
c   c                     a(?)
c
    0.00000E+00     0.00000E+00
c
c VARIABLE ID SECTION
c  (i class)          (Ua)              (x)             (y)             (z)
c  Stability Class    Wind              Receptor        Lateral         Receptor
c     (1-7)           Speed (m/s)       distance (m)    offset (m)      height (m)

MODE:
X/Q calculated by stability class and wind speed.

LOGICAL CHOICES:

MODELS SELECTED:
Default Gaussian plume model selected.

WARNING/ERROR MESSAGES:


G  WIPP Site STATION A RELEASE Setup
```

ATM. STAB. CLASS	WIND SPEED (m/s)	DISTANCE (m)	OFFSET (m)	RECEPTOR HEIGHT (m)	SCALED X/Q (s/m3)
A	2.20	100	0	1	3.73E-04
A	2.20	300	0	1	4.38E-05
A	2.20	1000	0	1	1.94E-06
A	2.20	3000	0	1	7.18E-07
A	2.20	553	0	1	8.88E-06

DESCRIPTION:

Underground roof fall

Speed 2.2 m/s
Direction From South
Stability Class: A

SOURCE TERM DETERMINATION
Reduced Material at Risk

R MAR PE Ci	MAR PE Ci	DR	ARF	RF	HEPA	
1.95E-03	7.80E+02	2.50E-02	1.00E-03	1.00E-01	1.00E+00	Use 1 if no HEPA

Filter DPM to Ci Calculation

Q= (Ci)	F (cfm)	FAS/ (dpm)	R (cfm)	CF (Ci/dpm)
#VALUE!	?	?	?	2.22E+12

DOSE CALCULATIONS Distance (meters)	DOSE (mrem)	DOSE = (rem)	X/Q (s/m^3)	Q (Ci)	B X F (m^3 rem/ s Ci)		
100	1.24E+02	1.24E-01	3.73E-04	1.95E-03	1.70E+05		
300	1.45E+01	1.45E-02	4.38E-05	1.95E-03	1.70E+05		
1000	6.43E-01	6.43E-04	1.94E-06	1.95E-03	1.70E+05		
3000	2.38E-01	2.38E-04	7.18E-07	1.95E-03	1.70E+05		
378	2.94E+00	2.94E-03	8.88E-06	1.95E-03	1.70E+05	Optional	distance

Comments:

Hung Chiou 6/17/03
Print name/Signature

CAB-A2003-X15

CONVERSIONS

MPH to m/s mph*0.447

mph	m/s
5.0	2.2

TBq to Curies TBq/27

TBq	Ci
840	31.1

Red cells are formula cells - DO NOT CHANGE
Blue cells are input cells - INPUT APPROPRIATE VALUES
Black cells contain specific information - DO NOT CHANGE

DEFAULT X/Q VALUES

Sta. A or	Sta. C	
4.50E-03	5.07E-03	100 meters
8.15E-04	6.42E-04	300 meters
1.24E-04	1.24E-04	1000 meters
3.63E-05	3.63E-05	3000 meters

TYPICAL FLOW
Sta. A flow 4.25E5
Sta. B flow 6E3
Sta. C flow 1.6E4
FAS Flow Sta. A & B = 2
FAS Flow Sta. C = 0.6

Station A FAS (dpm) = 3 X underground CAM Pu (cpm)

PM 364005, Inspection and Cleaning of Station "A" Sample Probes Bldg 364

- PM364500 created in 1998 to do quarterly probe inspections and shop (steam/pressure) cleaning of entire transport assembly. Prior to that, was on a non-periodic basis.

- A monthly implementation of PM364500 was established in early 2000 because of increasing deposits building up on the probes. May have been related to increased use of dual 700 fans for mine ventilation, increasing flow volume, and mining of Panel 2, creating more dust in exhaust. Again, shop cleaning was done, if required.

- Option of cleaning probes in-place was implemented in early 2002.

- Difficulty of mechanical cleaning in-place, safety concerns, & need to do a better cleaning job warranted investigating removal of probes from transport assembly for shop cleaning.

  •• Enough spare probes were located to allow swapping cleaned probes with in-place probes (sec. 7.2.1.1, 8.1.12, & 8.1.16.1).

  •• Shop cleaning method, utilizing pressure steam cleaning (as before) & adding 50%CLR solution soak, as necessary, established (with RadLab assistance), prior to implementing procedure change.

  •• Ultrasonic cleaning results at a vendor was evaluated as an option. First trial was not promising.

  •• Implementation of this change (in-place probe swapping) to the procedure was on 14 April 2003.

- If the entire transport assembly is removed for shop cleaning (Sec. 8.1.19 thru 8.1.30), the probe is swapped in the shop (sec 8.22.1).

- Section 8.3 states pass/fail criteria of the probe at removal inspection (no change).

Erna Endes.

COB-A2003-AA2

Low Flow Occurrences As Reported in the WIPP Air Monitoring Status Reports for the Fourth Quarter 2002 & First Quarter 2003

Station	Date Filter Installed	Flow (cfm)	Description of Mining Activity	Week Ending
Station A				
Skid A-1	11/6/2002	0.976	Initial mining in S3310 & back removal in E140 (N1100 - N780).	11/11/2002
Skid A-1	11/23/2002	1.01	Initial mining in W170 (S3080-S3310), & rib trimming in E140 (N1100 - N780).	11/25/2002
Skid A-1	12/21/2002	2.276	Rib trimming in W170 (S3080-S3310), & back removal in E300.	12/23/2002
Station D				
D-1	2/11/2003	4.2	*Mining S2750 to Room 2, & back removal in E140 (S2340 - S1950).	2/17/2003
D-1	2/12/2003	4.1	*Mining S2750 to Room 2, & back removal in E140 (S2340 - S1950).	2/17/2003

*Dust from mining activity is routed into the E300 drift where it is transported to the surface through the Exhaust Shaft.

Note: Currently dust suppression systems are used on the haulage routes underground. Also, in April 2003, a water spray system was added to one continuous miner. This alleviates the filter loading and low flow problems.

CoB - A2003-AD

DOCKET NO: A-98-49
Item: II-B3-53

Emplacement Inspection Report

EPA INSPECTION No. EPA-WIPP-6.03-17b
OF THE
WASTE ISOLATION PILOT PLANT
June 17-19, 2003

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

October 2003

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Attachment B Waste Emplacement Report For Eight TRU Waste Containers
Attachment C Copies of WWIS Modules
Attachment D WTS Procedures

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 17 to 19, 2003. 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.

Six DOE transuranic waste sites have shipped waste to the WIPP for disposal. These sites are: Argonne National Laboratory- East (ANL-E) in Illinois, Los Alamos National Laboratory (LANL) in New Mexico, Idaho National Engineering and Environmental Laboratory (INEEL), Hanford Site in Washington, Rocky Flats Environmental Technology Site (RFETS) in Colorado, and Savannah River Site (SRS) in Georgia. The first shipment was received by the facility in March 1999.

EPA inspected the WIPP to verify that waste is being emplaced in the underground facility in the manner specified in DOE's Compliance Certification Application (CCA) for the WIPP (EPA Air Docket A-93-02, Item II-G-01, and associated documents). The inspection also verified the proper emplacement of backfill material (magnesium oxide) with the waste packages. EPA had one finding regarding the emplacement of waste in the WIPP with respect to commitments made in the CCA.

2.0 INSPECTION PURPOSE AND SCOPE

The purpose of this inspection was to determine whether waste sent to the WIPP has been emplaced in the underground facility in the manner specified in DOE's Compliance Certification Application 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. 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 all WTS procedures examined for this inspection is provided in Table A.

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

Table A
Listing of WTS Procedures Examined During Inspection

- *WTS Quality Assurance Program Description*, Waste Isolation Pilot Plant Procedure WP 13-1, Revision 23; Effective Date October 15, 2002
- *Specification for Repackaged MgO Backfill*, Waste Isolation Pilot Plant Procedure D-0101, Revision 4, ECO Number 10182; Effective Date December 18, 2002
- *CH Waste Processing*, Technical Procedure WP 05-WH1011, Revision 20; Effective Date January 13, 2003
- *WIPP Waste Information System Program*, Waste Isolation Pilot Plant Procedure WP-08-NT.01, Revision 8; Effective Date February 27, 2003
- *TRU Waste Receipt*, Management Control Procedure WP-08-NT3020, Revision 8; Effective Date May 28, 2003
- *Waste Stream Profile Form Review and Approval Program*, Waste Isolation Pilot Plant Procedure WP-08-NT.03, Revision 3; Effective Date March 3, 2003

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

The Inspectors observed waste that had been emplaced in the repository and reviewed records documenting that waste emplacement was conducted in accordance with procedures. To date, the waste received at the repository are contact-handled (CH) transuranic wastes from ANL-E, LANL, RFETS, INEEL, SRS, and Hanford. These wastes are in one of three configurations: Standard Waste Boxes (SWBs), 55-gallon (208 liter) drums assembled in groups of seven called a Seven Pack, and Ten Drum Overpacks (TDOP). Both 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 wastes 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 Nick Stone, the WIPP Project Officer for Region 6, and Chuck Byrum and Tom Peake, Office of Radiation and Indoor Air. Richard Farrel, the acting CBFO Waste Operations Program Manager, was the chief DOE contact for the inspection. A list of all inspection participants is provided in Table B.

Table B
Inspection Participants

INSPECTION TEAM MEMBER	POSITION	AFFILIATION
Nick Stone	Inspector	EPA Region 6
Tom Peake	Inspector	EPA ORIA
Chuck Byrum	Lead Inspector	EPA ORIA
Shankar Ghose	Observer	EPA ORIA
CBFO / WTS PERSONNEL	**POSITION**	**AFFILIATION**
Richard Farrel (acting)	Waste Operations Program Manager	DOE/CBFO
Jody Plum	RCRA Compliance Manager	DOE/CBFO
Hardy Bellows	Waste Operations Program Manager	WTS
Dave Speed	WWIS Data Administrator Team Leader	WTS

The inspection took place on June 17-19, 2003, at the WIPP facility, which is located approximately 30 miles south east of Carlsbad, New Mexico. The opening meeting with CBFO and WTS personnel was held on June 17, 2003. The Inspectors interviewed WTS personnel about current shipments and emplacement in the underground.

The EPA Inspectors then accompanied CBFO and WTS personnel into the underground repository, in order to view waste packages that had been emplaced. The Inspectors selected eight containers and noted their numbers; the records for these containers were examined later. The WTS personnel explained how waste packages are handled and emplaced and answered questions from the EPA Inspectors. The inspection continued the next day with an examination of records and interviews of WTS personnel in charge of the WIPP Waste Information System (WWIS), which took place at the Carlsbad Field Office in Carlsbad. A closeout meeting was held at the end of each day.

3.1 WASTE EMPLACEMENT/WWIS

The repository is subdivided into panels, each panel consisting of seven (7) rooms. Panel 1 is being closed with Rooms 7, 3, 2, and 1 filled. Rooms 6, 5, and 4 were only partially filled due to creep closure in those rooms. Panel 1 contains 39,414 containers. These containers consist of 38,138 drums, 1239 standard waste boxes, 35 ten drum overpacks, and two 85 gallon drums.[2] At the time of inspection, the facility was emplacing waste in the end of Room 7 in Panel 2.

Wastes are stacked in columns (also called waste stacks) three high in any combination of SWBs and Seven Packs, both having the same "footprint." The Inspectors observed several TDOPs which are placed at the base of a waste stack to accommodate its different footprint. There is no particular order in which SWBs and Seven Packs are stacked; wastes are emplaced as received from waste generators. A series of three columns spans the distance of the disposal cell from left to right with ample space between columns. Space between the repository wall and the waste column is left open at alternating ends, as represented in Table C below. A second row of three columns is emplaced parallel to the first, but each column is staggered such that it is located between two columns from the previous row; these two left-to-right rows of three columns each are designated a row and numbered, as shown in Table in C below. This results in each waste Seven Pack, TDOP, or SWB having a unique identifier that indicates its location underground according to the row, the column and the position within the column (see Attachment B). MgO is placed on top of each column or waste in 4,000 pound super sacks.

Table C
Schematic of Waste Emplacement in Columns

Column 1		Column 3		Column 5		Combination of 2 left-right
	Column 2		Column 4		Column 6	columns is a Row

The EPA inspectors randomly selected five Seven Packs and three TDOPs emplaced in the repository, and WTS personnel read their identification numbers directly off the drums. The EPA Inspectors were unable to read them directly because the area adjacent to the emplaced waste was posted as a Radiation Area and access was restricted. The containers selected are identified in Table D below.

[2] Procedure WP 05-WH1011 identifies the order of waste emplacement in the repository.

Table D
Randomly Selected Waste Containers Examined During Inspection

Site of Origin	Waste Container Identifier	Container Type
ANL	AE25971	55 Gal Drum
ANL	AE25520	55 Gal Drum
RFETS	RFDC2141	55 Gal Drum
RFETS	RFDB2749	55 Gal Drum
SRS	SRTP00196	TDOP
INEEL	IDRF004000066	55 Gal Drum
SRS	SRTP00200	TDOP
SRS	SRTP00199	TDOP

Some records were paper, while others were electronically recorded in the WIPP Waste Information System (WWIS) database. The WWIS is an on-line database system used to record, track, and document the range of activities required for shipping TRU wastes to WIPP. The WTS personnel stated that the reliance on electronic approvals instead of paper was deliberate and was designed to minimize the use of paper. The EPA Inspectors examined the following modules:

- Characterization Module, linked to the Waste Container Data Report
- Certification Module, linked to the Acceptance Report or Rejection Report
- Shipping Module, linked to the Shipment Summary Report
- Inventory Module, linked to the Nuclide Report and Waste Emplacement Report.

Dave Speed produced either paper or electronic records of all modules requested (Attachment C). 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). WTS Procedure D-0101, *Specification for Prepackaged MgO Backfill*, contains specifications for the amount and specific placement of prepackaged MgO for four waste configurations: 85 gallon Over Packs, Ten Drum Over Packs, Seven Packs, and Standard Waste Boxes. WTS Technical Procedure WP 05-WH1011, *CH Waste Processing*, details a procedure for MgO placement and the means to document that MgO placement has been accomplished correctly (CH Waste Processing Data Sheet). The EPA Inspectors observed that MgO had been placed properly in the row that was visible from outside the restricted access area. The MgO is placed on top of each column in supersacks. Records examined for the eight (8) waste containers discussed earlier in this report indicated that MgO had been placed in compliance with Technical Procedure WP 05-WH1011.

4.0 SUMMARY OF RESULTS

The Inspectors asked DOE to demonstrate compliance with the random emplacement assumption used in the Performance Assessment in the CCA. Review of the WWIS indicated that waste emplaced in Panel 1 was not homogeneously random. The CCA Performance Assessment parameters were based on an assumption that waste would be random, thereby justifying homogeneous waste parameters (i.e., average values) for the model. The Inspectors asked DOE to provide documentation of random emplacement. The documents indicate heterogenous emplacement of waste based on the acceptable knowledge associated with each container. This inspection has determined the finding listed below in reference to DOE's inability to demonstrate random emplacement consistent with the CCA.

FINDING:

The CCA assumes that DOE will emplace waste in a random (i.e. homogeneous) fashion. The inspection team reviewed the available data in the WWIS and could not determine that the waste was emplaced in a random (i.e. homogeneous) manner. DOE must perform additional analysis to confirm that the actual emplaced waste loading does not adversely affect the long-term performance of the WIPP disposal system. We expect that such analyses can be completed as part of the recertification process, which would also provide updated inventory estimates based on waste already emplaced or characterized for WIPP disposal.

Attachment A
Listing of TRU Wastes Emplaced at WIPP As of June 11, 2003

Site	Drums	Pipe Overpack	SWB	TDOP	85 Gal Overpack	Dunnage Drums	Total
ANL-E	42						42
Hanford	844	112				3	959
INEEL	14,833		158		2	518	15,511
LANL	724	2	147			51	924
RFETS	4,276	17,605	1260			43	23,184
SRS	2,268		98	188			2,554
Total	22,987	17,719	1,663	188	2	615	43,174

Argonne National Laboratory - East (ANL-E)
Hanford Site (Hanford)
Idaho National Engineering and Environmental Laboratory (INEEL)
Los Alamos National Laboratory (LANL)
Rocky Flats Environmental Technology Site (RFETS)
Savannah River Site (SRS)

Drums = 55 gallon (208 liter) steel drums
Pipe Overpack = 55 gallon drum pipe overpack
SWB = Standard Waste Box
TDOP = ten drum overpack
Dunnage = sand filled dunnage drums

Attachment B
Waste Emplacement Report Data For Five (5) TRU Waste Containers

TRUPACT No.	129	129	153	153	170	181	162	154
Container No.	AE25971	AE25520	RFDC2141	RFDB2749	SRTP00196	IDRF004000 066	SRTP00200	SRTP00199
Row Number	132	132	128	128	134	134	135	136
Height	Middle	Bottom	Top	Top	Bot/Mid	Bot/Mid	Bot/Mid	Bot/Mid
Column	6	6	2	4	6	2	5	2
Disposal Cell	Main Room	Main Room	Main Room	Main Room	Main Room	Main Room	Main Room	Main Room
Disposal Room	7	7	7	7	7	7	7	7
Disposal Panel	2	2	2	2	2	2	2	2
Disposal Date	06/16/03	06/16/03	06/13/03	06/13/03	06/16/03	06/16/03	06/18/03	06/18/03

Attachment C

- Inspector's Checklist
- Shipment Summary Reports
- Waste Emplacement Report
- Waste Container Data Reports
- Attachments 1 and 4 from WP 05-WH1011
- Container Approval/Rejection Report

WIPP Waste Emplacement Inspection Checklist

June 2003

Inspectors: Nick Stone and Tom Peake

#	Question	Comments (Objective Evidence)	Documentation	Results
	Waste Emplacement			
1	Is waste being emplaced in the underground facility in the manner specified in DOE's Compliance Certification Application (CCA)?	Observed the waste emplaced in Panel 1, within the access drift near the opening of Room 2. The waste emplacement appeared to be compliant with the requirements in the CCA.	WP 05-WH1011	Adequate
2	Are waste containers stacked in columns three high?	Inspectors observed the waste stacks. All stacks were three drums high with an MgO super sack above each.	WP 05-WH1011	Adequate
3	Are waste containers emplaced as received?	Inspectors observed waste removed from TRU-PACT II containers and staged for transport into the underground.	WP 05-WH1011	Adequate
4	Are records adequate? Randomly select five waste containers to verify records for waste approval, shipment, and receipt:	Site of Origin / Identifier / Type Rocky Flats RFDB0279 Idaho IDRF741202926 Rocky Flats RFS00855 Rocky Flats RFDA7881 Rocky Flats RFDA0323	N/A	Adequate
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 emplace in the underground, and placement of backfill [MgO].	Reviewed the Shipment Summary Report, the Waste Container Data Report, and the CH Waste Processing Data Sheet (Attachment 1 of WP 05-WH1011) for each of the selected drums.	Attachments 1 and 4 of WP 05-WH1011.	Adequate

WIPP Emplacement Inspection Checklist

#	Question	Comments (Objective Evidence)	Documentation	Results
	Backfill [MgO] Emplacement			
6	Is DOE properly emplacing backfill material (magnesium oxide [MgO]) with the waste packages?	Inspectors observed the MgO super sacks placed on top of the waste stacks.	WP 05-WH1011	Adequate
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 pounds, multi-wall construction with a vapor and moisture barrier?	Inspectors observed the MgO super sacks to be constructed of polymer multi-walled material and sized properly to contain 4,000 lbs of MgO.	WP 05-WH1011	Adequate
#	Question	Comments (Objective Evidence)	Documentation	Results
	WIPP Waste Information System (WWIS)			
8	Is DOE maintaining records of waste shipments and emplacement properly?	Reviewed the WWIS reports and WP 05-WH1011 attachments for the five selected drums.	WP 05-WH1011	Adequate
9	Do the characterization module, certification module, shipping module, and inventory module adequately record the required information?	Interviewed Dave Speed and reviewed the characterization module, certification module, shipping module, and inventory module for each of the five drums selected.	WP 05-WH1011	Adequate
10	Characterization Module - Review a WWIS Waste Container Data Report. Does this report adequately record the Waste Stream Profile Form information?	Reviewed the Waste Container Data reports for each of the selected drums. Determined that each report reflected the Waste Stream Profile form information.	WP 05-WH1011and RP0360	Adequate
11	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?	Reviewed the Container Approval/Rejection Report. This document confirms that CBFO certifies and grants authority to each generator prior to review of the characterization data.	WP 05-WH1011and RP0510	Adequate

WIPP Emplacement Inspection Checklist

#	Question	Comments (Objective Evidence)	Documentation	Results
	WIPP Waste Information System (WWIS)			
12	Certification Module - Examine an Acceptance Report and a Rejection Report. Do these adequately record waste information?	Reviewed RP0510 "Container Approval/Rejection Report."	WP 05-WH1011and RP0510	Adequate
13	Is the generator/shipper denied any further write access to certification information after the data passes the limit and edit check and a review by the WWIS data administrator?	In discussions with Dave Speed and Mike Strum inspectors determined that the generator sites are denied write access to WWIS data that has been confirmed by CBFO prior to shipment.	WP 05-WH1011	Adequate
14	Shipping Module - Review the Shipment Summary Report. Does the report correctly record the containers shipped?	Reviewed the Shipment Summary Report for each of the drums selected. Determined that each drum was accurately described in the report.	WP 05-WH1011and RP0390	Adequate
15	Inventory Module - Review the Container Emplacement Report. Does this report adequately record the date of receipt, disposal locations of containers, and the emplacement of MgO?	Reviewed the Container Emplacement Report for each of the drums selected. Determined that the report accurately showed the receipt date, location, and placement of MgO.	WP 05-WH1011and RP0440	Adequate
16	Does the WWIS adequately document waste shipment and emplacements information for waste containers selected item 4 above?	After review of the documents provided, inspectors determined that the WWIS accurately reflects the waste shipment and emplacement information for the drums selected in Item 4.	WP 05-WH1011and RP0390, RP0440, RP0360, RP0510, and Attachments 1&4 of WP-05-WH1011	Adequate
17	Can DOE demonstrate that the waste emplacement conforms to the assumed waste loading conditions as specified in 194.24(f)? In the CCA and as of 2003, the waste must be randomly (i.e., homogenously) emplaced to conform with the performance and compliance assessment assumptions.			Finding

DOCKET NO: A-98-49
Item: II-B3-53

Monitoring Inspection Report

INSPECTION No. EPA-WIPP-6.03-18c
OF THE
WASTE ISOLATION PILOT PLANT
June 18-19, 2003

U. S. ENVIRONMENTAL PROTECTION AGENCY
Office of Radiation and Indoor Air
Center for Federal Regulation
1200 Pennsylvania Avenue, NW
Washington, DC 20460

October 2003

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Attachments

Attachment A Inspection Plan and Checklist

- PLAN File: 2003 Monitoring Plan FINAL.wpd
- CHECKLIST File: 070203 2003 194.42 Monitoring Checklist.wpd

Attachment B Opening and Closing Sign Up Sheets

Attachment C Documents Reviewed

-DOCUMENT Files: 070203 2003 194.42 Documents Reviewed A FINAL.wpd
070203 2003 194.42 Documents Reviewed B FINAL.wpd
070203 2003 194.42 Documents Reviewed C FINAL.wpd
070203 2003 194.42 Documents Reviewed D FINAL.wpd
070203 2003 194.42 Documents Reviewed E FINAL.wpd
070203 2003 194.42 Documents Reviewed F FINAL.wpd

Attachment D.1 Geomechanical Documents Reviewed

- File(s) Received: COB-M2003-D 07 1 Rev3.pdf
  COB-M2003-A 03-3177 Gar Vol II.pdf
  COB-M2003-A2 033177 Vol 1.pdf
- Document(s) Received: COB-M2003-AG

Attachment D.2 Hydrological Documents Reviewed

- File(s) Received: COB-M2003-C 02-1 Rev 6.pdf
  COB-M2003-O DOE WIPP 02-2225.pdf
  COB-M2003-W 02-EM1005 Rev 3.pdf
- Document(s) Received: COB-M2003-AJ
  COB-M2003-AL

Attachment D.3 Waste Activity Documents Reviewed

- File(s) Received: COB-M2003-G1 08-NT 01 Rev8.pdf
- Document(s) Received: COB-M2003-AK
  COB-M2003-AN

Attachment D.4 Drilling Related Documents Reviewed

- File(s) Received: COB-M2003-F 02-PC 02 Rev 0.pdf
  COB-M2003-N DOE WIPP 99-2308 Rev 3.pdf
  COB-M2003-R 02 EC3002 Rev 1.pdf
- Document(s) Received: COB-M2003-AF
  COB-M2003_R1
  COB-M2003_R2
  COB-M2003_R3
  COB-M2003_R4
  COB-M2003_R5
  COB-M2003_R6
  COB-M2003_R7
  COB-M2003_R8

Attachment D.5 Subsidence Documents Reviewed

- File(s) Received: COB-M2003-B 09 ES01 Rev 3.pdf
  COB-M2003-E DOE WIPP 03 2293.pdf
- Document(s) Received: COB-M2003-AE
  COB-M2003-AE1

Attachment D.6 Other Documents Reviewed

- Document(s) Received: COB-M2003-1
COB-M2003-AB
COB-M2003-AD

1.0 Executive Summary

The U.S. Environmental Protection Agency (EPA) conducted an inspection of the Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) on June 18-19, 2003, as part of our continuing WIPP oversight program. The purpose of this inspection was to verify that DOE is adequately monitoring the ten parameters listed in the Compliance Certification Application (CCA), Volume 1, Section 7.0, in particular Table 7-7 (See Table 1).

The inspection examined the implementation of monitoring for geomechanical, hydrological, waste activity, drilling related, and subsidence parameters. The inspectors toured locations where measurements are taken, reviewed parameter databases, and reviewed documents and procedures directing these monitoring activities.

The inspectors found that DOE, through its contractor Westinghouse (WTS), effectively implemented the monitoring programs at WIPP for all areas. EPA did not have any findings or concerns but did have one observation. The inspection team also confirmed that DOE monitoring programs are reported annually.

2.0 Scope

The WIPP Compliance Criteria (40 CFR Part 194.42(a)) require DOE to "conduct an analysis of the effects of disposal system parameters on the containment of waste in the disposal system." The results of these analyses must be included in the CCA and are to be used to develop pre-closure and post-closure monitoring requirements. (See Inspection Plan in Attachment A)

Volume 1, Section 7.0, of the CCA documents DOE's analysis of monitoring. Table 7-7 of the CCA (Attachment D.6, COB-M2000-1) lists the ten parameters that DOE determined may impact the disposal system. These parameters are grouped into major categories and listed in Table 1.

Table 1 - Monitored Parameters

Geomechanical Parameters- -Creep closure, -Extent of deformation, -Initiation of brittle deformation, and -Displacement of deformation features.	**Waste Activity Parameter-** -Waste Activity **Subsidence Parameter-** -Subsidence measurements
Hydrological Parameters- -Culebra groundwater composition and -Change in Culebra groundwater flow direction.	**Drilling Related Parameters-** -Drilling rate and -The probability of encountering a Castile brine reservoir.

We accepted these ten monitoring parameters in the certification issued on May 18, 1998. This inspection was performed under authority of 40 CFR 194.21 to verify the continued effectiveness of the parameter monitoring program at WIPP. Inspection activities included an examination of monitoring and sampling equipment both on and off site, and in the underground. We also reviewed sampling procedures and measurement techniques and verified implementation of an effective quality assurance program.

3.0 Inspection Team, Observers, and Participants

The inspection team consisted of four representatives of the EPA Administrator and an observer from the Environmental Evaluation Group (EEG), Thomas Kline.

Inspection Team Member	Position	Affiliation
Chuck Byrum	Inspection Team Leader	EPA
Nick Stone	Inspector	EPA
Shankar Ghose	Observer	EPA
Tom Peake	Observer	EPA

Numerous DOE staff and contractors participated in the inspection, below is a partial list.

DOE/Contractor Participates	Organization/Title	Affiliation/Organization
Stan Patchet	Manager	WTS
Stewart Jones	ES&H	WTS
Rey Carrasco	Geo. Engr.	WTS
Dave Speed	WWIS	WTS
Dave Hughes	RHG	WTS

The inspection began on Wednesday, June 18, 2002, with a presentation by DOE/CBFO, Sandia National Laboratories (SNL) and WTS that covered an overview of the status of elements of the monitoring program (COB-M2003-AB, COB-M2003-AD, COB-M2003-AE COB-M2003-AE1 and COB-M2003-AF).

The inspection team reviewed various activities to verify effective implementation of the plans and procedures. Inspectors observed a demonstration of the WIPP Waste Information System (WWIS), which is used to track the waste shipped from TRU waste sites. Inspectors also reviewed the Delaware Basin Drilling Surveillance Program, Groundwater Monitoring Program, and the Ground Control Monitoring Program.

4.0 Performance of the Inspection

EPA inspectors reviewed three fundamental areas to verify continued implementation of the DOE monitoring program during the pre-closure phase: 1) written plans and procedures, 2) quality assurance procedures and records, and 3) results of the monitoring program in the form of raw data, intermediate reports, and final annual reports, if appropriate. The inspection checklist in Attachment A provides details of inspection activities.

4.1 Monitoring of Geomechanical Parameters

DOE committed to measure four geomechanical parameters in the CCA: creep closure, extent of deformation, initiation of brittle deformation, and displacement of deformation features. WIPP has four programs that supply information for these four parameters: the geomechanical monitoring program, the geosciences program, the ground control program, and the rock mechanics program. These programs are documented in the WIPP Geotechnical Engineering Program Plan (WP 07-01, COB-M2003-D). The results of the Geotechnical Engineering Program are documented in the Geotechnical Analysis Report for July 1999 - June 2000 (DOE/WIPP-00-3177, COB-M2002-A and A2).

Inspectors toured and reviewed underground instrumentation, the computer database, and field data sheets used to record raw measurement data. They also examined the input of data into the computer database and examined the output quality assurance checkprints (Attachment D.1, COB-M2003-AG2) to verify implement of the measurement plan.

In 2003, the inspectors requested that DOE/WTS walk them through the measurement of values and to the input of those values into the database used to store this information. A roof to floor convergence measurement was chosen for the geomechanical program. While in the underground, inspectors observed taking a roof to floor convergence measurement at location in Panel Two using procedure WP 07-EU1301. Inspectors examined the datasheet filled out by the technicians, next the data was processed, checked printed, and input (Attachment D.1, COB-M2003-AG1 to AG4) into the database by Rey Carrasco and Dennis Mathieu according to procedure WP 07-EU130. This demonstration showed the inspectors that DOE/WTS staff implement procedures appropriately and are concerned about the quality of their work.

The inspectors also observed the acquisition of remotely acquired data, COB-M2003-AG3.

4.2 Monitoring of Hydrological Parameters

DOE committed to measure two hydrological parameters in the CCA: Culebra groundwater composition and changes in the Culebra groundwater flow direction. Related parameters are measured and documented in the WIPP environmental monitoring program. These programs are documented in the WIPP Groundwater Monitoring Program Plan (WP 02-1,

COB-M2003-C).

The results of this program are documented in the Waste Isolation Pilot Plant 2002 Site Environmental Report, DOE/WIPP 01-2225 (COB-M2003-O). This document describes the groundwater monitoring program and presents results for the previous year.

During the 2003 inspection inspectors requested that staff members walk them through the development of Culebra groundwater composition samples and the development of Culebra groundwater flow directions. The staff showed the inspectors how potentiometric surfaces are developed and how flow directions are develop for flow in the Culebra, see COB-M2003-AJ. Staff members also showed how groundwater serial samples are taken using procedure WP-02-EM1005 (COB-M2003-W, COB-M2003-AL). Inspectors were able to confirm that the staff follow procedures and report the monitor parameters as required.

4.3 Monitoring of Waste Activity Parameters

DOE committed to monitor the activity of waste emplaced into the CCA. This parameter is part of the extensive database collected for each container shipped to WIPP and is stored in the WIPP Waste Information System (WWIS). The WWIS is a software system that screens waste container data and provides reports on the TRU waste sent to WIPP. The requirements for the WWIS are discussed in the WIPP Waste Information Program and System Data Management Plan (WP 08-NT.01, COB-M2003-G1).

The facility demonstrated that the WWIS can receive data and that the WWIS can generate needed reports. CBFO has committed to annual waste activity reports. Dave Speed showed the inspection team how the WWIS records waste activity information provided by the generator sites and how the computer database produces waste activity reports. The inspection team obtained copies of the Nuclide Report (Attachment D.3, COB-M2003-AK).

4.4 Monitoring of Drilling Related Parameters

DOE committed to measure two drilling related parameters in the CCA: the drilling rate and the probability of encountering a Castile brine reservoir. These parameters are measured as part of the Delaware Basin Drilling Surveillance Plan (WP 02-PC.02, COB-M2003-F). This surveillance program measures and records many parameters related to drilling activities around the WIPP site. The results of the surveillance program are documented annually in the Delaware Basin Drilling Surveillance Program - Annual Report for September 2001 through August 2002 (DOE/WIPP99-2308, COB-M2003-N).

Inspectors reviewed the drilling surveillance database, examined drilling rate changes, and permitted and active injection wells while interviewing Dave Hughes. Inspectors received a list of changes in drilling rates from 1996 to June 2003 (COB-M2003-AF) and a list from the well database of injection wells (COB-M2003-R6). In addition inspectors received a list of

"Castile Brine Encounters" (COB-M2003-AF).

4.5 Monitoring of Subsidence Parameters

DOE committed to measure subsidence at the WIPP site. This parameter is documented as part of the of the WIPP Underground and Surface Surveying Program (WP 09-ES.01, COB-M2003-B). DOE performs the subsidence survey at the site annually during pre-closure operations. The results of this program are reported annually in the WIPP Subsidence Monument Leveling Survey - 2001 (DOE/WIPP 03-2293, COB-M2003-E).

