

**Allen, Pam, NMENV**

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**From:** Maestas, Ricardo, NMENV  
**Sent:** Thursday, March 06, 2014 11:36 AM  
**To:** Allen, Pam, NMENV  
**Subject:** FW: Requested Information - EPA  
**Attachments:** Environmental Air Sampler Filter Status.doc; Narrative.docx; Soil\_Sample\_Status.docx; Station A and B Samples History 2-20-14 R0.docx; WIPP 2-14-14 2-15-14 Consequence Evaluation.pdf

Email and attachments for WIPP file

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**From:** Kliphuis, Trais, NMENV  
**Sent:** Friday, February 21, 2014 8:07 AM  
**To:** Kendall, Jeff, NMENV; Flynn, Ryan, NMENV  
**Cc:** Kieling, John, NMENV; Blaine, Tom, NMENV; Maestas, Ricardo, NMENV; Smith, Coleman, NMENV; Holmes, Steve, NMENV  
**Subject:** FW: Requested Information - EPA

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**From:** Walsh, Jonathan [<mailto:Walsh.Jonathan@epa.gov>]  
**Sent:** Friday, February 21, 2014 8:00 AM  
**To:** Kliphuis, Trais, NMENV; Lucaskamat, Susan, NMENV; Stone, Nick; Brozowski, George  
**Subject:** FW: Requested Information

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**From:** Basabilvazo, George - DOE [<mailto:George.Basabilvazo@wipp.ws>]  
**Sent:** Friday, February 21, 2014 9:49 AM  
**To:** Walsh, Jonathan; Peake, Tom; Franco, Jose - FedNet; Bryson, Dana - CBFO External Contact; Hellstrom, George - DOE; McCauslin, Susan - FedNet; Marcinowski, Frank  
**Cc:** Kennedy, Scott - NWP; Chavez, Rick - RES; Jones, Stewart - RES; Hayes, Robert - NWP; Kehrman, Bob - RES; Reynolds, Tammy - NWP  
**Subject:** Requested Information

Hi Jonathan,

Here is the information you requested. We can use this in our discussion this morning.

When they shifted to filtration and stopped flow to Skid A3, normal readings were observed of 21 dpm alpha, 41 dpm beta-gamma. Other info as requested is attached.

The consequence report is preliminary and we really should discuss it. Please note that this is preliminary information and not for public release as marked.

I believe I've included everything you mentioned, but please let me know if I've missed something or if you have further questions. Thanks.

George T. Basabilvazo  
Director, Office of Environment, Safety & Health  
DOE/Carlsbad Field Office  
P.O. Box 3090



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Environmental Air Filter Analytical Status  
Preliminary Information – Not for Public Release

