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

OCT 27 2015

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OCT 29 2015

Mr. John E. Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Subject: Transmittal of the Mine Ventilation Rate Monitoring Annual Report

Dear Mr. Kieling:

The Mine Ventilation Rate Monitoring Annual Report, required by the Waste Isolation Pilot Plant Hazardous Waste Facility Permit No. NM4890139088-TSDF, is attached. This report satisfies the Permit Part 4, Section 4.6.4.2. and Permit Attachment O, Section O-5a.

The Permit requires that the Test and Balance of the WIPP mine ventilation system be conducted on a 12-18 month interval, not to exceed 18 months. The most recent Test and Balance was conducted in June 2013: the next one was due no later than October 2015. However, due to the inaccessibility of many portions of the WIPP underground as a result of the February 14, 2014, radiological event, and the fact that the underground ventilation has been operated in the filtration mode since the event, the Test and Balance of the WIPP mine ventilation system cannot be performed within the required time period. Information regarding the inability to conduct the Test and Balance was previously provided to you in the Draft Underground Compliance Plan transmitted to you on June 25, 2014, pursuant to New Mexico Administrative Order dated May 12, 2014. Once the Permittees define and establish normal ventilation in the underground, the Test and Balance will be conducted. Until then, the Permittees will rely on the data from the latest Test and Balance. The Permittees' inability to conduct the Test and Balance does not pose a threat to human health or the environment since the system continues to be operated in filtration mode and no Permit-related, TRU mixed waste handling activities are underway in the underground.

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

If you have questions regarding this submittal, please contact Mr. George T. Basabilvazo at (575) 234-7488.

Sincerely,

Todd A. Shrader, Manager
Carlsbad Field Office

Philip J. Breidenbach, Project Manager
Nuclear Waste Partnership LLC

cc: w/enclosure

K. Roberts, NMED	*ED	C. Smith, NMED	ED
R. Maestas, NMED	ED	CBFO M&RC	
S. Holmes, NMED	ED		

*ED denotes electronic dist

CBFO:EPD:GTB:MN:15-2240:UFC 5486.00

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DOE/WIPP-15-3557

Mine Ventilation Rate Monitoring Annual Report

United States Department of Energy
Carlsbad Field Office
Carlsbad, New Mexico

October 2015

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ABBREVIATIONS/ACRONYMS

acfm	actual cubic feet per minute
AO	Administrative Order
CMRO	Central Monitoring Room Operator
hp	horsepower
MOC	Management and Operating Contractor
MVRMP	Mine Ventilation Rate Monitoring Plan
NMED	New Mexico Environment Department
Permit	Waste Isolation Pilot Plant Hazardous Waste Facility Permit
PPE	Personal Protective Equipment
QA	quality assurance
QAPD	Quality Assurance Program Description
RPD	relative percent difference
scfm	standard cubic feet per minute
U/G	underground
WIPP	Waste Isolation Pilot Plant

EXECUTIVE SUMMARY

The Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (Permit) Part 4 requires the WIPP facility Permittees to implement the WIPP Mine Ventilation Flow Rate Monitoring Plan (MVRMP) in Attachment O of the Permit. The MVRMP describes how compliance with the ventilation requirements described in Permit Part 4, Section 4.5.3.2 and Attachment A2, Section A2-2a(3) for airflow rates for the total underground (U/G) repository and the active disposal room are obtained and documented. The MVRMP requires ventilation flow rate measurements, for the total U/G repository and each active disposal room, to document that the airflows meet Permit conditions.

Permit Part 4, Section 4.6.4.2 requires that an annual report be submitted every October with the results of the data and analysis of the Mine Ventilation Rate Monitoring Plan. During the reporting period of July 1, 2014 through June 30, 2015, the lowest monthly annual running average total U/G repository ventilation flow rate was 59,916 standard cubic feet per minute (scfm).

The mine ventilation was shifted to Filtration Mode (60,000 scfm) on February 14, 2014 due to a radiation release from Panel 7, Room 7. The low annual running average total U/G repository flow rate of 59,916 scfm is a result of operating in Filtration Mode for the reporting period.

A minimum of 42,000 actual cubic feet per minute (acfm) in an active disposal room is required to meet the minimum required ventilation rate of 35,000 scfm stipulated in the Permit. The average ventilation flow rates were not calculated for the flow through the active disposal room since waste handling did not occur during the reporting period.

1.0 INTRODUCTION

The New Mexico Environment Department (NMED) renewed the Permit on November 30, 2010.

Attachment O of the Permit is the MVRMP. The MVRMP contains the methods for documenting compliance with the ventilation requirements described in Permit Part 4, Section 4.5.3.2 and Attachment A2, Section A2-2a(3).