This year the staff showed inspectors how survey data is input into the computer database, and used to produce the needed reports. Larry Pyeatt showed how the actual measured subsidence compares with predicted values, COB-M2003-AE. He also described the new surveyor qualification requirements, COB-M2003-AE1.

5.0 Summary of finding, observation, concerns, and recommendations.

Inspectors concluded that DOE has adequately maintained programs to monitor the necessary ten parameters during pre-closure operations. We have no findings or concerns. However we do have one observation. DOE/WTS reports the results of these monitoring activities annually as specified in the CCA.

5.1 Inspection Observation.

For some of the parameters that are required to be monitored, such as some geomechanical and waste activity parameters, it is not clear that they are all reported. During the inspection DOE committed to make sure that all monitor parameters are clearly reported annually.

Attachment A: Inspection Plan and Checklist

- **PLAN File:** 071503 2003 Monitoring Plan FINAL.wpd
- **CHECKLIST File:** 071603 2003 194.42 Monitoring Checklist.wpd

WIPP Monitoring Inspection Plan - 40 CFR 194.42 for the year 2003

Purpose: Verify that the Department of Energy (DOE) can demonstrate that the Waste Isolation Pilot Plant (WIPP) is monitoring the parameter commitments made in the documentation to support the EPA's certification decision, in particular CCA, Volume 1, Section 7.0 and Appendix MON. This inspection is conducted under the authority of 40 CFR 194, Section 21.

This inspection is part of EPA's continued oversight to ensure that WIPP can, in fact, monitor the performance of significant parameters of the disposal system.

Scope: Inspection activities will include an examination of monitoring and sampling equipment both on and off site, and in the underground. A review of sampling procedures and measurement techniques may be conducted. Quality assurance procedures and documentation for each of these activities will also be reviewed.

Location: This inspection will be held at the WIPP facility location twenty-six miles south east of Carlsbad, New Mexico and the surrounding vicinity as needed.

Duration: The EPA expects to complete its inspection in one day. The day will begin with an opening meeting at 8:00 a.m. and end at 5:00 p.m. with a closeout session.

Expected Date: June 18, 2003 to June 19, 2003.

Documents For Review: Provide the latest versions for this inspection and any other pertinent documentation and/or procedures.

40 CFR 194.42 for year 2003 - DOE WIPP Monitoring Commitments Checklist

	Pre-closure Monitoring Commitments		
#	Question	Comment (Objective Evidence)	Result
	Geomechanical Parameters		
1	Does DOE demonstrate that they have implemented plans/programs/procedures to measure - a) Creep Closure; b) Extent of Deformation; c) Initiation of Brittle Deformation and d) Displacement of Deformation Features during the pre-closure phase of operations as specified in the CCA part of the geomechanical monitoring system? (CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)	COB-M2003-D documents the program planned to measure, document, report, and QA these four activities. Section 3.0, COB-M2003-D documents the Geomechanical Monitoring Program and records the activities associated with this program, the methods planned to be used, and the reporting plans. Section 4.0, COB-M2003-D documents the quality assurance requirements of these activities. During this inspection a demonstration by Rey Carrasco and other staff of geomechanical measurements were done. COB-M2003-AG1 through AG4 are examples of data collected and verification (using WP 07-EU1303). COB-M2003-A is an example of results of these monitoring activities. The inspection team toured and reviewed the computer system and database systems used to collect and process these data.	Sat.
2	Does DOE demonstrate that they have implemented an effective quality assurance program for item 1 above? 40 CFR 194.22	EPA performed its annual quality assurance inspection July 2002 and found the program at DOE/WTS adequate.	Sat.
3	Does DOE demonstrate that the results of the geotechnical investigations are reported annually? (CCA, Volume 1 Section 7.2.4; App. MON, Page MON-10)	COB-M2002–D, page 6, Section 3.2 requires that analysis will be performed annually and the results will be published in the geotechnical analysis report.	Sat.

Documents Reviewed:

#8 COB-M2003-D: WIPP Geotechnical Engineering Program Plan - WP 07-01, Revision 3
#23 COB-M2003-Y: Manually Acquired Geomechanical Instrument Data - WP 07-EU1301, Revision 0
#24 COB-M2003-X: Geomechanical Instrument Data Processing - WP 07-EU1303, Revision 0, 01/15/01
#21 COB-M2003-AG1: Sample - raw data - GIS Field Data Sheet, Room Closure Measurements
#21 COB-M2003-AG2: Sample - raw data - Convergence CHECK PRINT
#21 COB-M2003-AG3: Sample - Check print - Remotely acquired data.
#21 COB-M2003-AG4: Sample - Various plots
#22 COB-M2003-AD: Presentation on geotechnical engineering
#4 COB-M2003-A, A2: Geotechnical Analysis Report for July 2001 - June 2002, DOE/WIPP-00-3177 V 1,2

40 CFR 194.42 for year 2003 - DOE WIPP Monitoring Commitments Checklist

	Pre-closure Monitoring Commitments		
#	Question	Comment (Objective Evidence)	Result
	Hydrological Parameters		
1	Does DOE demonstrate that they have implemented plans/programs/procedures to measure - a) Culebra Groundwater Composition; b) Change in Culebra Groundwater Flow Direction during the pre-closure phase of operations as specified in the CCA part of WIPP's groundwater monitoring plan? (CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)	COB-M2003-C documents the program planned to measure, document, report, and QA these two activities. COB-M2003-C documents the Groundwater Surveillance Program Plan and records the activities associated with this program, the methods planned to be used, and the reporting plans. Section 11.0, COB-M2003-C documents the quality assurance requirements of these activities. Staff members described how flow direction is determined. #38 show examples of the flow directions developed and the potentiometric surface used to derive them. Staff members walked inspectors through the serial sample measurement techniques outlined in #22 to acquire representative chemistry samples from groundwater wells. #40 and #41 are samples of the results of this process for the WQSP-2 water monitor well	Sat.
2	Does DOE demonstrate that they have implemented an effective quality assurance program for item 1 above? (CCA, App MON, Page MON-22) 40 CFR 194.22	EPA performed its annual quality assurance inspection July 2002 and found the program at DOE/WTS adequate.	Sat.
3	Does DOE demonstrate that the results of the groundwater monitoring program are reported annually? (CCA, Volume 1 Section 7.2.4; App. MON, Page MON-22)	COB-M2003-C Section 8.1.3, page 33 documents that results of monitoring will be reported annually and will be published in the Annual Site Environmental Report.	Sat.

Documents Reviewed:

#6 COB-M2003-C: Groundwater Monitoring Program Plan - WP 02-1, Revision 6, 3/6/03
#22 COB-M2003-W: Groundwater Serial Sample analysis - WP 02-EM1005, Revision 3, 11/19/01
#38 COB-M2003-AJ: Flow direction and potentiometric surface plots
#40 COB-M2003-AL: Forms from groundwater chemistry collection, field logs
#41 COB-M2003-AM: Plot of 15 rounds of serial samples for dirrerent components of groundwater
#20 COB-M2003-O: Waste Isolation Pilot Plant 2001 Site Environmental Report. DOE/WIPP 02-2225

40 CFR 194.42 for year 2003 - DOE WIPP Monitoring Commitments Checklist

	Pre-closure Monitoring Commitments		
#	Question	Comment (Objective Evidence)	Result
	Waste Activity Parameters		
1	Does DOE demonstrate that they have implemented plans/programs/procedures to measure - a) Waste Activity? (CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)	The WWIS will be used to measure and store waste activity among other things. COB-M2003-G1 to G7 documents the program plan to measure, document, report, and QA this activity. COB-M2003-G1 to G7 documents the WWIS Program and records the activities associated with this program, the methods planned to be used, and the reports planned. Dave Speed demonstrated the used of the WWIS and described the production of the Nuclide Report (#40) which list total waste activity. Dave demonstrated that procedures are implemented appropriately. #42 documents the waste activity as of March 18, 2003.	Sat.
2	Does DOE demonstrate that they have implemented an effective quality assurance program for item 1? (CCA, App WAP, page C-30) 40 CFR 194.22	EPA performed its annual quality assurance inspection July 2002 and found the program at DOE/WTS adequate.	Sat.
3	Does DOE demonstrate that the results of the waste activity parameters are reported annually? (CCA Volume 1, Section 7.2.4 Reporting)	COB-M2003-G1 Section 6, page 11 'Regulatory Reporting' documents that results of monitoring will be reported annually.	Sat.

Documents Reviewed:
#11 COB-M2003-G1: WIPP Waste Information System Program and Data Management Plan - WP 08-NT.01, Revision 8
#40 COB-M2003-AK: Sample - WWIS Nuclide Report
#42 COB-M2003-AN Sample - Summary of Waste Emplacement Inventory as of March 18, 2003

40 CFR 194.42 for year 2003 - DOE WIPP Monitoring Commitments Checklist

	Pre-closure and Post Closure Monitoring Commitments		
#	Question	Comment (Objective Evidence)	Result
	Drilling Related Parameters		
1	Does DOE demonstrate that they have implemented plans/programs/procedures to measure - a) Drilling Rate; and b) Probability of Encountering a Castile Brine Reservoir? (CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)	COB-M2003-F, documents the program planned to measure, document, report, and QA these two activities. COB-M2003-F documents the Delaware Basin Drilling Surveillance Plan and records the activities associated with this program, the methods planned to be used, and the reporting plans. Section 6.0, COB-M2003-F documents the quality assurance requirements of these activities. Dave Hughes showed COB-M2003-R5 and COB-M2003-R7 as examples of data generated by the drilling related monitoring program. COB-M2003-R2 is an example of the information produced from the surveillance database. COB-M2003-N is a copy of the annual report; page 8 shows the 2000 calculation of the drilling rate and page 10 shows a discussion of Castile brine pockets.	Sat.
2	Does DOE demonstrate that they have implemented an effective quality assurance program for item 1 above? (CCA, App DMP, page DMP-9) 40 CFR 194.22	EPA performed its annual quality assurance inspection July 2002 and found the program at DOE/WTS adequate.	Sat.
3	Does DOE demonstrate that the results of the drilling related parameters are reported annually? (CCA Volume 1, Section 7.2.4 Reporting; App DMP, page DMP-9)	COB-M2003-F, page 5 documents that results of monitoring will be reported annually.	Sat.

Documents Reviewed:

#10 COB-M2003-F: Delaware Basin Drilling Surveillance Plan - WP 02-PC.02, Revision 0
#3 COB-M2003-AB: Opening presentation listing recent drilling rates, Castile Brine encounters, airdrilling, disposal wells, drilling practices and solution mining.
#24 COB-M2003-N: Delaware Basin Monitoring Annual Report, DOE/WIPP 99-2308, Revision 3
#28 COB-M2003-R1: New Mexico Weekly Activity Report
#29 COB-M2003-R2: Well Check Prints
#30 COB-M2003-R3: PI Scout Ticket
#31 COB-M2003-R4: State of NM Well Forms
#32 COB-M2003-R5: NM Deep Well Count Report
#33 COB-M2003-R6: Injection and salt water disposal well information
#34 COB-M2003-R7: Field Report Annual Survey
#45 COB-M2003-R8: Castile Brine Encounter

40 CFR 194.42 for year 2003 - DOE WIPP Monitoring Commitments Checklist

	Pre-closure and Post Closure Monitoring Commitments		
#	Question	Comment (Objective Evidence)	Result
	Subsidence Measurements		
1	Does DOE demonstrate that they have implemented plans/programs/procedures to measure - a) Subsidence measurements? (CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)	COB-M2003-B documents the program planned to measure, document, report, and QA these two activities. COB-M2003-B documents the WIPP Underground & Surface Surveying Program and records the activities associated with this program, the methods planned to be used, and the reporting plans. Section 4.0, COB-M2003-B documents the quality assurance requirements of these activities. Staff presented the measured subsidence over Panel 1, see COB-M2003-AE and also discussed changes in the program such as surveyor standards, see COB-M2003-AE1. COB-M2003-AH shows examples of the results of the program. The inspection team toured and reviewed the computer and database system used to record and store subsidence survey data.	Sat.
2	Does DOE demonstrate that they have implemented an effective quality assurance program for item 1? 40 CFR 194.22	EPA performed its annual quality assurance inspection July 2002 and found the program at DOE/WTS adequate.	Sat.
3	Does DOE demonstrate that the results of the subsidence measurements are reported annually? (CCA Volume 1, Section 7.2.4 Reporting)	COB-M2003-B, page 2 documents that results of monitoring will be reported annually.	Sat.

Documents Reviewed:

#5 COB-M2003-B: WIPP Underground and Surface Surveying Program - WP 09-ES.01, Revision 3
#33 COB-M2003-P: Subsidence Survey Data Acquisition Report, Technical Procedure - WP 09-ES4001, Revision 0, 06/13/02
#3 COB-M2003-AE: Presentation of the results of the subsidence monitor program
#3 COB-M2003-AE1: Survey Training and Qualification Standards
#36 COB-M2003-AH: Plot of survey loops for subsidence measurements, elevation comparison
#9 COB-M2003-E: WIPP Subsidence Monument Leveling Survey - 2002, October 2002

Attachment B:
Opening and Closing Meeting Attendance Sheets

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION CLOSING MEETING

Date: Wednesday, June 18, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Lisa Will	Enft Oversight/WTS/QA	8433
Nick Stone	EPA Region 6	214 665 7226
Tom Klein	Sai/EEG	885-9675
Tom Peake	EPA/HQ	202 564 9765
Chuck Byrum	EPA/HQ	214 665 7555
Russ Patterson	DOE/CBFO	505-234-7457
Rey Carrasco	WTS/Geo Engr.	8698
Don Haward	WTS/S&H	8285
Jim Kenney	SO/CTAC	8128
Larry Madl	P. Sci/WRES	7328
Steve B Jones	Env. Mon/WRES	8293
SHANKAR GHOSE	Geologist/EPA/HQ	202 564 9763
Dave Kump	Rel Saf + Emerg Mgmt/WTS	8486
S.J. Patchet	WTS Mine Eng	8370
Richard Farrell	DOE CBFO	8316

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION OPENING MEETING

Date: Wednesday, June 18, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Lisa Will	Ext Oversight / WTS/QA	8433
Stewart Jones	Env. Mon. / WRES	8293
Ernie Endes	WTS/IWHE	8684
Jim Kenney	S.O. Specialist / CTAC	8128
Mark Dziansk	IWO / WTS	8154
John D. Guy	IWO / WTS	8906
Tom Klein	Sai / EEG	885-9675
Ed Flynn	WTS / OPS	8377
Leny Bosnick	WTS / OPS	8066
Chuck Byrum	EPA/ HQ	2146657555
Tom Peake	EPA/HQ	202 564 9765
Don Harward	CJTS / S&H	8285
Dave Kump	WTS/RadSoft Emerg. Mgmt	8486
Phil Porter	WTS / OPS	8442
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Randy Elmore	WTS/IWHE	505-234-8019
S.J. Patchet	WTS / Mine Engineering	8370
L.A. Pyeatt	WTS/ Mine Eng.	8191
Rey Carrasco	WTS/Geo Engr.	8698

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION OPENING MEETING

Date: Wednesday, June 18, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Larry Madl	Principal Scientist/WRES	234-7328
SHANKAR GHOSE	Geologist/EPA/HQ	202 564 9763
Russ Patterson	PA Manager/DOE/CBFO	505-234-7457
Nick Stone	EPA Region 6	214 665 7226

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION OPENING MEETING

Date: Thursday, June 19, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Lisa Will	Eft oversight/WTS/QA	8433
DAVID HUGHES	WRES	7342
Larry Madl	WRES	7328
H.L. Jody Plum	RCRA PERMIT MGR. DOE/CBFO/OEC	505.234.7462
Russ Patterson	PA Manager / DOE-CBFO	505-234-7457
Chuck Byrum	EPA/HQ	214-665-7555
Tom Peake	EPA/HQ	202-569-9765
Nick Stone	EPA Region 6	214 665 7226
SHANKAR GHOSE	EPA/HQ	202 564 9763
Jim Johns	WRES	505-234-7480
Dave Kump	Mgr. Rad Saft + Emerg. Mgmt / WTS	505-234-8486
Tom Klein	Sai / EEG	885-9675
Art Chavez	WRES	234-7456
Steve Kouba	WRES	234-7443
JUDY ZWICKL	WRES	234-7416

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION CLOSING MEETING

Date: Thursday, June 19, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Richard Farrell	Safety Officer/DOE-CBFO	505-~~85~~ 234-8318
Dave Kump	Mgr. Rad Safe + Emerg Mgmt./WTS	505-234-8486
Mark Dziamski	Crew Manager/IWO	505-234-8154
Harold Johnson	NEPA Compliance Ofcr	505-234-7349
Don Harward	Dep Mgr. S&H/WTS	234-8285
Leroy Boston	Mgr Surface OB + Main	234-8006
Kathi Dunbar	Key	234-8199
KATHY ZBRYK	Env. Scientist/WRES	x8373
DAVID HUGHES	WRES	7342
Ernie Endes	WTS/EWHE	8684
Tom Klein	Sci/EEG	885-9675
Ed Flynn	WTS/OPS	8377
Don Galbraith	CBFO-OSO Fac Rep	8365
E.B. Nuckols	CBFO	(505) 234-7356
Russ Patterson	DOE/CBFO	505/234-7457
LFrank Supka	WTS/Safety + Health	(505) 234-8816
REY CARRASCO	WTS/Geo Engr	505 234 8698
SUBHASH SETHI	WTS/OPS.	505-234-8182
S.J. PATCHET	WTS/MINE ENGINEERING	505-234-8370

ALL CORRESPONDENCE, REPORTS, DEFICIENCY NOTICES SHOULD BE ROUTED THROUGH WTS QUALITY ASSURANCE IN ACCORDANCE WITH WP 13-QA3007, *EXTERNAL OVERSIGHT ACTIVITES*

EPA ANNUAL INSPECTION CLOSING MEETING

Date: Thursday, June 19, 2003

PRINTED NAME	TITLE/ORGANIZATION	PHONE NUMBER
Stewart Jones	Env Mon. Mgr / WRES	505.234.8293
Phil Porter	OPS NTS	505-234-8442
Steve Youngerman	WTS/OPS	505-234-8302
Nick Stone	EPA Region 6	214 665-7226
Tom Peake	EPA/HQ	202-564-9765
Chuck Byrum	EPA/HQ	214-665-7555
Lisa Will	Ext Oversight/WTS/QA	8433
SHANKAR GHOSE	EPA/HQ	202 564 9763

Attachment C: Documents Reviewed

- Document Files: 071603 2003 194.42 Documents Reviewed A FINAL.wpd
- Document Files: 071603 2003 194.42 Documents Reviewed B FINAL.wpd
- Document Files: 071603 2003 194.42 Documents Reviewed C FINAL.wpd
- Document Files: 071603 2003 194.42 Documents Reviewed D FINAL.wpd
- Document Files: 071603 2003 194.42 Documents Reviewed E FINAL.wpd
- Document Files: 071603 2003 194.42 Documents Reviewed F FINAL.wpd

	Documents Reviewed and Copies Received	194.42 Monitoring Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
1	Table 7-7 from Chapter 7 of the CCA; Pre-closure and Post-closure Monitored Parameters.	Parameters committed by DOE to be measured. COB-M2003-1	DOE, CCA, Chapter 7, Table 7-7. Attachment D.6	Yes
2	CCA, Appendix MON and Attachment MONPAR. In particular Table MON-1, pages MON-10, MON-29	Both documents discuss the pre- and post-closure parameters selected to be monitored at the WIPP site. COB-M2003-2	DOE, CCA documentation. *Not included in this report	No*
3	Opening Meeting Presentation Materials	EPA Inspection - Hydrology Program (AB) Geotechnical Engineering (AD) WIPP Subsidence Monitoring (AE) Survey Training and Qualification Standards (AE1) Delaware Basin Drilling Surveillance Program (AF) COB-M2003-AB, AD, AE, AE1, and AF	DOE/WTS/SNL Attachment D.4 and D.6	Yes
4	Geotechnical Analysis Report for July 2001 - June 2002, DOE/WIPP-00-3177, Volumes One and Two, March 2003	This report is an example of the results of the geomechanical monitoring program. COB-M2003-A and A2	DOE/WTS	File
5	Subsidence Monitoring: WIPP Underground and Surface Surveying Program WP 09-ES.01 Revision 3, 10/16/01	Demonstrates DOE's implementation of subsidence monitoring. COB-M2003-B	DOE/WTS	File
6	Hydrological Monitoring: WIPP Groundwater Monitoring Program Plan WP 02-1 Revision 6, 3/6/03	Demonstrates DOE's implementation of hydrological monitoring. COB-M2003-C	DOE/WTS	File

NOTE: Copies of plans, procedures, and reports may be obtained from the Department of Energy or Westinghouse.

	Documents Reviewed and Copies Received	194.42 Monitoring Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
7	Strategic Plan for Groundwater Monitoring at the Waste Isolation Pilot Plant DOE/WIPP-03-3230, February 2003	Describes the objectives and goals of the groundwater monitoring program. COB-M2003-Q	DOE/WTS	File
8	Geomechanical Monitoring: WIPP Geotechnical Engineering Program Plan WP 07-01, Revision 3, 12/17/02	Demonstrates DOE's implementation of geomechanical monitoring. COB-M2003-D	DOE/WTS	File
9	WIPP Subsidence Monument Leveling Survey - 2002 DOE/WIPP 03-2293, October 2002	This report is an example of the results of the subsidence monitoring program. COB-M2003-E	DOE/WTS	File
10	Delaware Basin Drilling Surveillance Plan WP 02-PC.02, Revision 0, 03/27/97	Documents DOE's drilling monitoring plan. COB-M2003-F	DOE/WTS	File
11	WIPP Waste Information System Program and Data Management Plan WP 08-NT.01, Revision 8, 02/27/03	Demonstrates DOE's implementation of waste activity monitoring. COB-M2003-G1	DOE/WTS	File
12	Delaware Basin Drilling Database Upgrade Process - Management Control Procedure WP 02-EC3002, Revision 1, 06/14/00	Documents how state and commercial well ata is entered. COB-M2003-R	DOE/WTS	File
13	Electric Submersible Pump Monitoring System Installation and Operation - Technical Procedure WP 02-EM1002, Revision 1, 09/30/99	Installation and operation instructions for submersible pump. COB-M2003-S	DOE/WTS	File
14	Final Sample and Serial Sample Collection - Technical Procedure WP 02-EM1006, Revision 3, 04/24/03	Describes water sample collection. COB-M2003-T	DOE/WTS	File

	Documents Reviewed and Copies Received	194.42 Monitoring Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
15	Waste Stream Profile Form Review and Approval Program WP 08-NT.03 Revision 3, 03/03/03	Demonstrates DOE's implementation of waste activity monitoring. COB-M2003-G2	DOE/WTS *Not included in this report.	File
16	WIPP Waste Information System Configuration Management and Software Quality Assurance Program WP 08-NT.04, Revision 4, 01/29/03	Demonstrates DOE's implementation of waste activity monitoring. COB-M2003-G3	DOE/WTS	File
17	WIPP Waste Information System Software Verification and Validation Plan WP 08-NT.05, Revision 2, 04/03/03	Demonstrates DOE's implementation of waste activity monitoring. COB-M2003-G4	DOE/WTS	File
18	WIPP Waste Information Software Requirements Specification WP 08-NT.06, Revision 3, 12/03/01	Demonstrates DOE's implementation of waste activity monitoring. COB-M2003-G5	DOE/WTS	File
19	WIPP Waste Information System Software Design Description WP 08-NT.07, Revision 3, 08/13/01	Demonstrates DOE's implementation of waste activity monitoring. COB-M2003-G6	DOE/WTS	File
20	TRU Waste Receipt WP 08-NT3020, Revision 8, 05/28/03	Demonstrates DOE's implementation of waste activity monitoring. COB-M2003-G7	DOE/WTS	File
21	Cation and Anion Analysis - Technical Procedure WP 02-EM1007, Revision 0, 03/24/99	Documents analysis of cations and anions of water sample. COB-M2003-U	DOE/WTS	File
22	Groundwater Serial Sample Analysis - Technical Procedure WP 02-EM1005, Revision 3, 11/19/01	Instruction for taking serial samples. COB-M2003-W	DOE/WTS	File

	Documents Reviewed and Copies Received	194.42 Monitoring Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
23	WID Quality Assurance Program Description WP 13-1 Revision 23, 10/15/02	Demonstrates DOE's implementation of quality assurance program. COB-M2003-M	DOE/WTS *Not included in this report.	File
24	Delaware Basin Monitoring Annual Report September 2002 DOE/WIPP 99-2308 Revision 3	Demonstrates DOE's implementation of drilling surveillance program. COB-M2003-N	DOE/WTS	File
25	Waste Isolation Pilot Plant 2001 Site Environmental Report DOE/WIPP 02-2225	Example of the results of the environmental monitoring program, in particular hydrological parameters. COB-M2003-O	DOE/WTS	File
26	Subsidence Survey Data Acquisition Report, Technical Procedure WP 09-ES4001, Revision 0 06/13/02	Procedure documents methods used for acquiring data, creating database, and generating report on subsidence monuments COB-M2003-P	DOE/WTS	File
27	Groundwater Level Measurement - Technical Procedure WP 02-EM1014, Revision 3	Instructions for taking groundwater levels. COB-M2003-V	DOE/WTS	File
28	Sample - NM Weekly Activity Report	Attachment D.4 COB-M2003-R1	DOE/WTS	Yes
29	Sample - Well Check Prints	Attachment D.4 COB-M2003-R2	DOE/WTS	Yes
30	Sample - PI Scout Ticket	Attachment D.4 COB-M2003-R3	DOE/WTS	Yes
31	Sample - State of NM Well Forms	Attachment D.4 COB-M2003-R4	DOE/WTS	Yes

	Documents Reviewed and Copies Received	194.42 Monitoring Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
32	Sample - NM Deep Well Count Report	Attachment D.4 COB-M2003-R5	DOE/WTS	Yes
33	Sample - Injection and Salt Water Disposal Well Information	Attachment D.4 COB-M2003-R6	DOE/WTS	Yes
34	Sample - Field Report Annual Survey	WP 02-EC3002 (#12) Attachment 2 Attachment D.4 COB-M2003-R7	DOE/WTS	Yes
35	Sample - GIS Field Data Sheet, Check prints, plots	Attachment D.1 COB-M2003-AG1 to AG4	DOE/WTS	Yes
36	Sample - Plot of survey loops for subsidence measurements, elevation comparison	. COB-M2003-AH	DOE/WTS	No*
37	Sample - Injection and salt water disposal well information forms	. COB-M2003-AI	DOE/WTS	No*
38	Sample - flow direction plots and potentiometric surface plot.	COB-M2003-AJ	DOE/WTS	No*
39	Sample - WIPP WWIS Nuclide Report as of 06/19/03	Attachment D.3 COB-M2003-AK	DOE/WTS	Yes
40	Sample - forms from groundwater chemistry composition collection, Field Logs	COB-M2003-AL	DOE/WTS	No*
41	Sample - Plots of 15 rounds of serial samples for different components of groundwater	COB-M2003-AM	DOE/WTS	No*
42	Sample - Summary of Waste Emplacement Inventory as of March 18, 2003	Attachment D.3 COB-M2003-AN	DOE/WTS	Yes

	Documents Reviewed and Copies Received	194.42 Monitoring Inspection - June 2003	DOE Documents	
#	Document Title	Subject Matter	Source and Location	Copy
43	Geomechanical Instrument Data Processing WP 07-EU1303, Revision 0, 01/15/01	Sample of implementation of subsidence monitoring program. COB-M2003-X	DOE/WTS	File
44	Manually Acquired Geomechanical Instrument Data WP 07-EU1301, Revision 1, 03/07/03	Technical Procedure for taking geomechanical measurements. COB-M2003-Y	DOE/WTS	File
45	Castile Brine Encounters	Attachment D.4 COB-M2003-R8	DOE/WTS	Yes

Attachment D.1:

Geomechanical Documents Reviewed

- File Received: COB-M2003-D 07 1 Rev3.pdf
- File Received: COB-M2003-A 03-3177 Gar Vol II.pdf
- File Received: COB-M2003-A2 03-3177 Vol 1.pdf

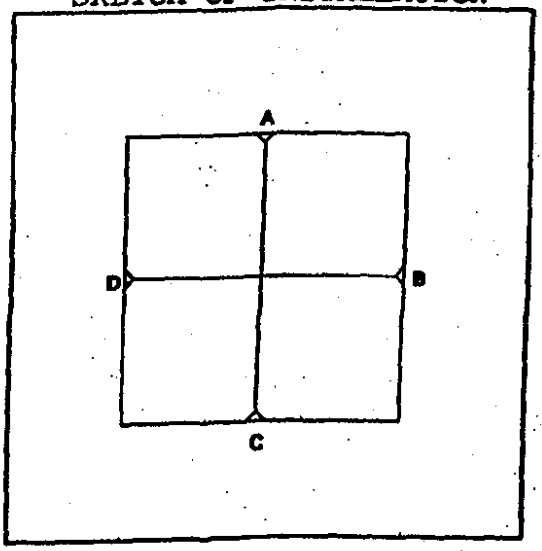
- Document(s) Received: COB-M2003-AG1 to AG4

GIS FIELD DATA SHEET

DATE 06/18/03 TIME 10:40 READINGS BY Whiteley, RCC

FIELDTAG	ENTITY	READING	GISID
E520-S2425	A-C	11'2" + 1.282	18411
E520-S2425	B-D	3'10" + 0.468 RCC 4/18/03	18412

SKETCH OF INSTALLATION



STATION E520-S2425

INSTRUMENT TYPE CVPT

READING DEVICE SINCO

SERIAL NUMBER 114944

CHECK DATE 07-24-03

COMMENTS Check for cracks, erosion, salt build-up, damage, corrosion, loose or missing parts, malfunctions and structural deterioration.