Location	Sample ID	Filter Install Date	Filter Retrieval Date	Gross $\alpha$ / $\beta$ Count			Radiochemistry						
				Field Smears and Surveys of Sampling Equipment and Area	* Initial 10 Minute DPM Gross $\alpha$ / $\beta$ Count > 200 $\alpha$ > 600 $\beta$	ISOLO Spectrum Analyzer	Data from WIPP Labs	Am-241 Bq/mL x 10 <sup>-12</sup>		Pu-238 Bq/mL x 10 <sup>-12</sup>		Pu-239/240 Bq/mL x 10 <sup>-12</sup>	
								Baseline Value**	Sample	Baseline Value**	Sample	Baseline Value**	Sample
WIPP Farfield (WFF)	AL-WFF-20140212-1.1	2/11/14	2/15/14	Field Smears and Surveys at accepted levels	Within Radon Background	36 DPM counted on 2/18/14	About three weeks	Mean = 2.6 $\sigma$ = 9.7	Value = TPU =	Mean = -1.5 $\sigma$ = 7.7	Value = TPU =	Mean = 0.3 $\sigma$ = 3.3	Value = TPU =
WIPP Farfield (WFF)	AL-WFF-20140219-1.1	2/15/14	2/18/14	Field Smears and Surveys at accepted levels	Within Radon Background	Awaiting 72 Hour Radon Decay to Analyze	About three weeks	Mean = 2.6 $\sigma$ = 9.7	Value = TPU =	Mean = -1.5 $\sigma$ = 7.7	Value = TPU =	Mean = 0.3 $\sigma$ = 3.3	Value = TPU =
WIPP East (WEE)	AL-WEE-20140212-1.1	2/11/14	2/17/14	Field Smears and Surveys at accepted levels	Within Radon Background	Awaiting 72 Hour Radon Decay to Analyze	About three weeks	Mean = 2.6 $\sigma$ = 9.7	Value = TPU =	Mean = -1.5 $\sigma$ = 7.7	Value = TPU =	Mean = 0.3 $\sigma$ = 3.3	Value = TPU =
WIPP South (WSS)	AL-WSS-20140212-1.1	2/11/14	2/17/14	Field Smears and Surveys at accepted levels	Within Radon Background	Awaiting 72 Hour Radon Decay to Analyze	About three weeks	Mean = 2.6 $\sigma$ = 9.7	Value = TPU =	Mean = -1.5 $\sigma$ = 7.7	Value = TPU =	Mean = 0.3 $\sigma$ = 3.3	Value = TPU =
Mills Ranch (MLR)	AL-MLR-20140212-1.1	2/11/14	2/18/14	Field Smears and Surveys at accepted levels	Within Radon Background	Awaiting 72 Hour Radon Decay to Analyze	About three weeks	Mean = 2.6 $\sigma$ = 9.7	Value = TPU =	Mean = -1.5 $\sigma$ = 7.7	Value = TPU =	Mean = 0.3 $\sigma$ = 3.3	Value = TPU =
Smith Ranch (SMR)	AL-SMR-20140212-1.1	2/11/14	2/18/14	Field Smears and Surveys at accepted levels	Within Radon Background	Awaiting 72 Hour Radon Decay to Analyze	About three weeks	Mean = 2.6 $\sigma$ = 9.7	Value = TPU =	Mean = -1.5 $\sigma$ = 7.7	Value = TPU =	Mean = 0.3 $\sigma$ = 3.3	Value = TPU =
Carlsbad (CBD)	AL-CBD-20140212-1.1	2/11/14	2/18/14	Field Smears and Surveys at accepted levels	Within Radon Background	Awaiting 72 Hour Radon Decay to Analyze	About three weeks	Mean = 2.6 $\sigma$ = 9.7	Value = TPU =	Mean = -1.5 $\sigma$ = 7.7	Value = TPU =	Mean = 0.3 $\sigma$ = 3.3	Value = TPU =
South East Control (SEC)	AL-SEC-20140212-1.2	2/11/14	2/18/14	Field Smears and Surveys at accepted levels	Within Radon Background	Awaiting 72 Hour Radon Decay to Analyze	About three weeks	Mean = 2.6 $\sigma$ = 9.7	Value = TPU =	Mean = -1.5 $\sigma$ = 7.7	Value = TPU =	Mean = 0.3 $\sigma$ = 3.3	Value = TPU =
South East Control (SEC) Blank sample	AL-SEC-20140212-2.2	2/11/14	2/18/14	Field Smears and Surveys at accepted levels	Within Radon Background	Awaiting 72 Hour Radon Decay to Analyze	About three weeks	Mean = 2.6 $\sigma$ = 9.7	Value = TPU =	Mean = -1.5 $\sigma$ = 7.7	Value = TPU =	Mean = 0.3 $\sigma$ = 3.3	Value = TPU =

\* These are screening values that will inform filter counting staff that there appears to be reading that could be above background and further evaluation is necessary.

\*\* These values are from the DOE/WIPP 92-037, Attachment 1, Statistical Summary of the Radiological Baseline for the WIPP, Table 3-10. These values were derived from the summary statistics for samples at all locations in the baseline. The Units are noted as Becquerels per milliliter x 10<sup>-12</sup> or Becquerels per cubic meter x 10<sup>-6</sup>  
TPU = Total Propagated Uncertainty

## Preliminary Information – Not for Public Release

### Rad Event Narrative

The WIPP underground was operating under a normal ventilation configuration in automatic mode. No abnormal ventilation or radiological conditions were known prior to the event.

On 2/14/2014, 2313 hrs a continuous air monitor (CAM) alarm was received from CAM which was monitoring the active waste panel in the Central Monitoring Room (CMR). At 2314 hrs the CAM reached the programmed setpoint that caused the ventilation system to respond as designed by changing air flow rates and redirecting flow through the filtration system. This is accomplished by changing fan configuration and closing in-line dampers to route all airflow through the filters.

Operations personnel responded to the CAM alarm and ventilation shift in accordance with established procedures. The response included both operating and notification protocols. Operations and Radiation Control management was notified and responded to the plant. Radiological personnel collected installed filter paper used for monitoring exhaust effluent air and initiated procedures to measure radioactive activity deposited on the filters. There are sampling points installed that sample before (Station A) and after the filtration system (Station B).