The Permit also specifies that an annual report be submitted every October that describes the implementation of the MVRMP, and presents the results of the monitoring activities. This document was prepared to fulfill the annual reporting requirement for the period from July 1, 2014, to June 30, 2015.

A salt haul truck fire occurred in the U/G on February 5, 2014. Waste emplacement, mining, and U/G support activities were stopped while an investigation was performed. Subsequently, a radiation release from Panel 7, Room 7 occurred on February 14, 2014. The U/G repository has been in Filtration Mode since February 14, 2014. While the U/G remains in Filtration Mode, the Running Mine Average Annual Flow Rate has fallen below the minimum of 260,000 scfm. In addition, no waste handling has occurred in the U/G; therefore the Active Disposal Room measurements have not been made for the reporting period.

On May 12, 2014, the NMED issued an Administrative Order (AO) addressing permit-required actions that could not be performed in the underground due to the radiological conditions and the limited airflow available in Filtration Mode. The AO required development and submittal of a draft Underground Compliance Plan that described the current compliance status of each underground Permit requirement, a proposed timeline, including dates, for compliance and achieving underground recovery; and plans related to attaining compliance with the Permit; the reason(s) for any Permit noncompliance; and any other pertinent information. The draft Underground Compliance Plan was submitted to the NMED on June 25, 2014. The Plan notified NMED that the WIPP site would not be able to meet the following Permit requirements:

- Annual running average ventilation flow of 260,000 scfm.
- The Permittees may not be able to conduct the next Test and Balance on the schedule prescribed in the Permit, however, Test and Balance will be necessary before the facility returns to waste handling operations.

1.1 Total Mine Ventilation Rate Monitoring in the U/G Repository

To comply with Permit Part 4, the running annual average mine ventilation rate is computed on a monthly basis to assure that the minimum flow rate of 260,000 scfm is achieved. This running annual average is calculated based on monthly averages for run-times for the WIPP facility modes of ventilation operation, as tabulated in the Central Monitoring Room Operator (CMRO) Log. This information is recorded each time the ventilation system configuration changes, including periods when there is no ventilation. The operator uses the logged runtime data for various modes of operation, multiplied by the flow-rates for the different modes presented in Table 1, to calculate the average monthly and annual flow rate for the facility.

Table 1 – Ventilation Operating Modes and Associated Flow Rate

Mode of Operation	Flow Rate (scfm) – Nominal Values	Test and Balance Summary (June 2013)
Normal (two 600 hp** fans)	425,000	±4.3%
Alternate (one 600 hp fan)	260,000	±4.4%
Maintenance Bypass [parallel operation of 600 hp fan(s) and 235 hp*** fan(s)]	260,000 to 425,000	NA*
Reduced (two 235 hp fans)	120,000	NA*
Minimum (one 235 hp fan)	60,000	NA*
Filtration (one 235 hp fan)	60,000	±4.8%

* Note: The modes of operations were not modeled in the June 2013 Test and Balance
** Note: The 600 hp fans are also referred to as the 700 fans
*** Note: The 235 hp fans are also referred to as the 860 fans

The calculation of the running average annual total mine flow rate is computed monthly using the times entered in the CMRO Log in accordance with the following formula:

Monthly Average Flow Rate = [(Normal Mode Run-Time (hours) x 425,000 scfm] + [Alternate Mode Run-Time (hours) x 260,000 scfm] + [Maintenance Bypass Run-Time (hours) x 260,000 scfm] + [(Reduced Mode Run-Time (hours) x 120,000 scfm] + [Minimum Mode Run-Time (hours) x 60,000 scfm] + [Filtration Mode Run-Time (hours) x 60,000 scfm)] / 730 hours per month.

The annual average flow rate is calculated using the times entered in the CMRO Log and the following formula:

$$\text{Annual Average Flow Rate} = \sum \frac{\text{Monthly Average for Previous 12 Months}}{12}$$

1.2 Ventilation Rate Monitoring in the Active Disposal Room

The ventilation flow rate in the active waste disposal room is measured at the entrance to the room to demonstrate compliance with Permit Part 4, Section 4.5.3.2 and Attachment A2,Section A2-2a(3), which requires a minimum of 35,000 scfm of airflow through the active room when waste disposal is taking place and workers are present in the room. Permit Part 4, Section 4.6.4.3 requires compliance to be evaluated monthly for the active disposal room.