VIEW LOOKING NORTH

FDS/PANEL2

COB-M2003-AG-1

CVPT FIELD DATA CHECKPRINT

DATE	TIME	GISID	FEET	INCHES	DIAL
6/18/03	10:40	18411	11	2	1.282
6/18/03	10:46	18412	31	10	0.468

Date: 6/18/03 CheckPrint # 1

Time: 1:55 PM Records Printed: 2 Checked By _____

COB-M2003-AG2

CHECKPRINT - REMOTELY ACQUIRED DATA

INST. TAG	TYPE	READING	ASCII	GISID	DATE	TIME
51X-GE-00347	WEX	2.896	01:+2.8956	82007	6/18/03	14:07
51X-GE-00347	WEX	3.952	02:+3.9523	82008	6/18/03	14:07
51X-GE-00347	WEX	5.093	03:+5.0933	82009	6/18/03	14:07
51X-GE-00346	WEX	2.687	04:+2.6870	82010	6/18/03	14:07
51X-GE-00346	WEX	4.307	05:+4.3066	82011	6/18/03	14:07
51X-GE-00346	WEX	4.965	06:+4.9651	82012	6/18/03	14:07
51X-GE-00351	WEX	2.074	07:+2.0739	82013	6/18/03	14:07
51X-GE-00351	WEX	3.609	08:+3.6094	82014	6/18/03	14:07
51X-GE-00351	WEX	4.969	09:+4.9695	82015	6/18/03	14:07
51X-GE-00349	WEX	3.339	10:+3.3394	82016	6/18/03	14:07
51X-GE-00349	WEX	4.305	11:+4.3053	82017	6/18/03	14:07
51X-GE-00349	WEX	5.293	12:+5.2929	82018	6/18/03	14:07
51X-GE-00345	WEX	3.09	13:+3.0905	82019	6/18/03	14:07
51X-GE-00345	WEX	3.817	14:+3.8170	82020	6/18/03	14:07
51X-GE-00345	WEX	5.265	15:+5.2654	82021	6/18/03	14:07
51X-GE-00344	WEX	2.558	16:+2.5583	82022	6/18/03	14:07
51X-GE-00344	WEX	4.295	17:+4.2946	82023	6/18/03	14:07
51X-GE-00344	WEX	5.993	18:+5.9930	82024	6/18/03	14:07
51X-GE-00343	WEX	3.478	19:+3.4778	82025	6/18/03	14:07
51X-GE-00343	WEX	4.611	20:+4.6105	82026	6/18/03	14:07
51X-GE-00343	WEX	6.583	21:+6.5834	82027	6/18/03	14:07
51X-GE-00342	WEX	3.668	22:+3.6682	82004	6/18/03	14:07
51X-GE-00342	WEX	4.124	23:+4.1237	82005	6/18/03	14:07
51X-GE-00342	WEX	6.094	24:+6.0935	82006	6/18/03	14:07
51X-GE-00350	WEX	2.744	25:+2.7435	82028	6/18/03	14:07
51X-GE-00350	WEX	3.841	26:+3.8415	82029	6/18/03	14:07
51X-GE-00350	WEX	5.103	27:+5.1026	82030	6/18/03	14:07
51X-GE-00348	WEX	2.814	28:+2.8143	82031	6/18/03	14:07

COB-M2003-AG3

CHECKPRINT - REMOTELY ACQUIRED DATA

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51X-GE-00341	WEX	2.964	31:+2.9638	82001	6/18/03	14:07
51X-GE-00341	WEX	3.77	32:+3.7697	82002	6/18/03	14:07
51X-GE-00341	WEX	6.056	33:+6.0558	82003	6/18/03	14:07

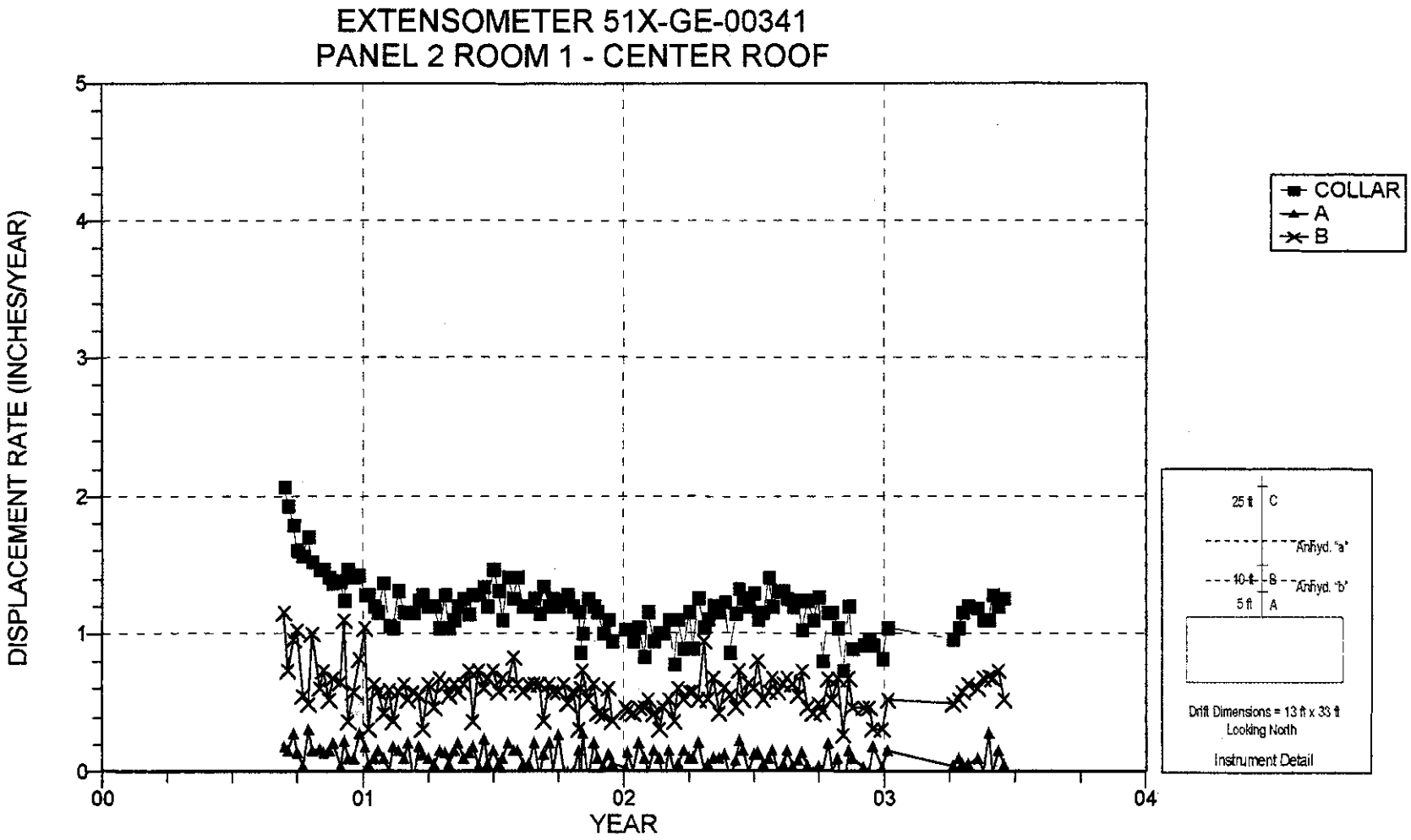
Number of Records: 33

_____ Edit

____ Checkprint

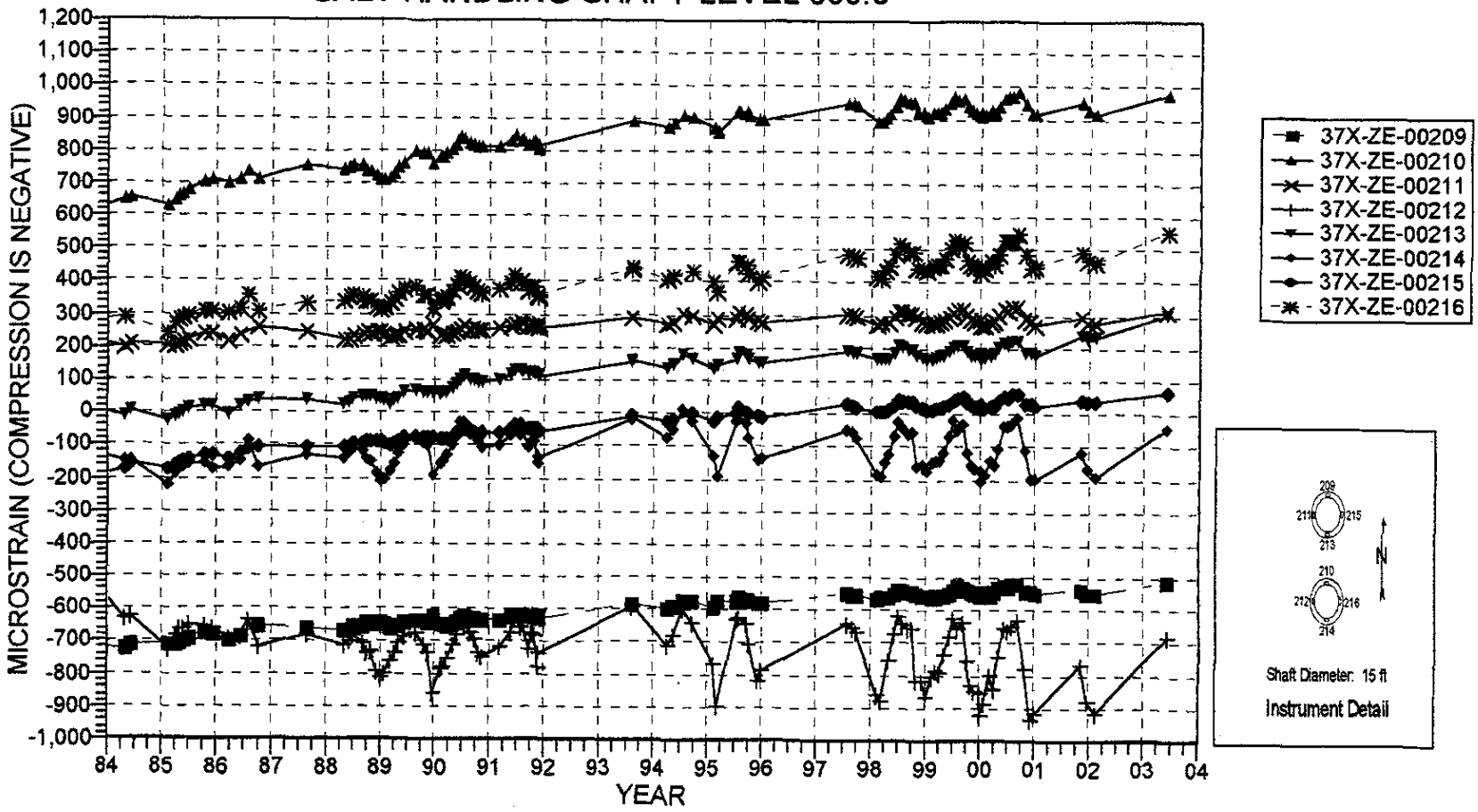
Edited by _____ Date _____

____ Errors Found Checked by _____ Date _____



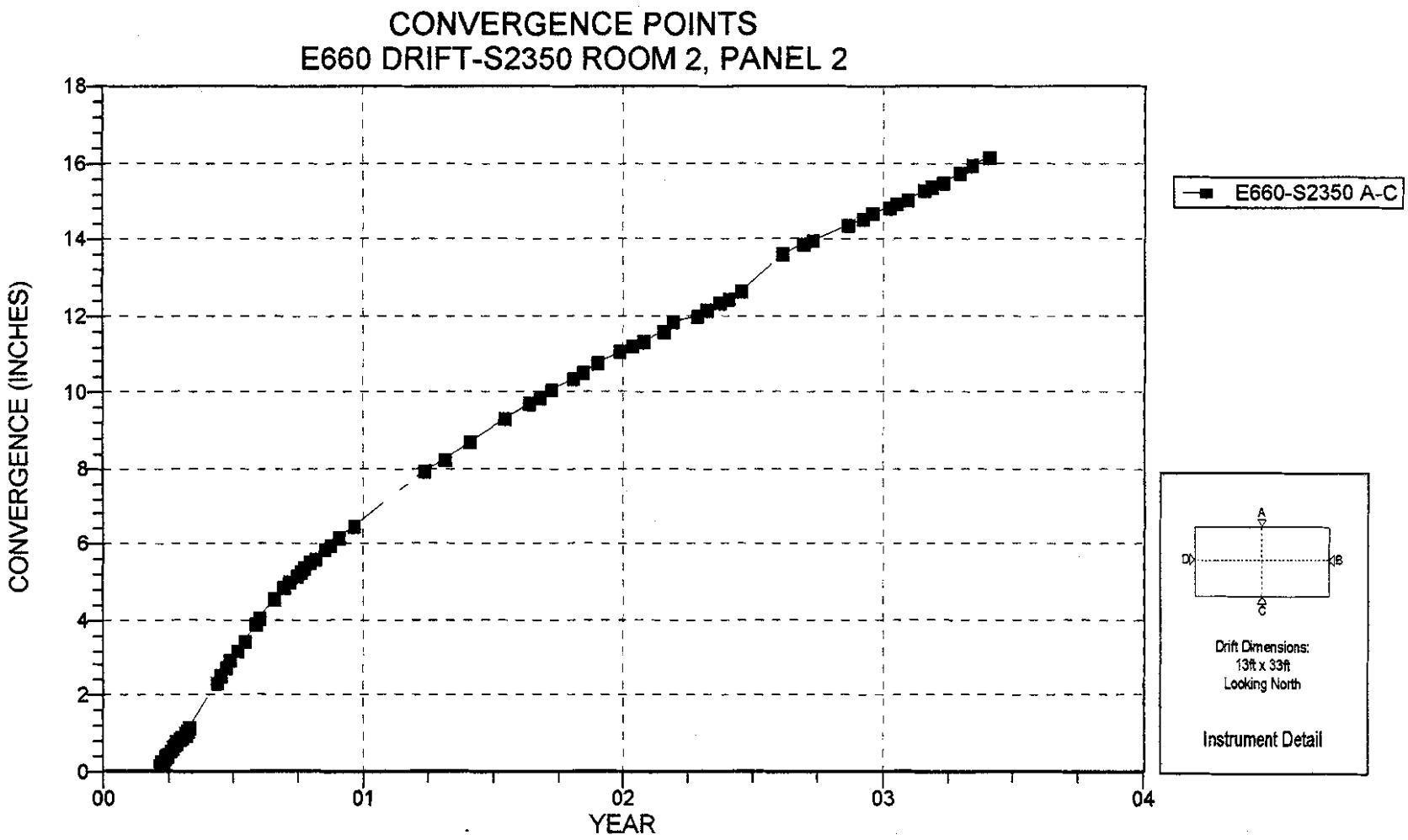
NOTES:
1. Excavation date: January 2000.

EMBEDMENT STRAIN GAGES
SALT HANDLING SHAFT-LEVEL 856.3'



NOTES:
1. Concrete for key was placed in April 1982.

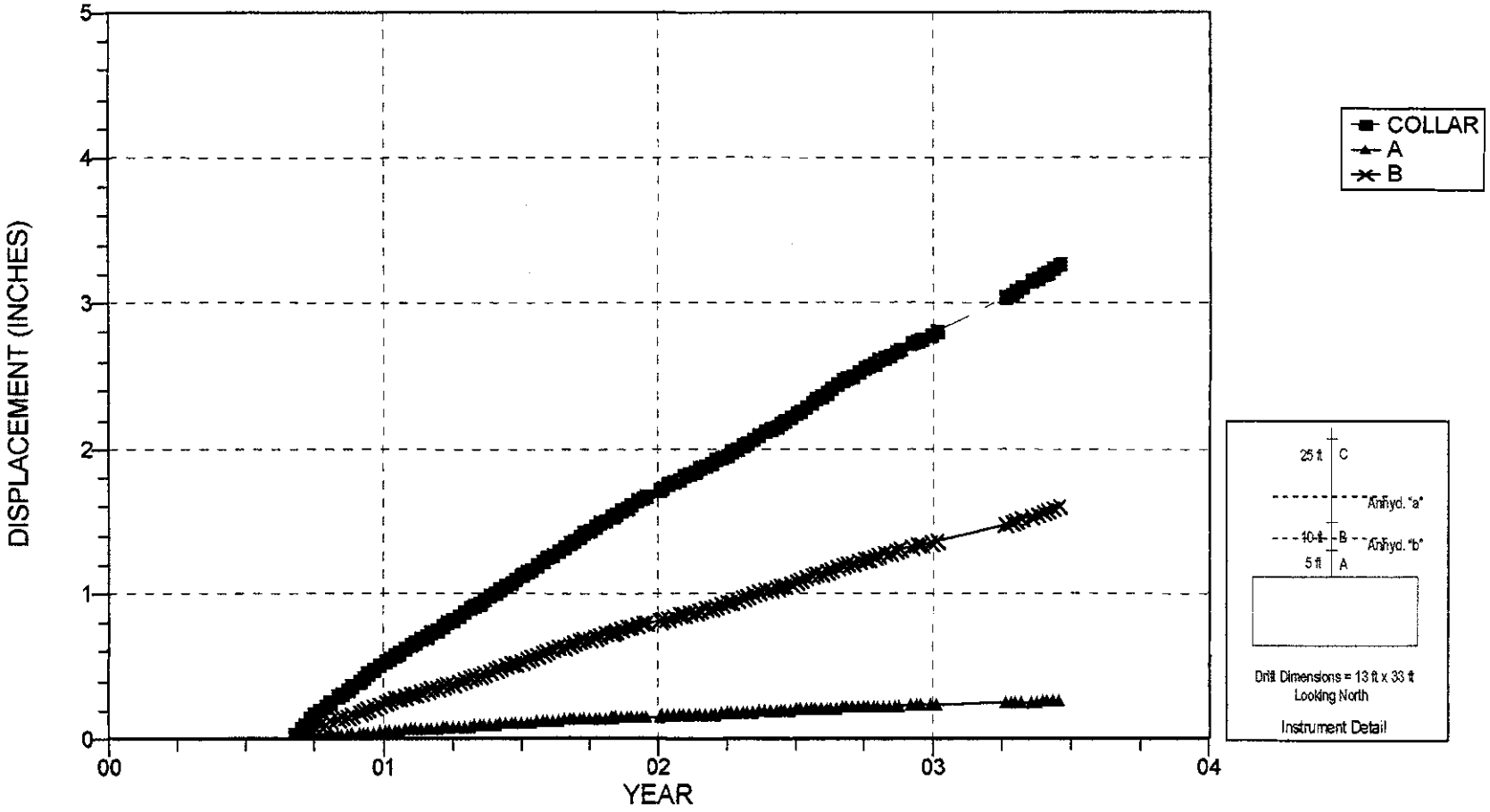
Cob-N2003-AG4



NOTES:

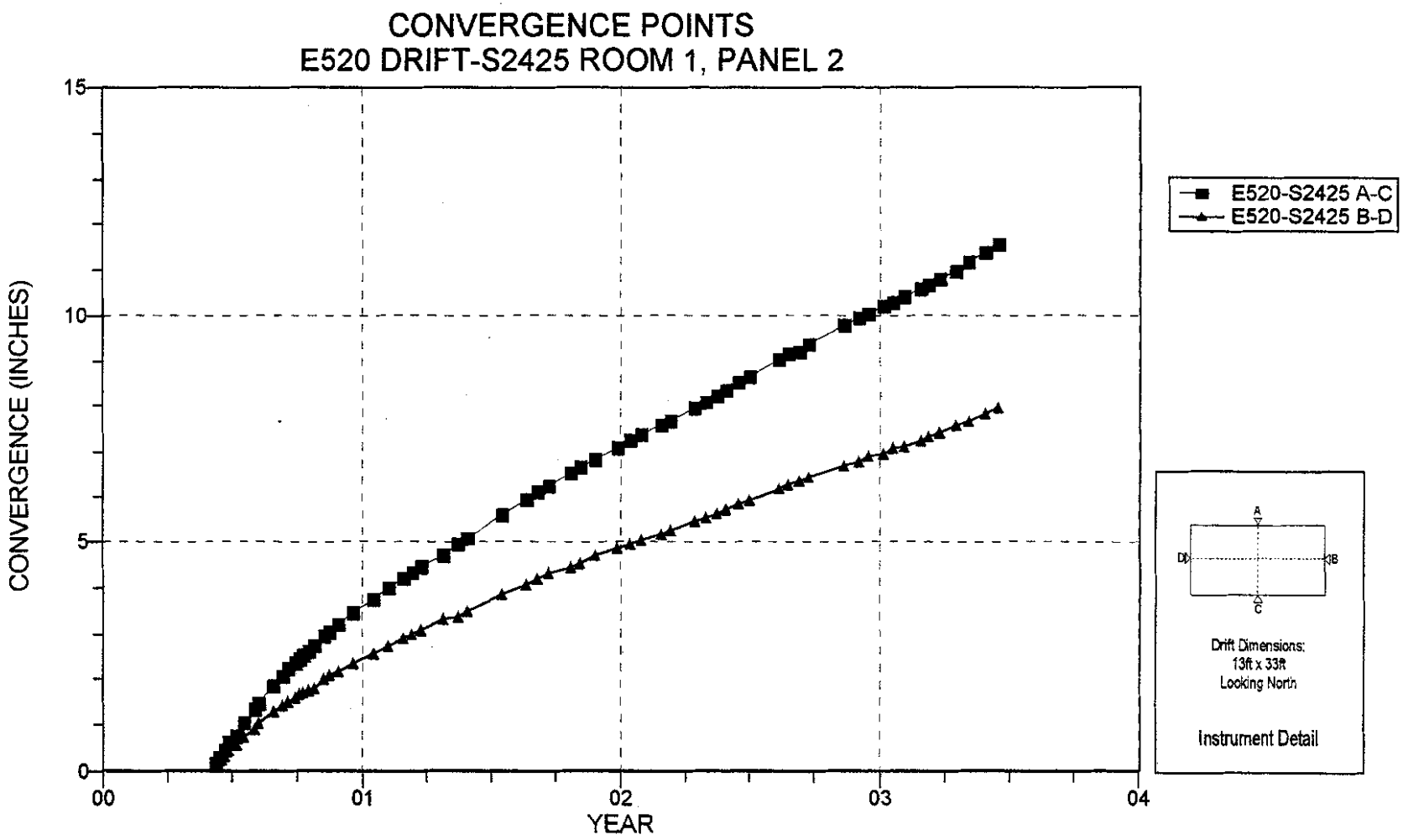
1. Excavation date: February 2000.

EXTENSOMETER 51X-GE-00341
PANEL 2 ROOM 1 - CENTER ROOF

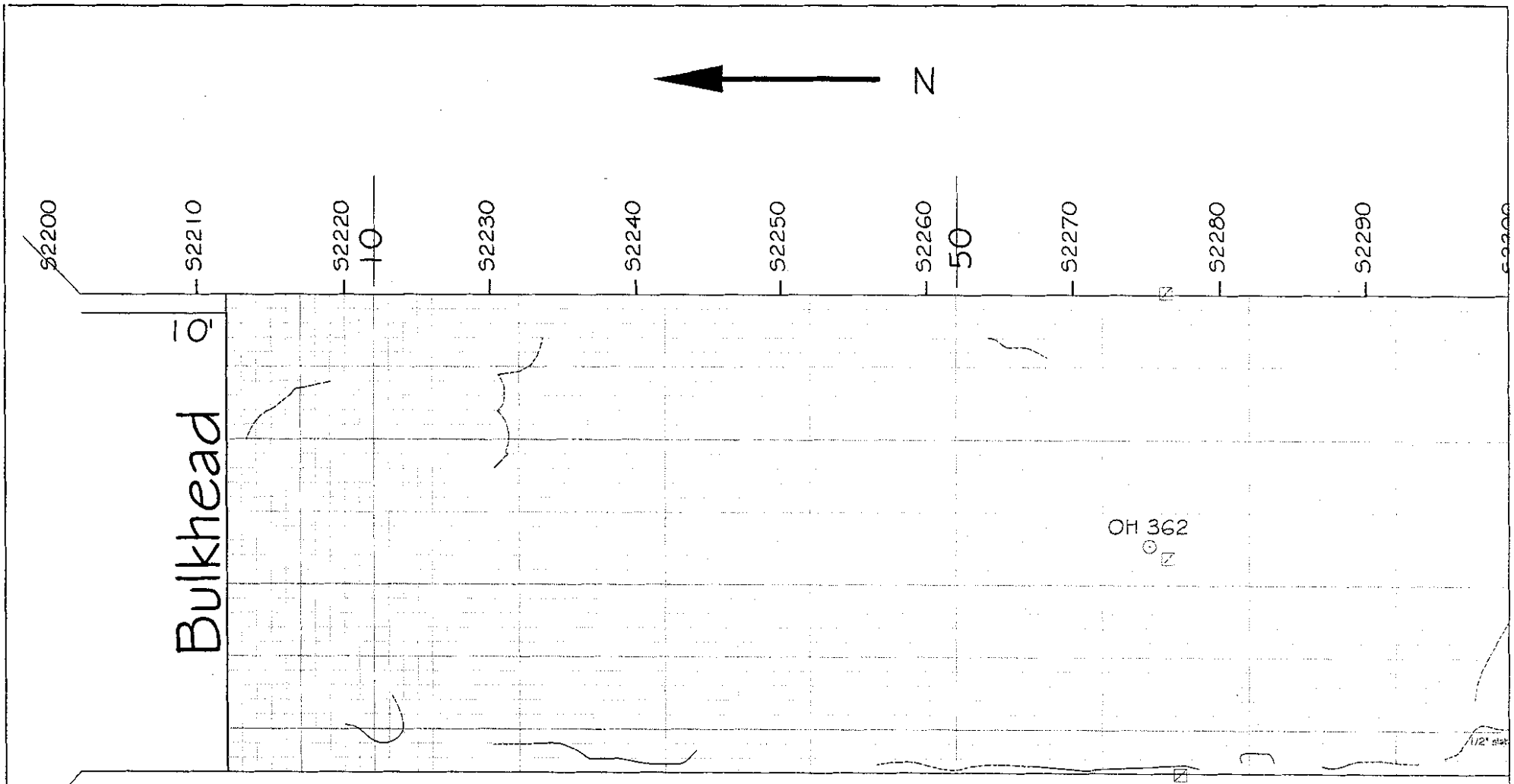


NOTES:

1. Excavation date: January 2000.



NOTES:
1. Excavation date: January 2000.



DESCRIPTION AND NOTES

- LAF (low angle fracture)
- Incipient LAF
- VF (vertical fracture)
- Magnitude of VF offset
- OH (observation hole)
- Extensometer
- RC (radial convergence point)
- Initial roof bolting

NOTE: all fracture apertures are less than 1/4" unless otherwise noted

- Spalling
- Vertical offset (hatched side up)
- Fracture passing through roof bolt hole

WIPP WASTE ISOLATION PILOT PLANT	UNDERGROUND GEOLOGIC LOG
LOCATION Panel 2, Room 2	
SUBJECT Back Fractures	
HORIZONTAL AND VERTICAL SCALE: 1" = 10'	STATION S2198 TO S2498
MAPPED BY K. Littleton DATE 4/2003	SHEET 1 OF 3

Attachment D.2:

Hydrological Documents Reviewed

- **File Received:** **COB-M2003-C 02-1 Rev 6.pdf**
- **File Received:** **COB-M2003-O DOE WIPP 02-2225.pdf**
  COB-M2003-W 02-EM1005 Rev 3.pdf

- **Document(s) Received:** **COB-M2003-AJ**
  COB-M2003-AL

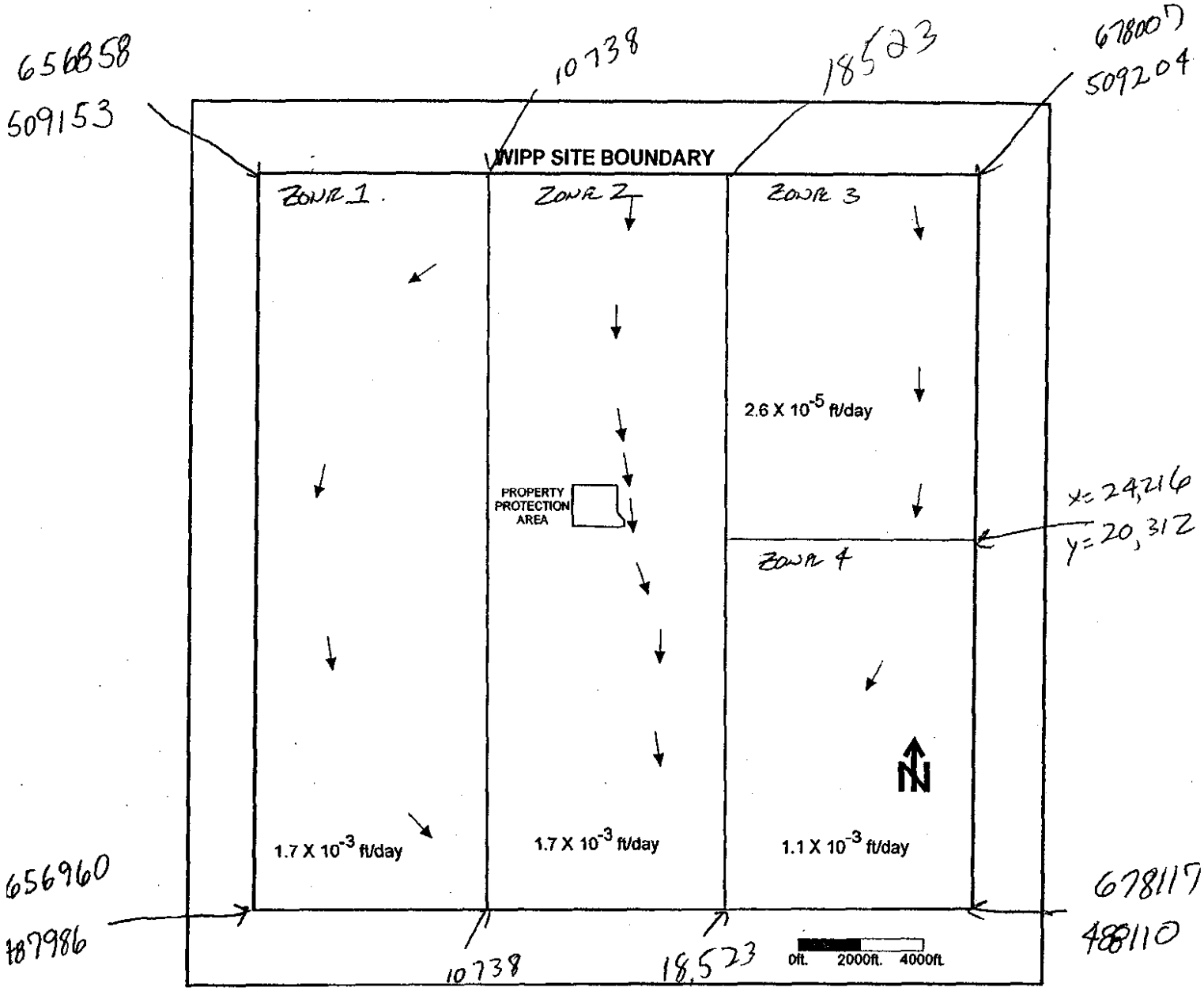


Figure 6.4 - Flow Rate and Direction of Groundwater Flowing Across the WIPP Site from the Culebra Formation, December 2001

INFORMATION ONLY

well coords zone

COB-M2003-AJ

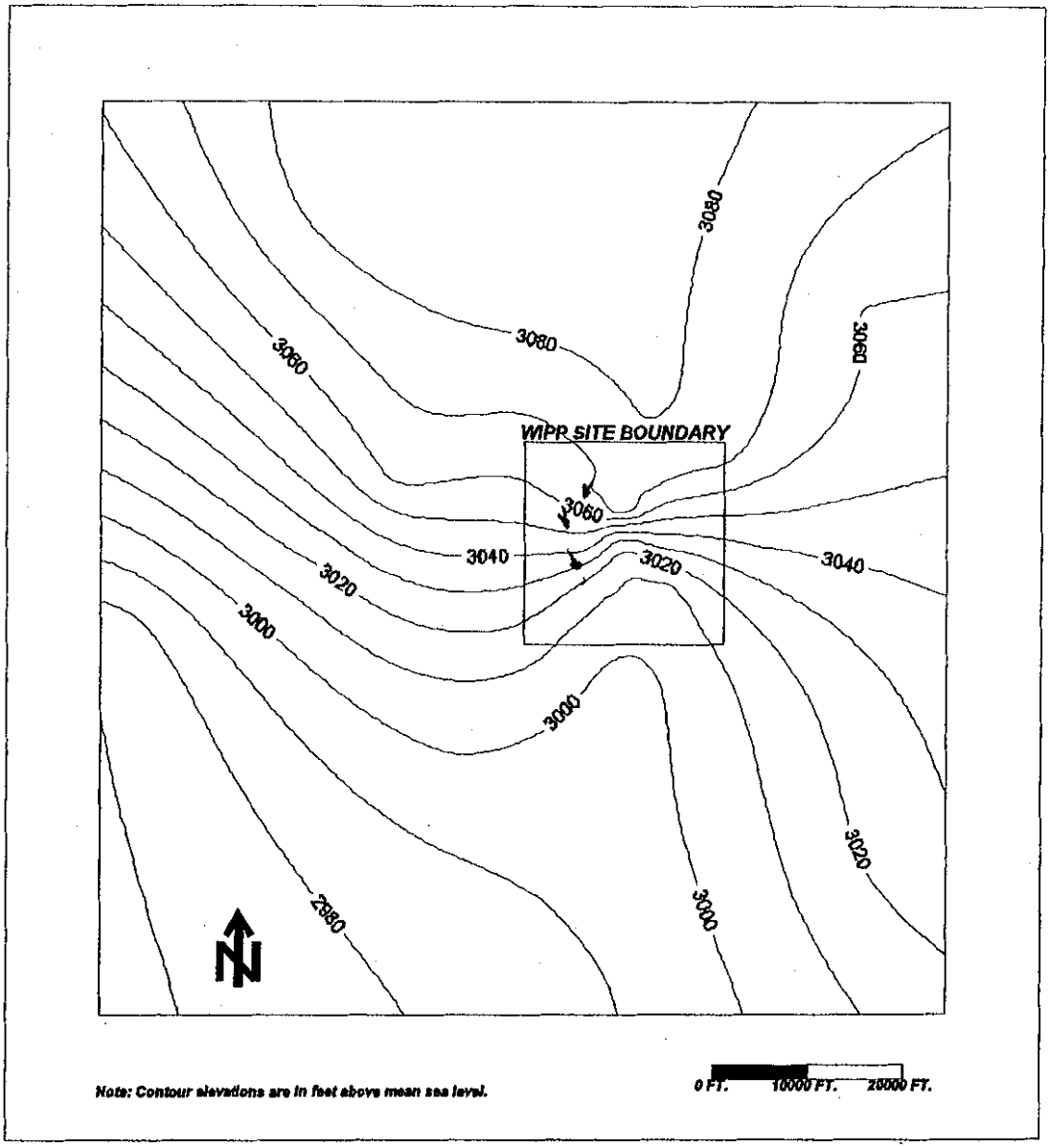


Figure 6.3 - Potentiometric Surface, Adjusted to Equivalent Freshwater Head, of the Culebra Dolomite Member of the Rustler Formation near the WIPP Site, December, 2001

	A	B	C	D	E	F	G	H	I	J
1	Well_no	T_Value	Thickness	K_Value	Compared	Elevation Change	Distance	Avg. K val	V=ft/day	
2	H-2	0.60	20.50	0.02927	WQSP-6	21.08	3070	0.01963	1.35E-04	
3	H-3	2.37	23.70	0.10000	WIPP-21	30.14	4598	0.05521	3.62E-04	
4	H-4	1.05	25.30	0.04150	H-3	5.24	9051	0.07075	4.10E-05	
5	H-5	0.09	23.70	0.00384	H-15	58.12	10923	0.00487	2.59E-05	
6	H-6	33.00	23.00	1.43478	H-2	24.88	12858	0.73203	1.42E-03	
7	[redacted]	29.70	24.50	1.21224	WQSP-4	9.20	5763	0.86612	1.38E-03	*** East N
8	H-15	0.13	22.00	0.00591	WQSP-4	3.78	4088	0.26295	2.43E-04	
9	H-16	0.72	21.90	0.03288						
10	H-17	0.22	25.59	0.00860						
11	H-18	1.63	24.20	0.06736						
12	H-19	6.22	24.40	0.25492	H-11	6.56	5930	0.73358	8.12E-04	
13	[redacted]	11.00	23.00	0.47826	H-5	61.40	15597	0.24105	9.49E-04	
14	DOE-2	89.00	22.00	4.04545						
15	P-14	307.50	22.00	13.97727						
16	P-15	0.09	22.00	0.00409	H-6	47.18	20552	0.71944	1.65E-03	
17	P-17	1.00	25.00	0.04000						
18	WIPP-12	0.10	25.00	0.00400	WQSP-2	10.59	1487	0.39783	2.83E-03	
19	WIPP-13	69.00	23.00	3.00000						
20	WIPP-19	0.60	23.00	0.02609						
21	WIPP-18	0.30	21.00	0.01429						
22	WIPP-21	0.25	24.00	0.01042	WIPP-12	29.00	3998	0.00721	5.23E-05	
23	WIPP-22	0.37	22.00	0.01682						
24	ERDA-9	0.47	23.00	0.02043						
25	WQSP-1	28.00	23.00	1.21739						
26	[redacted]	19.00	24.00	0.79167	H-4	75.43	18583	0.41658	1.69E-03	Center
27	WQSP-4	13.00	25.00	0.52000	H-5	60.39	14962	0.26192	1.06E-03	*** East S
28	WQSP-5	1.20	26.00	0.04615						
29	WQSP-6	0.25	25.00	0.01000	P-15	1.22	9177	0.00705	9.37E-07	
30	H-6	33.00	23.00	1.43478	P-15	47.18	20552	0.71944	1.65E-03	
31	H-5	0.09	23.70	0.00384	H-11	69.52	19263	0.60804	2.19E-03	
32	[redacted]	33.00	23.00	1.43478	H-4	61.21	22167	0.73814	2.04E-03	WEST
33	Min		20.50000	0.00384						
34	Max		26.00000	13.97727						
35	Average		23.44					Avg.	1.03E-03	
36								Min.	9.37E-07	
37								Max.	2.83E-03	
38								Median	1.00E-03	
39								Std. Dev.	8.76E-04	

INFORMATION ONLY

QC-B-003
Rev. 1
1/17/02

RECORD COPY

Eagle-Picher
Certificate of Analysis

BOTTLE TYPE: C **QA LEVEL:** LEVEL 1 **LOT NO.:** C2220010

DESCRIPTION: 1 Liter (32oz.) Natural HDPE Cylinder

INORGANIC QUALITY ASSURANCE

Eagle-Picher Level 1 products have been tested and found to comply with or to be lower than the EPA detection limits as stated in OSWER Directive # 9240.0-05A "Specifications And Guidance For Contaminant-Free Sample Containers 12/92".