Analysis of the filter paper deposits revealed alpha contamination at high levels. Operating crews then initiated response procedures and directed site personnel to remain indoors as a precautionary measure. Operations and Radiological personnel continued to collect and analyze samples as well as survey the site in the areas downwind of the release point. Plume models were calculated and surveys were performed in accordance with the models. Additionally, samples were collected from installed sampling stations outside the site boundary and are currently being analyzed.

**Environmental Soil Sample Analytical Status**  
**Preliminary Information – Not for Public Release**

Location/Depth	Sample ID	Matrix Sample Date		Lab Submit Date	Data from WIPP Labs	Radiochemistry					
						Am-241 Bq/g x 10 <sup>-3</sup>		Pu-238 Bq/g x 10 <sup>-3</sup>		Pu-239/240 Bq/g x 10 <sup>-3</sup>	
						Baseline Value	Sample	Baseline Value	Sample	Baseline Value	Sample
Far Field Surface Sample (0-2 cm)	SS-WFF-20140213-1.1	Soil	2/13/14	2/17/14	Three Weeks (3/10/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
Far Field Intermediate Sample (2-5 cm)	SI-WFF-20140213-1.1	Soil	2/13/14	2/17/14	Three Weeks (3/10/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
Far Field Deep Sample (5-10 cm)	SD-WFF-20140213-1.1	Soil	2/13/14	2/17/14	Three Weeks (3/10/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP East Surface Sample (0-2 cm)	SS-WEE-20140213-1.1	Soil	2/13/14	2/17/14	Three Weeks (3/10/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0		σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP East Intermediate Sample (2-5 cm)	SI-WEE-20140213-1.1	Soil	2/13/14	2/17/14	Three Weeks (3/10/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP East Deep Sample (5-10 cm)	SD-WEE-20140213-1.1	Soil	2/13/14	2/17/14	Three Weeks (3/10/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP South Surface Sample (0-2 cm)	SS-WSS-20140214-1.1	Soil	2/13/14	2/17/14	Three Weeks (3/10/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP South Intermediate Sample (2-5 cm)	SI-WSS-20140214-1.1	Soil	2/13/14	2/17/14	Three Weeks (3/10/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP South Deep Sample (5-10 cm)	SD-WSS-20140214-1.1	Soil	2/13/14	2/17/14	Three Weeks (3/10/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =

**Environmental Soil Sample Analytical Status**  
**Preliminary Information – Not for Public Release**

Location/Depth	Sample ID	Matrix Sample Date		Lab Submittal Date	Radiochemistry						
					Data from WIPP Labs	Am-241 Bq/g x 10 <sup>-3</sup>		Pu-238 Bq/g x 10 <sup>-3</sup>		Pu-239/240 Bq/g x 10 <sup>-3</sup>	
						Baseline Value	Sample	Baseline Value	Sample	Baseline Value	Sample
Far Field Surface Sample (0-2 cm)	SS-WFF-20140217-1.2	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
Far Field Intermediate Sample (2-5 cm)	SI-WFF-20140217-1.2	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
Far Field Deep Sample (5-10 cm)	SD-WFF-20140217-1.2	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
Far Field Surface Sample (0-2 cm)	SS-WFF-20140217-2.2	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
Far Field Intermediate Sample (2-5 cm)	SI-WFF-20140217-2.2	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
Far Field Deep Sample (5-10 cm)	SD-WFF-20140217-2.2	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP East Surface Sample (0-2 cm)	SS-WEE-20140217-1.1	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP East Intermediate Sample (2-5 cm)	SI-WEE-20140217-1.1	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =

**Environmental Soil Sample Analytical Status  
Preliminary Information – Not for Public Release**

**Environmental Soil Sample Analytical Status**  
**Preliminary Information – Not for Public Release**

Location/Depth	Sample ID	Matrix Sample Date		Lab Submit tal Date	Radiochemistry						
					Data from WIPP Labs	Am-241 Bq/g x 10 <sup>-3</sup>		Pu-238 Bq/g x 10 <sup>-3</sup>		Pu-239/240 Bq/g x 10 <sup>-3</sup>	
						Baseline Value	Sample	Baseline Value	Sample	Baseline Value	Sample
WIPP East Deep Sample (5-10 cm)	SD- WEE- 2014021 7-1.1	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP South Surface Sample (0-2 cm)	SS- WSS- 2014021 7-1.1	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP South Intermediate Sample (2-5 cm)	SI- WSS- 2014021 7-1.1	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =
WIPP South Deep Sample (5-10 cm)	SD- WSS- 2014021 7-1.1	Soil	2/17/14	2/18/14	Three weeks (3/11/14)	Mean = 1.7	Value =	Mean = -0.1	Value =	Mean = 0.20	Value =
						σ = 2.0	TPU =	σ = 1.1	TPU =	σ = 0.73	TPU =

