



NEW MEXICO  
ENVIRONMENT DEPARTMENT



*DOE Oversight Bureau*

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**Deep Penetrating Radiation Monitoring at the Waste Isolation Pilot Plant/ New Mexico conducted by NMED/DOE OB for the Calendar Year 2010 Quarter 1**

The New Mexico Environment Department (NMED) DOE Oversight Bureau has compiled and assessed deep penetrating radiation (DPR) data collected during the first calendar quarter 2010. The accompanying table and graphs shows DPR dose levels at various locations surrounding the Waste Isolation Pilot Plant, at the Oversight Bureau Office in Carlsbad, at the Malaga Volunteer Fire Department, at the rest area between Carlsbad and Loving, and near the intersection of US Highway 62/180 and the North Access Road. The data were obtained using RadElect gamma radiation monitoring electrets.

DPR results ranged from a minimum average quarterly dose of 23.9 mRem at WIPP 2 (adjacent to the WIPP) to a maximum average quarterly dose of 32.9 mRem at WIPP 8 (on the northeast corner of the Exclusive Use Area fence). Electret number SFC 064, at WIPP 14, showed an anomalous high voltage drop, and was not included in the calculations.

Currently, WIPP 15 serves as a control for quality assurance and is located in the Oversight Bureau Office in Carlsbad. The first quarter 2010 average quarterly dose for WIPP 15 was 30.9 mRem.

Graph-1 compares NMED DPR results by location for the first calendar quarter 2010 and includes on-site and off-site averages, including  $\pm$  standard deviation, which can be compared with the twelve quarter average from WIPP 15.

Table 1 shows the individual results from each electret.

Response

Questions and / or comments may be addressed to Thomas Kesterson by phone at (575)887-6851, by e-mail at [thomasl.kesterson@state.nm.us](mailto:thomasl.kesterson@state.nm.us), or to the address in the above letterhead.

- Enclosures:
1. Graph 1 – DPR 1st Calendar Qtr 2010, Quarterly Dose by Location
  2. Graph 2 – Twelve Quarter Average DPR Results
  3. Table 1 – Deep Penetrating Radiation as Measured by Electrets CY 2010 Q-1
  4. Figure 1 – Location of Electret Gamma Monitors in the Vicinity of Carlsbad
  5. Figure 2 – Location of Electret Gamma Monitors near the WIPP.
  6. Physical Location of the Oversight Bureau's Electret Gamma Monitors.

Distribution: George Basabilvazo, DOE  
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## Table-1: Direct Penetrating Radiation as Measured by Electrets CY 2010 Q-1

New Mexico Environment Department, DOE Oversight Bureau, WIPP Section

### WIPP 1

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SX 3751	1/4/10 9:05 AM	3/30/10 8:36 AM	84.98	48	28.5
SFB 973	1/4/10 9:05 AM	3/30/10 8:36 AM	84.98	49	27.8
SX 3856	1/4/10 9:05 AM	3/30/10 8:36 AM	84.98	46	28.0
<b>Average Quarterly Dose in mRem:</b>					<b>28.1</b>

### WIPP 2

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SBZ 900	1/4/10 8:14 AM	3/30/10 8:29 AM	85.01	39	24.5
SBZ 901	1/4/10 8:14 AM	3/30/10 8:29 AM	85.01	38	23.4
SBZ 906	1/4/10 8:14 AM	3/30/10 8:29 AM	85.01	36	22.2
<b>Average Quarterly Dose in mRem:</b>					<b>23.4</b>

### WIPP 3

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SBZ 889	1/4/10 9:11 AM	3/30/10 8:19 AM	84.96	48	27.1
SBZ 893	1/4/10 9:11 AM	3/30/10 8:19 AM	84.96	38	24.4
SBZ 892	1/4/10 9:11 AM	3/30/10 8:19 AM	84.96	39	25.0
<b>Average Quarterly Dose in mRem:</b>					<b>25.5</b>

### WIPP 4

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFB 969	1/5/10 2:10 PM	3/30/10 8:09 AM	83.75	50	29.3
SFB 999	1/5/10 2:10 PM	3/30/10 8:09 AM	83.75	47	27.5
SFC 131	1/5/10 2:10 PM	3/30/10 8:09 AM	83.75	49	28.6
<b>Average Quarterly Dose in mRem:</b>					<b>28.5</b>

### WIPP 5

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 061	1/5/10 2:03 PM	3/30/10 7:30 AM	83.73	52	30.3
SX 3836	1/5/10 2:03 PM	3/30/10 7:30 AM	83.73	47	29.2
SX 3746	1/5/10 2:03 PM	3/30/10 7:30 AM	83.73	45	27.9
<b>Average Quarterly Dose in mRem:</b>					<b>29.1</b>

## Table-1: Direct Penetrating Radiation as Measured by Electrets CY 2010 Q-1

New Mexico Environment Department, DOE Oversight Bureau, WIPP Section

### WIPP 6

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 099	1/6/10 9:49 AM	3/30/10 7:21 AM	82.90	41	24.7
SFC 126	1/6/10 9:49 AM	3/30/10 7:21 AM	82.90	41	24.7
SFC 171	1/6/10 9:49 AM	3/30/10 7:21 AM	82.90	42	25.0
<b>Average Quarterly Dose in mRem:</b>					<b>24.8</b>