A calibrated Davis ball-bearing anemometer and full-entry traverse, as described in *Subsurface Ventilation Engineering*, (McPherson 2009), is the standard method for measurement of airflow in the active waste disposal room. Airflow measurements are collected at an established location near the entrance of each active disposal room. The location is chosen by the operator to minimize airflow disturbances caused by system intersections and corners in accordance with McPherson (2009). The operator uses a calibrated anemometer and the completion of a full-entry traverse. These readings are used to verify that a minimum of 35,000 scfm ventilation flow has been achieved through the active room prior to waste disposal taking place with workers present in the room. Multiple measurements are taken at each field location to ensure accurate results and correlated within 10 percent for acceptability. Data are collected and recorded by qualified operators, and the data are verified. The facility operator verifies proper ventilation flow rates when waste disposal is taking place and workers are present in the room, any time there is an operational mode change, or if there is a change in the U/G ventilation system configuration that could affect the ventilation system. A momentary reduction in U/G ventilation caused by the realignment or switching of U/G ventilation fans is not an operational mode change and does not require verification of airflow in the active disposal room.

Once the ventilation flow rate is verified, the operator records the acfm value on the log sheet. The operator compares the recorded acfm value with the minimum acfm value provided at the top of the Active Disposal Room Ventilation Rate Log Sheet. As described in Permit Attachment O, an actual airflow of at least 42,000 acfm is needed to ensure that the 35,000 scfm minimum requirement is met. The operator checks and records the airflow through the active room during the shift whenever there is an operational mode change, or a change in system configuration that could affect the ventilation system. If the required ventilation rate is not achieved, or cannot be supported due to operational needs, access to the room is restricted.

1.3 Test and Balance

The Test and Balance is a comprehensive series of measurements and adjustments designed to ensure that the U/G ventilation system is operating within acceptable design parameters. The Test and Balance is an appropriate method of verifying U/G ventilation system flow because it provides consistent results based on good engineering practices. The Test and Balance is conducted at 12-to-18-month intervals, as required by the MVRMP, Permit Attachment O, Section O-3a(2).

Once completed, the Test and Balance data are the baseline for U/G ventilation system operations until the next Test and Balance is performed. Test and Balance results have been used to accommodate varying operational conditions and to provide adequate airflow for recovery efforts in the mine.

The Test and Balance interval is sufficient to account for changes in the mine and verify system performance. Minor system modifications that occur between tests produce small changes to the system resistance to airflow in comparison to the overall system resistance. Historic data indicate airflow changes can be attributed to additional or reduced linear feet of mined passage such as mining new entries, closure of formerly ventilated portions of the mine, or reduction in drift size due to salt creep.

The most recent Test and Balance of the mine ventilation system was performed in June 2013. A summary of the results of the June 2013 Test and Balance is presented in Table 1 in accordance with Permit Section O-5a.

1.4 Quarterly Airflow Verification Checks

Quarterly verification checks of the total mine airflow were not performed in accordance with the inspection schedule identified in the Permit Attachment E, procedure IC041098,(U/G Exhaust Mass Flow Measurement System for Fans 700A, B & C. None of the 700 fans (700A, B, & C) were in use during the reporting period.

The quarterly verification checks require the measurement of airflow induced by each of the fans during various modes of operation using a standard pitot tube traverse. The flow measurement indicators (e.g., central monitoring system, Flosonic®) are then compared to the standard pitot traverse. If the relative percent difference (RPD) is greater than ± 5 percent, sensors are cleaned and calibrated. Another pitot tube traverse is then performed to verify an RPD of less than ± 5 percent.

The equipment used to perform the quarterly airflow verification checks is controlled and calibrated through the WIPP Metrology Program. The WIPP Metrology Program ensures that maintenance and test equipment used in the performance of maintenance activities meets the WIPP Quality Assurance Program Description (QAPD) requirements and is traceable to National Institute of Standards and Technology standards. The frequency and method of calibration are governed by the WIPP Metrology Program using the manufacturer's recommendations and the equipment reliability.

2.0 MINE VENTILATION RATE MONITORING RESULTS

This section presents the results of implementing the mine ventilation rate monitoring program. The data presented in this section were collected in accordance with the latest revision of the MVRMP as documented in Permit Attachment O.

2.1 Total Mine Ventilation Rate

A summary of the monthly total mine ventilation rate flow data is provided in Table 2. This table shows that the running annual average total mine ventilation flow was 59,916 scfm for the reporting period. In addition, it shows that the lowest running annual average mine ventilation flow rate in the U/G repository occurred in June 2015 when the running annual average flow rate was 59,916 scfm. This running annual average for this reporting period was below the 260,000 scfm required in Permit Part 4, Section 4.5.3.2. Table 2 fulfills the notification requirement of Permit Part 4, Section 4.6.4.3 that the minimum running annual average total mine ventilation rate, specified in the Permit, has not been achieved.