\* These values are from the DOE/WIPP 92-037, Attachment 1, Statistical Summary of the Radiological Baseline for the WIPP, Table 4-1. These values were derived from adding the mean plus the standard deviation value. The Units are noted as Becquerels per milliliter x 10<sup>-12</sup> or Becquerels per gram x 10<sup>-3</sup>

\*\* Soils sample radiochemistry statistics are a summary of samples obtained in three groups representing different geographic groups on a regional scale: 1) within 1 kilometer of the Waste Handling Building, 2) 8 kilometers centered at the WIPP site, and 3) Area coverage of approximately 10,000 square kilometers.

TPU = Total Propagated Uncertainty

**Station A and B Filter Readings Following 02-14-14 Radiological Event  
Preliminary Information – Not for Public Release**

Date	Time Installed	Time Removed	Filter ID	Inst Model	Count time	A-2-3		First Count	Re-count	
						Alpha (dpm)	Beta (dpm)		Alpha (dpm)	Beta (dpm)
2-14-14	2/14/14 0742	2/15/14 0630	A23021414	Tennelec XLB	10 Mins	4.4M	1.2M	021514/0649		
2-15-14	2/15/14 0630	2/15/14 0840	A23021514	Tennelec XLB	10 Mins	225K	46.8K	021514/0916		
2-15-14	2/15/14 0840	2/15/14 1510	A23021514 0840	Tennelec XLB	10 Mins	285k	54k	021514/1541		
2-15-14	2/15/14 1510	2/15/14 2330	A23021514 1510	Tennelec XLB	10 Mins	124050	24481	021614/0012		
2-15-14	2/15/14 2330	2/16/14 0850	A23021514 2330	Tennelec XLB	10 Mins	47283	10558	021614/0917		
2-16-14	2/16/14 0850	2/16/14 1648	A23021614 0850	Tennelec XLB	10 Mins	12215	2842	021614/1927		
2-16-14	2/16/14 1648	2/17/14 0015	A23021614 1650	Tennelec XLB	10 Mins	4051	1256	021714/0046		
2-17-14	2/17/14 0015	2/17/14 0820	A23021714 0015	Tennelec XLB	10 Mins	1802	638	021714/0942	021714/1012	
									1723	573
2-17-14	2/17/14 0820	2/17/14 1620	A23021714 0820	Tennelec XLB	10 Mins	1048	621	021714/1705		
2-	2/17/14	2/18/14	A23021714	Tennelec	10	802	633	021814/0051	021814/0423	

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**Station A and B Filter Readings Following 02-14-14 Radiological Event  
Preliminary Information – Not for Public Release**

Station B

Date	Time Installed	Time Removed	Filter ID	Inst Model	Count time	B-1-3		First Count	Re-count	
						Alpha (dpm)	Beta (dpm)		Alpha (dpm)	Beta (dpm)
2-14-14	2/14/14 0754	2/15/14 0835	B13021414	Tennelec XLB	10 Mins	28205	5877	021514/0850		
2-15-14	2/15/14 0835	2/15/14 1445	B13021514	Tennelec XLB	10 Mins	36194	7340			
2-15-14	2/15/14 1445	2/15/14 2305	B130215141445	Tennelec XLB	10 Mins	671	142	021714/1056		
2-15-14	2/15/14 2305	2/16/14 0904	B130215142305	Tennelec XLB	10 Mins	300	152	021614/0932	021614/1127	
									253	63
									021614/1250	
									245	59
								021614/1741		
								240	49	
2-16-14	2/16/14 0904	2/16/14 1705	B130216140904	Tennelec XLB	10 Mins	144	67	021614/1755		
2-16-14	2/16/14 1705	2/17/14 0030	B130216141705	Tennelec XLB	10 Mins	72	54	021714/0046	021714/1203	
									62	18
2-17-14	2/17/14 0030	2/17/14 0805	B130216140030	Tennelec XLB	10 Mins	43	26	021714/0930	021714/0955	
									30	23
									021714/1400	
									32	16

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**Station A and B Filter Readings Following 02-14-14 Radiological Event**  
**Preliminary Information – Not for Public Release**