### WIPP 7

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SX 3872	1/5/10 12:34 PM	3/31/10 8:30 AM	84.83	43	26.0
SBZ 873	1/5/10 12:34 PM	3/31/10 8:30 AM	84.83	41	26.4
SBZ 876	1/5/10 12:34 PM	3/31/10 8:30 AM	84.83	50	28.5
<b>Average Quarterly Dose in mRem:</b>					<b>26.9</b>

### WIPP 8

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFB 966	1/5/10 1:12 PM	3/31/10 8:39 AM	84.81	55	31.7
SFB 988	1/5/10 1:12 PM	3/31/10 8:39 AM	84.81	53	30.4
SFC 095	1/5/10 1:12 PM	3/31/10 8:39 AM	84.81	60	35.0
<b>Average Quarterly Dose in mRem:</b>					<b>32.4</b>

### WIPP 9

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 068	1/5/10 1:17 PM	3/31/10 8:42 AM	84.81	45	25.5
SFC 187	1/5/10 1:17 PM	3/31/10 8:42 AM	84.81	46	26.2
SFC 201	1/5/10 1:17 PM	3/31/10 8:42 AM	84.81	48	27.3
<b>Average Quarterly Dose in mRem:</b>					<b>26.3</b>

### WIPP 10

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 067	1/5/10 1:14 PM	3/31/10 8:44 AM	84.81	46	25.8
SFC 140	1/5/10 1:14 PM	3/31/10 8:44 AM	84.81	45	25.4
SFC 188	1/5/10 1:14 PM	3/31/10 8:44 AM	84.81	41	23.4
<b>Average Quarterly Dose in mRem:</b>					<b>24.9</b>

## Table-1: Direct Penetrating Radiation as Measured by Electrets CY 2010 Q-1

New Mexico Environment Department, DOE Oversight Bureau, WIPP Section

### WIPP 11

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 068	1/4/10 7:17 AM	3/30/10 8:44 AM	85.06	45	25.7
SFC 187	1/4/10 7:17 AM	3/30/10 8:44 AM	85.06	43	24.4
SFC 201	1/4/10 7:17 AM	3/30/10 8:44 AM	85.06	43	24.7
<b>Average Quarterly Dose in mRem:</b>					<b>24.9</b>

### WIPP 12

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 013	1/5/10 1:48 PM	3/30/10 7:39 AM	83.74	50	29.8
SX 3896	1/5/10 1:48 PM	3/30/10 7:39 AM	83.74	48	29.6
SFC 108	1/5/10 1:48 PM	3/30/10 7:39 AM	83.74	51	29.9
<b>Average Quarterly Dose in mRem:</b>					<b>29.7</b>

### WIPP 13

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 067	1/5/10 1:51 PM	3/30/10 7:45 AM	83.75	47	27.6
SFC 140	1/5/10 1:51 PM	3/30/10 7:45 AM	83.75	53	31.1
SFC 188	1/5/10 1:51 PM	3/30/10 7:45 AM	83.75	49	29.0
<b>Average Quarterly Dose in mRem:</b>					<b>29.3</b>

### WIPP 14

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
* SFC 064	1/5/10 1:55 PM	3/30/10 7:51 AM	83.75	271	166.9
SFC 077	1/5/10 1:55 PM	3/30/10 7:51 AM	83.75	48	28.4
SFC 152	1/5/10 1:55 PM	3/30/10 7:51 AM	83.75	49	29.0
<b>Average Quarterly Dose in mRem:</b>					<b>28.7</b>

\* SFC 064 showed an anomalous high reading, and was not included in these calculations.

### WIPP 15 Carlsbad

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SX 3785	1/4/10 9:26 AM	3/30/10 10:07 AM	85.03	48	28.9
SX 3823	1/4/10 9:26 AM	3/30/10 10:07 AM	85.03	49	30.0
SX 3911	1/4/10 9:26 AM	3/30/10 10:07 AM	85.03	53	32.1
<b>Average Quarterly Dose in mRem:</b>					<b>30.3</b>

**Table-1: Direct Penetrating Radiation as Measured by Electrets CY 2010 Q-1**

New Mexico Environment Department, DOE Oversight Bureau, WIPP Section

**WIPP 16**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 060	1/4/10 1:07 PM	3/30/10 2:03 PM	85.04	51	29.8
SFC 132	1/4/10 1:07 PM	3/30/10 2:03 PM	85.04	50	29.0
SFC 173	1/4/10 1:07 PM	3/30/10 2:03 PM	85.04	47	26.7
<b>Average Quarterly Dose in mRem:</b>					<b>28.5</b>

**WIPP 17**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SBZ 847	1/4/10 1:23 PM	3/30/10 1:43 PM	85.01	49	27.6
SBZ 852	1/4/10 1:23 PM	3/30/10 1:43 PM	85.01	41	26.6
SBZ 880	1/4/10 1:23 PM	3/30/10 1:43 PM	85.01	43	27.9
<b>Average Quarterly Dose in mRem:</b>					<b>27.4</b>

**WIPP 18**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SBZ 908	1/6/10 11:37 AM	3/30/10 9:06 AM	82.90	46	29.0
SBZ 851	1/6/10 11:37 AM	3/30/10 9:06 AM	82.90	44	27.3
SBZ 879	1/6/10 11:37 AM	3/30/10 9:06 AM	82.90	42	25.4
<b>Average Quarterly Dose in mRem:</b>					<b>27.2</b>