ANALYTE	CONTRACT REQUIRED DETECTION LIMITS (ug/L)
Ag (Silver)	< 5
Al (Aluminum)	< 75
As (Arsenic)	< 1
Ba (Barium)	< 10
Be (Beryllium)	< 0.5
Ca (Calcium)	< 500
Cd (Cadmium)	< 1
CN (Cyanide)	< 10
Co (Cobalt)	< 5
Cr (Chromium)	< 5
Cu (Copper)	< 5
F (Fluoride)	< 200
Fe (Iron)	< 50
Hg (Mercury)	< 0.2
K (Potassium)	< 100
Mg (Magnesium)	< 50
Mn (Manganese)	< 5
Na (Sodium)	< 100
Ni (Nickel)	< 10
Pb (Lead)	< 1
Sb (Antimony)	< 2
Se (Selenium)	< 2
Tl (Thallium)	< 5
V (Vanadium)	< 5
Zn (Zinc)	< 10

IF EAGLE PICHER CAN BE OF ANY FURTHER ASSISTANCE, PLEASE CALL (800) 331-7425 AND ASK FOR OUR TECHNICAL SERVICE DEPARTMENT.

Approved By: Sharon L. Stephens 9/16/02
Sharon L. Stephens
Quality Assurance

Eagle Picher
200 B.J. Tunnell Blvd.
Miami, OK 74354
Phone 800-331-7425 Fax 918-540-1659

COB-M2003-AL COPY

RECORD COPY

FLOW VOLUME WORKSHEET
WQSP-2, CULEBRA, ROUND-16, MARCH 2003

DATE	TIME HOUR	MIN	FLOW RATE gpm	MINUTES of flow	HOURS of flow	VOLUME gallons	TOTAL FLOW gallons
03/17/03	7	15	0.00	0.00	0.00	0.00	0.00
	7	16	12.00	1.00	0.02	6.00	6.00
	7	20	12.00	4.00	0.07	48.00	54.00
	7	28	11.45	8.00	0.13	93.80	147.80
	7	33	0.37	5.00	0.08	29.55	177.35
	14	30	0.39	417.00	6.95	158.46	335.81
03/18/03	6	0	0.37	930.00	15.50	353.40	689.21
	14	30	0.37	510.00	8.50	188.70	877.91
03/19/03	4	0	0.39	810.00	13.50	307.80	1185.71
	9	12	0.37	312.00	5.20	118.56	1304.27
	9	13	0.37	1.00	0.02	0.37	1304.64
AVERAGE FLOW RATE=			0.44	AVG GALLONS PUMPED PER DAY=			626.64
TOTAL HOURS PUMPED=			49.97				

COPY

FINAL SAMPLES CHECKLIST

PROJECT NAME : WIPP-DMP WELL NUMBER: WQSP-2 FILTER TYPE:WHATMAN COLLECTED BY : B. Foster, M. Balderama

PORE SIZE : 0.45 um

ZONE: CULEBRA ROUND: SIXTEEN LOT # : H7187184004l0 DATE COLLECTED : 3/19/03

SAMPLE NUMBER	PARAMETERS	SAMPLE FOR	DESTINATION	CONTAINERS NUMBER	CONTAINERS VOLUME	CONTAINERS TYPE	ACID WASH	SAMPLE FILTER	PRESERVATIVE	COLLECTION TIME
WQ2CR16N 1	VOC	W	TRA. ANA.	4	40 ml	GLASS	NO	NO	HCL, pH<2	06:55-07:00
WQ2CR16N 1D	VOC	W	TRA. ANA.	4	40 ml	GLASS	NO	NO	HCL, pH<2	07:00-07:05
WQ2CR16N 2	VOC(OTHER)	W	TRA. ANA.	2	40 ml	GLASS	NO	NO	HCL, pH<2	07:05-07:10
WQ2CR16N 2D	VOC(OTHER)	W	TRA. ANA.	2	40 ml	GLASS	NO	NO	HCL, pH<2	07:10-07:15
WQ2CR16N 3	VOC TRIP BLANK	W	TRA. ANA.	4	40 ml	GLASS	NO	NO	HCL, pH<2	06:40-06:45
WQ2CR16N 3D	VOC TRIP BLANK	W	TRA. ANA.	4	40 ml	GLASS	NO	NO	HCL, pH<2	06:45-06:50
WQ2CR16N 4	TOX	W	TRA. ANA.	1	500 ML	GLASS	YES	NO	H2SO4, pH<2	07:15-07:20
WQ2CR16N 4D	TOX	W	TRA. ANA.	1	500 ML	GLASS	YES	NO	H2SO4, pH<2	07:20-07:25
WQ2CR16N 5	TOC	W	TRA. ANA.	1	250 ml	GLASS	NO	NO	HCL, pH<2	07:25-07:30
WQ2CR16N 5D	TOC	W	TRA. ANA.	1	250 ml	GLASS	NO	NO	HCL, pH<2	07:30-07:35
WQ2CR16N 6	SEMI-VOLATILES	W	TRA. ANA.	6	1 LITER	GLASS	YES	NO	NONE	07:35-07:40
WQ2CR16N 6D	SEMI-VOLATILES	W	TRA. ANA.	2	1 LITER	GLASS	YES	NO	NONE	07:40-07:45
WQ2CR16N 7	METALS	W	TRA. ANA.	1	1 LITER	PLASTIC	YES	NO	HNO3, pH<2	07:45-07:50
WQ2CR16N 7D	METALS	W	TRA. ANA.	1	1 LITER	PLASTIC	YES	NO	HNO3, pH<2	07:50-07:55
WQ2CR16N 8	GENERAL CHEMISTRY	W	TRA. ANA.	1	1 LITER	PLASTIC	YES	NO	NONE	07:55-08:00
WQ2CR16N 8D	GENERAL CHEMISTRY	W	TRA. ANA.	1	1 LITER	PLASTIC	YES	NO	NONE	08:00-08:05
WQ2CR16N 9	RADIONUCLIDES	W	WIPP LAB	2	2 LITER	PLASTIC	YES	YES	HNO3, pH<2	08:05-08:10
WQ2CR16N 9D	RADIONUCLIDES	W	WIPP LAB	2	2 LITER	PLASTIC	YES	YES	HNO3, pH<2	08:10-08:15
BU2CR16N 10	RADIONUCLIDES	W	WIPP LAB	2	2 LITER	PLASTIC	YES	YES	HNO3, pH<2	06:50-06:55
WQ2CR16N 11	HOLD	W	HOLD	1	2 LITER	PLASTIC	YES	YES	HNO3, pH<2	08:15-08:20

RECORD COPY

PRESERVATIVES

NITRIC ACID: MANUFACTURER JT Baker ; LOT # X08427 ; DATE OPENED 9/5/02 .

SULFURIC ACID: MANUFACTURER JT Baker ; LOT # G52539 ; DATE OPENED 3/1/99 .

HYDROCHLORIC ACID: MANUFACTURER JT Baker ; LOT # M12539 ; DATE OPENED 9/7/00 .

COPY

CHAIN-OF-C[illegible]TODY RECORD

WASTE ISOLATION PILOT PLANT
~~WESTINGHOUSE ELECTRIC CORP~~. WRES
P.O. BOX 2078
CARLSBAD, NM 88221-2078

C of C Control No. 6305

RFA Control No. 6305

SAMPLING PROGRAM WIPP/AMP

LAB DESTINATION Trace Analysis

SAMPLE TEAM MEMBERS B. Foster, M. Balderrama

CARRIER/WAYBILL NO. NA

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
WQ2CR16N1	WQSP-2, Culebra	3/19/03 06:55-07:00	Ground Water	40ml. A-Glass x 4	good	
WQ2CR16N1D		07:00-07:05		40ml. A-Glass x 4		
WQ2CR16N2		07:05-07:10		40 ml. A-Glass x 2		
WQ2CR16N2D		07:10-07:15		40 ml. A-Glass x 2		
WQ2CR16N3		06:40-06:45		40 ml. A-Glass x 4		
WQ2CR16N3D		06:45-06:50		40 ml. A-Glass x 4		
WQ2CR16N4		07:15-07:20		500ml. A-Glass x 1		
WQ2CR16N4D		07:20-07:25		500ml. A-Glass x 1		
WQ2CR16N5		07:25-07:30		250 ml. A-Glass x 1		
WQ2CR16N5D		07:30-07:35		250 ml. A-Glass x 1		
WQ2CR16N6		07:35-07:40		1 liter A-Glass x 6		
WQ2CR16N6D		07:40-07:45		1 liter A-Glass x 2		
WQ2CR16N7	WQSP-2, Culebra	3/19/03 07:45-07:50	Ground Water	1 liter plastic x 1		

Special Instructions: Please Analyze VOC's and Semi-Vols ASAP

Possible Sample Hazards: NONE

SIGNATURES: (Name, Company, Date, and Time)

1. Relinquished By: Bill Foster, WRES, 3/19/03 08:40
   Received By: Ron Richardson, WRES/3/19/03-08:40
2. Relinquished By: Ron Richardson WRES-3/19/03-12:30
   Received By: Vicki Hensley 3-19-03 12:30
3. Relinquished By:
   Received By:
4. Relinquished By:
   Received By:

RECORD COPY

COPY

WP 02-EM3001

WHITE - Original, to accompany samples YELLOW - Field Copy PINK - Other

ORIGINAL

Attachment 1 - Hydrology Field Activity Log

HYDROLOGY FIELD ACTIVITY LOG

Date: 3/17/03 (289)
Page 1 of 5

Project Name: WFP/GWMP | Well Number: WQSP-2, Round-16

Activity Subject: Field Notes

Name	Time	
M BAldermann	06:20	M. BAldermann, B. Foster arrive on site. Prepare for Round-16 Samplings
	06:30	SWL - 402.24' - 0.16 (Adj) = 402.08' BTOC
		Probe - 2E8126 Cal. due - 5/15/03
B. Foster	06:50	Calculated initial downhole pressure — 806' - 402 = 404 x 2.3066 = ± 175 psi
	06:55	Begin purging bubbler system
		200 psi on nitrogen gauge
		Zero reading — 9050
		Transducer - 8315
		gauge factor - 0.06221
		Multiplier - -62.21
		offset - 563.00
	07:05	Bubbler system purged.
		167 psi on bubbler gauge
	07:12	Begin logging - ch #5 - 165.87
		60 sec. scan rate

COPY

PARAMETER LIMIT
WORKSHEET
WQSP-2, CULEBRA

ROUND #	ALKALINITY	CHLORIDES	DICATS	TOTAL IRON	pH	TEMP	SPECIFIC GRAVITY	SPECIFIC CONDUCTIVITY	Eh
1	58.7	34017	163.1	0.00	7.24	23.3	1.046	74000	460
2	59.3	33757	160.7	0.01	7.27	23.4	1.046	79600	259
3	59.1	33987	162.0	0.06	7.24	22.2	1.046	77900	343
4	58.9	33962	158.3	0.03	7.20	22.1	1.047	81000	396
5	61.1	33587	159.9	0.03	7.38	21.6	1.047	80500	247
6	60.5	33187	160.7	0.01	7.28	21.7	1.047	80100	231
7	60.2	34113	160.6	0.02	7.27	21.9	1.047	78800	234
8	58.2	34113	161.2	0.01	7.25	21.9	1.047	79800	
9	62.5	34463	161.9	0.04	7.30	21.5	1.047	79000	207
10	59.9	33061	163.3	0.00	7.24	22.3	1.047	81000	265
11	62.9	33237	164.8	0.01	7.34	22.3	1.048	80500	307
12	60.5	33086	160.2	0.01	7.26	21.4	1.048	80500	38
13	62.7	33587	160.9	0.03	7.25	21.8	1.047	80000	206
14	59.8	33662	164.6	0.02	7.25	21.8	1.047	81500	411
15	60.2	33887	165.0	0.01	7.22	21.7	1.047	82100	309
AVERAGE	60.3	33714	161.8	0.02	7.27	22.1	1.047	79753	280
+ 5%	63.3	35399	169.9	0.02	7.63	23.2	1.099	83741	293
- 5%	57.3	32028	153.7	0.02	6.90	21.0	0.995	75766	266
STD. DEV.	1.4	408	1.9	0.02	0.04	0.6	0.001	1854	101

RECORD COPY

CHARGE BALANCE FORMULAS
& TDS CALCULATIONS
WQSP-2, CULEBRA, ROUND-16
HACH ANALYSIS

PARAMETER	VALUE mg/l	ATOMIC/MOLE WEIGHT	CHARGE UNITS	meq/l
CATIONS				
SODIUM	20580.00	22.99	1	895.18
POTASSIUM	471.00	39.10	1	12.05
MAGNESIUM	1032.00	24.31	2	84.90
CALCIUM	1522.00	40.08	2	75.95
SUM OF CATIONS	23605.00	SUM OF CATION CHARGES		1068.07
ANIONS				
CHLORIDE	33212.00	35.45	1	936.79
SULFATE	6300.00	96.05	2	131.18
IODIDE	0.00	126.90	1	0.00
BROMIDE	0.00	79.91	1	0.00
FLUORIDE	0.00	19.00	1	0.00
FIELD HCO3*	61.00	61.01	1	1.00
HCO3 CONVERT TO CO3**	30.00			
SUM OF ANIONS	39542.00	SUM OF ANION CHARGES		1068.97
TOTAL DISSOLVED SOLIDS	63147.00	CHARGE DIFFERENCE		0.90
FIELD CONDUCTIVITY	80700.00	% CHARGE DIFFERENCE		0.04
TDS/FIELD COND.	0.78			

COPY

Attachment 3 - Serial Sampling Check Printout Sheet

WELL: WQSP-2 PREPARED BY: B. Foster DATE: 3/17/03

ZONE: Culebra

ROUND: 16 CHECKED BY: NA DATE: NA

SAMPLE: #1

ORIGINAL

PROGRAMMABLE CALCULATOR MAKE Sharp MODEL NO: EL 5500 III

WQSP-2 Alkalinity 3/17/03
INPUT CHECK
TITRANT INIT. VOL=3.52
TITRANT FINAL VOL=8.48
NORMALITY=0.0202
SAMPLE SIZE=100.
RESULTS: #1
ALKALINITY MG/L= 61.11
NET TITRANT ML= 4.96
INPUT CHECK
TITRANT INIT. VOL=8.48
TITRANT FINAL VOL=13.46
NORMALITY=0.0202
SAMPLE SIZE=100.
RESULTS: #1 Dup.
ALKALINITY MG/L= 61.36
NET TITRANT ML= 4.98

Chloride WQSP-2 3/17/03
INPUT CHECK:
BLANK INIT. VOL=1.3
BLANK FINAL VOL=1.4
NORMALITY=0.0282
INIT. TITRANT VOL=1.4
FINAL TITRANT VOL=8.2
SAMPLE SIZE=10.
DILUTION FACTOR=50.
RESULTS: #1
CHLORIDE MG/L= 33536.85
NET TITRANT ML 6.80
INPUT CHECK:
BLANK INIT. VOL=1.3
BLANK FINAL VOL=1.4
NORMALITY=0.0282
INIT. TITRANT VOL=8.2
FINAL TITRANT VOL=15.06
SAMPLE SIZE=10.
DILUTION FACTOR=50.
RESULTS: #1 Dup.
CHLORIDE MG/L= 33837.18
NET TITRANT ML 6.86

BiCats WQSP-2 3/17/03
INPUT CHECK:
BLANK INITIAL VOL.=2.12
BLANK FINAL VOL.=2.18
TITRANT INIT. VOL.=2.18
TITRANT FINAL VOL.=10.35
SAMPLE SIZE=10.
DILUTE FACTOR=10.
MOLARITY=0.01
RESULTS: #1
DICATIONS MEQ/L 162.20
NET TITRANT ML = 8.17
INPUT CHECK:
BLANK INITIAL VOL.=2.12
BLANK FINAL VOL.=2.18
TITRANT INIT. VOL.=10.35
TITRANT FINAL VOL.=18.56
SAMPLE SIZE=10.
DILUTE FACTOR=10.
MOLARITY=0.01
RESULTS: #1 Dup.
DICATIONS MEQ/L 163.00
NET TITRANT ML = 8.21

Attachment 3 - Serial Sampling Check Printout Sheet

WELL: WQSP-2 PREPARED BY: B. Foster DATE: 3/17/03

ZONE: Culebra

ROUND: 16 CHECKED BY: NA DATE: NA

SAMPLE: #1

ORIGINAL BF 3/17/03

PROGRAMMABLE CALCULATOR MAKE Sharp MODEL NO: EES ELSSMOE

pH
WQSP-2
3/17/03
720A PH METER
c1997 ORION RSCH
#1

CALIBRATION
CH-1
P1 pH =7.01
-6.0mV 21.1C
P2 pH =10.05
-179.7mV 21.0C

SLP=97.5%
ISO=7.000
08:46 03-17-03

CH-1
pH =7.17
-14.9mV 21.1C
08:58 03-17-03

CH-1
pH =7.02
-5.6mV 21.1C
09:09 03-17-03

Eh WQSP-2
3/17/03
#1
720A PH METER
c1997 ORION RSCH

CH-1
229.1mV 25.0C
09:55 03-17-03

CH-1
476.1mV 25.0C
09:56 03-17-03

CH-1
109.1mV 21.5C
10:09 03-17-03

CH-1
227.2mV 25.0C
10:09 03-17-03

Eh WQSP-2 3/17/03 #1

INPUT CHECK:	
ZOBELL VAL.1=	229.10
ZOBELL TMP 1=	25.00
ZOBELL VAL.2=	227.20
ZOBELL TMP 2=	25.00
LIGHT VAL 1=	476.10
LIGHT TMP 1=	25.00
SAMPLE VAL=	109.10
SAMP. TEMP=	21.50
RESULTS:	
EH SAMP REL.=	311.60
EXP.VAL.Z1=	428.00
EXP.VAL.L1=	675.00
EXP.VAL.Z2=	428.00
ZOBELL 1 EH=	428.10
LIGHTS 1 EH=	675.10
ZOBELL 2 EH=	426.20

COPY

Attachment 2 - Serial Sampling Summary Sheet

WELL: WQSP-2 PREPARED BY: B. Foster DATE: 3/17/03

ZONE: Culebra

ROUND: 16 CHECKED BY: NA DATE: NA

SAMPLE: #1

ORIGINAL

PARAMETER	UNITS	TEST RESULTS	ANALYST	DATE/TIME TESTED
Eh	mV	+312	B. Foster	3/17/03 10:09
pH	S. U.	7.17	B. Foster	3/17/03 08:58
Temperature	°C	22.1	B. Foster	3/17/03 08:32
Sp. Gravity at °C 22.2	—	1.046	B. Foster	3/17/03 09:00
Sp. Conductance at °C 25.0	• mhos/cm	81,700	B. Foster	3/17/03 09:57
Bicarbonate Alkalinity as HCO_3	mg/L	Samp. 61.1 Dupl. 61.4	B. Foster	3/17/03 08:50 08:55
Carbonate Alkalinity as CO_3	mg/L	Samp. — Dupl. —	/	/
Chloride	mg/L	Samp. 33,537 Dupl. 33,837	B. Foster	3/17/03 09:45 09:50
Divalent Cations	meq/L	Samp. 162.2 Dupl. 163.0	B. Foster	3/17/03 09:35 09:40
Iron (Total)	mg/L	Samp. 0.02 Dupl. 0.02	B. Foster	3/17/03 09:05

REMARKS: _____

Attachment 2 - Serial Sampling Summary Sheet

WELL: WQSP-2 PREPARED BY: B. Foster DATE: 3/18/03

ZONE: Culebra

ROUND: 16 CHECKED BY: NA DATE: NA

SAMPLE: #2

ORIGINAL

PARAMETER	UNITS	TEST RESULTS	ANALYST	DATE/TIME TESTED
Eh	mV	+291	B. Foster	3/18/03 08:03
pH	S. U.	7.18	B. Foster	3/18/03 07:08
Temperature	°C	21.7	B. Foster	3/18/03 06:47
Sp. Gravity at °C 21.8	—	1.046	B. Foster	3/18/03 07:15
Sp. Conductance at °C 25.0	µmhos/cm	80,800	B. Foster	3/18/03 07:57
Bicarbonate Alkalinity as HCO_3	mg/L	Samp. 60.3 Dupl. 61.0	B. Foster	3/18/03 07:00 07:05
Carbonate Alkalinity as CO_3	mg/L	Samp. — Dupl. —		
Chloride	mg/L	Samp. 34,037 Dupl. 33,887	B. Foster	3/18/03 08:10 08:15
Divalent Cations	meq/L	Samp. 163.6 Dupl. 164.2	B. Foster	3/18/03 07:35 07:40
Iron (Total)	mg/L	Samp. 0.03 Dupl. 0.03	B. Foster	3/18/03 07:45

REMARKS: _____

COPY

Attachment 2 - Serial Sampling Summary Sheet

WELL: WQSP-2 PREPARED BY: B. Foster DATE: 3/19/03

ZONE: Culebra

ROUND: 16 CHECKED BY: NA DATE: NA

SAMPLE: #3

ORIGINAL

PARAMETER	UNITS	TEST RESULTS	ANALYST	DATE/TIME TESTED
Eh	mV	+297	B. Foster	3/19/03 06:16
pH	S. U.	7.17	B. Foster	3/19/03 05:21
Temperature	°C	21.2	B. Foster	3/19/03 04:53
Sp. Gravity at °C 23.0	—	1.047	B. Foster	3/19/03 05:30
Sp. Conductance at °C 25.0	• mhos/cm	80,700	B. Foster	3/19/03 06:07
Bicarbonate Alkalinity as HCO_3	mg/L	Samp. 61.0 Dupl. 61.0	B. Foster	3/19/03 05:10 05:15
Carbonate Alkalinity as CO_3	mg/L	Samp. — Dupl. —	/	/
Chloride	mg/L	Samp. 33,036 Dupl. 33,387	B. Foster	3/19/03 06:20 06:25
Divalent Cations	meq/L	Samp. 160.8 Dupl. 161.2	B. Foster	3/19/03 05:50 05:55
Iron (Total)	mg/L	Samp. 0.03 Dupl. 0.03	B. Foster	3/19/03 05:35

REMARKS: _____

COPY

Attachment D.3:

Waste Activity Documents Reviewed

- File Received: COB-M2003-G1 08-NT 01 Rev 8.pdf

- Document(s) Received: COB-M2003-AK
COB-M2003-AN

WIPP Waste Information System

Nuclide Report

Report	*RP0380*
Version	*1.2*
Instance	*PRD01*
Run by	*STANDID*
Report Date	*06/19/2003 10:52*
Total Pages	*6*

Selection Criteria -

Site id :	%
Nuclide :	%
Panel Number :	%
Room Number :	%
Handling Code :	%
Bore Hole Number :	%
Show Uncertainty :	*NO*
TRU Nuclides Only :	%
EPA Tracked Nuclides Only:	%

CCB-M2003-AK

Panel Number : 1 **Room Number : 1** **Bore Hole Number :**

Radionuclide	Activity (Ci)	Mass(G)
AC-227 - ACTINIUM	3.5603E-05	4.8563E-07
AM-241 - AMERICIUM 241	1.4221E+03	4.0983E+02
AM-243 - AMERICIUM 243	4.0731E-03	2.0177E-02
CO-60 - COBALT 60	1.2000E-07	1.0500E-10
CS-137 - CESIUM 137	1.1351E-04	1.2919E-06
K-40 - POTASSIUM-40	4.0020E-06	7.0870E-01
NP-237 - NEPTUNIUM 237	1.1148E-02	1.5630E+01
PA-231 - PROTACTINIUM 231	3.5894E-04	5.1332E-03
PU-238 - PLUTONIUM 238	3.9920E+02	2.3082E+01
PU-239 - PLUTONIUM 239	1.0160E+04	1.6153E+05
PU-240 - PLUTONIUM 240	2.3276E+03	1.0120E+04
PU-241 - PLUTONIUM 241	3.1961E+04	3.0732E+02
PU-242 - PLUTONIUM 242	2.7681E-01	6.9600E+01
SR-90 - STRONTIUM 90	3.0443E-05	2.2057E-07
TH-232 - THORIUM 232	1.0414E-05	9.3892E+01
U-233 - URANIUM 233	1.0491E-01	1.0747E+01
U-234 - URANIUM 234	1.4419E-01	2.2805E+01
U-235 - URANIUM 235	1.2328E-03	5.6291E+02
U-238 - URANIUM 238	1.3341E-02	3.9237E+04
Totals:	4.6271E+04	2.1240E+05

Panel Number : 1 **Room Number : 2** **Bore Hole Number :**

Radionuclide	Activity (Ci)	Mass(G)
AC-227 - ACTINIUM	2.6645E-04	3.6387E-06
AM-241 - AMERICIUM 241	1.0595E+04	3.0533E+03
AM-243 - AMERICIUM 243	5.2166E-03	2.3745E-02
CS-137 - CESIUM 137	1.3352E-04	1.5164E-06
K-40 - POTASSIUM-40	8.4940E-06	1.5047E+00
NP-237 - NEPTUNIUM 237	1.8661E-02	2.6172E+01
PA-231 - PROTACTINIUM 231	3.2967E-04	6.9096E-03
PU-238 - PLUTONIUM 238	6.5195E+02	3.7685E+01
PU-239 - PLUTONIUM 239	1.8462E+04	2.9352E+05
PU-240 - PLUTONIUM 240	4.2071E+03	1.8292E+04
PU-241 - PLUTONIUM 241	6.3311E+04	6.0876E+02
PU-242 - PLUTONIUM 242	4.0269E-01	1.0143E+02
SR-90 - STRONTIUM 90	7.5449E-06	5.4674E-08
		1.1737E+07

Radionuclide	Activity (Ci)	Mass(G)
TH-230 - THORIUM	5.0960E-04	2.5010E-02
TH-232 - THORIUM 232	1.4340E-06	1.3007E+01
U-233 - URANIUM 233	1.3676E-01	1.4012E+01
U-234 - URANIUM 234	6.3201E-01	9.9974E+01
U-235 - URANIUM 235	5.2187E-02	2.3830E+04
U-238 - URANIUM 238	3.8752E+00	1.1397E+07
Totals:	9.7232E+04	

Panel Number : 1 **Room Number : 3** **Bore Hole Number :**

Radionuclide	Activity (Ci)	Mass(G)
AM-241 - AMERICIUM 241	4.8984E+04	1.4116E+04
CS-137 - CESIUM 137	1.2539E-05	1.4248E-07
NP-237 - NEPTUNIUM 237	1.5878E-01	2.2269E+02
PU-238 - PLUTONIUM 238	2.1564E+03	1.2465E+02
PU-239 - PLUTONIUM 239	5.5875E+04	8.8832E+05
PU-240 - PLUTONIUM 240	1.2569E+04	5.4648E+04
PU-241 - PLUTONIUM 241	1.7815E+05	1.7129E+03
PU-242 - PLUTONIUM 242	1.1899E+00	2.9973E+02
RA-226 - RADIUM 226	7.8785E-06	7.8785E-06
SR-90 - STRONTIUM 90		
U-233 - URANIUM 233	2.8513E-02	2.9214E+00
U-234 - URANIUM 234	4.3515E-01	6.8854E+01
U-235 - URANIUM 235	4.7486E-02	2.1683E+04
U-238 - URANIUM 238	2.3434E+00	6.8923E+06
Totals:	2.9774E+05	7.8735E+06

Panel Number : 1 **Room Number : 4** **Bore Hole Number :**

Radionuclide	Activity (Ci)	Mass(G)
AM-241 - AMERICIUM 241	5.6147E+03	1.6181E+03
NP-237 - NEPTUNIUM 237	1.6499E-02	2.3141E+01
PU-238 - PLUTONIUM 238	7.1070E+02	4.1081E+01
PU-239 - PLUTONIUM 239	1.5038E+04	2.3908E+05
PU-240 - PLUTONIUM 240	3.3797E+03	1.4694E+04
PU-241 - PLUTONIUM 241	5.7280E+04	5.5077E+02
PU-242 - PLUTONIUM 242	3.2172E-01	8.1037E+01
U-234 - URANIUM 234	1.0038E-01	1.5883E+01

Radionuclide	Activity (Ci)	Mass(G)
U-235 - URANIUM 235	9.3989E-03	4.2917E+03
U-238 - URANIUM 238	4.3477E-01	1.2787E+06
Totals:	8.2025E+04	1.5391E+06

Panel Number : 1 **Room Number : 5** **Bore Hole Number :**

Radionuclide	Activity (Ci)	Mass(G)
AM-241 - AMERICIUM 241	1.1232E+04	3.2369E+03
NP-237 - NEPTUNIUM 237	4.1192E-02	5.7773E+01
PU-238 - PLUTONIUM 238	4.9307E+02	2.8501E+01
PU-239 - PLUTONIUM 239	1.2341E+04	1.9620E+05
PU-240 - PLUTONIUM 240	2.7427E+03	1.1925E+04
PU-241 - PLUTONIUM 241	3.8036E+04	3.6573E+02
PU-242 - PLUTONIUM 242	2.3423E-01	5.9000E+01
U-233 - URANIUM 233	5.2969E-03	5.4272E-01
U-234 - URANIUM 234	6.4339E-02	1.0180E+01
U-235 - URANIUM 235	8.3825E-03	3.8276E+03
U-238 - URANIUM 238	2.6287E-01	7.7313E+05
Totals:	6.4845E+04	9.8885E+05

Panel Number : 1 **Room Number : 6** **Bore Hole Number :**

Radionuclide	Activity (Ci)	Mass(G)
AC-227 - ACTINIUM	3.6430E-04	4.9741E-06
AM-241 - AMERICIUM 241	1.4472E+04	4.1705E+03
AM-243 - AMERICIUM 243	1.5729E-03	7.7878E-03
CS-137 - CESIUM 137	7.2349E-06	7.6137E-07
K-40 - POTASSIUM-40	1.6160E-06	2.8610E-01
NP-237 - NEPTUNIUM 237	7.5073E-02	1.0530E+02
PA-231 - PROTACTINIUM 231	4.9790E-04	1.0419E-02
PU-238 - PLUTONIUM 238	3.3829E+02	1.9554E+01
PU-239 - PLUTONIUM 239	1.2851E+04	2.0432E+05
PU-240 - PLUTONIUM 240	2.8699E+03	1.2478E+04
PU-241 - PLUTONIUM 241	2.6727E+04	2.5699E+02
PU-242 - PLUTONIUM 242	2.1064E-01	5.3054E+01
TH-230 - THORIUM	2.4100E-05	1.1800E-03
U-233 - URANIUM 233	4.3707E-03	4.4782E-01

Radionuclide	Activity (Ci)	Mass(G)
U-234 - URANIUM 234	2.8120E-02	4.4512E+00
U-235 - URANIUM 235	2.5512E-03	1.1650E+03
U-238 - URANIUM 238	1.2067E-01	3.5492E+05
Totals:	5.7259E+04	5.7749E+05

Panel Number : 1 **Room Number : 7** **Bore Hole Number :**

Radionuclide	Activity (Ci)	Mass(G)
AM-241 - AMERICIUM 241	2.7844E+04	8.0252E+03
AM-243 - AMERICIUM 243	2.2362E-03	1.1140E-02
CO-60 - COBALT 60	3.4696E-07	3.0400E-10
CS-137 - CESIUM 137	2.4119E-04	2.7401E-06
K-40 - POTASSIUM-40	1.8587E-05	3.2901E+00
NA-22 - SODIUM 22 (NA-22)	5.3435E-06	8.4500E-10
NP-237 - NEPTUNIUM 237	9.3755E-02	1.3149E+02
PA-231 - PROTACTINIUM 231	6.1146E-06	1.3003E-05
PU-238 - PLUTONIUM 238	1.4362E+03	8.3073E+01
PU-239 - PLUTONIUM 239	2.7257E+04	4.3332E+05
PU-240 - PLUTONIUM 240	6.1924E+03	2.6925E+04
PU-241 - PLUTONIUM 241	8.6568E+04	8.3333E+02
PU-242 - PLUTONIUM 242	6.8228E-01	1.7200E+02
TH-232 - THORIUM 232	2.6073E-06	2.3646E+01
U-233 - URANIUM 233	1.3393E-01	1.3722E+01
U-234 - URANIUM 234	1.6387E-01	2.5948E+01
U-235 - URANIUM 235	1.3687E-02	6.2499E+03
U-238 - URANIUM 238	4.8689E-01	1.4312E+06
Totals:	1.4930E+05	1.9070E+06

Panel Number : 2 **Room Number : 7** **Bore Hole Number :**

Radionuclide	Activity (Ci)	Mass(G)
AC-227 - ACTINIUM	1.5540E-03	2.1240E-05
AC-228 - ACTINIUM 228	4.3322E-05	1.9000E-11
AM-241 - AMERICIUM 241	1.8380E+03	5.2932E+02
AM-243 - AMERICIUM 243	3.7161E-01	1.8394E+00
BI-212 - BISMUTH 212	4.1700E-09	
BI-213 - BISMUTH 213	6.2200E-09	

Nuclide Report

Radionuclide	Activity (Ci)	Mass(G)
BI-214 - BISMUTH 214	3.8548E-02	8.7400E-10
CE-144 - CERIUM-144	4.8200E-05	1.5000E-08
CF-249 - CALIFORNIUM 249	1.7195E-05	4.1534E-06
CM-243 - CURIUM 243	1.5123E-02	2.8971E-04
CM-244 - CURIUM 244	1.0500E-02	1.2836E-04
CO-60 - COBALT 60	5.9479E-06	5.2160E-09
CS-137 - CESIUM 137	2.5961E-01	2.9501E-03
EU-152 - EUROPIUM 152	2.2671E-06	1.2738E-08
K-40 - POTASSIUM-40	2.7206E-05	4.5226E+00
NA-22 - SODIUM 22 (NA-22)	8.8457E-05	1.3996E-08
NP-237 - NEPTUNIUM 237	2.5870E-02	3.6271E+01
PA-231 - PROTACTINIUM 231	5.9358E-03	6.0390E-02
PB-212 - LEAD 212	1.3366E-06	
PU-238 - PLUTONIUM 238	5.2437E+02	3.0346E+01
PU-239 - PLUTONIUM 239	9.7591E+03	1.5501E+05
PU-240 - PLUTONIUM 240	2.2594E+03	9.8141E+03
PU-241 - PLUTONIUM 241	3.5390E+04	5.7505E+02
PU-242 - PLUTONIUM 242	3.1437E-01	7.9230E+01
RA-226 - RADIUM 226	6.7700E-08	6.7700E-08
SR-90 - STRONTIUM 90	2.7009E-01	1.9572E-03
TH-229 - THORIUM 229	3.1019E-04	1.4563E-03
TH-230 - THORIUM	9.3300E-02	4.5700E+00
TH-232 - THORIUM 232	3.0403E-05	2.7420E+02
TL-208 - THALLIUM 208	4.8516E-03	1.7000E-11
U-233 - URANIUM 233	1.2204E-02	1.2504E+00
U-234 - URANIUM 234	8.1928E-01	1.2966E+02
U-235 - URANIUM 235	6.7053E-03	3.0618E+03
U-238 - URANIUM 238	4.6257E-01	1.3605E+06
Totals:	4.9774E+04	1.5300E+06
Grand Totals:	8.4444E+05	2.6365E+07

Table 4: Summary of Waste Emplacement Inventory as of March 18, 2003

Summary of Waste Emplacement Inventory				
TRU Waste Inventory (Cubic Meters)				
	FY 2003 Emplaced Container Volume	Cumulative Emplaced Container Volume	Maximum Emplacement Limit	Percent of Limit Emplaced
CH TRU	3,075	10,534	175,600	6.00%
Material Parameter Inventory (Kilograms)				
	FY 2003 Emplaced Weight	Cumulative Emplaced Weight	Maximum Emplacement Limit	Percent of Limit Emplaced
Cellulosics Plastics Rubber	290,976	1,187,014	20,000,000	5.94%
	FY 2003 Emplaced Weight	Cumulative Emplaced Weight	Minimum Emplacement Limit	Percent of Limit Emplaced
Fe-Metals	994,875	3,637,245	20,000,000	18.19%
Non-Fe Metals	36,826	65,137	2,000	3256.85%

Radiological Activity Inventory (curies)			
Radionuclide	Cumulative Activity on FY 2002 Annual Change Report	FY 2003 Activity	Total Activity to Date
^{227}Ac	3.6430E-04	3.0205E-04	6.6635E-04
^{241}Am	1.1612E+05	4.0905E+03	1.2021E+05
^{243}Am	4.6693E-03	8.4295E-03	1.3099E-02
^{60}Co	3.4700E-07	1.1996E-07	4.6696E-07
^{40}K	3.2122E-04	1.8704E-04	5.0826E-04
^{22}Na	2.4657E-05	8.0420E-06	3.2699E-05
^{237}Np	5.3430E-06	5.0000E-10	5.3435E-06
^{231}Pa	3.96460E-01	1.8999E-02	4.1546E-01
^{238}Pu	5.0402E-04	6.8860E-04	1.1926E-03
^{239}Pu	5.5253E+03	6.7986E+02	6.2052E+03
^{240}Pu	1.3434E+05	1.8103E+04	1.5244E+05
^{241}Pu	3.0255E+04	4.1391E+03	3.4394E+04
^{242}Pu	4.2491E+05	5.8590E+04	4.8350E+05
^{226}RA	2.8772E+00	4.4884E-01	3.3260E+00
^{230}Th	7.8785E-06	0.0000E+00	7.8785E-06
^{232}Th	0.0000E+00	3.8405E-05	3.8405E-05
^{233}U	2.4100E-05	5.0960E-04	5.3370E-04
^{234}U	2.6070E-06	1.1848E-05	1.4455E-05
^{235}U	2.4451E-01	1.6927E-01	4.1378E-01
^{238}U	1.1730E+00	3.9572E-01	1.5687E+00
^{90}Sr	1.1625E-01	1.8697E-02	1.3495E-01
^{137}Cs	6.1287E+00	1.4085E+00	7.5372E+00
Totals	7.1116E+05	8.5605E+04	7.9677E+05

CPR includes liners in total for plastics

Fe-Metals includes containers in total

FY 2003 Activity - To be reported on Annual Change Report to EPA for non-significant changes that occurred between 9-16-2002 and 9-15-2003

COB-M2003-AN

Attachment D.4:

Drilling Related Documents Reviewed

- **File Received: COB-M2003-F 02-PC02 Rev 0.pdf**
- **File Received: COB-M2003-N DOE WIPP 99-2308 Rev 3.pdf**
- **File Received: COB-M2003-R 02 EC3002 Rev 1.pdf**

-Document(s) Received:

COB-M2003-AF
COB-M2003-R1
COB-M2003-R2
COB-M2003-R3
COB-M2003-R4
COB-M2003-R5
COB-M2003-R6
COB-M2003-R7
COB-M2003-R8

Delaware Basin Drilling Surveillance Program

- First implemented in October 1997, the Delaware Basin Drilling Surveillance Program (DBDSP) collects information on drilling activities that builds on the data presented in the Compliance Certification Application of 1996 and will be used to define whether the drilling scenarios in the application continue to be valid at each five-year recertification.