17-14	1620	0010	1620	XLB	Mins				633	230
									021814/0751	
									592	210
2-18-14	2/18/14 0010	2/18/14 0820	A23021814 0010	Tennelec XLB	10 Mins	326	338	021814/0928	021814/1202	
									237	157
									021814/1824	
									212	116
2-18-14	2/18/14 0820	2/18/14 1605	A23021814 0820	Tennelec XLB	10 Mins	609	780	021814/1624	021914/0315	
									258	118
2-18-14	2/18/14 1605	2/19/14 0035	A23021814 1605	Tennelec XLB	10 Mins	346	340	021914/0143	021914/0547	
									227	143
2-19-14	2/19/14 0035	2/19/14 0823	A23021914 0040	Tennelec XLB	10 Mins	224	320	021914/0952	021914/1222	
									136	143
2-19-14	2/19/14 0823	2/19/14 1600	A23021914 0823	Tennelec XLB	10 Mins	264	443	021914/1708	021914/2046	
									130	137
2-19-14	2/19/14 1600	2/20/14 0018	A23021914 1600	Tennelec XLB	10 Mins	286	378	022014/0124		
									150	

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**Station A and B Filter Readings Following 02-14-14 Radiological Event**  
**Preliminary Information – Not for Public Release**

2-17-14	02/17/14 0805	2/17/14 1600	B130217140805	Tennelec XLB	10 Mins	78	35	021714/1650	021714/1958	
									58	20
									021814/1823	
2-17-14	2/17/14 1600	2/18/14 0030	B130217141600	Tennelec XLB	10 Mins	65	55	021814/0051	021814/0423	
									45	18
									021814/0751	
2-18-14	2/18/14 0030	2/18/14 0901	B130218140030	Tennelec XLB	10 Mins	42	61	021814/0928	021814/1202	
									23	12
2-18-14	2/18/14 0901	2/18/14 1655	B130218140901	Tennelec XLB	10 Mins	41	29	021814/1754	021914/0315	
									28	7
2-18-14	2/18/14 1655	2/19/14 0105	B130218141655	Tennelec XLB	10 Mins	42	36	021914/0144	021914/0547	
									20	7
2-19-14	2/19/14 0105	2/19/14 0900	B130219140105	Tennelec XLB	10 Mins	33	44	021914/0952	021914/1222	
									20	15
2-19-14 2-19-14	2/19/14 0900	2/19/14 1627	B130219140900	Tennelec XLB	10 Mins	36	34	021914/1708	021914/2036	
									25	10
	2/19/14 1627	2/20/14 0035	B130219141627	Tennelec XLB	10 Mins	45	46	022014/0107	022014/0359	
									25	9

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Preliminary Information – Not For Public Release



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Back to: Valentines day

Printer Friendly View

Portrait View

pdf-Handscape

Interactive Map

Quick Guide to NARAC/CMweb 2.11

NARAC Technical Plot Guide



## Consequence Report Valentines day Automated Report - Testing

Not For Public Dissemination  
Issued: February 16, 2014 11:38 CST

**SUMMARY:**

This report describes the health effect consequences associated with a hypothetical unknown release to the atmosphere from a radiological source. This is an initial, automated NARAC product, not a final recommendation. Initial predictions are for a limited time period and areas affected may change at later times. Please consult NARAC staff (925-422-7627) for refined, quality assured predictions. Predictions should be confirmed and refined using measurements.

**PRODUCTS:**

- Early Phase TED (0-96 hrs) :** (Total Effective Dose Including Plume Passage)  
Material: PU-239
- Early Phase Evac Shelter TED (12-108 hrs) :** (Evacuation/Sheltering based on Avoidable Total Effective Dose)  
Material: PU-239
- Early Phase Thyroid CDE (0-96 hrs) :** (Thyroid Committed Dose Equivalent Including Plume Passage)  
Material: PU-239
- Early Phase Evac Shelter Thyroid CDE (12-108 hrs) :** (Evacuation/Sheltering based on Avoidable Thyroid Committed Dose Equivalent)  
Material: PU-239
- Worker Protection Dose Rate at 12 hrs (Near Field) :** (Groundshine and Air Immersion Dose Rate at 02/15/2014 18:15:00 UTC)  
Material: PU-239
- Worker Protection Dose Rate at 12 hrs (Far Field) :** (Groundshine and Air Immersion Dose Rate at 02/15/2014 18:15:00 UTC)  
Material: PU-239
- Deposition at 12 hrs :** (Surface Contamination from Deposited Radionuclides)  
Material: PU-239
- Intermediate Phase Relocation PAGs :** (Relocation based on Avoidable Groundshine and Resuspension Dose)  
Material: PU-239
- Intermediate Phase Dose :** (Based on Avoidable Groundshine and Resuspension Dose 12hr-50yr)  
Material: PU-239