The data sheets showing the calculation of the mine ventilation rate monitoring data monthly averages are presented in Attachment 1.

Table 2 – Summary of Total Mine and Active Disposal Room Ventilation Flow Rate Monitoring Data

	Total Mine Ventilation Flow Data (avg scfm)	Running Annual Average Total Mine Ventilation Flow Data (avg scfm)*	Active Disposal Room Ventilation Flow Data (avg acfm)†
Jul 14	59,910	239,633	N/A
Aug 14	59,970	210,662	N/A
Sep 14	59,990	181,938	N/A
Oct 14	59,950	154,949	N/A
Nov 14	59,950	126,068	N/A
Dec 14	59,870	96,914	N/A
Jan 15	60,000	69,352	N/A
Feb 15	59,840	59,957	N/A
Mar 15	59,990	59,956	N/A
Apr 15	59,990	59,955	N/A
May 15	59,990	59,954	N/A
Jun 15	59,540	59,916	N/A

*Note: Running Annual Average is calculated based on the twelve previous months and includes data not presented in this table.
† Access to the disposal rooms restricted.
N/A – not applicable since no waste handling has occurred in the U/G.

2.2 Active Disposal Room Ventilation Rate

No waste handling activities were performed during the reporting period, therefore no active disposal room ventilation monitoring was performed. This information is reflected in Table 2.

2.3 Test and Balance

The most recent Test and Balance of the mine ventilation system was performed in June 2013. The next Test and Balance was due no later than October 2014.

As listed in the Underground Compliance Plan, "The Permittees may not be able to conduct the next Test and Balance on the schedule prescribed in the Permit, however, a Test and Balance will be necessary before the facility returns to waste handling operations."[1]

2.4 Quarterly Airflow Verification Checks

Quarterly airflow verification checks of the total mine airflow will not be performed for the 600 hp fans (700 A, B, &C) while the U/G remains in Filtration Mode because the fans are not in use.

3.0 QUALITY ASSURANCE RESULTS

This section describes the Quality Assurance Program as it relates to the MVRMP.

3.1 Description of Mine Ventilation Rate Monitoring QA Program

Quality Assurance (QA) associated with the MVRMP consists of several elements. The qualifications of personnel conducting ventilation flow measurements are maintained through a training qualification process. The ventilation simulation software program is controlled in accordance with the Management and Operating Contractor (MOC) QAPD, and WIPP facility computer software QA plans.

Data generated by the MVRMP, as well as records and procedures to support the MVRMP, are maintained and managed in accordance with the MOC QAPD. Nonconformance or conditions adverse to quality are addressed and corrected in accordance with applicable Quality Assurance procedures.

Instrumentation used to implement the MVRMP is of known precision and accuracy. This information is recorded in the instrumentation calibration documentation.

[1] Underground Compliance Plan Compliance Status and Schedule

4.0 SUMMARY OF MINE VENTILATION RATE MONITORING

Regular mine ventilation rate monitoring of the U/G repository and active disposal rooms is conducted at the WIPP facility. The following is an analysis of the data from this program:

- Permit requirements related to mine ventilation rate monitoring reporting have been met for the reporting period.
- Data quality is acceptable.
- Ventilation through the mine was not maintained within Permit stipulated flow rates for the reporting period. This has been reported to the NMED and documented in the Underground Compliance Plan Compliance Status and Schedule.
- Access to the WIPP facility U/G for hazardous waste management purposes has been restricted since February 14, 2014.
- The Test and Balance was not performed on schedule as prescribed in the Permit. This has been reported to the NMED. A Test and Balance will be necessary before the facility returns to waste handling operations.

5.0 REFERENCES

DOCUMENT NUMBER AND TITLE
Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Identification No. NM4890139088-TSDF
McPherson, Malcolm J., 2009, Subsurface Ventilation Engineering, Omnipress, Second Edition
DOE Letter CBFO:OESH:GTB:MN:14-1539:UFC 5486.00, Underground Compliance Plan and Underground Derived Waste Storage Plan, as ordered by Items 17a and 17b of the May 12, 2014 NMED Administrative Order
IC041098, *U/G Exhaust Mass Flow Measurement System for Fans 700A, B & C*

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	44571	742.85	60	44571.00
NO VENTILATION	69	1.15	0	0.00
TOTAL		744.00		
SUM OF FLOW(kscfm-hr)				44571.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.91**