- The DBDSP performs work to WP 02-PC.02, ***Delaware Basin Drilling Surveillance Plan***. This plan defines the parameters of the program and details the information collected.

- WP 02-EC3002, ***Delaware Basin Drilling Database Upgrade Process***, details how and where the information is collected and how it is applied to the various databases maintained by the program.

COB-M2003-AF

Changes Since Last Year

- Drilling Rate is currently 53.0 holes per square kilometer
- Received five responses on the Annual Survey of area drillers
- No Castile Brine encounters were reported during the last year
- Solution Mining:
  - No activity on the Eddy Potash solution mining project that is located just north of the Delaware Basin
  - Information on the underground hydrocarbon storage facility located near Orla in Reeves County, Texas indicates this facility has been plugged and abandoned since 1990. Currently in the process of acquiring the plugging reports for this facility.

Pilot Permit

? Size Volume ?

Major Parameters Monitored

Two parameters continuously being monitored by the DBDSP are:

- **Drilling Rate**
- **Castile Brine Encounters**

Process to calculate the Drilling Rate

- Weekly reports from the State of New Mexico and several commercial sources are reviewed to determine which wells are in the Delaware Basin.
- New wells are added to the databases.
- As wells are completed, pertinent information from the above sources is added to the databases for each well from the available reports.
- The databases are queried for a standard report that accesses the depth of each well. A report is printed that itemizes the type of deep wells such as oil, gas, etc.
- The numbers from the reports are added together along with the known numbers of deep potash core holes (19) and WIPP monitoring wells (10).
- This number is used to calculate the drilling rate.

- Demonstration can be given during the visit.

Drilling Rate

The drilling rate is calculated as follows: number of deep holes (deeper than 2,150 feet or the depth of the repository) times 10,000 years (regulatory time frame) divided by the area of the Delaware Basin (23,102.1 Sq. Km.) divided by 100 years (current active drilling era).

Year	*No. of Deep Holes*	*Drilling Rate*
1996	10,804	46.8
1997	11,444	49.5
1998	11,616	50.3
1999	11,684	50.6
2000	11,828	51.2
2001	12,056	52.2
2002	12,139	52.5
Currently	12,251	53.0

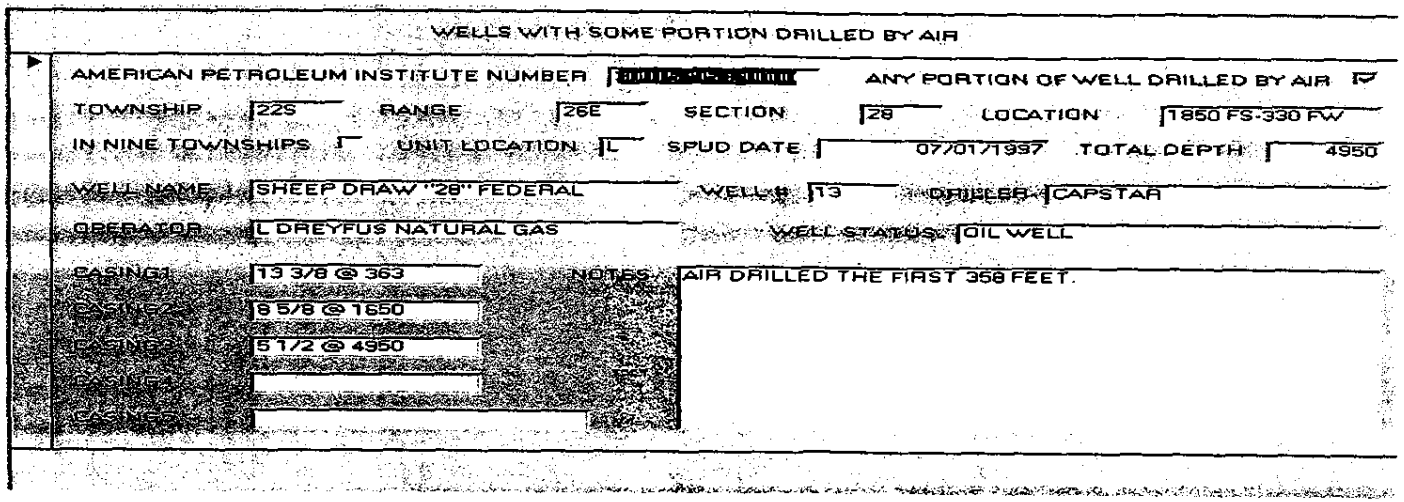
Castile Brine Encounters

New CRA Related Castile Brine Encounters – July 1995 Through September 2002					
1	21S-31E-35	Lost Tank "35" State #4	09/11/2000	Oil Well	Estimated several hundred barrels per hour. Continued drilling.
2	21S-31E-35	Lost Tank "35" State #16	02/06/2002	Oil Well	At 2705 ft. encountered 1000 B/H. Shut-in to get room in reserve pit with pressure of 180 psi. Shut in next day with pressure at 100 psi and waterflow of 450 B/H. Two days later no water flow and full returns.
3	22S-31E-02	Graham "AKB" State #8	04/12/2002	Oil Well	Estimated 105 barrels per hour. Continued drilling.
4	23S-30E-01	James Ranch Unit #63	12/23/1999	Oil Well	Sulfur water encountered at 2900 ft. 35 PPM was reported but quickly dissipated to 3 PPM in a matter of minutes. Continued drilling.
5	23S-30E-01	Hudson "1" Federal #7	01/06/2001	Oil Well	Estimated initial flow at 400 to 500 barrels per hour with a total volume of 600-800 barrels. Continued drilling.

No official documentation on State records exists for the five new Castile Brine encounters. Four were reported by WIPP Site personnel during discussions with area drillers while the fifth was reported by one of the operators on the Annual Survey performed by the Delaware Basin Drilling Surveillance Program. All five wells were drilled in areas where Castile Brine is expected to be encountered during the drilling process. Three wells were drilled in the vicinity of ERDA-6 and the other two were southwest of the WIPP Site (all were located in the nine-township area). During this same time frame there were 345 wells drilled in the nine-township area.

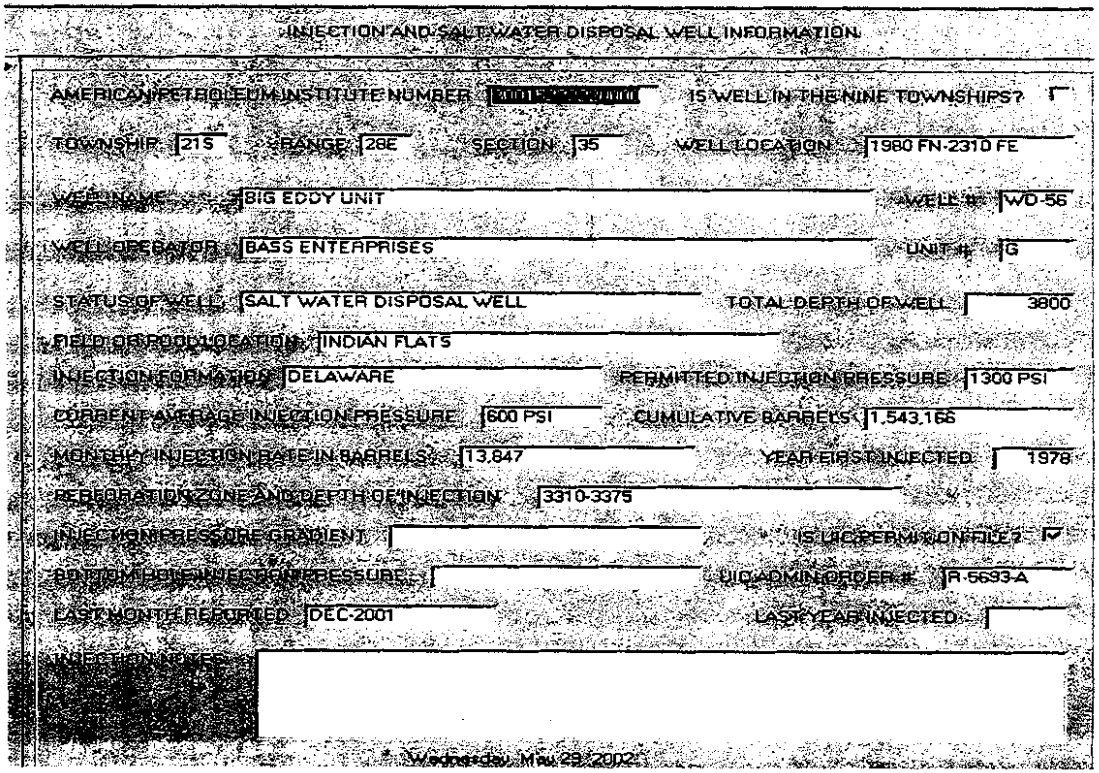
AIR DRILLING

- The Delaware Basin Drilling Surveillance Program checks the record for each new well drilled to verify if any portion of the well was air drilled.
- This work is performed according to WP 02-EC3002, Delaware Basin Drilling Database Upgrade Process
- Since the submittal of the CCA in 1996 there has been one case of air drilling and that occurred near the airport in Carlsbad, see below.
- The results of monitoring for air drilling is reported in the annual Delaware Basin Monitoring Report, DOE/WIPP 99-2308.

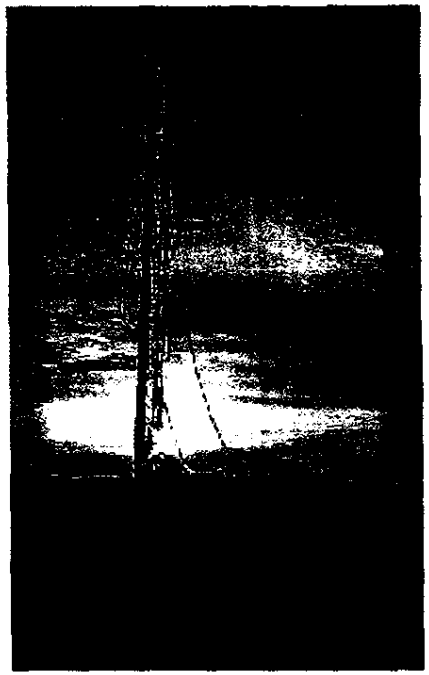


INJECTION AND SALT WATER DISPOSAL WELLS

- Injection rates are monitored monthly on all injection and salt water disposal wells (swd) in the New Mexico portion of the Delaware Basin.
- Supporting information for the CCA submitted to the EPA in 1997 showed 37 injection and swd wells in the nine-township area immediately surrounding the WIPP Site.
- There are currently 40 injection and swd wells in the nine-township area.



CURRENT DRILLING PRACTICES



- The Delaware Basin Drilling Surveillance Program continues to monitor drilling practices in the area.
- An annual survey is sent to each operator of new wells drilled asking for information on how that well was drilled.
- Responses received indicate that the same drilling methods are being used now that were reported on in the CCA.
- Copies of completion records are obtained as they become available. These provide valuable information on drilling practices.
- Several on-line services subscribed to also aid in research on drilling practices.
- This information is presented in the annual Delaware Basin Monitoring report, DOE/WIPP 99-2308.

SOLUTION MINING

- Solution mining activities are monitored as part of the Delaware Basin Drilling Surveillance Program.
- Within the New Mexico portion of the Delaware Basin the only solution mining activities occurring are brine wells used to supply brine for the drilling process.
- Mississippi Chemical recently received the go-ahead on a pilot project to solution mine potash. This project was first proposed in 1997. It is approximately three acres in size and needs funding to be completed. This project is located north at the old Eddy Potash Mine about 5 miles outside the Delaware Basin.
- The underground hydrocarbon storage facility near Orla, Texas operated by Phillips Petroleum Company, The Tunstill Storage Facility, has been plugged and abandoned.

NEW MEXICO OIL CONSERVATION DIVISION WEEKLY ACTIVITY REPORT
WELL ACTIVITY PROCESSED BETWEEN JUN 09,2003 AND JUN 16,2003 (ID1)

API NUMBER	OPERATOR / WELL	FOOTAGES / LOCATION	OCD UL	LAND TYPE	WORK STATUS	WELL TYPE	PROPOSED FORMATION	COUNTY	EFFECTIVE DATE	PLUG DATE
	** INTENTIONS TO DRILL OR RETROACTIVE WELL ENTRIES **									
30-005-63574	025575 YATES PETROLEUM CORPORATION 032444 COOKER BCB FEDERAL #001	660S 1980W N-15-06S-26E	N	FED	NEW	G	WC:PRE/CAMBRIAN	CHAVES	2003-06-02	
30-015-32814	025575 YATES PETROLEUM CORPORATION 032429 DIXON & YATES LM FEDERAL COM #002	660N 1650W C-28-18S-29E	C	FED	NEW	G	N TURKEY TRACK MORROW (N/2)	EDDY	2003-05-30	
30-015-32815	014049 MARBOB ENERGY CORP 032430 DRY LAND SHINER FEDERAL COM #001	940N 660E 1-03-21S-25E	1	FED	NEW	G	SPRINGS MORROW (N/2)	EDDY	2003-05-30	
30-015-32820	151416 FASKEN OIL & RANCH LTD 032445 ADAMS BEND 35 FEDERAL #001	1680N 1836E G-35-20S-26E	G	FED	NEW	G	SPRINGS MORROW	EDDY	2003-06-02	
30-015-32823	001801 BASS ENTERPRISES PRODUCTION CO 001796 POKER LAKE UNIT #099Q	1080N 660W 2-19-24S-31E	2	FED	NEW	O	POKER LAKE DELAWARE	EDDY	2003-06-03	
30-015-32824	025575 YATES PETROLEUM CORPORATION 014840 ZINGARO ANG FEDERAL #002Q	1650S 1770E J-01-22S-23E	J	FED	NEW	O	INDIAN BASIN U/PENN ASSOC	EDDY	2003-06-03	
30-015-32825	193407 CONCHO OIL & GAS CORP. 031001 LOTOS C FEDERAL #906	1836S 664E I-09-24S-31E	I	FED	NEW	O	W SAND DUNES DELAWARE	EDDY	2003-04-25	
30-015-32826	192463 OXY USA WTP LIMITED PARTNERSHIP 030035 OXY MISTY FEDERAL #002	1650S 1980W K-35-18S-30E	K	FED	NEW	G	N HACKBERRY MORROW	EDDY	2003-05-01	
30-015-32827	006137 DEVON ENERGY PRODUCTION COMPANY, LP 032442 RIGHTHAND CANYON 35 FEE COM #002	1347S 1177W L-35-21S-24E	L	PRIV	NEW	G	INDIAN BASIN U/PENN ASSOC (W/	EDDY	2003-06-10	
30-015-32828	013837 MACK ENERGY CORP 030039 AOUDAD STATE #008	330N 1040E A-36-17S-31E	A	ST	NEW	O	San Andres	EDDY	2003-06-11	
30-015-32829	006137 DEVON ENERGY PRODUCTION COMPANY, LP 030648 OLD RANCH KNOLL 8 FEDERAL COM #008	1500S 1080W L-08-22S-24E	L	FED	NEW	O	INDIAN BASIN U/PENN ASSOC	EDDY	2003-04-22	
30-015-32830	168489 RICKS EXPLORATION, INC. 026066 GREENWOOD PRE-GRAYBURG UNIT #020	1980N 1980E G-27-18S-31E	G	FED	NEW	O	SHUGART BONE SPRING	EDDY	2003-06-09	
30-015-32831	168489 RICKS EXPLORATION, INC. 026066 GREENWOOD PRE-GRAYBURG UNIT #021	560N 760E A-27-18S-31E	A	FED	NEW	O	SHUGART BONE SPRING	EDDY	2003-06-09	
30-015-32832	168489 RICKS EXPLORATION, INC. 026066 GREENWOOD PRE-GRAYBURG UNIT #022	660N 910W D-35-18S-31E	D	FED	NEW	G	SHUGART MORROW (W/2)	EDDY	2003-06-09	
30-015-32833	168489 RICKS EXPLORATION, INC. 026066 GREENWOOD PRE-GRAYBURG UNIT #023	660N 1980E B-27-18S-31E	B	FED	NEW	O	SHUGART BONE SPRING	EDDY	2003-06-09	
30-025-36299	000495 AMERADA HESS CORP 025890 FRED TURNER JR B #004	1400S 1900E J-17-20S-38E	J	PRIV	NEW	O	Abo	LEA	2003-06-12	
30-039-27293	189071 PURE RESOURCES LP 026629 RINCON UNIT #161M	1814N 2106W F-17-27N-06W	F	FED	NEW	G	BASIN DK/BLANCO MV	RIO ARRIBA	2003-06-03	
30-039-27324	189071 PURE RESOURCES LP 026629 RINCON UNIT #170R	2070S 2460W K-20-27N-06W	K	FED	NEW	G	BASIN DK/BLANCO MV	RIO ARRIBA	2003-06-02	

COB-M2003-21

NEW MEXICO OIL CONSERVATION DIVISION WEEKLY ACTIVITY REPORT
COMPLETION ACTIVITY PROCESSED BETWEEN AUG 23, 2002 AND AUG 30, 2002 (ID2)

API NUMBER	OPERATOR / WELL	BOTTOM HOLE LOCATION	OCD UL	LAND TYPE	WORK STAT	COMP STAT	WELL TYPE	POOL	COUNTY	DEPTH	EFF DATE COMPL DATE
	********** GAS WELL COMPLETIONS **********										
30-045-31085	017654 PHILLIPS PETROLEUM CO NW 009261 SAN JUAN 32 8 UNIT #010M	792S 1850E O-24-31N-08W	O	FED	NEW	A	G	BASIN DAKOTA (PRORATED GAS) 71599 P - 630 MCF	SAN JUAN	7985	2002-08-22 2002-08-22
	********** OIL WELL COMPLETIONS **********										
30-015-31911	025575 YATES PETROLEUM CORPORATION 012328 GRAHAM AKB STATE #005	330N 2310W C-02-22S-31E	C	ST	NEW	A	O	LOST TANK;DELAWARE 40299 P - 250 BBLS	EDDY	8406	2002-06-01 2002-06-01
30-015-31923	184860 MELROSE OPERATING COMPANY 026081 ARTESIA UNIT #091	90N 1535E B-35-17S-28E	B	ST	NEW	A	O	ARTESIA;QUEEN-GRAYBURG-SAN ANDRES 3230 P - 209 BBLS	EDDY	3070	2001-08-29 2001-08-29
30-015-31934	020451 SDX RESOURCES INC 024439 NW STATE #018	2272N 2273E G-32-17S-28E	G	ST	NEW	A	O	ARTESIA;QUEEN-GRAYBURG-SAN ANDRES 3230 P - 68 BBLS	EDDY	3215	2002-04-26 2002-04-26
30-015-32048	014049 MARBOB ENERGY CORP 023300 LEE FEDERAL #015	830N 1650E B-20-17S-31E	B	FED	NEW	A	O	CEDAR LAKE; YESO (O) 96831 P - 36 BBLS	EDDY	5198	2002-08-02 2002-08-02
30-015-32103	014021 MARATHON OIL CO 006409 INDIAN HILLS UNIT #039	1690S 1701E K-16-21S-24E	K	ST	NEW	A	G	INDIAN BASIN;UPPER PENN (ASSOC) 33685 P - 250 BBLS	EDDY	8918	2002-04-29 2002-04-20
30-015-32279	013837 MACK ENERGY CORP 006051 BERRY A FEDERAL #014	1100N 2230W C-21-17S-30E	C	FED	NEW	A	O	LOCO HILLS; PADDOCK 96718 P - 159 BBLS	EDDY	4900	2002-06-15 2002-06-20
30-015-32302	013837 MACK ENERGY CORP 021044 CONTINENTAL A STATE #009	2310N 580W E-30-17S-29E	E	ST	NEW	A	O	EMPIRE; YESO 96210 P - 139 BBLS	EDDY	4376	2002-06-08 2002-06-12
30-025-35731	004323 CHEVRON U S A INC 029939 FANNING 4 #002	1700N 1955E G-04-24S-37E	G	PRI	NEW	A	O	TEAGUE;DEVONIAN 58330 P - 21 BBLS	LEA	11140	2002-05-01 2002-02-15
30-025-35742	157984 OCCIDENTAL PERMIAN LTD 019552 SOUTH HOBBS G/SA UNIT #244	2246N 597W E-34-18S-38E	E	PRI	NEW	A	O	HOBBS;GRAYBURG-SAN ANDRES 31920 P - 35 BBLS	LEA	4437	2001-12-16 2002-01-18
30-025-35916	007377 EOG RESOURCES INC 029770 PONDEROSA STATE #001	2250S 930W L-09-16S-32E	L	ST	NEW	A	O	WILDCAT G-08 S163209L;STRAWN 97233 P - 48 BBLS	LEA	12050	2002-05-26 2002-07-26
30-025-35923	014245 MATADOR OPERATING CO 029796 SHELLEY 34 STATE #001	800N 330E A-34-19S-37E	A	ST	NEW	A	O	MONUMENT;TUBB 47090 P - 22 BBLS	LEA	7190	2002-06-16 2002-07-31
	********** SWD WELL COMPLETIONS **********										
30-015-26116	014049 MARBOB ENERGY CORP 030470 CHALK AKH SWD FEDERAL #001	1980S 660E I-22-18S-27E	I	FED	NEW	A	S	SWD;CANYON 96184	EDDY	10050	2002-06-03 2002-06-03
	********** ZONE ABANDONMENTS **********										
30-005-62636	025575 YATES PETROLEUM CORPORATION 012626 PATHFINDER AFT STATE #003	1650S 2310W K-21-10S-27E	K	ST	NEW	P	G	DIABLO;FUSSELMAN (ASSOCIATED) 17625	CHAVES	6650	2002-07-03 DT NOT KNOWN
30-005-62773	025575 YATES PETROLEUM CORPORATION 012899 WOLF AHF STATE #001	660N 660E A-13-09S-27E	A	ST	NEW	P	G	WOLF LAKE;SAN ANDRES, SOUTH 65075	CHAVES	6660	2000-01-21 1990-06-12

	UWI	API	JC	Lease Name	Well Num	Operator Name	Location
1	30015326880000	30015326880000		AUSTIN 36 STATE	2	MYCO INDUSTRIES INC	36 21S 27E S2 NW SE
2	30015320030000	30015320030000		LUCY `ALC` STATE	7	YATES PETROLEUM CORP	34 21S 31E W2 NW NE
3	30015325270000	30015325270000		LOST TANK AIS STATE	7	YATES PETROLEUM CORP	36 21S 31E SE SE NW
4	30015327950000	30015327950000		ALLEN COM	2	CHI OPERATING INC	31 22S 27E NW SE NE
5	30015327610000	30015327610000	30015713622003	NEFF 13 FEDERAL	16	CHEVRON U S A INC	13 22S 31E S2 NE NE
6	30015326440000	30015326440000	30015750632002	GETTY 24 FEDERAL	16	CHEVRON U S A INC	24 22S 31E SE NW SE
7	30015327520000	30015327520000	30015746912003	MOBIL 12 FEDERAL	2	GRUY PET MGMT CO	12 23S 26E NW NW NW
8	30015326710000	30015326710000		PARDUE C 8808 JVP	3	BTA OIL PRODUCERS	11 23S 28E NW SE SW
9	30015326320000	30015326320000	30015723802003	TODD 13E FEDERAL	26	DEVON ENERGY PROD	13 23S 31E W2 SW NW
10	30015328090000	30015328090000	30015750422003	C K FEDERAL	2	GRUY PET MGMT CO	8 24S 26E SE NW NE
11	30015328180000	30015328180000		EDSELS WAND WAIVER FEE	1	MARBOB ENERGY CORP	6 24S 28E N2 SW NW
12	30015328210000	30015328210000		H B 2 STATE	4	DEVON ENERGY PROD	2 24S 29E NW SE SW
13	30015320430000	30015320430000	30015715482001	POKER LAKE UNIT	176	BASS ENTRPRS PROD CO	5 24S 30E S2 SW SW
14	30015321420000	30015321420000		POKER LAKE UNIT	190	BASS ENTRPRS PROD CO	7 24S 30E C NW SE
15	30015328160000	30015328160000		PALLADIUM 7 FEDERAL	5	POGO PRODUCING CO	7 24S 31E E2 SE NW
16	30015327680000	30015327680000	30015745582003	LOTOS 8 FEDERAL	803	RICKS EXPL INC	8 24S 31E C SE NW
17	30015328250000	30015328250000	30015745572003	LOTOS C FEDERAL	906	RICKS EXPL INC	9 24S 31E SW NE SE
18	30015328230000	30015328230000		POKER LAKE UNIT	99	BASS ENTRPRS PROD CO	19 24S 31E C SW NW
19	30015325690000	30015325690000		EAGLE 4 STATE	1	SWESTERN ENERGY PROD	4 25S 28E N2 NE SE
20	30015327730000	30015327730000		REDTAILED HAWK 10-H	1	SWESTERN ENERGY PROD	10 25S 28E SE NE NW
21	30015313930000	30015313930000	30015798492000	DIVERSE FEDERAL	4	LIMARK CORP	23 26S 29E N2 SE NE
22	30015235790001	30015235790001		ROSS DRAW	10	WILLIAMSON JC	27 26S 30E
23	30015304850100	30015304850100		MERPHAN `16` STATE	1	EOG RESOURCES INC	16 26S 31E SW NW

COB-M2003-R2

	Footage	Field Name	State	County	Current	Last Activity Date	IP Prod Form	Driller	Log	Form At TD Name
1	1650 FSL 1980 FEL CONGRESS SECTION	WILDCAT	NM	EDDY		2003/06/12				
2	660 FNL 2005 FEL CONGRESS SECTION	LOST TANK WEST	NM	EDDY		2003/06/11				
3	2310 FNL 2310 FWL CONGRESS SECTION	LOST TANK	NM	EDDY		2003/06/10		8500		
4	1650 FNL 990 FEL CONGRESS SECTION	CARLSBAD SOUTH	NM	EDDY		2003/06/10				
5	740 FNL 990 FEL CONGRESS SECTION	LIVINGSTON RIDGE	NM	EDDY		2003/06/11		8600		BRUSHY CANYON
6	1800 FSL 1650 FEL CONGRESS SECTION	LIVINGSTON RIDGE	NM	EDDY		2003/06/11		8600		BRUSHY CANYON
7	400 FNL 330 FWL CONGRESS SECTION	CARLSBAD SOUTH	NM	EDDY		2003/06/11		12206		MORROW
8	721 FSL 1497 FWL CONGRESS SECTION	LOVING EAST	NM	EDDY	OIL	2003/06/13	BRUSHY CANYON	6319		BONE SPRING
9	1980 FNL 330 FWL CONGRESS SECTION	INGLE WELLS	NM	EDDY	OIL	2003/06/11	CHERRY CANYON	8540		BONE SPRING
10	1200 FNL 1400 FEL CONGRESS SECTION	WHITE CITY	NM	EDDY		2003/06/11				
11	1650 FNL 660 FWL CONGRESS SECTION	WILDCAT	NM	EDDY		2003/06/11				
12	860 FSL 1780 FWL CONGRESS SECTION	CEDAR CANYON	NM	EDDY		2003/06/10				
13	660 FSL 460 FWL CONGRESS SECTION	NASH DRAW	NM	EDDY	OIL	2003/06/13	DELAWARE	7550		DELAWARE
14	1980 FSL 1980 FEL CONGRESS SECTION	NASH DRAW	NM	EDDY	OIL	2003/06/13	DELAWARE	7459		BONE SPRING
15	1980 FNL 2310 FWL CONGRESS SECTION	SAND DUNES SOUTH	NM	EDDY		2003/06/11				
16	1980 FNL 1980 FWL CONGRESS SECTION	SAND DUNES WEST	NM	EDDY		2003/06/12				
17	1836 FSL 664 FEL CONGRESS SECTION	SAND DUNES WEST	NM	EDDY		2003/06/10				
18	1980 FNL 660 FWL CONGRESS SECTION	POKER LAKE	NM	EDDY		2003/06/10				
19	2310 FSL 660 FEL CONGRESS SECTION	WILLOW LAKE SW	NM	EDDY	OIL	2003/06/12	CHERRY CANYON	6640		CHERRY CANYON
20	780 FNL 2610 FWL CONGRESS SECTION	WILLOW LAKE SW	NM	EDDY		2003/06/13		6865		
21	1650 FNL 660 FEL CONGRESS SECTION	BRUSHY DRAW	NM	EDDY	OIL	2003/06/13	DELAWARE	3114		RAMSEY /SD/
22	1980 FNL 660 FWL CONGRESS SECTION	ROSS DRAW	NM	EDDY	GAS-WO	2003/06/09	WOLFCAMP	14540		MORROW
23	1800 FNL 810 FWL CONGRESS SECTION	PHANTOM DRAW	NM	EDDY		2003/06/13		13450		

	Oldest Age	Proj Depth	Proj Form	Target	Permit Date	Spud Date	Comp Date	Initial	Final	Ground Elev	KB Elev	Ref Elev	Elev Code	Latitude	Longitude
1		12100	MORROW	GAS	2003/03/21	2003/04/05		WO		3108				32.43374	-104.14048
2		8500	DELAWARE	OIL	2001/09/26			D		3489				32.44035	-103.76305
3		8500	DELAWARE	OIL	2002/11/12	2003/05/21		D		3578				32.43597	-103.73200
4		12000	MORROW	GAS	2003/05/11	2003/05/31		D		3174				32.35084	-104.22310
5		8600	DELAWARE	OIL	2003/04/17	2003/05/16		D		3603				32.39674	-103.72557
6		8600		GAS	2003/02/07	2003/04/23		D		3585				32.37462	-103.72776
7		13000	MORROW	GAS	2003/04/16	2003/05/01		D		3252				32.32506	-104.25370
8		6350	BRUSHY CANYON	OIL	2003/03/06	2003/03/09	2003/04/16	D	DO	2980				32.31446	-104.06142
9		12000	WOLFCAMP	UNRPTD	2002/12/02	2003/01/21	2003/02/28	D	DO	3497				32.30611	-103.73862
10		13000	PENNSYLVANIAN	GAS	2003/05/29			D		3483				32.23590	-104.31069
11		13000	MORROW	GAS	2003/06/05			WO		3096				32.24941	-104.13283
12		8300	BONE SPRING	OIL	2003/06/10			D		3062					
13		7670	DELAWARE	OIL	2001/10/03	2003/03/28	2003/04/17	D	DO	3288				32.24122	-103.91009
14		7500	UNKNOWN	OIL	2001/12/18	2003/03/14	2003/04/05	WF	DO	3179				32.23024	-103.91796
15		8500	DELAWARE	OIL	2003/05/23	2003/06/03		D		3494				32.23360	-103.81729
16		8500	DELAWARE	OIL	2003/04/16	2003/05/29		D		3500				32.23362	-103.80102
17		8500	DELAWARE	OIL	2003/03/05			D		3459				32.22964	-103.77532
18		8300	DELAWARE	OIL	2003/06/03			D		3471					
19		6611	DELAWARE	OIL	2003/01/03	2003/01/18	2003/04/06	D	DO	2987	3005	3005	KB	32.15807	-104.08547
20		7000	DELAWARE SD	OIL	2003/05/05	2003/05/10		D		2969				32.14959	-104.07492
21		3200	DELAWARE	OIL	2000/10/19	2001/03/10	2001/07/01	D	DO	2946				32.02995	-103.94719
22		13970	WOLFCAMP	GAS	2000/06/01	2000/06/05	2000/06/22	D X	DG	2993				32.01516	-103.87478
23		13450		GAS	2000/12/20	2001/01/06		D R		3212				32.04510	-103.78850

Date: 6/10/2003
Time: 10:11 AM

PI/Dwights PLUS on CD Scout Ticket

2 ALLEN COM

State: NEW MEXICO
County: EDDY
Operator: CHI OPERATING INC
API: 30015327950000 IC:
Initial Class: D
Target Objective: GAS
Final Well Class:
Status:
Field: CARLSBAD SOUTH
Permit: on MAY 11, 2003
First Report Date: MAY 14, 2003
Projected TD: 12000 Formation: MORROW
Hole Direction: VERTICAL

Location

Section, Twp., Range: 31 22 S 27 E
Spot Code: NW SE NE
Footage NS EW Origin: 1650 FNL 990 FEL CONGRESS SECTION
Surface remark:
Principal Meridian: NEW MEXICO

Lat/Long: 32.3508400 / -104.2231000 US
PBHL Footage NS EW Origin:
PBHL Section:
PHBL remark:
PHBL: From Surface: TVD:
ABHL Footage NS EW Origin:
ABHL Section:
ABHL remark:
ABHL: From Surface: TVD:
Location Narrative:

Type	Remark
SCALED_FOOT	REGULATORY
IRREG_SECT	N

Dates and Depths

Spud: MAY 31, 2003 Spud Date Code: E
TD: on
LTD:
TVD:
PlugBack Depth:
Completed:
Formation @ TD: Name:
Ref. Elevation:
KB. Elevation:
Ground Elevation: 3174 GR
Contractor: PATTERSON-UTI ENERGY INCORPORATED
Rig Release Date: Rig # 500

Drilling Journal

Narrative: JUN 03, 2003 DRLG @ 1445

Operator Address

Street or PO Box: BOX 1799

COB-M2003-R3

Date: 6/10/2003
Time: 10:11 AM

PI/Dwights PLUS on CD Scout Ticket

Operator Address

City:	MIDLAND		
State, Zip:	TX , 79702		
Country:	USA		
Phone:	9156855001	Fax:	
E-Mail:			
Agent Name:		Agent Code:	
Agent Remark:	WOLF JOHN W;;;;;;915;685;5001		

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

C-104 LT GP DHC

Form C-104
Revised July 28, 2000
Submit to Appropriate District Office
5 Copies
AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

1 Operator name and Address	5 OGRID Number
Yates Petroleum Corporation 105 South Fourth Street Artesia NM 88210	025575
	1 Reason for Filing Code/ Effective Date NW

2 API Number	5 Pool Name	6 Pool Code
30-015-31911	Lost Tank Delaware	40299
7 Property Code	**8 Property Name**	**9 Well Number**
12328	Graham AKB State	5

II. 10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County
C	2	22S	31E		330	North	2310	West	Eddy

11 Bottom Hole Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County

12 Lse Code	13 Producing Method Code	14 Gas Connection Date	15 C-129 Permit Number	16 C-129 Effective Date	17 C-129 Expiration Date
S	P	6/28/02			

III. Oil and Gas Transporters

18 Transporter OGRID	19 Transporter Name & Address	20 POD	21 O/G	22 POD ULSTR Location and Description
007440	EOTT Energy Corporation 1050 17th Street, Suite 1825 Denver, CO 80265	2724010	O	Unit A of Section 2-T22S-R31E
025561	Yates Petroleum Corporation 105 South Fourth Street Artesia, NM 88210	2724030	G	Unit A of Section 2-T22S-R31E

RECEIVED
JUL 2002
OCD - ARTESIA

IV. Produced Water

23 POD	24 POD ULSTR Location and Description
2724050	Unit A of Section 2-T22S-R31E

V. Well Completion Data

25 Spud Date	26 Ready Date	27 TD	28 PBTD	29 Perforations	30 DHC, MC
5/8/02	6/27/02	8406'	8363'	6948'-6992'	

31 Hole Size	32 Casing & Tubing Size	33 Depth Set	34 Sacks Cement
26"	20"	40'	Conductor
17-1/2"	13-3/8"	850'	700 sx (circ)
11"	8-5/8"	4087'	1300 sx (circ)
7-7/8"	5-1/2"	8406'	1150 sx (circ)

VI. Well Test Data

35 Date New Oil	36 Gas Delivery Date	37 Test Date	38 Test Length	39 Tbg. Pressure	40 Csg. Pressure
6/28/02	6/28/02	7/4/02	24 hours	N/A	N/A
41 Choke Size	**42 Oil**	**43 Water**	**44 Gas**	**45 AOF**	**46 Test Method**
N/A	250	29	269		Pumping