**SOURCE INFORMATION:**

Release Start Time:	February 15, 2014 15:45 CST
Release Stop Time:	February 15, 2014 16:05 CST
Release Location:	(32.3723,-103.792)
Release Mechanism:	Generic
Source Material and Amount:	0.5 mCi of PU-239 (100% respirable) Total Strength: 0.5 mCi
Source Geometry:	point released at 6.7 m
Particle Size Distribution:	All particulate is in the respirable range from 0.1 to 10 microns

**METEOROLOGY:**

Observations from 02/15/2014 06:00:00 UTC to 02/16/2014 01:00:00 UTC at 1 hr intervals were used in the NARAC meteorological model

Observation Met Times:

- February 15, 2014 15:30 CST
- February 15, 2014 16:30 CST
- February 15, 2014 17:30 CST
- February 15, 2014 18:30 CST
- February 15, 2014 19:30 CST
- February 15, 2014 20:30 CST
- February 15, 2014 21:30 CST
- February 15, 2014 22:30 CST
- February 15, 2014 23:30 CST
- February 16, 2014 00:30 CST
- February 16, 2014 01:30 CST
- February 16, 2014 02:30 CST
- February 16, 2014 03:30 CST
- February 16, 2014 04:30 CST

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(925) 422-9159  
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- February 16, 2014 05:30 CST
- February 16, 2014 06:30 CST
- February 16, 2014 07:30 CST
- February 16, 2014 08:30 CST
- February 16, 2014 09:30 CST
- February 16, 2014 10:30 CST

No precipitation is included in this calculation

**ASSUMPTIONS:**

Unless otherwise stated ICRP60 series DCF's were used for dose plots.

**CONTACT INFORMATION:**

Calculation requested by:  
Robert B. Hayes, DOE -- WIPP  
8788  
Robert.Hayes@wipp.ws

This report has not been approved for distribution

Classification: Not For Public Dissemination

**DISCLAIMER:**

These model predictions are intended to be guidance, and are not final recommendations. The accuracy of any prediction will be limited by the accuracy of the input data, such as estimates of the amount of material that becomes airborne and the available meteorological data for the area and time of the incident. Plume predictions may be for a limited time period, and may change at later times if new input data becomes available. Predictions should be confirmed and refined using field measurements. Air and ground concentration may be higher than predicted by this plume model simulation due the limited resolution of this particular simulation. For actual incidents or exercises, consult incident command and subject matter experts from the appropriate coordinating agency before making any decisions based on this model prediction.

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**Early Phase TED (0-96 hrs)**  
**(Total Effective Dose Including Plume Passage)**

Valentines day  
 Automated Report - Testing



Contour Levels		
Description	(rem) Extent Area	Population
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>0.01 390m 22,033m <sup>2</sup>	0
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>0.0010 2,046m 568,189m <sup>2</sup>	0

Note: Areas and counts in the table are cumulative.  
 Population Source = LandScan USA V1.0.

Effects or contamination from February 15, 2014 15:45 CST to February 19, 2014 15:45 CST  
**Release Location:** 32.372340 N, 103.791610 W  
**Material:** PU-239  
**Generated On:** February 16, 2014 09:58 CST  
**Model:** ADAPT/LODI  
**Comments:**  
 Hypothetical release starting at 02/15/2014 06:15:00 UTC for 20 min  
 met obs at 1 hr intervals from 02/15/2014 06:00:00 UTC to 02/16/2014 01:00:00 UTC

Map Size: 2.4 km by 2.4 km Id: ProductionT.rcE21792.rcC1

NARAC Operations: ( NARAC Staff ); narac@llnl.gov; 925-424-6465  
 Requested by: (Robert B. Hayes; DOE - WIPP; 8798; Robert.Hayes@wipp.wa )  
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**Early Phase Evac Shelter TED (12-108 hrs)**  
 (Evacuation/Sheltering based on Avoidable Total Effective Dose)

Valentines day  
 Automated Report -  
 Testing



Contour Levels		
Description	(rem) Extent Area	Population
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>0.0001 242m 8,382m2	0
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>1.00E-5 1,527m 292,465m2	0

Note: Areas and counts in the table are cumulative.  
 Population Source = LandScan USA V1.0.

