



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 Fourth Calendar Quarter 2009**

The New Mexico Environment Department (NMED) DOE Oversight Bureau has compiled and assessed deep penetrating radiation (DPR) data collected during the fourth calendar quarter 2009. The accompanying table and graph shows DPR dose levels at various locations surrounding the Waste Isolation Pilot Plant, at the Oversight Bureau Office in Carlsbad, and at the Malaga Volunteer Fire Department. The data were obtained using RadElect gamma radiation monitoring electrets.

DPR results ranged from a minimum average quarterly dose of 22.5 mRem at WIPP 3 (adjacent to the WIPP) to a maximum average quarterly dose of 32.8 mRem at WIPP 8 (on the north-east corner of the Exclusive Use Area fence). WIPP 16, at the rest area on US 285 between Loving and Carlsbad, where TRU shipments entering the state via the southern route undergo a Level VI inspection, showed an average quarterly dose of 34.5 mRem. WIPP 17, at the intersection of US 285 and the Black River Village Rd., also along the southern route, had an average quarterly dose of 29.2 mRem. This route has not been used since September, 2008.

Currently, WIPP 15 serves as a control for quality assurance and is located in the Oversight Bureau Office in Carlsbad. The third quarter average quarterly dose was 28.9 mRem.

Graph-1 compares NMED DPR results by location for the third calendar quarter and includes on-site and off-site averages, including  $\pm$  standard deviation, which can be compared with the eleven 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 3rd Calendar Qtr 2009, Quarterly Dose
  2. Table 1 – Deep Penetrating Radiation as Measured by Electrets CY 2009 Q-3
  3. Figure 1 – Location of Electret Gamma Monitors in the Vicinity of Carlsbad
  4. Figure 2 – Location of Electret Gamma Monitors near WIPP.
  5. 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 2009 Q-4**

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
SX3751	9/30/09 8:12 AM	1/4/10 9:05 AM	96.04	56	25.9
SFB 973	9/30/09 8:12 AM	1/4/10 9:05 AM	96.04	56	24.8
SX 3856	9/30/09 8:12 AM	1/4/10 9:05 AM	96.04	55	25.6
Average Quarterly Dose in mRem:					<b>25.5</b>

**WIPP 2**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SBZ 900	9/30/09 7:07 AM	1/4/10 8:14 AM	96.05	48	23.7
SBZ 901	9/30/09 7:07 AM	1/4/10 8:14 AM	96.05	47	23.1
SBZ 906	9/30/09 7:07 AM	1/4/10 8:14 AM	96.05	44	21.3
Average Quarterly Dose in mRem:					<b>22.7</b>

**WIPP 3**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SBZ 889	9/30/09 8:22 AM	1/4/10 9:11 AM	96.03	45	23.1
SBZ 893	9/30/09 8:22 AM	1/4/10 9:11 AM	96.03	44	22.3
SBZ 892	9/30/09 8:22 AM	1/4/10 9:11 AM	96.03	44	22.1
Average Quarterly Dose in mRem:					<b>22.5</b>

**WIPP 4**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFB 969	9/30/09 8:30 AM	1/5/10 2:10 PM	97.24	62	27.3
SFB 999	9/30/09 8:30 AM	1/5/10 2:10 PM	97.24	57	25.2
SFC 131	9/30/09 8:30 AM	1/5/10 2:10 PM	97.24	60	26.6
Average Quarterly Dose in mRem:					<b>26.3</b>

**WIPP 5**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 061	9/30/09 8:38 AM	1/5/10 2:03 PM	97.23	59	25.8
SX3836	9/30/09 8:38 AM	1/5/10 2:03 PM	97.23	56	26.1
SX3746	9/30/09 8:38 AM	1/5/10 2:03 PM	97.23	55	25.5
Average Quarterly Dose in mRem:					<b>25.8</b>

**Table-1: Direct Penetrating Radiation as Measured by Electrets CY 2009 Q-4**

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	9/30/09 9:57 AM	1/6/10 9:49 AM	97.99	57	24.7
SFC 126	9/30/09 9:57 AM	1/6/10 9:49 AM	97.99	52	22.6
SFC 171	9/30/09 9:57 AM	1/6/10 9:49 AM	97.99	59	25.7
Average Quarterly Dose in mRem:					<b>24.3</b>

**WIPP 7**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SX 3872	10/2/09 8:04 AM	1/5/10 12:34 PM	95.19	53	25.5
SBZ 873	10/2/09 8:04 AM	1/5/10 12:34 PM	95.19	44	22.5
SBZ 876	10/2/09 8:04 AM	1/5/10 12:34 PM	95.19	46	24.4
Average Quarterly Dose in mRem:					<b>24.1</b>