47 I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.
Signature: Tina Huerta
Printed name: Tina Huerta
Title: Regulatory Compliance Supervisor
Date: July 25, 2002
Phone: 505-748-1471

OIL CONSERVATION DIVISION
Approved by: ORIGINAL SIGNED BY TIM W. GUM
DISTRICT II SUPERVISOR
Title:
Approval Date: JUL 30 2002

COB-M2103-R4

Submit To Appropriate District Office
State Lease - 6 copies
Fee Lease - 5 copies
District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-105
Revised March 25, 1999

WELL API NO. 30-015-31911
5. Indicate Type of Lease STATE [X] FEE [ ]
State Oil & Gas Lease No. V-2705

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well: OIL WELL [X] GAS WELL [ ] DRY [ ] OTHER
b. Type of Completion: NEW WELL [X] WORK OVER [ ] DEEPEN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] OTHER

RECEIVED
OCD - ARTESIA

7. Lease Name or Unit Agreement Name: Graham AKB State

2. Name of Operator: Yates Petroleum Corporation

8. Well No.: 5

3. Address of Operator: 105 South 4th St., Artesia, NM 88210

9. Pool name or Wildcat: Lost Tank Delaware

4. Well Location
Unit Letter C : 330 Feet From The North Line and 2310 Feet From The West Line
Section 2 Township 22S Range 31E NMPM Eddy County

10. Date Spudded	11. Date T.D. Reached	12. Date Compl. (Ready to Prod.)	13. Elevations (DF& RKB, RT, GR, etc.)	14. Elev. Casinghead
5/8/02	6/2/02	6/27/02	3514' GR	NA

15. Total Depth	16. Plug Back T.D	17. If Multiple Compl. How Many Zones?	18. Intervals Drilled By	Rotary Tools	Cable Tools
8406'	8363'			40'-8406'	

19. Producing Interval(s), of this completion - Top, Bottom, Name: 6948'-6992' Livingston Ridge
20. Was Directional Survey Made: No
21. Type Electric and Other Logs Run: CNL, Azimuthal Laterolog
22. Was Well Cored: No

23. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
20"		40'	26"	Conductor	
13-3/8"	48#	850'	17-1/2"	700 sx (circ)	
8-5/8"	32#	4087'	11"	1300 sx (circ)	
5-1/2"	15.5# & 17#	8406'	7-7/8"	1150 sx (circ)	

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET

26. Perforation record (interval, size, and number)
6948'-6992' (45 holes) Livingston Ridge

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
6948'-6992'	Frac w/84,000# Super LC 20/40-16/30
	Prop w/963 bbls fluid to recover

28. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
6/28/02	Pumping	Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
7/4/02	24	N/A		250	269	29	1.076

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (Corr.)
N/A	N/A		250	269	29	33.2

29. Disposition of Gas (Sold, used for fuel, vented, etc.): Sold
Test Witnessed By: Keith Ellerd

30. List Attachments: Logs and Deviation Survey

31. I hereby certify that the information shown on both sides of this form as true and complete to the best of my knowledge and belief

Signature Tina Huerta Printed Name Tina Huerta Title Regulatory Compliance Supervisor Date July 25, 2002

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised March 25, 1999

WELL API NO. 30-015-31911
5. Indicate Type of Lease STATE [X] FEE [ ]
6. State Oil & Gas Lease No. V-2705

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Graham AKB State

1. Type of Well: Oil Well [X] Gas Well [ ] Other [ ]

2. Name of Operator: Yates Petroleum Corporation

7. Well No. #5

3. Address of Operator: 105 S. 4th Street Artesia, NM 88210

8. Pool name or Wildcat: Undes. Lost Tank Delaware

4. Well Location
Unit Letter C : 330 feet from the North line and 2310 feet from the West line
Section 2 Township 22S Range 31E NMPM Eddy County

10. Elevation (Show whether DR, RKB, RT, GR, etc.) 3514' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING [ ]
TEMPORARILY ABANDON [ ]	CHANGE PLANS [ ]	COMMENCE DRILLING OPNS. [X]	PLUG AND ABANDONMENT [ ]
PULL OR ALTER CASING [ ]	MULTIPLE COMPLETION [ ]	CASING TEST AND CEMENT JOB [ ]	
OTHER: [ ]		OTHER: [ ]	

Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompilation.

5/8/02 – Spudded 26" hole with rathole machine at 10:55 AM. Drilled to 40'.
Set 40' of 20" conductor cemented to surface.
Notified OCD of spud.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [signature] TITLE Engineering Technician DATE May 10, 2002

Type or print name Susan Herpin Telephone No. 505-748-1471

(This space for State use)

APPROVED BY [signature] TITLE ORIGINAL SIGNED BY TIM W. GUM DISTRICT II SUPERVISOR DATE MAY 20 2002

Conditions of approval, if any:

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

C-15?

Form C-103
Revised March 25, 1999

WELL API NO.
30-015-31911

5. Indicate Type of Lease
STATE [X] FEE [ ]

6. State Oil & Gas Lease No.
V-2705

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name:
Graham AKB State

1. Type of Well:
Oil Well [X] Gas Well [ ] Other [ ]

2. Name of Operator
Yates Petroleum Corporation

7. Well No.
5

3. Address of Operator
105 S. 4th Street Artesia, NM 88210

8. Pool name or Wildcat
Undes. Lost Tank Delaware

RECEIVED
OCD ARTESIA

4. Well Location

Unit Letter C : 330 feet from the North line and 2310 feet from the West line

Section 2 Township 22S Range 31E NMPM Eddy County

10. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
3514' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:			SUBSEQUENT REPORT OF:		
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]		REMEDIAL WORK [ ]	ALTERING CASING [ ]	
TEMPORARILY ABANDON [ ]	CHANGE PLANS [ ]		COMMENCE DRILLING OPNS. [ ]	PLUG AND ABANDONMENT [ ]	
PULL OR ALTER CASING [ ]	MULTIPLE COMPLETION [ ]		CASING TEST AND CEMENT JOB [ ]		
OTHER: [ ]			OTHER: Intermediate Casing [X]		

Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompilation.

5/16/02 - TD 17-1/2" hole at 11:45 AM. Ran 19 joints of 13-3/8" 48# H-40 casing, set at 850'. Texas pattern guide shoe set at 850'. Insert float set at 804.96'. Cemented with 500 sx BJ Lite C Poz with 2% CaCl2. Tailed in with 200 sx Class C + 2% CaCl2. PD at 5:15 PM 5/16/02. Circulated 106 sx cement. WOC 25 hours. Reduced hole to 11" and resumed drilling.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Tina Huerta TITLE Regulatory Compliance Supervisor DATE May 29, 2002

Type or print name Tina Huerta Telephone No. 505-748-1471

(This space for State use)

APPPROVED BY ORIGINAL SIGNED BY TIM W. GUM DISTRICT II SUPERVISOR TITLE DATE JUN 03 2002

Conditions of approval, if any:

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
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1000 Rio Brazos Rd., Aztec, NM 87410
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State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised March 25, 1999

WELL API NO.
30-015-31911

5. Indicate Type of Lease
STATE [X] FEE [ ]

6. State Oil & Gas Lease No.
V-2705

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name:
Graham AKB State

1. Type of Well:
Oil Well [X] Gas Well [ ] Other [ ]

2. Name of Operator
Yates Petroleum Corporation

7. Well No.
5

3. Address of Operator
105 S. 4th Street Artesia, NM 88210

8. Pool name or Wildcat
Undes. Lost Tank Delaware

RECEIVED
OCD - ARTESIA

4. Well Location

Unit Letter C : 330 feet from the North line and 2310 feet from the West line

Section 2 Township 22S Range 31E NMPM Eddy County

10. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
3514' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:			SUBSEQUENT REPORT OF:		
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]		REMEDIAL WORK [ ]	ALTERING CASING [ ]	
TEMPORARILY ABANDON [ ]	CHANGE PLANS [ ]		COMMENCE DRILLING OPNS. [ ]	PLUG AND ABANDONMENT [ ]	
PULL OR ALTER CASING [ ]	MULTIPLE COMPLETION [ ]		CASING TEST AND CEMENT JOB [ ]		
OTHER: [ ]			OTHER: Intermediate and Production Casing [X]		

Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompilation.

5/24/02 - Ran 95 joints 8-5/8" 32# J-55 casing set at 4087'. Regular guide shoe set at 4087'. Float collar set at 4043'. Cemented with 1050 sx BJ Lite C with 2% CaCl2 + .25# celloflake + 5# LCM-1. Tailed in with 250 sx Class "C" + 2% CaCl2. Circulated 164 sx to pit. WOC 26 hours and 15 mins. Reduced hole to 7-7/8" and resumed drilling.

6/02/02 - Ran 191 joints 5-1/2" 15.5#, 17# J-55 SB, vam casing set at 8406' as follows: 38 jts (1645.37'), 1 jt (44.07'), 147 jts (6489.64'), 5 jts (218.41'). Float shoe set at 8406'. Float collar set at 8363'. DV tool set at 4016'. Bottom marker set at 6761'. Bottom of packer set at 4022'. Bottom of packer/DV tool set at 4025'. Cemented as follows: 150 SCF nitrogen/150 bbls mud ahead of 525 sx Super "C" modified with .6% FL-25 + FL-52 + 5# LCM-1 + 3% KCl. Tailed in with 75 sx SDH + 8% A10-B + 8# LCM-1 + 25# CF. PD at 4:15 PM 6-2-02. Bumped plug to 1000# for 1 min. Circulated thru TD tool 1 hr. Stage 2: 450 sx BJ Lite C Poz with 6% bentonite. Tailed in with 100 sx Class "C" Neat. PD at 6:00 PM 6-2-02. Bumped plug to 2700# for 1 min. Circulated 72 sx.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Tina Huerta TITLE Regulatory Compliance Supervisor DATE June 6, 2002

Type or print name Tina Huerta Telephone No. 505-748-1471

(This space for State use)

APPPROVED BY ORIGINAL SIGNED BY TIM W. GUM DISTRICT II SUPERVISOR TITLE DATE JUN 12 2002

Conditions of approval, if any:

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

C150

Form C-103
Revised March 25, 1999

WELL API NO. 30-015-31911

5. Indicate Type of Lease STATE [X] FEE [ ]

6. State Oil & Gas Lease No. V-2705

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Graham AKB State

1. Type of Well: Oil Well [X] Gas Well [ ] Other [ ]

2. Name of Operator: Yates Petroleum Corporation

7. Well No. 5

3. Address of Operator: 105 S. 4th Street Artesia, NM 88210

8. Pool name or Wildcat: Lost Tank Delaware

JUL 2002 RECEIVED OCD - ARTESIA

4. Well Location

Unit Letter C : 330 feet from the North line and 2310 feet from the West line

Section 2 Township 22S Range 31E NMPM Eddy County

10. Elevation (Show whether DR, RKB, RT, GR, etc.) 3514' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:			SUBSEQUENT REPORT OF:		
PERFORM REMEDIAL WORK	[ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK	[ ]	ALTERING CASING [ ]
TEMPORARILY ABANDON	[ ]	CHANGE PLANS [ ]	COMMENCE DRILLING OPNS.	[ ]	PLUG AND ABANDONMENT [ ]
PULL OR ALTER CASING	[ ]	MULTIPLE COMPLETION [ ]	CASING TEST AND CEMENT JOB	[ ]	
OTHER:	[ ]		OTHER: Perforate	[X]	

Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompilation.

6/21/02-6/23/02 – Perforate Livingston Ridge zone with 1 SJPF from 6948'-6992' (45 holes).
6/25/02 – Frac Livingston Ridge perfs 6948'-6992' with 84,000# Super LC 20/40 – 16/30 Prop with 963 bbls fluid to recover.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Tina Huerta TITLE Regulatory Compliance Supervisor DATE June 28, 2002

Type or print name Tina Huerta Telephone No. 505-748-1471

(This space for State use)

APPPROVED BY ORIGINAL SIGNED BY TIM W. GUM DISTRICT II SUPERVISOR TITLE DATE JUL 08 2002

Conditions of approval, if any:

New Mexico Deep Well Count

The current count of hydrocarbon wells by type that reside within the Delaware Basin of Southeastern New Me

CU=Corehole
D=Dry hole
G=Gas well
I=Injection well
J=Junked and abandoned
O=Oil well
OG=Oil and Gas well
PG=Plugged Gas well
PI=Plugged Injection well
PO=Plugged Oil well
PSD=Plugged Salt water disposal well
PSA=Plugged Brine well
S=Drilling or waiting on paperwork
SA=Brine well
SD=Salt water disposal well
SE=Service well
ST=Stratigraphic test well
WI=WIPP related well (formerly hydrocarbon well)

Type of well	Number of wells of each type
D	841
G	630
I	62
J	15
O	1863
OG	5
PG	133
PI	30
PO	284
PSA	1
PSD	9
S	3
SD	104
SE	3
ST	2
WI	1

COB-M2003-25

New Mexico Deep Well Count

The current count of hydrocarbon wells by type that reside within the Delaware Basin of Southeastern New Me

CU=Corehole

D=Dry hole

G=Gas well

I=Injection well

J=Junked and abandoned

O=Oil well

OG=Oil and Gas well

PG=Plugged Gas well

PI=Plugged Injection well

PO=Plugged Oil well

PSD=Plugged Salt water disposal well

PSA=Plugged Brine well

S=Drilling or waiting on paperwork

SA=Brine well

SD=Salt water disposal well

SE=Service well

ST=Stratigraphic test well

WI=WIPP related well (formerly hydrocarbon well)

Type of well	Number of wells of each type
D	841
G	632
I	62
J	15
O	1867
OG	5
PG	133
PI	30
PO	284
PSA	1
PSD	9
S	3
SD	104
SE	3
ST	2
WI	1

INJECTION AND SALT WATER DISPOSAL WELL INFORMATION

AMERICAN PETROLEUM INSTITUTE NUMBER: 30015210520000 IS WELL IN THE NINE TOWNSHIPS? ☑

TOWNSHIP: 23S RANGE: 30E SECTION: 01 WELL LOCATION: 1830 FN-1980 FW

WELL NAME: HUDSON FEDERAL WELL #: 1

WELL OPERATOR: BASS ENTERPRISES PRODUCTION CO UNIT #: F

STATUS OF WELL: SALT WATER DISPOSAL WELL TOTAL DEPTH OF WELL: 14325

FIELD OR POOL LOCATION: LOS MEDANOS

INJECTION FORMATION: DELAWARE PERMITTED INJECTION PRESSURE: 808 PSI

CURRENT AVERAGE INJECTION PRESSURE: 850 PSI CUMULATIVE BARRELS: 759,021

MONTHLY INJECTION RATE IN BARRELS: 25,769 YEAR FIRST INJECTED: 2001

PERFORATION ZONE AND DEPTH OF INJECTION: 4040-4825

INJECTION PRESSURE GRADIENT: IS UIC PERMIT ON FILE? ☑

BOTTOM HOLE INJECTION PRESSURE: UIC ADMIN ORDER #: SWD-788

LAST MONTH REPORTED: JAN-2003 LAST YEAR INJECTED:

INJECTION NOTES: WENT ON LINE MARCH 1, 2001.

Thursday, June 19, 2003

COB-M2003-R6

WP Deleted
Attachment 2
Field Report

FIELD REPORT
ANNUAL SURVEY

WELL INFORMATION

Well Name & No. - Graham "AKB" State #8

Well Location 22S-31E-02 (1650 FN-330 FW)

API Number 30-015-31913

Well Operator Yates Petroleum Corp

Well Status (oil-gas-swd, etc.) oil/gas

Lease Holder N/A

Well Latitude (field visit only) N/A

Well Longitude (field visit only) N/A

DRILLING INFORMATION

Drilling Contractor Pat/UTI #512

Drill Bit Diameter 17.5"-S, 11"-I, 7.875"-P

Drill Collar Diameter 8"-S, 8"-I, 6"-P

Drill Collar Length (8-S, 33-I, 33-P (# of collars)

Surface Casing Diameter 13.375"

Drill Pipe Diameter 4.5" - All sections

Drill String Angular Velocity 50-Surf, 80-bottom

Penetration Rate thru the Salado Formation 3.5-68 ft/hr

Drilling Mud Density 9.9-10.2 ppg

Drilling Mud Viscosity 28 sec/qt

Drilling Mud Yield Stress Point N/A

Air Drilled (list any portion) no

H2S Encounters (depth &PPM) yes, 3,134', 110ppm

Any Pressurized Brine Encounter (flow rate-pressure-volume) 105 bbls/hr, pressure/volume N/A

Castile Formation Brine Encounter yes

Castile Brine Reservoir Pressure N/A

Castile Brine Reservoir Volume N/A

Typical Time till shut-in (Castile Brine) N/A

Longest Time till shut-in (Castile Brine) N/A

INJECTION INFORMATION (injection & swd wells)

Injection Formation N/A

Injection Depth

Bottom Hole Injection Pressure

Injection Pressure Gradient

Perforation Zones

Injection Rate

MISCELLANEOUS INFORMATION

List anything of interest (gas blowout-stuck tools-etc.)

Signature Cory Bredemeier

Date

COB-M2003-R7

FIELD REPORT
ANNUAL SURVEY

WELL INFORMATION

Well Name & No. - Lucy "ALC" State #3

Well Location 21S-31E-34 (1710 FS-1980 FE)

API Number 30-015-31793

Well Operator Yates Petroleum Corp

Well Status (oil-gas-swd, etc.) oil/gas

Lease Holder N/A

Well Latitude (field visit only) N/A

Well Longitude (field visit only) N/A

DRILLING INFORMATION

Drilling Contractor UTI #502

Drill Bit Diameter 17.5"-S, 11"-I, 7.875"-P

Drill Collar Diameter 8 1/16"-S, 7.5"-I, 6.5"-P

Drill Collar Length 25-S, 27-I, 27-P (# of collars)

Surface Casing Diameter 13.375"

Drill Pipe Diameter 4.5"-All sections

Drill String Angular Velocity 75-Surf., 85-bottom

Penetration Rate thru the Salado Formation 10.5-35.4 ft/hr

Drilling Mud Density 10 ppg

Drilling Mud Viscosity 28-29 sec/qt

Drilling Mud Yield Stress Point no

Air Drilled (list any portion) no

H2S Encounters (depth &PPM) none

Any Pressurized Brine Encounter (flow rate-pressure-volume) none

Castile Formation Brine Encounter no

Castile Brine Reservoir Pressure N/A

Castile Brine Reservoir Volume N/A

Typical Time till shut-in (Castile Brine) N/A

Longest Time till shut-in (Castile Brine) N/A

INJECTION INFORMATION (injection & swd wells)

Injection Formation ~~N/A~~

Injection Depth

Bottom Hole Injection Pressure

Injection Pressure Gradient

Perforation Zones

Injection Rate

MISCELLANEOUS INFORMATION

List anything of interest (gas blowout-stuck tools-etc.)

Signature Cory Fredericks

Date

FIELD REPORT
ANNUAL SURVEY

WELL INFORMATION

Well Name & No. - Graham "AKB" State #5

Well Location 22S-31E-02 (330 FN-2310 FW)

API Number 30-015-31911

Well Operator Yates Petroleum Corp

Well Status (oil-gas-swd, etc.) oil/gas

Lease Holder N/A

Well Latitude (field visit only) N/A

Well Longitude (field visit only) N/A

DRILLING INFORMATION

Drilling Contractor Patterson-UTI #512

Drill Bit Diameter 17.5"-S, 11"-I, 7.875"-P

Drill Collar Diameter 7 1/4"-S, 8"-I, 6"-P

Drill Collar Length 18-S, 33-I, 33-P (# of collars)

Surface Casing Diameter 13.375"

Drill Pipe Diameter 4.5" - All sections

Drill String Angular Velocity 40-Surf., 90-bottom

Penetration Rate thru the Salado Formation 4-68.7 ft/hr

Drilling Mud Density 10 ppg

Drilling Mud Viscosity 28 sec/qt

Drilling Mud Yield Stress Point N/A

Air Drilled (list any portion) none

H2S Encounters (depth &PPM) NO

Any Pressurized Brine Encounter (flow rate-pressure-volume) NO

Castile Formation Brine Encounter NO

Castile Brine Reservoir Pressure none

Castile Brine Reservoir Volume N/A

Typical Time till shut-in (Castile Brine) N/A

Longest Time till shut-in (Castile Brine) N/A

INJECTION INFORMATION (injection & swd wells)

Injection Formation N/A

Injection Depth

Bottom Hole Injection Pressure

Injection Pressure Gradient

Perforation Zones

Injection Rate

MISCELLANEOUS INFORMATION

List anything of interest (gas blowout-stuck tools-etc.) Had to steer intermediate hole due to deviation

Signature Cory Bradshaw

Date 8/14/02

FIELD REPORT
ANNUAL SURVEY

WELL INFORMATION

Well Name & No. - Flora "AKF" State #3

Well Location 22S-31E-02 (2310 FS-330 FW)

API Number 30-015-32027

Well Operator Yates Petroleum Corp

Well Status (oil-gas-swd, etc.) oil/gas

Lease Holder N/A

Well Latitude (field visit only) N/A

Well Longitude (field visit only) N/A

DRILLING INFORMATION

Drilling Contractor Patterson-UTI #512

Drill Bit Diameter 17.5"-S, 11"-I, 7.875"-P

Drill Collar Diameter 7.875"-S, 7.875"-I, 6"-P

Drill Collar Length 18-S, 33-I, 33-P (# of collars)

Surface Casing Diameter 13.375"-S

Drill Pipe Diameter 4.5"-All sections

Drill String Angular Velocity 60-Surf, 105 bottom

Penetration Rate thru the Salado Formation 13-65' p/hr

Drilling Mud Density 10 ppg

Drilling Mud Viscosity 28 Sec/qt

Drilling Mud Yield Stress Point N/A

Air Drilled (list any portion) None

H2S Encounters (depth &PPM) none

Any Pressurized Brine Encounter (flow rate-pressure-volume) no

Castile Formation Brine Encounter none

Castile Brine Reservoir Pressure N/A

Castile Brine Reservoir Volume N/A

Typical Time till shut-in (Castile Brine) N/A

Longest Time till shut-in (Castile Brine) N/A

INJECTION INFORMATION (injection & swd wells)

~~Injection Formation~~

Injection Depth

Bottom Hole Injection Pressure N/A

~~Injection Pressure Gradient~~

Perforation Zones

Injection Rate

MISCELLANEOUS INFORMATION

List anything of interest (gas blowout-stuck tools-etc.)

Signature Cory Erubin - Drlg. Engineer

Date 8/13/02

FIELD REPORT
ANNUAL SURVEY

WELL INFORMATION

Well Name & No. - Jacque "AQJ" State #5

Well Location 21S-31E-34 (2310 FS-2310 FW)

API Number 30-015-31928

Well Operator Yates Petroleum Corp

Well Status (oil-gas-swd, etc.) oil/gas

Lease Holder N/A

Well Latitude (field visit only) N/A

Well Longitude (field visit only) N/A

DRILLING INFORMATION

Drilling Contractor UTI #502

Drill Bit Diameter 17.5"-S, 11"-I, 7.875"-P

Drill Collar Diameter 7 15/16"-S, 7.5"-I, 6 3/8"-P

Drill Collar Length 16-S, 27-I, 27-P (# of collars)

Surface Casing Diameter 13.375"

Drill Pipe Diameter 4.5"-All Sections

Drill String Angular Velocity 75-Surf., 90-bottom

Penetration Rate thru the Salado Formation 12-60 ft/hr

Drilling Mud Density 10 ppg

Drilling Mud Viscosity 28-29 sec/qt

Drilling Mud Yield Stress Point no

Air Drilled (list any portion) NO

H2S Encounters (depth &PPM) no

Any Pressurized Brine Encounter (flow rate-pressure-volume) no

Castile Formation Brine Encounter no

Castile Brine Reservoir Pressure no

Castile Brine Reservoir Volume N/A

Typical Time till shut-in (Castile Brine) N/A

Longest Time till shut-in (Castile Brine) N/A

INJECTION INFORMATION (injection & swd wells)

Injection Formation

Injection Depth

Bottom Hole Injection Pressure N/A

Injection Pressure Gradient

Perforation Zones

Injection Rate

MISCELLANEOUS INFORMATION

List anything of interest (gas blowout-stuck tools-etc.)

Signature Cory Trahan

Date 8/14/02

Table 4

Castile Brine Encounters

#	Location	Well Name	Spud Date	Status	Well Information
Original CCA Related Castile Brine Encounters – 1896 Through June 1995					
1	21S-31E-26	Federal #1	10/31/1979	P&A	Identified as encountering Castile Brine.
2	21S-31E-35	ERDA-6	06/13/1975	P&A	Identified as encountering Castile Brine.
3	21S-31E-35	Federal "FI" #1	09/25/1981	P&A	Identified as encountering Castile Brine.
4	21S-31E-36	Lost Tank "AIS" State #1	12/07/1991	Oil Well	Identified as encountering Castile Brine.
5	21S-31E-36	Lost Tank "AIS" State #4	11/19/1991	Oil Well	Identified as encountering Castile Brine.
6	21S-32E-31	Lost Tank SWD #1	11/12/1991	SWD	Identified as encountering Castile Brine.
7	22S-29E-09	Danford Permit #1	05/18/1937	P&A	Identified as encountering Castile Brine.
8	22S-31E-01	Unocal "AHU" Federal #1	04/02/1991	Oil Well	Identified as encountering Castile Brine.
9	22S-31E-01	Molly State #1	09/25/1991	Oil Well	Identified as encountering Castile Brine.
10	22S-31E-01	Molly State #3	10/20/1991	Oil Well	Identified as encountering Castile Brine.
11	22S-31E-02	State "2" #3	11/28/1991	Oil Well	Identified as encountering Castile Brine.
12	22S-31E-11	Martha "AIK" Federal #3	05/06/1991	Oil Well	Identified as encountering Castile Brine.
13	22S-31E-11	Martha "AIK" Federal #4	09/02/1991	Oil Well	Identified as encountering Castile Brine.
14	22S-31E-12	Federal "12" #8	03/28/1992	Oil Well	Identified as encountering Castile Brine.