Effects or contamination from February 16, 2014 03:45 CST to February 20, 2014 03:45 CST  
**Release Location:** 32.372340 N, 103.791610 W  
**Material:** PU-239  
**Generated On:** February 16, 2014 09:58 CST  
**Model:** ADAPT/LODI  
**Comments:**  
 Hypothetical release starting at 02/15/2014 06:15:00 UTC for 20 min  
 met obs at 1 hr intervals from 02/15/2014 06:00:00 UTC to 02/16/2014 01:00:00 UTC

Map Size: 1.8 km by 1.8 km Id: ProductionT.rcE21792.rcC1

NARAC Operations: ( NARAC Staff ); narac@llnl.gov; 925-424-6465  
 Requested by: (Robert B. Hayes; DOE – WIPP; 8788; Robert.Hayes@wipp.wv.gov)  
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**Early Phase Thyroid CDE (0-96 hrs)**  
**(Thyroid Committed Dose Equivalent Including Plume Passage)**

Valentines day  
 Automated Report -  
 Testing



Contour Levels		
Description	(rem) Extent Area	Population
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>0.0010 259m 9,579m <sup>2</sup>	0
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>0.0001 1,526m 304,646m <sup>2</sup>	0

**Note:** Areas and counts in the table are cumulative.  
 Population Source = LandScan USA V1.0.

Effects or contamination from February 15, 2014 15:45 CST to February 19, 2014 15:45 CST  
**Release Location:** 32.372340 N, 103.791610 W  
**Material:** PU-239  
**Generated On:** February 16, 2014 09:58 CST  
**Model:** ADAPT/LODI  
**Comments:**  
 Hypothetical release starting at 02/15/2014 06:15:00 UTC for 20 min  
 met obs at 1 hr intervals from 02/15/2014 06:00:00 UTC to 02/16/2014 01:00:00 UTC

Map Size: 1.8 km by 1.8 km Id: ProductionT.rcE21792.rcC1

NARAC Operations: ( NARAC Staff ); narac@llnl.gov; 925-424-6465  
 Requested by: (Robert B. Hayes; DOE – WPP; 8788; Robert.Hayes@wpp.wa )  
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**Early Phase Evac Shelter Thyroid CDE (12-108 hrs)**  
**(Evacuation/Sheltering based on Avoidable Thyroid Committed Dose Equivalent)**

Valentines day  
 Automated Report -  
 Testing



Contour Levels		
Description	(rem) Extent Area	Population
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>1.00E-5 149m 3,077m2	0
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>1.00E-6 1,045m 140,476m2	0
Note: Areas and counts in the table are cumulative. Population Source = LandScan USA V1.0.		

Effects or contamination from February 16, 2014 03:45 CST to February 20, 2014 03:45 CST  
**Release Location:** 32.372340 N, 103.791610 W

**Material:** PU-239  
**Generated On:** February 16, 2014 09:58 CST  
**Model:** ADAPT/LODI

**Comments:**  
 Hypothetical release starting at 02/15/2014 06:15:00 UTC for 20 min  
 met obs at 1 hr intervals from 02/15/2014 06:00:00 UTC to 02/16/2014 01:00:00 UTC

Map Size: 1.2 km by 1.2 km Id: ProductionT.rcE21792.rcC1

NARAC Operations: ( NARAC Staff ); narac@llnl.gov; 925-424-6465  
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**Worker Protection Dose Rate at 12 hrs (Near Field)**  
**(Groundshine and Air Immersion Dose Rate at**  
**02/15/2014 18:15:00 UTC)**

Valentines day  
 Automated Report -  
 Testing



Map Size: 600 m by 600 m Id: ProductionT.rcE21792.rc1

Exposure Limits		
Description	(rem/hr) Extent Area	Population
Note: Areas and counts in the table are cumulative. Population Source = LandScan USA V1.0.		

Effects or contamination at February 16, 2014  
 03:45 CST  
**Release Location:** 32.372340 N, 103.791610  
 W  
**Material:** PU-239  
**Generated On:** February 16, 2014 09:58 CST  
**Model:** ADAPT/LODI  
**Comments:**  
 Release starting at 02/15/2014 06:15:00 UTC  
 for 20 min  
 met obs at 1 hr intervals from 02/15/2014  
 06:00:00 UTC to 02/16/2014 01:00:00 UTC  
 Groundshine and air immersion dose only.  
 Assumes use of respiratory protection.

NARAC Operations: ( NARAC Staff ); narac@llnl.gov; 925-424-8465  
 Requested by: (Robert B. Hayes, DOE - WPP, 8788; Robert.Hayes@wpp.wv )  
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**Worker Protection Dose Rate at 12 hrs (Far Field)**  
**(Groundshine and Air Immersion Dose Rate at**  
**02/15/2014 18:15:00 UTC)**

Valentines day  
 Automated Report -  
 Testing



Contour Levels		
Description	(mrem/hr) Extent Area	Population
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>1.00E-9 245m 8,794m2	0
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>1.00E-10 1,536m 300,350m2	0
Note: Areas and counts in the table are cumulative. Population Source = LandScan USA V1.0.		

