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# WP 04-VU1612

Revision 7

# WIPP Mine Ventilation Rate Monitoring

Management Control Procedure

EFFECTIVE DATE: 11/11/10

Dale Parrish

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## CHANGE HISTORY SUMMARY

| REVISION NUMBER | DATE ISSUED | DESCRIPTION OF CHANGES |
|---|---|---|
| 7 | 11/11/10 | Took Attachment Q off of reference to the HWFP |

## INTRODUCTION [1]

This procedure documents the process that demonstrates compliance with the ventilation requirements of the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit. The underground (U/G) ventilation system is configured to support waste emplacement, mining, and other operational activities. These activities are supported by the U/G ventilation system running in Normal, Alternate, or Maintenance Bypass modes to allow adequate flow required to maintain a running annual average of at least 260,000 standard cubic feet of air per minute (scfm) through the underground repository and a minimum of 42,000 acfm (actual cubic feet per minute) of air through the active disposal room(s) when workers are present. A minimum of 12,000 acfm of airflow at the waste shaft side of Regulator 74-B-308 when handling Contact-Handled (CH) in Waste Handling Mode in the underground, and 20,000 acfm when handling Remote-Handled (RH) in Waste Handling Mode in the underground. If minimum flow rates cannot be achieved, contact the Facility Shift Manager (FSM).

This procedure also provides a mechanism in Attachment 4 to document ground control inspections of the waste transport route prior to establishing Waste Handling Mode in the U/G.

Performance of this procedure generates the following record(s), as applicable. Any records generated are handled in accordance with departmental Records Inventory and Disposition Schedules.

- U/G Facility Flow ventilation maintained by the Central Monitoring Room (CMR) Log
- Attachment 4, Active Disposal Room and Regulator 74-B-308 Ventilation Rate Log Sheet

## REFERENCES

### BASELINE DOCUMENTS[1,2]

- DOE/WIPP-07-3372*, Waste Isolation Pilot Plant Documented Safety Analysis*
- DOE/WIPP-07-3373*, Waste Isolation Pilot Plant Technical Safety Requirements*
- Hazardous Waste Facility Permit, No. NM4890139088-TSDF

### REFERENCED DOCUMENTS

None

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**PERFORMANCE**

1.0 DATA COMPILATION OF TOTAL MINE FLOW RATES

**NOTE**

Runtimes are tabulated in minutes and recorded to the nearest quarter hour.

1.1 Calculate a running annual average using data summarized from the CMR Log as follows:

1.1.1 Daily, record ventilation information in the CMR Log on Attachment 2 for the following:

- Any time there is an operational mode change to the U/G ventilation
- Any time there is no ventilation

1.1.2 Monthly, calculate the average flow rate using the formula on Attachment 1 and document it on Attachment 3, Example WIPP Mine Ventilation Rate Monitoring Plan.

1.1.3 Annually, calculate the previous 12 months of data using the formula on Attachment 1 and obtain the running annual average each month in accordance with the WIPP Hazardous Waste Facility Permit. Document the average rate on Attachment 3.

1.1.4 If the annual average rate is less than 260 kscfm, notify the Site Environmental Compliance Manager.

2.0 MONITORING AIRFLOW THROUGH ACTIVE WASTE DISPOSAL ROOM(S)

2.1 Measure airflow in the active disposal room(s) when the active disposal room(s) are open to entry by workers and record information on Attachment 4 for the following conditions:

- At the start of each shift.
- When there is an operational mode change.
- There is a change in the ventilation system configuration that could affect flow rates.

2.2 If the active disposal room(s) is restricted to entry by workers, verify barriers and/or posting are in place at the beginning of each shift and record information on Attachment 4.

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2.3 If measured airflow is greater than or equal to 42,000 acfm, no access restrictions are required based on ventilation.

2.4 If measured airflow is less than 42,000 acfm, the following actions must be taken:

- Install barriers and/or postings in the active disposal room(s) to restrict entry to all personnel. The postings shall state no entry allowed and the phone number of the cognizant manager or organization to contact regarding the posting.