15	22S-31E-13	Neff "13" Federal #5	02/04/1991	Oil Well	Identified as encountering Castile Brine.
16	22S-31E-17	WIPP-12	11/17/1978	Monitoring	Identified as encountering Castile Brine.
17	22S-32E-05	Bilbrey "5" Federal #1	11/26/1981	Oil Well	Identified as encountering Castile Brine.
18	22S-32E-15	Lechuza Federal #4	12/29/1992	Oil Well	Identified as encountering Castile Brine.
19	22S-32E-16	Kiwi "AKX" State #1	04/28/1992	Oil Well	Identified as encountering Castile Brine.
20	22S-32E-25	Covington "A" Federal #1	02/07/1975	Oil Well	Identified as encountering Castile Brine.
21	22S-32E-26	Culberson #1	12/15/1944	P&A	Identified as encountering Castile Brine.
22	22S-32E-34	Red Tank "34" Federal #1	09/23/1992	Oil Well	Identified as encountering Castile Brine.
23	22S-32E-36	Richardson State #1	07/20/1962	P&A	Identified as encountering Castile Brine.
24	22S-32E-36	Shell State #1	02/22/1964	Oil Well	Identified as encountering Castile Brine.
25	22S-33E-20	Cloyd Permit #1	09/07/1937	P&A	Identified as encountering Castile Brine.
26	22S-33E-20	Cloyd Permit #2	06/22/1938	P&A	Identified as encountering Castile Brine.
27	23S-30E-01	Hudson Federal #1	02/25/1974	SWD	Identified as encountering Castile Brine.
New CRA Related Castile Brine Encounters – July 1995 Through September 2002					
1	21S-31E-35	Lost Tank "35" State #4	09/11/2000	Oil Well	Estimated several hundred barrels per hour. Continued drilling.
2	21S-31E-35	Lost Tank "35" State #16	02/06/2002	Oil Well	At 2705 ft. encountered 1000 B/H. Shut-in to get room in reserve pit with pressure of 180 psi. Shut in next day with pressure at 100 psi and waterflow of 450 B/H. Two days later no water flow and full returns.
3	22S-31E-02	Graham "AKB" State #8	04/12/2002	Oil Well	Estimated 105 barrels per hour. Continued drilling.
4	23S-30E-01	James Ranch Unit #63	12/23/1999	Oil Well	Sulfur water encountered at 2900 ft. 35 PPM was reported but quickly dissipated to 3 PPM in a matter of minutes. Continued drilling.
5	23S-30E-01	Hudson "1" Federal #7	01/06/2001	Oil Well	Estimated initial flow at 4 to 500 barrels per hour with a total volume of 600-800 barrels. Continued drilling.

No official documentation on State records exists for the five new Castile Brine encounters. Four were reported by WIPP Site personnel during discussions with area drillers while the fifth was reported by one of the operators on the Annual Survey performed by the Delaware Basin Drilling Surveillance Program. All five wells were drilled in areas where Castile Brine is expected to be encountered during the drilling process. Three wells were drilled in the vicinity of ERDA-6 and the other two were southwest of the WIPP Site (all were located in the nine-township area). During this same time frame there were 345 wells drilled in the nine-township area.

CCB-M2003-R8

Attachment D.5:

Subsidence Documents Reviewed

- File Received: COB-M2003-B 09 ES 01 Rev3.pdf
- File Received: COB-M2003-E DOE WIPP 03 2293.pdf

-Document(s) Received: COB-M2003-AE
COB-M2003-AE1

WIPP SUBSIDENCE MONITORING

40 CFR 194.42 MONITORING

LARRY Pyeatt

COB - M2003 -AE

L. PYEATT
6/10/03

QUALITY ASSURANCE ACTIVITIES

- EQUIPMENT
  - STATE OF THE ART INSTRUMENT
  - INSTRUMENT CALIBRATION PER WIPP METROLOGY PROGRAM
- PROCEDURES
  - WP 09-ES.01, WIPP UNDERGROUND AND SURFACE SURVEYING PROGRAM
  - WP 09-ES4001, SUBSIDENCE SURVEY DATA ACQUISITION REPORT
  - FIELD CHECK PRIOR TO EACH USE (2 PEG TEST)
  - LOOP ERROR IS DETERMINED BY LOOP CLOSURE
  - FEDERAL GEODETIC CONTROL SUBCOMMITTEE (FGCS) 2ND ORDER CLASS II (1995)
  - SUBSIDENCE MONITORING SOFTWARE QUALITY ASSURANCE PLAN

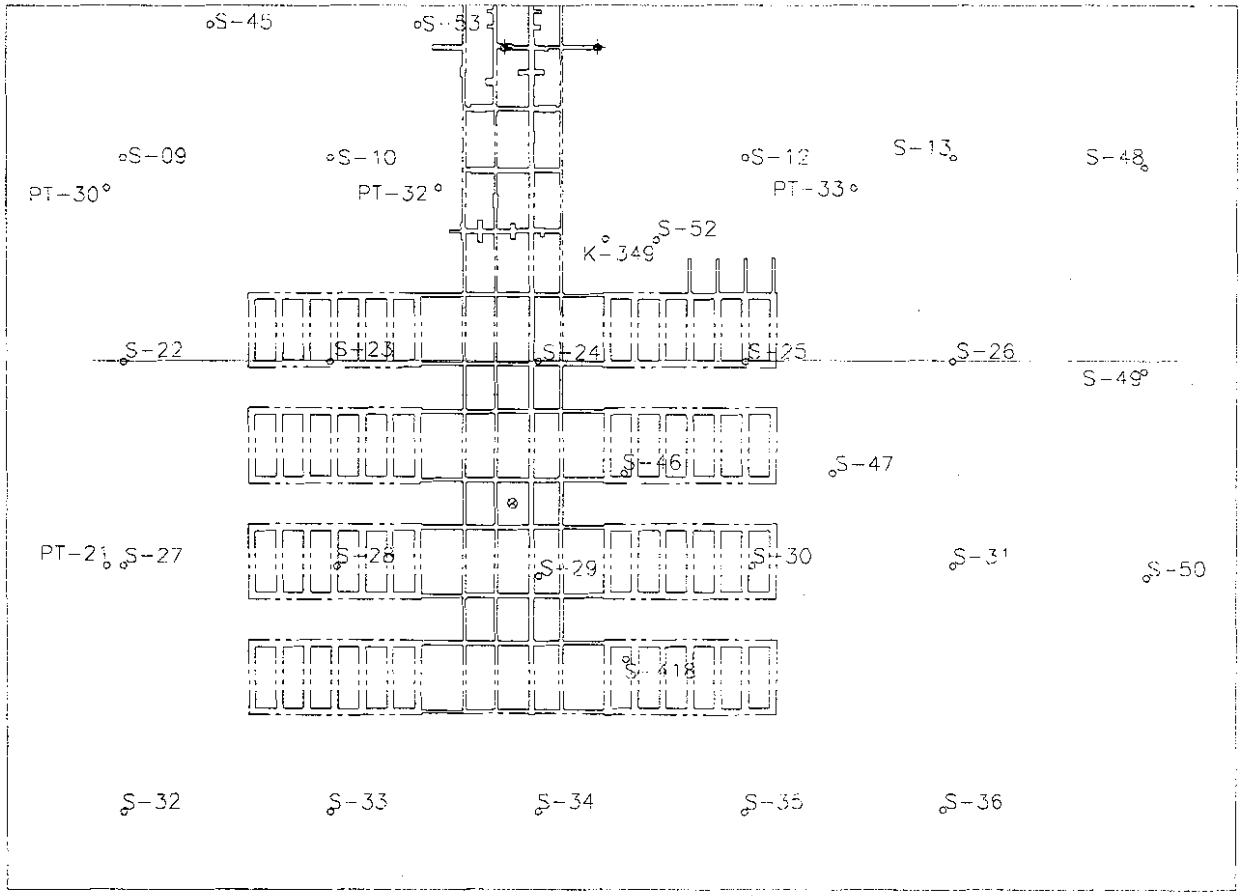
QUALITY ASSURANCE ACTIVITIES, CONT.

- PERSONEL TRAINED IN ACCORDANCE WITH WP 09, ENGINEERING CONDUCT OF OPERATIONS
- REPORTING
  - WIPP SUBSIDENCE MONUMENT LEVELING SURVEY, DOE/WIPP 03-2293 ANNUAL REPORT
  - REPORT AND DATA ARE MAINTAINED AS PER WP 09-ES4001, WP 09-ES01, WP 15-PR3005 AND WP 15-PS3002

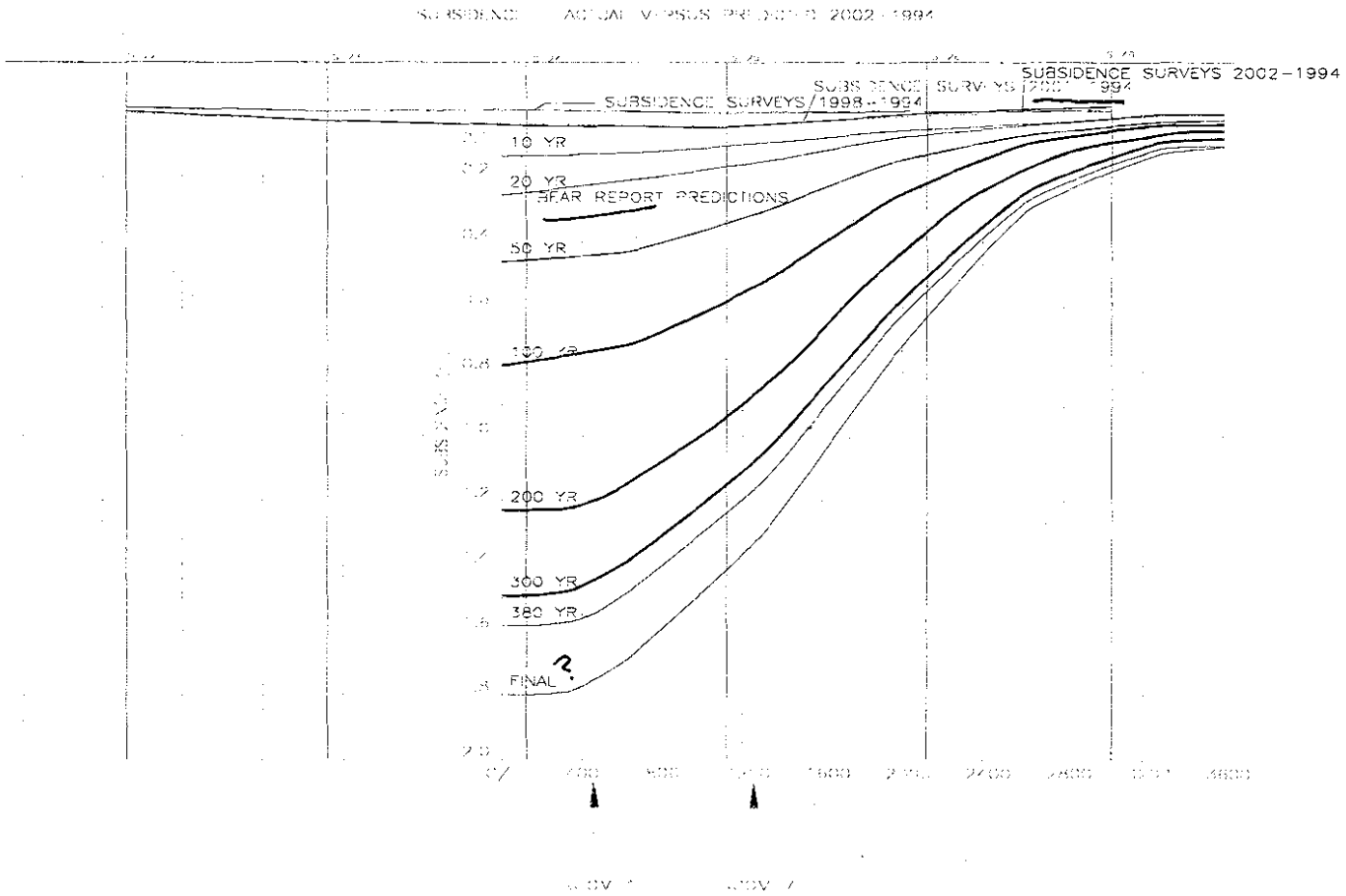
RESULTS

- CLOSURE ERROR
  - ALLOWABLE ERROR FOR LEVELING IS $0.033\text{FT.} \times \sqrt{\text{M.}}$, WHERE 'M' IS THE LENGTH OF THE LOOP IN MILES
  - ALL LOOP CLOSURES WERE LESS THAN ALLOWABLE ERROR
- ANNUAL SURVEY RESULTS ARE MAINTAINED IN A DATABASE

MONUMENT LOCATIONS
PANEL 1



SUBSIDENCE PROFILE
PANEL 1



RESULTS

- DOWNWARD TREND OVER PANEL 1
- SUBSIDENCE IS WITHIN BACKFILL ENGINEERING ANALYSIS REPORT (BEAR) PREDICTIONS

SUBSIDENCE MONITORING PROGRAM SUMMARY

- THE PROGRAM PROVIDES USABLE RESULTS FOR THE REQUIRED PARAMETER

2.3.1 SURVEY TRAINING AND QUALIFICATION STANDARDS

1. Cognizant Engineer and/or Chief Surveyor
    a. Training
        i. Engineering degree or equivalent
        ii. Successful completion of specific training on surveying instruments used at WIPP
        iii. Completed training as required by Conduct of Engineering WIPP procedure WP-09
    b. Experience
        i. Five years experience in the surveying field
    c. Proficiency
        i. Proficiency in the use of precision leveling equipment specified for the program as demonstrated by passing the board examination for cognizant engineer
        ii. Proficiency in the use of related surveying software as demonstrated by passing the board examination for cognizant engineer
2. Surveying Technician
    a. Training
        i. Successful completion of specific training of surveying instruments used at WIPP
        ii. Completed training as required by Conduct of Engineering WIPP procedure WP-09
    b. Experience
        i. One year experience in the surveying field
    c. Proficiency
        i. Demonstrated proficiency in the use of precision leveling equipment specified for the program by successfully completing survey loops with closures better than Second order, Class II specifications
3. Surveying Rodman
    a. Training
        i. Field orientation at the start of surveys and continued instructions as the survey progresses
        ii. Completed training as required by Conduct of Engineering WIPP procedure WP-09
    b. Experience
        i. None required

WP 09-ES.01
Changes — in process

COB-M2003-AEI

Attachment D.6:

Other Documents Reviewed

- Document(s) Received: COB-M2003-1
  COB-M2003-AB
  COB-M2003-AD

Table 7-7. Preclosure and Postclosure Monitored Parameters

Monitored Parameter	Preclosure	Postclosure
Culebra groundwater composition	X	X
Culebra change in groundwater flow	X	X
Probability of encountering a Castile brine reservoir	X	X
Drilling rate	X	X
Subsidence measurements	X	X
Waste activity	X	
Creep closure and stresses	X	
Extent of deformation	X	
Initiation of brittle deformation	X	
Displacement of deformation features	X	

COB-M2003-1

Washington

Regulatory and Environmental Services

EPA Inspection

Hydrology Program

June 17 - 19, 2003

Stewart Jones

COB-M-COB 2003-AB

Washington

Regulatory and Environmental Services

CHANGES WITHIN THE LAST YEAR

- Five Culebra wells were plugged and abandoned (H-09a, H-10b, H-11b3, P-15 and P-18)
- Two new wells have been recently drilled SNL-2 (new location) and SNL-9 (replaces P-14) SNL-12
- Visual MODFLOW® is currently undergoing evaluation. It will be used to determine flow rate and direction measurements.
- Two new hydrologists are now on staff to assist with hydrological evaluations

Washington

Regulatory and Environmental Services

FUTURE PLANS

- Collection of remote water level measurements via telemetry is being evaluated.

- The feasibility to incorporate low flow sampling techniques into the groundwater sampling program is also being evaluated.

Washington

Regulatory and Environmental Services

Groundwater Monitoring

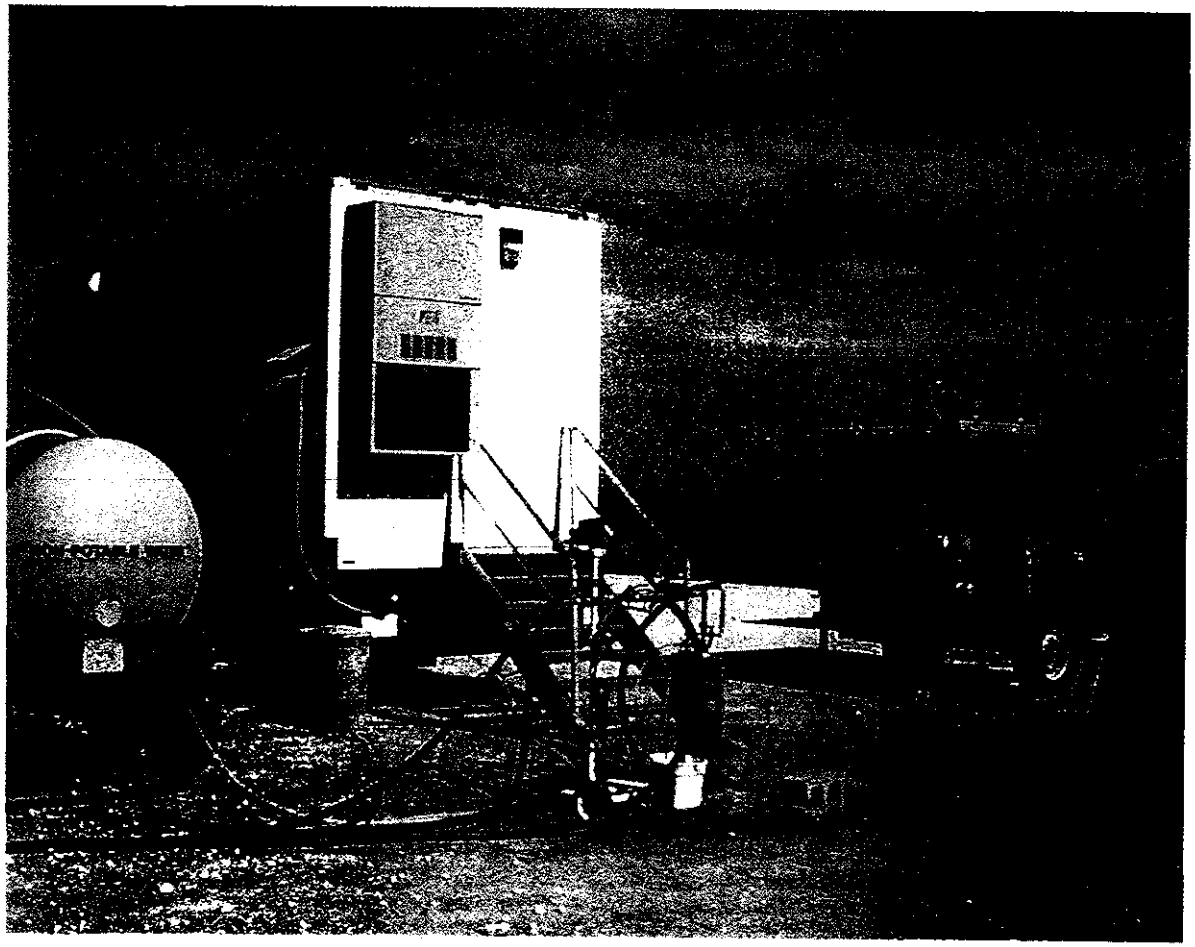
Compliance with
40 CFR 194

- Culebra brine composition (groundwater monitoring)
- Culebra groundwater flow direction
  - groundwater level measurements
  - groundwater pressure density survey

Washington

Regulatory and Environmental Services

Groundwater Monitoring Lab Truck



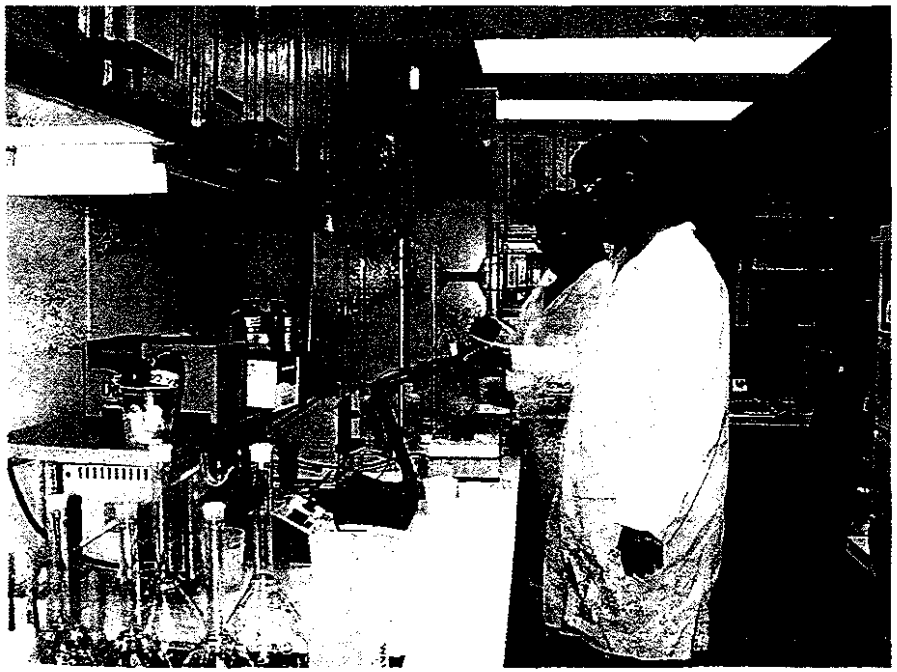
Field setup for Groundwater Sampling

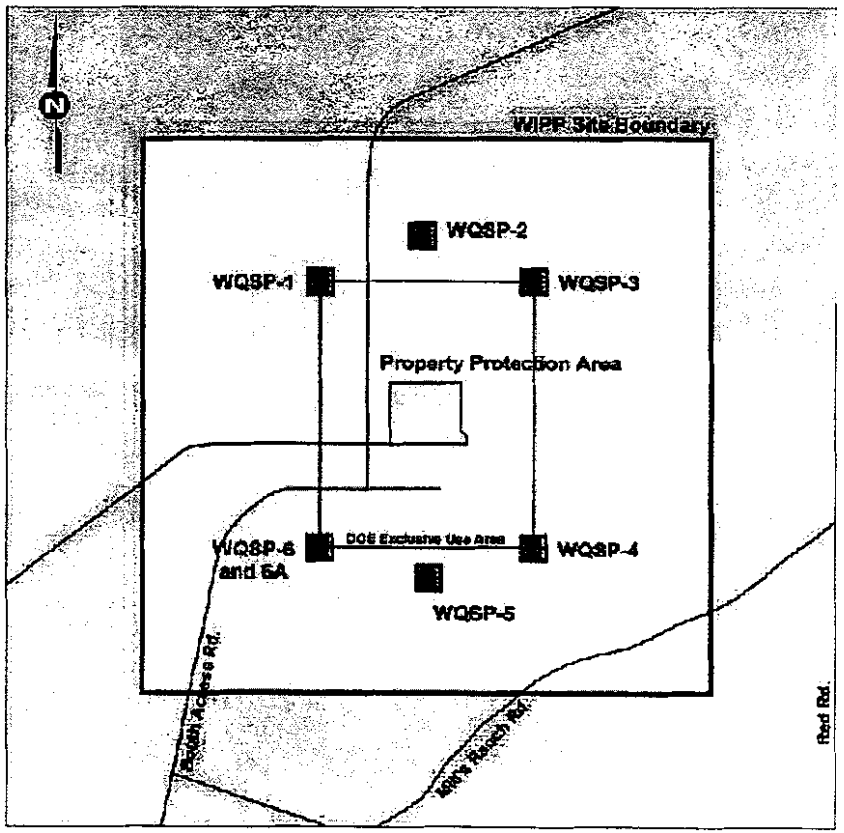
Washington

Regulatory and Environmental Services

Groundwater Sampling

Field Sampling activities to determine Culebra groundwater composition



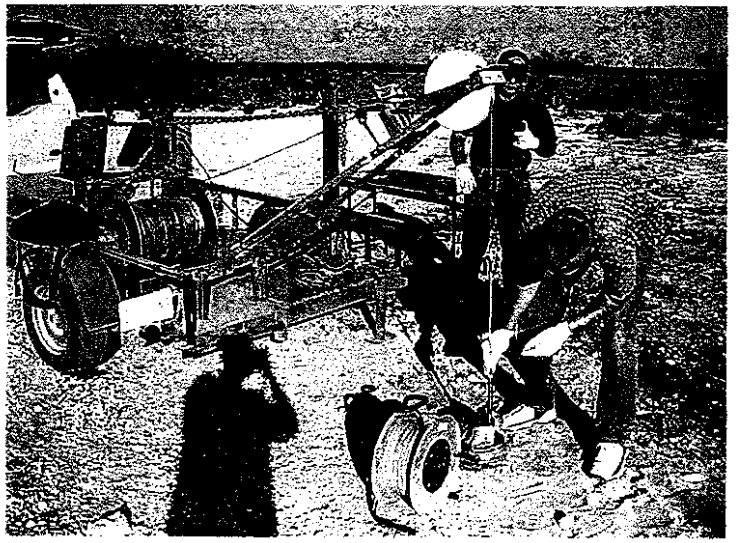


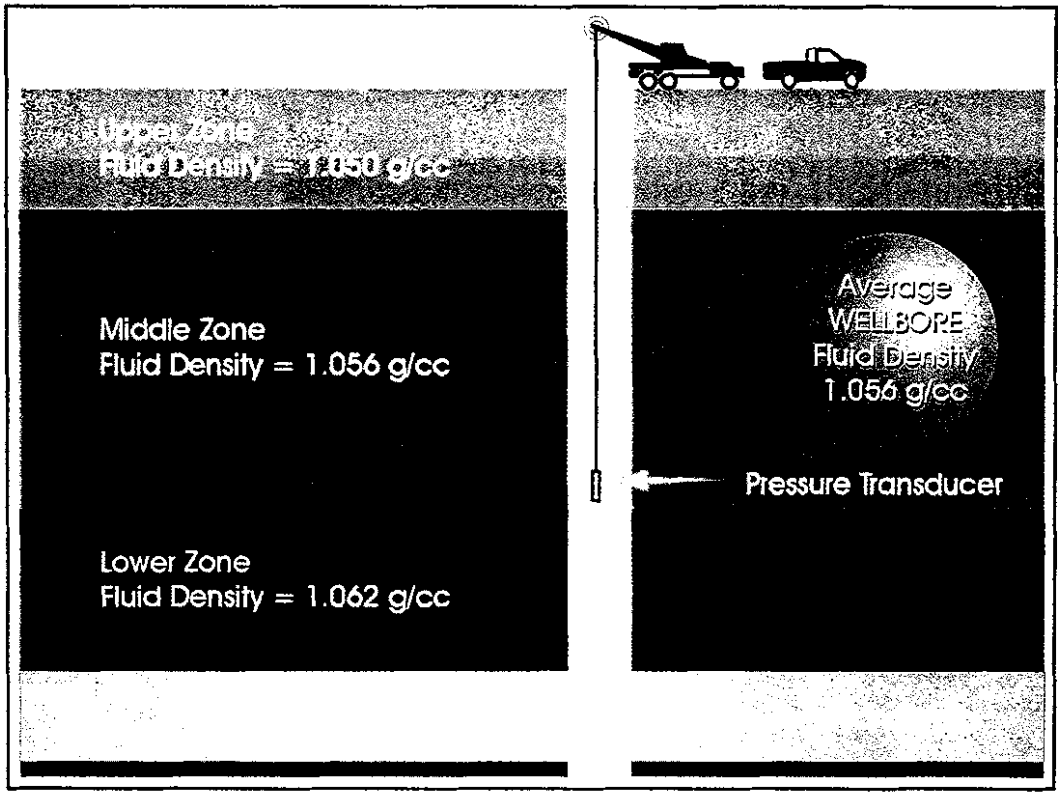
Washington

Regulatory and Environmental Services

Pressure Density Surveys

Pressure Density Surveys compliment water level surface measurements by providing well bore fluid density data for freshwater head calculations.



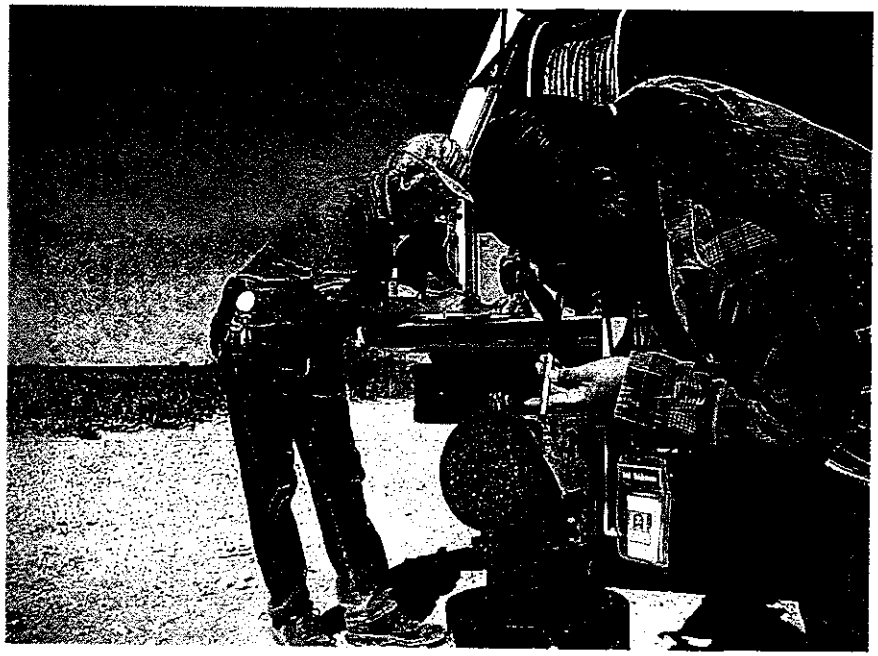


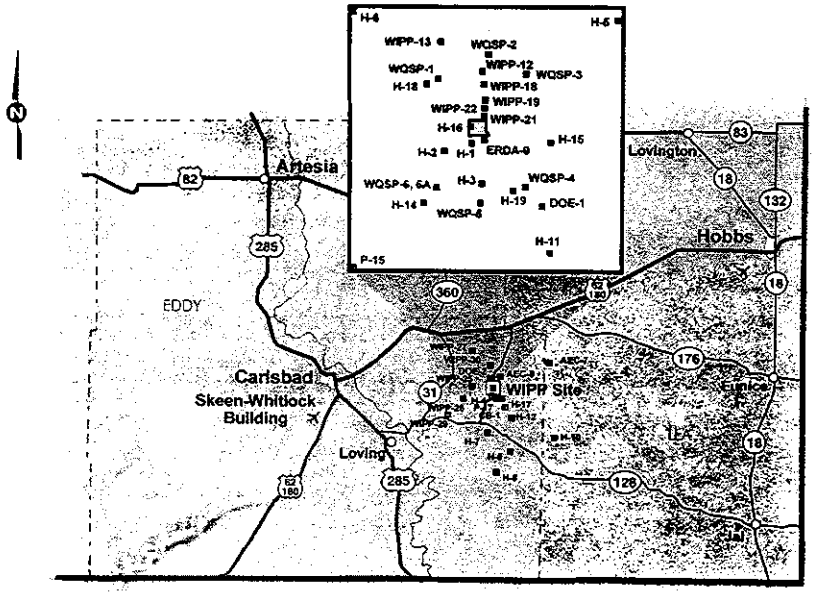
Washington

Regulatory and Environmental Services

Water Level Measurements

Groundwater measurements are taken manually using an electrical conductance water level probe



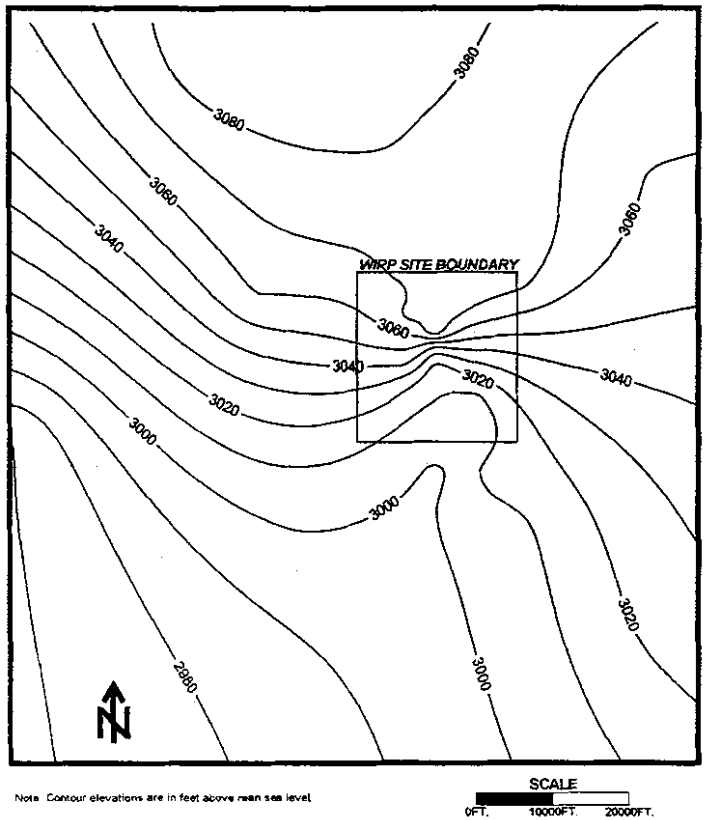


Monthly reports are generated and provided to stakeholders

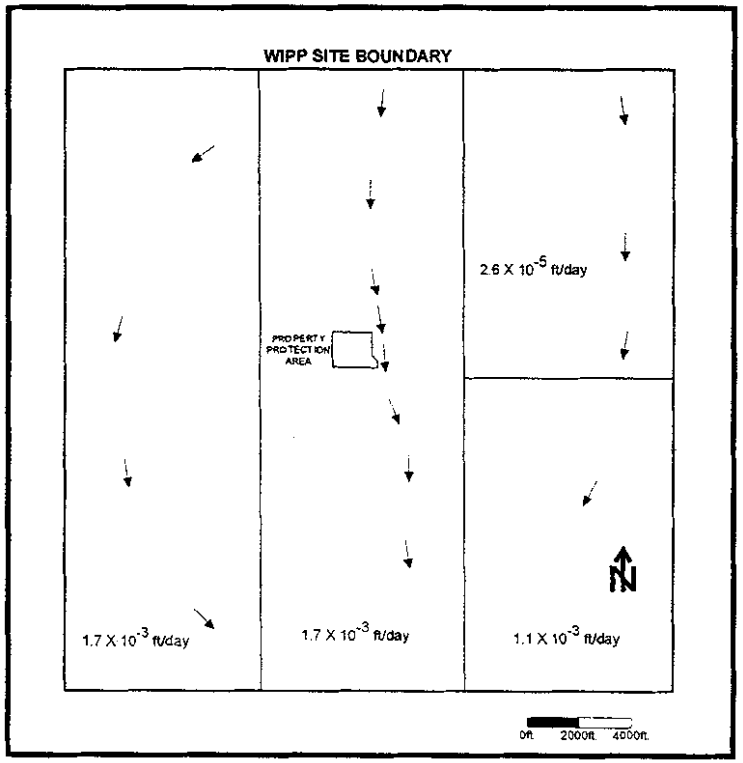
Washington

Regulatory and Environmental Services

Potentiometric Elevations and Flow Direction



Potentiometric surface, adjusted to freshwater head of the Culebra, December 2002



Transmissivity zones and flow lines

Geotechnical Engineering

EPA Inspection

40 CFR 194.42 Monitoring

June 18, 2003

REMUNDO CARRASO

CEB-M2003-AD

Monitoring Parameters

- Creep closure
  - Convergence Monitoring
- Extent of deformation
  - Deformation Monitoring
- Initiation of brittle deformation
  - Fracture Mapping
- Displacement of deformation features
  - Geologic Stratigraphy
  - Fracture Mapping

Program Quality Assurance

- Program Plan
  - WP 07-1, WIPP Geotechnical Engineering Program Plan

- Monitoring Procedures
  - WP 07-EU1301, Manually Acquired Geomechanical Instrument Data
  - WP 07-EU1303, Geomechanical Instrument Data Processing
  - WP 07-EU1001, Geologic and Fracture Mapping of the Facility Horizon Drifts

Program Quality Assurance, Cont.