Effects or contamination at February 16, 2014  
 03:45 CST

Release Location: 32.372340 N, 103.791610 W

Material: PU-239

Generated On: February 16, 2014 09:58 CST

Model: ADAPT/LODI

**Comments:**

Release starting at 02/15/2014 06:15:00 UTC for 20 min

met obs at 1 hr intervals from 02/15/2014

06:00:00 UTC to 02/16/2014 01:00:00 UTC

Groundshine and air immersion dose only.

Assumes use of respiratory protection.

Map Size: 1.8 km by 1.8 km Id: ProductionT.rcE21792.rc1

NARAC Operations: ( NARAC Staff ); narac@llnl.gov; 925-424-6465  
 Requested by: (Robert B. Hayes; DOE - WPP; 8768; Robert.Hayes@wpp.we)   
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**Deposition at 12 hrs**  
**(Surface Contamination from Deposited Radionuclides)**

Valentines day  
 Automated Report -  
 Testing



Contour Levels		
Description	(uCi/m2) Extent Area	Population
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>0.0001 0.6km 0.05km2	0
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>1.00E-5 3.3km 1.3km2	0

Note: Areas and counts in the table are cumulative.  
 Population Source = LandScan USA V1.0.

Map Size: 3.8 km by 3.8 km Id: Production7.rcE21792.rcC1

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 Requested by: (Robert B. Hayes; DOE – WPP; 8788; Robert.Hayes@wpp.wa )  
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Effects or contamination at February 16, 2014  
 03:45 CST  
**Release Location:** 32.372340 N, 103.791610 W  
**Material:** PU-239  
**Generated On:** February 16, 2014 09:58 CST  
**Model:** ADAPT/LODI  
**Comments:**  
 Hypothetical release starting at 02/15/2014  
 06:15:00 UTC for 20 min  
 met obs at 1 hr intervals from 02/15/2014  
 06:00:00 UTC to 02/16/2014 01:00:00 UTC

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**Intermediate Phase Relocation PAGs**  
 (Relocation based on Avoidable Groundshine and Resuspension Dose)

Valentines day  
 Automated Report -  
 Testing



Map Size: 600 m by 600 m Id: ProductionT.rcE21792.rc1

Intermediate Phase Dose		
Description	(rem) Extent Area	Population
<b>Note:</b> Areas and counts in the table are cumulative. Population Source = LandScan USA V1.0.		

Effects or contamination from February 16, 2014 03:45 CST to February 15, 2016 15:45 CST  
**Release Location:** 32.372340 N, 103.791610 W  
**Material:** PU-239  
**Generated On:** February 16, 2014 09:58 CST  
**Model:** ADAPT/LODI  
**Comments:**  
 Doses shown are accrued after 02/15/2014 18:15:00 UTC and can be avoided by protective actions  
 Hypothetical release starting at 02/15/2014 06:15:00 UTC for 20 min  
 met obs at 1 hr intervals from 02/15/2014 06:00:00 UTC to 02/16/2014 01:00:00 UTC

NARAC Operations: ( NARAC Staff ); narac@llnl.gov; 925-424-6465  
 Requested by: (Robert B. Hayes; DOE – WIPP; 8788; Robert.Hayes@wpp.wv)   
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**Intermediate Phase Dose**  
 (Based on Avoidable Groundshine and Resuspension  
 Dose 12hr-50yr)

Valentines day  
 Automated Report -  
 Testing



Intermediate Phase Dose		
Description	(rem) Extent Area	Population
Note: Areas and counts in the table are cumulative. Population Source = LandScan USA V1.0.		

Effects or contamination from February 16, 2014 03:45 CST to February 15, 2064 15:45 CST  
**Release Location:** 32.372340 N, 103.791610 W  
**Material:** PU-239  
**Generated On:** February 16, 2014 09:58 CST  
**Model:** ADAPT/LODI  
**Comments:**  
 Doses shown are accrued after 02/15/2014 18:15:00 UTC and can be avoided by protective actions  
 Hypothetical release starting at 02/15/2014 06:15:00 UTC for 20 min  
 met obs at 1 hr intervals from 02/15/2014 06:00:00 UTC to 02/16/2014 01:00:00 UTC

NARAC Operations: ( NARAC Staff ); narac@llnl.gov; 925-424-8465  
 Requested by: (Robert B. Hayes; DOE – WPP; 8788; Robert.Hayes@wpp.wes)  
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