**OR**

- Initiate changes to the U/G ventilation configuration to increase the airflow to a minimum of 42,000 acfm into the active disposal room. Personnel shall be restricted from access into the active disposal room until the minimum airflow has been established.

- If minimum flow rates cannot be achieved, contact the FSM.

2.5 Measure airflow at the waste shaft side of Regulator 74-B-308 and record information on Attachment 4 for the following conditions:

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**NOTE**

If measured airflow is less than 12,000 acfm, CH Waste Handling is not allowed in the U/G. If measured airflow is less than 20,000 acfm, RH Waste Handling is not allowed in the U/G. If minimum flow rates cannot be achieved, contact the FSM.

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- Prior to establishing Waste Handling Mode in the U/G.

- There is a change in the ventilation system configuration during Waste Handling that could affect flow rates.

## Attachment 1 - Example Data Sheet

**1. Log Sheet Entries Standard Format:**

- Started/Stopped _____ Fan(s) - Placed UVFS in _____ Mode.
  (With the exception of Maintenance Bypass Mode, the log will also include the different fan configurations.)

**Examples**

- Started 860B - Placed UVFS in Maintenance Bypass Mode (1-700 fan with 1-860 fan)
- Started 860C - Placed UVFS in Maintenance Bypass Mode (1-700 fan with 2-860 fans)
- Started 700A - Placed UVFS in Normal Mode
- Secured 700A - No U/G ventilation in service

**2. NOMINAL FLOW RATES**

| MODE OF OPERATION | FLOW RATE (kscfm) - Nominal Values |
|---|---|
| Normal | 425 |
| Alternate | 260 |
| Maintenance Bypass | 260 to 425 |
| Reduced | 120 |
| Minimum | 60 |
| Filtration | 60 |

** (Average total mine flow rate is calculated on a monthly basis. After one year, the calculation will encompass the previous 12 month's worth of data and become a running average. Hours are calculated to the nearest quarter hour. All hours are calculated from times entered in the CMR Log.)

$$\text{Average Flow Rate} = \frac{NRT(425k) + ART(260k) + MBRT(260k) + RRT(120k) + MRT(60k) + FRT(60k)}{(\text{\# of months tabulation began**})\ (730\ \text{hr/mo})}$$

Where:

NRT = Normal Run Time
ART = Alternate Run Time
MBRT = Maintenance Bypass Run Time
RRT = Reduced Run Time
MRT = Minimum Run Time
FRT = Filtration Run Time

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## Attachment 2 - Example Mode Sheet

WEEK ENDING:_____

| | | FRIDAY | SATURDAY | SUNDAY | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | |
|---|---|---|---|---|---|---|---|---|---|
| | DATE | | | | | | | | TOTAL |
| NORMAL VENTILATION | TIME(min) | | | | | | | | |
| | FLOW (kscfm) | 425 | 425 | 425 | 425 | 425 | 425 | 425 | 425 |
| ALTERNATE VENTILATION | TIME (min) | | | | | | | | |
| | FLOW (kscfm) | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| MAINTENANCE BYPASS (1-700 FAN w/1-860 FAN) | TIME (min) | | | | | | | | |
| | ** FLOW (kscfm) | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| MAINTENANCE BYPASS (1-700 FAN w/2-860 FANS) | TIME (min) | | | | | | | | |
| | ** FLOW (kscfm) | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| MAINTENANCE BYPASS (2-700 FANS w/1-860 FAN) | TIME (min) | | | | | | | | |
| | ** FLOW (kscfm) | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| MAINTENANCE BYPASS (2-700 FANS w/2-860 FANS) | TIME (min) | | | | | | | | |
| | ** FLOW (kscfm) | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| REDUCED VENTILATION | TIME (min) | | | | | | | | |
| | FLOW (kscfm) | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| MINIMUM VENTILATION | TIME (min) | | | | | | | | |
| | FLOW (kscfm) | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| FILTRATION | TIME (min) | | | | | | | | |
| | FLOW (kscfm) | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| NO VENTILATION | TIME (min) | | | | | | | | |