**WIPP 8**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFB 966	10/2/09 8:50 AM	1/5/10 1:12 PM	95.18	50	37.0
SFB 988	10/2/09 8:50 AM	1/5/10 1:12 PM	95.18	45	34.4
SFC 095	10/2/09 8:50 AM	1/5/10 1:12 PM	95.18	51	41.9
Average Quarterly Dose in mRem:					<b>37.8</b>

**WIPP 9**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 068	9/30/09 8:03 AM	1/4/10 7:17 AM	95.97	54	22.6
SFC 187	9/30/09 8:03 AM	1/4/10 7:17 AM	95.97	58	23.6
SFC 201	9/30/09 8:03 AM	1/4/10 7:17 AM	95.97	54	22.9
Average Quarterly Dose in mRem:					<b>23.1</b>

**WIPP 10**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 067	9/30/09 10:08 AM	1/5/10 1:51 PM	97.15	55	23.7
SFC 140	9/30/09 10:08 AM	1/5/10 1:51 PM	97.15	58	23.5
SFC 188	9/30/09 10:08 AM	1/5/10 1:51 PM	97.15	58	23.2
Average Quarterly Dose in mRem:					<b>23.5</b>

**Table-1: Direct Penetrating Radiation as Measured by Electrets CY 2009 Q-4**

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	9/30/09 8:03 AM	1/4/10 7:17 AM	95.97	55	26.8
SFC 187	9/30/09 8:03 AM	1/4/10 7:17 AM	95.97	59	28.3
SFC 201	9/30/09 8:03 AM	1/4/10 7:17 AM	95.97	62	25.6
Average Quarterly Dose in mRem:					26.9

**WIPP 12**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 013	9/30/09 10:03 AM	1/5/10 1:48 PM	97.16	60	26.6
SX 3896	9/30/09 10:03 AM	1/5/10 1:48 PM	97.16	54	25.2
SFC 108	9/30/09 10:03 AM	1/5/10 1:48 PM	97.16	58	25.7
Average Quarterly Dose in mRem:					25.8

**WIPP 13**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 067	9/30/09 10:08 AM	1/5/10 1:51 PM	97.15	54	23.9
SFC 140	9/30/09 10:08 AM	1/5/10 1:51 PM	97.15	52	23.2
SFC 188	9/30/09 10:08 AM	1/5/10 1:51 PM	97.15	55	24.2
Average Quarterly Dose in mRem:					23.7

**WIPP 14**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 064	9/30/09 10:10 AM	1/5/10 1:55 PM	97.16	55	27.6
SFC 077	9/30/09 10:10 AM	1/5/10 1:55 PM	97.16	62	26.3
SFC 152	9/30/09 10:10 AM	1/5/10 1:55 PM	97.16	59	27.7
Average Quarterly Dose in mRem:					27.2

**WIPP 15 Carlsbad**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SX 3785	10/3/09 9:56 AM	1/4/10 9:26 AM	92.98	62	27.8
SX 3823	10/3/09 9:56 AM	1/4/10 9:26 AM	92.98	55	29.4
SX 3911	10/3/09 9:56 AM	1/4/10 9:26 AM	92.98	58	29.6
Average Quarterly Dose in mRem:					28.9

**Table-1: Direct Penetrating Radiation as Measured by Electrets CY 2009 Q-4****WIPP 16**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SFC 060	10/1/09 3:59 PM	1/4/10 1:07 PM	94.88	76	35.6
SFC 132	10/1/09 3:59 PM	1/4/10 1:07 PM	94.88	69	32.2
SFC 173	10/1/09 3:59 PM	1/4/10 1:07 PM	94.88	77	35.8
Average Quarterly Dose in mRem:					<b>34.5</b>