- Reporting
  - Geotechnical Analysis Report (DOE/WIPP 02-3177, September 2002)
  - Geotechnical Analysis Report (DOE/WIPP 03-3177, March 2003)
  - Ground Control Annual Plan for the WIPP (DOE/WIPP 02-3212, Rev. 1, May 2003)
  - Periodic topical reports

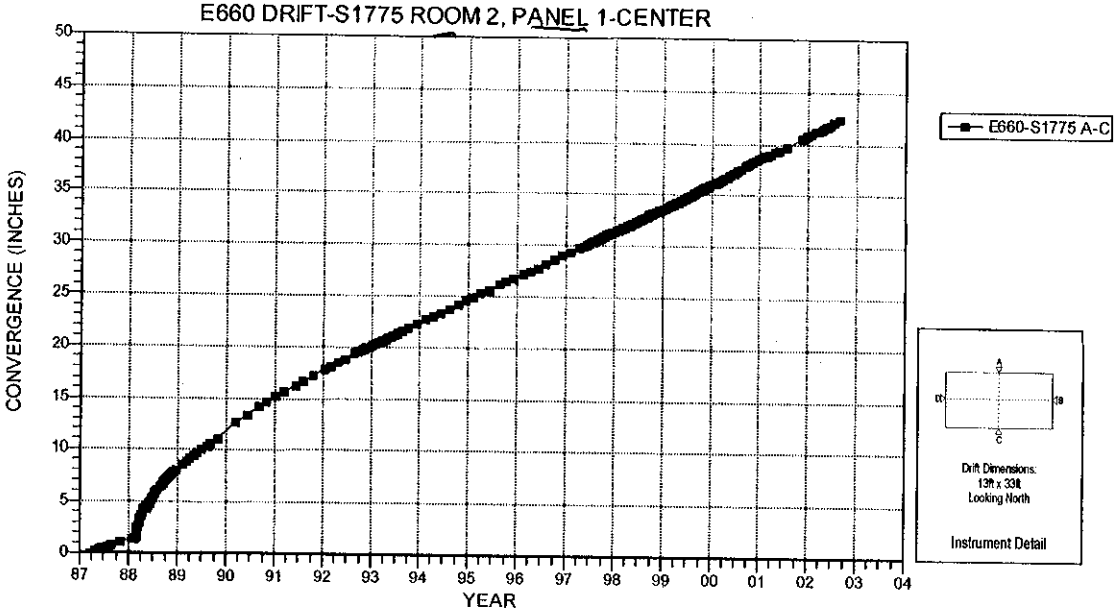
Geotechnical Monitoring Program Results

- Continued Excavation Deformation
  - No observable change in deformation mechanism
- New Mining Effects on Existing Openings
  - Deformation response as expected near new mining
- Monitoring Station Layout Changes
  - Monitoring locations changes as new areas are mined and existing areas closed
  - Reinstallation if damaged or removed due to opening maintenance

Geotechnical Monitoring Summary

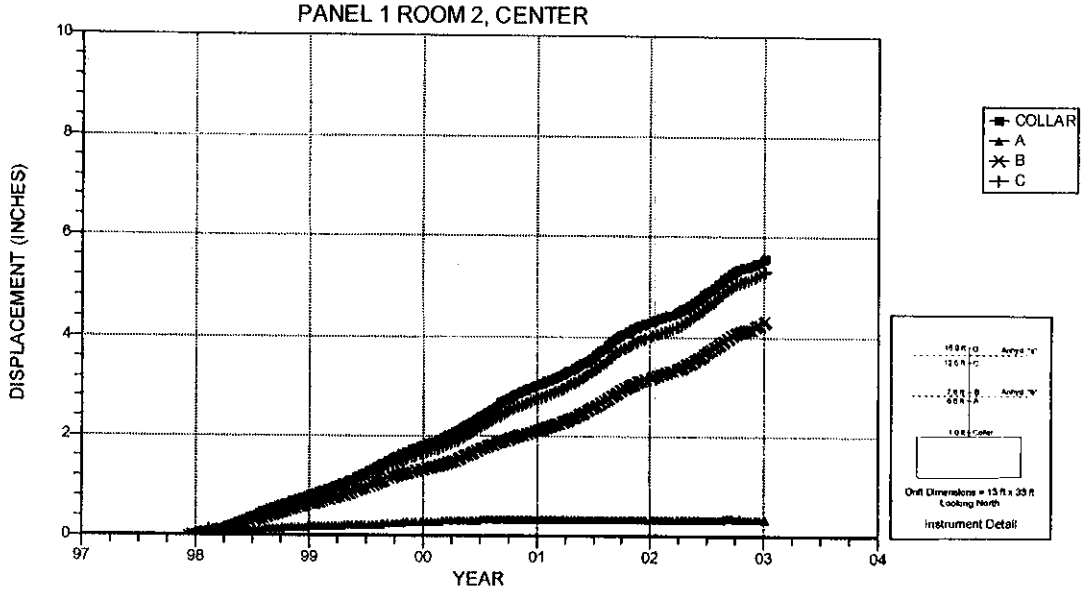
- Excavation Performance Observations
  - Deformation rates are consistent and predictable
  - Effects of Panel 2 mining on Panel 1 were as anticipated
  - Early Panel 3 monitoring is consistent with historical mining observations

CONVERGENCE POINTS
E660 DRIFT-S1775 ROOM 2, PANEL 1-CENTER

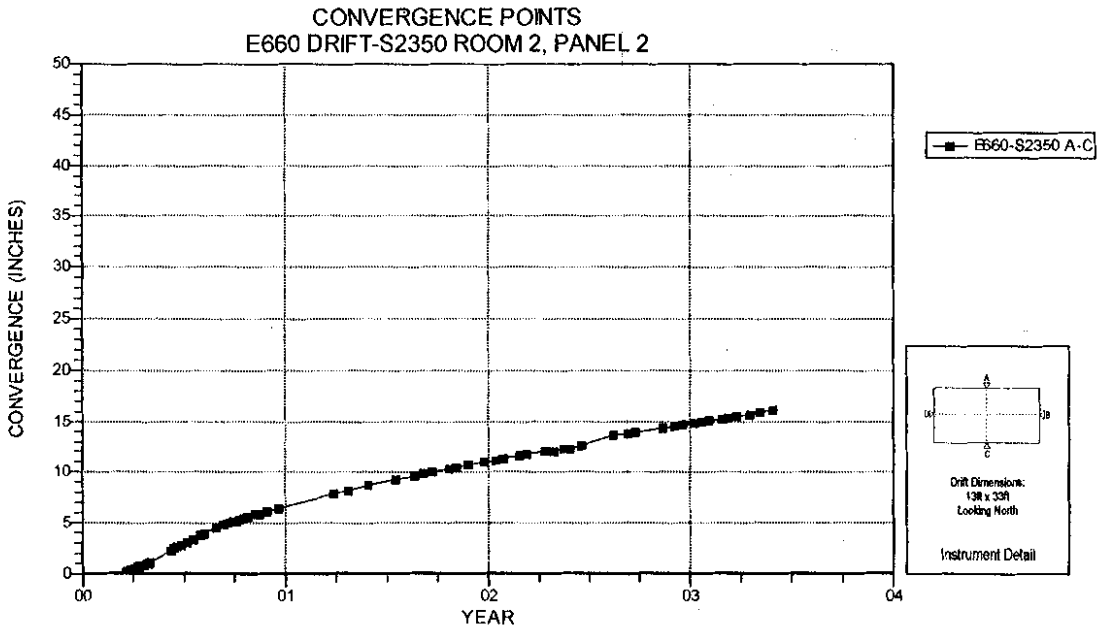


NOTES:
1. Excavation date: January 1987.
2. Floor trimmed in November 1989.

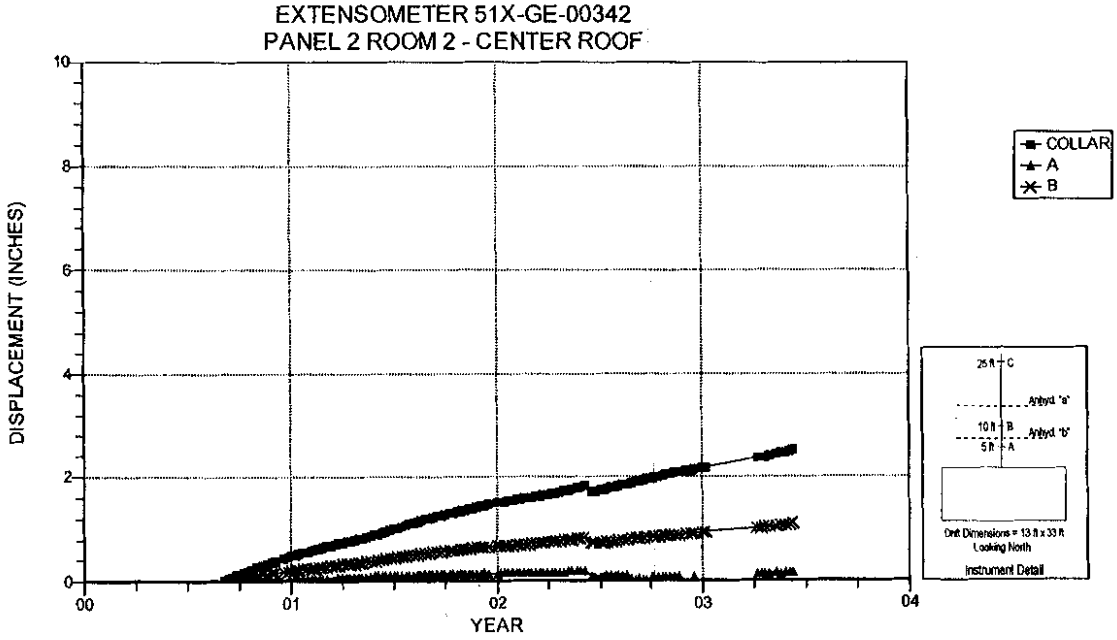
EXTENSOMETER 51X-GE-00316
PANEL 1 ROOM 2, CENTER



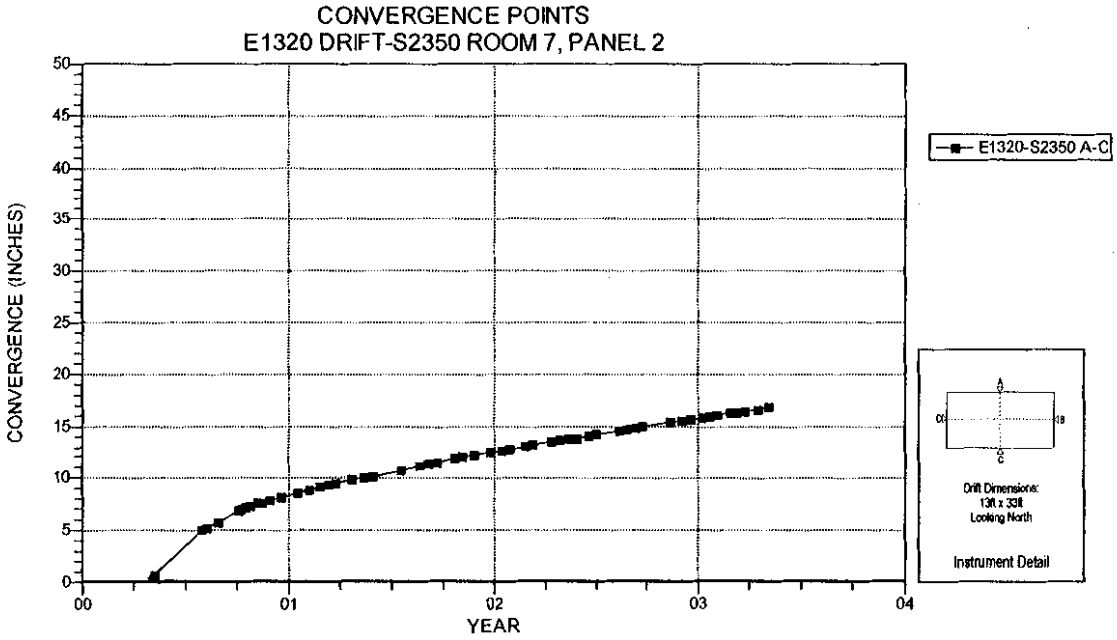
NOTES:
1. Excavation date: January 1987.



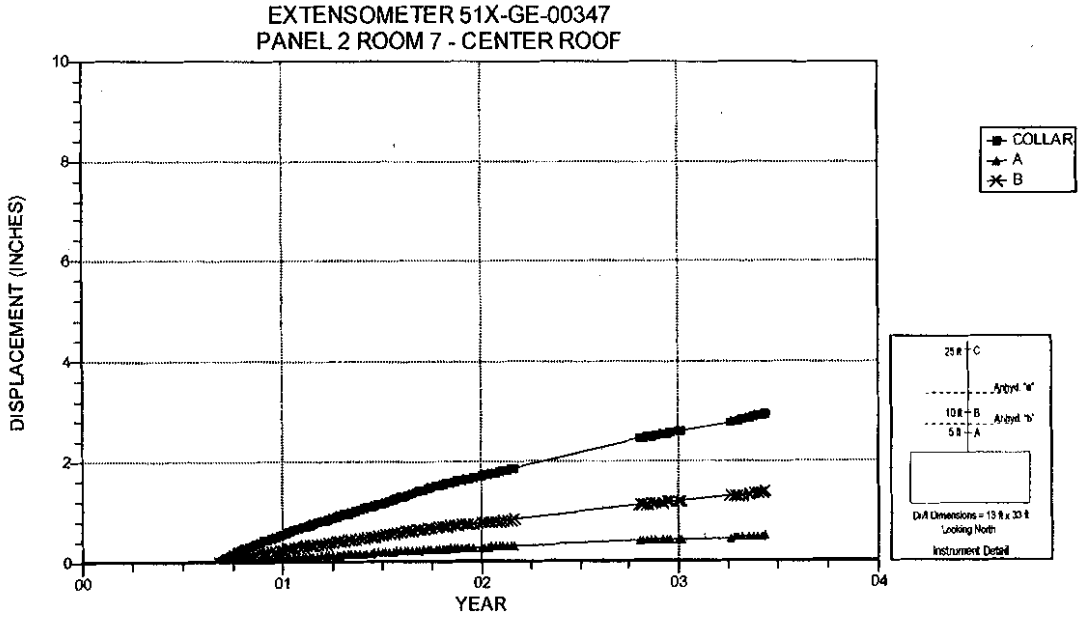
NOTES:
1. Excavation date: February 2000.



NOTES:
1. Excavation date: January 2000.
2. Instrument disturbed during maintenance.



NOTES:
1. Excavation date: May 2000.



NOTES:
1. Excavation date: May 2000.

DOCKET NO: A-98-49
Item: II-B3-53

Emplacement Inspection Report

EPA INSPECTION No. EPA-WIPP-6.03-17b
OF THE
WASTE ISOLATION PILOT PLANT
June 17-19, 2003

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

October 2003

Table of Contents

1.0 EXECUTIVE SUMMARY 1

2.0 INSPECTION PURPOSE AND SCOPE 2

3.0 PERFORMANCE OF THE INSPECTION 3
- 3.1 Waste Emplacement/WWIS 4
- 3.2 Magnesium Oxide Backfill 6

4.0 SUMMARY OF RESULTS 6

Tables

Table A Listing of WTS Procedures Examined During Inspection 2
Table B Listing of Inspection Participants 3
Table C Schematic of Waste Emplacement in Columns 4
Table D Randomly Selected Waste Containers Examined During Inspection 5

Attachments

Attachment A Listing of TRU Wastes Emplaced To Date
Attachment B Waste Emplacement Report For Eight TRU Waste Containers
Attachment C Copies of WWIS Modules
Attachment D WTS Procedures

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 17 to 19, 2003. 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.

Six DOE transuranic waste sites have shipped waste to the WIPP for disposal. These sites are: Argonne National Laboratory- East (ANL-E) in Illinois, Los Alamos National Laboratory (LANL) in New Mexico, Idaho National Engineering and Environmental Laboratory (INEEL), Hanford Site in Washington, Rocky Flats Environmental Technology Site (RFETS) in Colorado, and Savannah River Site (SRS) in Georgia. The first shipment was received by the facility in March 1999.

EPA inspected the WIPP to verify that waste is being emplaced in the underground facility in the manner specified in DOE's Compliance Certification Application (CCA) for the WIPP (EPA Air Docket A-93-02, Item II-G-01, and associated documents). The inspection also verified the proper emplacement of backfill material (magnesium oxide) with the waste packages. EPA had one finding regarding the emplacement of waste in the WIPP with respect to commitments made in the CCA.

2.0 INSPECTION PURPOSE AND SCOPE

The purpose of this inspection was to determine whether waste sent to the WIPP has been emplaced in the underground facility in the manner specified in DOE's Compliance Certification Application 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. 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 all WTS procedures examined for this inspection is provided in Table A.

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

Table A
Listing of WTS Procedures Examined During Inspection

- *WTS Quality Assurance Program Description*, Waste Isolation Pilot Plant Procedure WP 13-1, Revision 23; Effective Date October 15, 2002
- *Specification for Repackaged MgO Backfill*, Waste Isolation Pilot Plant Procedure D-0101, Revision 4, ECO Number 10182; Effective Date December 18, 2002
- *CH Waste Processing*, Technical Procedure WP 05-WH1011, Revision 20; Effective Date January 13, 2003
- *WIPP Waste Information System Program*, Waste Isolation Pilot Plant Procedure WP-08-NT.01, Revision 8; Effective Date February 27, 2003
- *TRU Waste Receipt*, Management Control Procedure WP-08-NT3020, Revision 8; Effective Date May 28, 2003
- *Waste Stream Profile Form Review and Approval Program*, Waste Isolation Pilot Plant Procedure WP-08-NT.03, Revision 3; Effective Date March 3, 2003

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

The Inspectors observed waste that had been emplaced in the repository and reviewed records documenting that waste emplacement was conducted in accordance with procedures. To date, the waste received at the repository are contact-handled (CH) transuranic wastes from ANL-E, LANL, RFETS, INEEL, SRS, and Hanford. These wastes are in one of three configurations: Standard Waste Boxes (SWBs), 55-gallon (208 liter) drums assembled in groups of seven called a Seven Pack, and Ten Drum Overpacks (TDOP). Both 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 wastes 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 Nick Stone, the WIPP Project Officer for Region 6, and Chuck Byrum and Tom Peake, Office of Radiation and Indoor Air. Richard Farrel, the acting CBFO Waste Operations Program Manager, was the chief DOE contact for the inspection. A list of all inspection participants is provided in Table B.

Table B
Inspection Participants

INSPECTION TEAM MEMBER	POSITION	AFFILIATION
Nick Stone	Inspector	EPA Region 6
Tom Peake	Inspector	EPA ORIA
Chuck Byrum	Lead Inspector	EPA ORIA
Shankar Ghose	Observer	EPA ORIA
CBFO / WTS PERSONNEL	**POSITION**	**AFFILIATION**
Richard Farrel (acting)	Waste Operations Program Manager	DOE/CBFO
Jody Plum	RCRA Compliance Manager	DOE/CBFO
Hardy Bellows	Waste Operations Program Manager	WTS
Dave Speed	WWIS Data Administrator Team Leader	WTS

The inspection took place on June 17-19, 2003, at the WIPP facility, which is located approximately 30 miles south east of Carlsbad, New Mexico. The opening meeting with CBFO and WTS personnel was held on June 17, 2003. The Inspectors interviewed WTS personnel about current shipments and emplacement in the underground.

The EPA Inspectors then accompanied CBFO and WTS personnel into the underground repository, in order to view waste packages that had been emplaced. The Inspectors selected eight containers and noted their numbers; the records for these containers were examined later. The WTS personnel explained how waste packages are handled and emplaced and answered questions from the EPA Inspectors. The inspection continued the next day with an examination of records and interviews of WTS personnel in charge of the WIPP Waste Information System (WWIS), which took place at the Carlsbad Field Office in Carlsbad. A closeout meeting was held at the end of each day.

3.1 WASTE EMPLACEMENT/WWIS

The repository is subdivided into panels, each panel consisting of seven (7) rooms. Panel 1 is being closed with Rooms 7, 3, 2, and 1 filled. Rooms 6, 5, and 4 were only partially filled due to creep closure in those rooms. Panel 1 contains 39,414 containers. These containers consist of 38,138 drums, 1239 standard waste boxes, 35 ten drum overpacks, and two 85 gallon drums.[2] At the time of inspection, the facility was emplacing waste in the end of Room 7 in Panel 2.

Wastes are stacked in columns (also called waste stacks) three high in any combination of SWBs and Seven Packs, both having the same "footprint." The Inspectors observed several TDOPs which are placed at the base of a waste stack to accommodate its different footprint. There is no particular order in which SWBs and Seven Packs are stacked; wastes are emplaced as received from waste generators. A series of three columns spans the distance of the disposal cell from left to right with ample space between columns. Space between the repository wall and the waste column is left open at alternating ends, as represented in Table C below. A second row of three columns is emplaced parallel to the first, but each column is staggered such that it is located between two columns from the previous row; these two left-to-right rows of three columns each are designated a row and numbered, as shown in Table in C below. This results in each waste Seven Pack, TDOP, or SWB having a unique identifier that indicates its location underground according to the row, the column and the position within the column (see Attachment B). MgO is placed on top of each column or waste in 4,000 pound super sacks.

Table C
Schematic of Waste Emplacement in Columns

Column 1		Column 3		Column 5		Combination of 2 left-right
	Column 2		Column 4		Column 6	columns is a Row

The EPA inspectors randomly selected five Seven Packs and three TDOPs emplaced in the repository, and WTS personnel read their identification numbers directly off the drums. The EPA Inspectors were unable to read them directly because the area adjacent to the emplaced waste was posted as a Radiation Area and access was restricted. The containers selected are identified in Table D below.

[2] Procedure WP 05-WH1011 identifies the order of waste emplacement in the repository.

Table D
Randomly Selected Waste Containers Examined During Inspection

Site of Origin	Waste Container Identifier	Container Type
ANL	AE25971	55 Gal Drum
ANL	AE25520	55 Gal Drum
RFETS	RFDC2141	55 Gal Drum
RFETS	RFDB2749	55 Gal Drum
SRS	SRTP00196	TDOP
INEEL	IDRF004000066	55 Gal Drum
SRS	SRTP00200	TDOP
SRS	SRTP00199	TDOP

Some records were paper, while others were electronically recorded in the WIPP Waste Information System (WWIS) database. The WWIS is an on-line database system used to record, track, and document the range of activities required for shipping TRU wastes to WIPP. The WTS personnel stated that the reliance on electronic approvals instead of paper was deliberate and was designed to minimize the use of paper. The EPA Inspectors examined the following modules:

- Characterization Module, linked to the Waste Container Data Report
- Certification Module, linked to the Acceptance Report or Rejection Report
- Shipping Module, linked to the Shipment Summary Report
- Inventory Module, linked to the Nuclide Report and Waste Emplacement Report.

Dave Speed produced either paper or electronic records of all modules requested (Attachment C). 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). WTS Procedure D-0101, *Specification for Prepackaged MgO Backfill*, contains specifications for the amount and specific placement of prepackaged MgO for four waste configurations: 85 gallon Over Packs, Ten Drum Over Packs, Seven Packs, and Standard Waste Boxes. WTS Technical Procedure WP 05-WH1011, *CH Waste Processing*, details a procedure for MgO placement and the means to document that MgO placement has been accomplished correctly (CH Waste Processing Data Sheet). The EPA Inspectors observed that MgO had been placed properly in the row that was visible from outside the restricted access area. The MgO is placed on top of each column in supersacks. Records examined for the eight (8) waste containers discussed earlier in this report indicated that MgO had been placed in compliance with Technical Procedure WP 05-WH1011.

4.0 SUMMARY OF RESULTS

The Inspectors asked DOE to demonstrate compliance with the random emplacement assumption used in the Performance Assessment in the CCA. Review of the WWIS indicated that waste emplaced in Panel 1 was not homogeneously random. The CCA Performance Assessment parameters were based on an assumption that waste would be random, thereby justifying homogeneous waste parameters (i.e., average values) for the model. The Inspectors asked DOE to provide documentation of random emplacement. The documents indicate heterogenous emplacement of waste based on the acceptable knowledge associated with each container. This inspection has determined the finding listed below in reference to DOE's inability to demonstrate random emplacement consistent with the CCA.

FINDING:

The CCA assumes that DOE will emplace waste in a random (i.e. homogeneous) fashion. The inspection team reviewed the available data in the WWIS and could not determine that the waste was emplaced in a random (i.e. homogeneous) manner. DOE must perform additional analysis to confirm that the actual emplaced waste loading does not adversely affect the long-term performance of the WIPP disposal system. We expect that such analyses can be completed as part of the recertification process, which would also provide updated inventory estimates based on waste already emplaced or characterized for WIPP disposal.

Attachment A
Listing of TRU Wastes Emplaced at WIPP As of June 11, 2003

Site	Drums	Pipe Overpack	SWB	TDOP	85 Gal Overpack	Dunnage Drums	Total
ANL-E	42						42
Hanford	844	112				3	959
INEEL	14,833		158		2	518	15,511
LANL	724	2	147			51	924
RFETS	4,276	17,605	1260			43	23,184
SRS	2,268		98	188			2,554
Total	22,987	17,719	1,663	188	2	615	43,174

Argonne National Laboratory - East (ANL-E)
Hanford Site (Hanford)
Idaho National Engineering and Environmental Laboratory (INEEL)
Los Alamos National Laboratory (LANL)
Rocky Flats Environmental Technology Site (RFETS)
Savannah River Site (SRS)

Drums = 55 gallon (208 liter) steel drums
Pipe Overpack = 55 gallon drum pipe overpack
SWB = Standard Waste Box
TDOP = ten drum overpack
Dunnage = sand filled dunnage drums

Attachment B
Waste Emplacement Report Data For Five (5) TRU Waste Containers

TRUPACT No.	129	129	153	153	170	181	162	154
Container No.	AE25971	AE25520	RFDC2141	RFDB2749	SRTP00196	IDRF004000 066	SRTP00200	SRTP00199
Row Number	132	132	128	128	134	134	135	136
Height	Middle	Bottom	Top	Top	Bot/Mid	Bot/Mid	Bot/Mid	Bot/Mid
Column	6	6	2	4	6	2	5	2
Disposal Cell	Main Room	Main Room	Main Room	Main Room	Main Room	Main Room	Main Room	Main Room
Disposal Room	7	7	7	7	7	7	7	7
Disposal Panel	2	2	2	2	2	2	2	2
Disposal Date	06/16/03	06/16/03	06/13/03	06/13/03	06/16/03	06/16/03	06/18/03	06/18/03

Attachment C

- Inspector's Checklist
- Shipment Summary Reports
- Waste Emplacement Report
- Waste Container Data Reports
- Attachments 1 and 4 from WP 05-WH1011
- Container Approval/Rejection Report

WIPP Waste Emplacement Inspection Checklist

June 2003

Inspectors: Nick Stone and Tom Peake

#	Question	Comments (Objective Evidence)	Documentation	Results
	Waste Emplacement			
1	Is waste being emplaced in the underground facility in the manner specified in DOE's Compliance Certification Application (CCA)?	Observed the waste emplaced in Panel 1, within the access drift near the opening of Room 2. The waste emplacement appeared to be compliant with the requirements in the CCA.	WP 05-WH1011	Adequate
2	Are waste containers stacked in columns three high?	Inspectors observed the waste stacks. All stacks were three drums high with an MgO super sack above each.	WP 05-WH1011	Adequate
3	Are waste containers emplaced as received?	Inspectors observed waste removed from TRU-PACT II containers and staged for transport into the underground.	WP 05-WH1011	Adequate
4	Are records adequate? Randomly select five waste containers to verify records for waste approval, shipment, and receipt:	Site of Origin / Identifier / Type Rocky Flats RFDB0279 Idaho IDRF741202926 Rocky Flats RFS00855 Rocky Flats RFDA7881 Rocky Flats RFDA0323	N/A	Adequate
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 emplace in the underground, and placement of backfill [MgO].	Reviewed the Shipment Summary Report, the Waste Container Data Report, and the CH Waste Processing Data Sheet (Attachment 1 of WP 05-WH1011) for each of the selected drums.	Attachments 1 and 4 of WP 05-WH1011.	Adequate

WIPP Emplacement Inspection Checklist

#	Question	Comments (Objective Evidence)	Documentation	Results
	Backfill [MgO] Emplacement			
6	Is DOE properly emplacing backfill material (magnesium oxide [MgO]) with the waste packages?	Inspectors observed the MgO super sacks placed on top of the waste stacks.	WP 05-WH1011	Adequate
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 pounds, multi-wall construction with a vapor and moisture barrier?	Inspectors observed the MgO super sacks to be constructed of polymer multi-walled material and sized properly to contain 4,000 lbs of MgO.	WP 05-WH1011	Adequate
#	Question	Comments (Objective Evidence)	Documentation	Results
	WIPP Waste Information System (WWIS)			
8	Is DOE maintaining records of waste shipments and emplacement properly?	Reviewed the WWIS reports and WP 05-WH1011 attachments for the five selected drums.	WP 05-WH1011	Adequate
9	Do the characterization module, certification module, shipping module, and inventory module adequately record the required information?	Interviewed Dave Speed and reviewed the characterization module, certification module, shipping module, and inventory module for each of the five drums selected.	WP 05-WH1011	Adequate
10	Characterization Module - Review a WWIS Waste Container Data Report. Does this report adequately record the Waste Stream Profile Form information?	Reviewed the Waste Container Data reports for each of the selected drums. Determined that each report reflected the Waste Stream Profile form information.	WP 05-WH1011and RP0360	Adequate
11	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?	Reviewed the Container Approval/Rejection Report. This document confirms that CBFO certifies and grants authority to each generator prior to review of the characterization data.	WP 05-WH1011and RP0510	Adequate

WIPP Emplacement Inspection Checklist

#	Question	Comments (Objective Evidence)	Documentation	Results
	WIPP Waste Information System (WWIS)			
12	Certification Module - Examine an Acceptance Report and a Rejection Report. Do these adequately record waste information?	Reviewed RP0510 "Container Approval/Rejection Report."	WP 05-WH1011and RP0510	Adequate
13	Is the generator/shipper denied any further write access to certification information after the data passes the limit and edit check and a review by the WWIS data administrator?	In discussions with Dave Speed and Mike Strum inspectors determined that the generator sites are denied write access to WWIS data that has been confirmed by CBFO prior to shipment.	WP 05-WH1011	Adequate
14	Shipping Module - Review the Shipment Summary Report. Does the report correctly record the containers shipped?	Reviewed the Shipment Summary Report for each of the drums selected. Determined that each drum was accurately described in the report.	WP 05-WH1011and RP0390	Adequate
15	Inventory Module - Review the Container Emplacement Report. Does this report adequately record the date of receipt, disposal locations of containers, and the emplacement of MgO?	Reviewed the Container Emplacement Report for each of the drums selected. Determined that the report accurately showed the receipt date, location, and placement of MgO.	WP 05-WH1011and RP0440	Adequate
16	Does the WWIS adequately document waste shipment and emplacements information for waste containers selected item 4 above?	After review of the documents provided, inspectors determined that the WWIS accurately reflects the waste shipment and emplacement information for the drums selected in Item 4.	WP 05-WH1011and RP0390, RP0440, RP0360, RP0510, and Attachments 1&4 of WP-05-WH1011	Adequate
17	Can DOE demonstrate that the waste emplacement conforms to the assumed waste loading conditions as specified in 194.24(f)? In the CCA and as of 2003, the waste must be randomly (i.e., homogenously) emplaced to conform with the performance and compliance assessment assumptions.			Finding