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# Attachment 3 - Example WIPP Mine Ventilation Rate Monitoring Plan Summary Sheet

Week Ending: _____

## SURFACE

DATE STARTED: 10/22/99

| MODE OF OPERATION | WEEKLY RUNTIME (min) | WEEKLY RUNTIME (hours) | WEEKLY FLOW RATE (kscfm) | WEEKLY TOTAL flow rate (kscfmhr) | MONTHLY RUNTIME (min) | MONTHLY RUNTIME (hours) | MONTHLY FLOW RATE (kscfm) | MONTHLY TOTAL flow rate (kscfmhr) | ANNUALLY ** RUNTIME (min) | ANNUALLY ** RUNTIME (hours) | ANNUALLY ** FLOW RATE (kscfm) | ANNUALLY ** TOTAL flow rate (kscfmhr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NORMAL VENTILATION | | | | | | | | | | | | |
| ALTERNATE VENTILATION | | | | | | | | | | | | |
| MAINTENANCE BYPASS (1-700 FAN W/ 1-860 FAN) | | | | | | | | | | | | |
| MAINTENANCE BYPASS (1-700 FAN w/ 2-860 FANS) | | | | | | | | | | | | |
| MAINTENANCE BYPASS 2-700 FANS w/ 1-860 FAN) | | | | | | | | | | | | |
| MAINTENANCE BYPASS (2-700 FANS w/ 2-860 FANS) | | | | | | | | | | | | |
| REDUCED VENTILATION | | | | | | | | | | | | |
| MINIMUM VENTILATION | | | | | | | | | | | | |
| FILTRATION | | | | | | | | | | | | |
| NO VENTILATION | | | | | | | | | | | | |
| TOTAL | | | | | | | | | | | | |
| SUM of TOTAL (kscfm-hr) | | | | | | | | | | | | |
| AVERAGE FLOW RATE | | | | | | | | | | | | |

## UNDERGROUND

DATE STARTED: 5/17/00

| | DATE | RUNTIME (min) | AIRFLOW (tacfm) | AIRFLOW X RUNTIME |
|---|---|---|---|---|
| ACTIVE DISPOSAL ROOM FLOW {MINIMUM=35KSCFM/42KACFM)} | | | | |
| | | | | |
| | | | | |
| TOTAL TIME (min) | | | | |
| WEEKLY AVERAGE FLOW (kscfm) | | | | |

| MONTH | AVERAGE FLOW (kacfm) |
|---|---|
| WK1 | |
| WK2 | |
| WK3 | |
| WK4 | |
| WK5 | |

| TOTAL | AVERAGE FLOW (kacfm) |
|---|---|
| MONTHLY | |
| CUMULATIVE | |

(**) Note: Cumulative until 10/21/00

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Attachment 4 - Underground Active Disposal Room and Regulator 74-B-308 Ventilation Rate Log Sheet

**ROOM NUMBER**_____ **PANEL NUMBER**_____

**NOTES:** **When airflow reading in the active disposal room is below 42,000 ACFM access will be restricted**.
When airflow reading at the waste shaft side of Regulator 74-B-308 is below 12,000 acfm, U/G CH Waste Handling is prohibited.
When airflow reading at the waste shaft side of Regulator 74-B-308 is below 20,000 acfm, U/G RH Waste Handling is prohibited. If minimum flow rates cannot be achieved, contact the FSM.

| Date | Time | M&TE# | Calibration Due Date | Active Disposal Room | | | Regulator 74-B-308 | | | Waste Haul Route Ground Control Inspection | | Signature | Verified By |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Room Airflow Reading | Was Access Restricted? | | Airflow Reading | Is WH Mode Allowed? | | | | | |
| | | | | | YES | NO | | CH | RH | SAT | UNSAT | | |
| | | | | | | | | | | | | | |
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