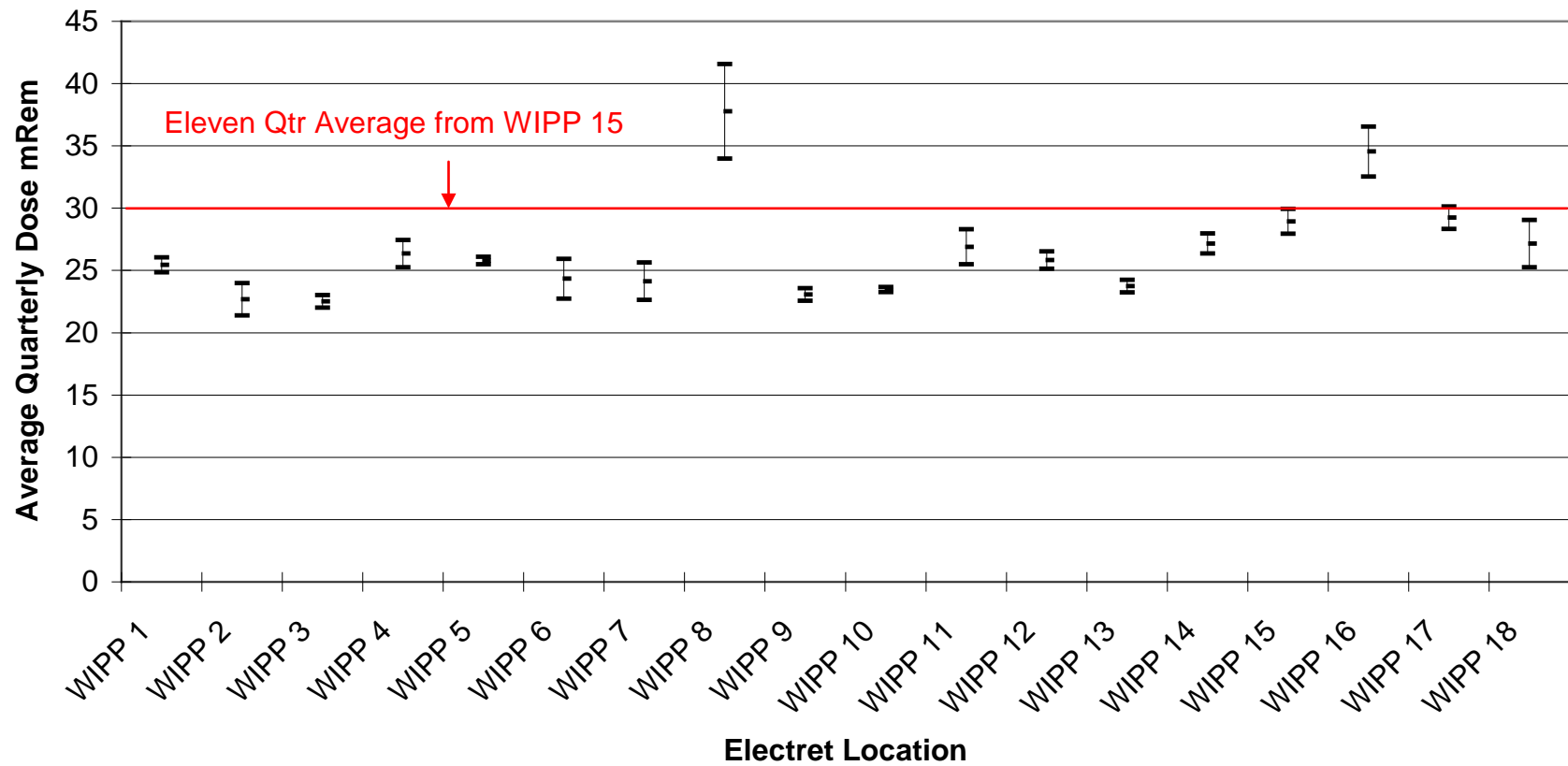
**WIPP 17**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SBZ 847	10/1/09 3:30 PM	1/4/10 1:23 PM	94.91	57	29.9
SBZ 852	10/1/09 3:30 PM	1/4/10 1:23 PM	94.91	55	28.2
SBZ 880	10/1/09 3:30 PM	1/4/10 1:23 PM	94.91	58	29.6
Average Quarterly Dose in mRem:					<b>29.2</b>

**WIPP 18**

Electret Number	Start Date and Time	Finish Date and Time	# of Days:	Voltage Drop	Quarterly Dose
SBZ 908	9/30/09 10:35 AM	1/6/10 11:37 AM	98.04	63	29.2
SBZ 851	9/30/09 10:35 AM	1/6/10 11:37 AM	98.04	56	25.7
SBZ 879	9/30/09 10:35 AM	1/6/10 11:37 AM	98.04	59	26.5
Average Quarterly Dose in mRem:					<b>27.1</b>

### ***DPR 4th Calendar Quarter, 2009 Quarterly Dose***



**Graph 1: DPR 4<sup>th</sup> Calendar Quarter, 2009 Quarterly Dose**