CALENDAR MONTH -JULY - 2014

COMMENTS:
No active roon status due to fire and radialogical issuses.
No access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	44619	743.65	60	44619.00
NO VENTILATION	21	0.35	0	0.00
TOTAL		744.00		
SUM OF FLOW(kscfm-hr)				44619.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.97**

CALENDAR MONTH -August - 2014

COMMENTS:
No active roon status due to fire and radialogical issuses.
No access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	43196	719.93	60	43196.00
NO VENTILATION	4	0.07	0	0.00
TOTAL		720.00		
SUM OF FLOW(kscfm-hr)				43196.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.99**

CALENDAR MONTH -September-2014

COMMENTS:
No active room status due to fire and radiological issuses.
No limited access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	44602	743.37	60	44602.00
NO VENTILATION	38	0.63	0	0.00
TOTAL		744.00		
SUM OF FLOW(kscfm-hr)				44602.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.95**

CALENDAR MONTH -October-2014

COMMENTS:
No active room status due to fire and radialogical issuses.
limited access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
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ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	43166	719.43	60	43166.00
NO VENTILATION	34	0.57	0	0.00
TOTAL		720.00		
SUM OF FLOW(kscfm-hr)				43166.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.95**

CALENDAR MONTH -November-2014

COMMENTS:
No active room status due to fire and radialogical issuses.

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	43105	718.42	60	43105.00
NO VENTILATION	95	1.58	0	0.00
TOTAL		720.00		
SUM OF FLOW(kscfm-hr)				43105.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.87**

CALENDAR MONTH -December-2014

COMMENTS:
No active room status due to fire and radialogical issuses.
limited access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	44640	744.00	60	44640.00
NO VENTILATION	0	0.00	0	0.00
TOTAL		744.00		
SUM OF FLOW(kscfm-hr)				44640.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**60.00**

CALENDAR MONTH -January-2015

COMMENTS:
No active room status due to fire and radiological issuses.
No limited access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	40215	670.25	60	40215.00
NO VENTILATION	105	1.75	0	0.00
TOTAL		672.00		
SUM OF FLOW(kscfm-hr)				40215.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.84**

CALENDAR MONTH -Febuary-2015

COMMENTS:
No active room status due to fire and radialogical issuses.
No limited access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	44636	743.93	60	44636.00
NO VENTILATION	4	0.07	0	0.00
TOTAL		744.00		
SUM OF FLOW(kscfm-hr)				44636.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.99**

CALENDAR MONTH -March-2015

COMMENTS:
No active room status due to fire and radiological issues.
No limited access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	43196	719.93	60	43196.00
NO VENTILATION	4	0.07	0	0.00
TOTAL		720.00		
SUM OF FLOW(kscfm-hr)				43196.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.99**

CALENDAR MONTH -April-2015

COMMENTS:
No active room status due to fire and radiological issues.
No limited access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	44636	743.93	60	44636.00
NO VENTILATION	4	0.07	0	0.00
TOTAL		744.00		
SUM OF FLOW(kscfm-hr)				44636.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.99**

CALENDAR MONTH -May-2015

COMMENTS:
No active room status due to fire and radialogical issuses.
No limited access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00

Attachment 1 – Monthly Summary of Mine Ventilation Rate Monitoring

WIPP MINE VENTILATION RATE MONITORING PLAN

SURFACE

MODE OF OPERATION	RUNTIME (min)	RUNTIME (hours)	FLOW RATE (kscfm)	TOTAL FLOW (kscfmhr)
NORMAL VENTILATION (2-700 FANS)	0	0.00	425	0.00
ALTERNATE VENTILATION (1-700 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (1-700 FAN w/ 2 860-FANS)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 1-860 FAN)	0	0.00	260	0.00
MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS)	0	0.00	260	0.00
REDUCED VENTILATION (0-700 FANS w/ 2-860 FANS)	0	0.00	120	0.00
MINIMUM VENTILATION (0-700 FANS w/ 1-860 FAN)	0	0.00	60	0.00
FILTRATION 1-860 FAN thru HEPA)	42872	714.53	60	42872.00
NO VENTILATION	328	5.47	0	0.00
TOTAL		720.00		
SUM OF FLOW(kscfm-hr)				42872.00
MONTHLY AVERAGE FLOW RATE(kscfm)				**59.54**

CALENDAR MONTH -JUNE-2015

COMMENTS:
No active room status due to fire and radialogical issuses.
No limited access to the U/G

ACTIVE ROOM

MONTHLY AVERAGE FLOW (kacfm)	MINIMUM = 35K scfm = 42K acfm	**0.000**
NUMBER OF DATA POINTS USED IN CALCULATION OF AVERAGE		0.00