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Annual Radiological Environmental Monitoring Program Report for the Three Mile Island, Unit 2, Independent Spent Fuel Storage Installation

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ABSTRACT

This report presents the results of the 2002 Radiological Environmental Monitoring Program conducted in accordance with 10 CFR 72.44 for the Three Mile Island, Unit 2, Independent Spent Fuel Storage Installation. A description of the facility and the monitoring program is provided. The results of monitoring the two predominant radiation exposure pathways, potential airborne radioactivity releases and direct radiation exposure, indicate the facility operation has not contributed to any increase in the estimated maximum potential dose commitment to the general public.

SUMMARY

The purpose of this report is to present the results of the Radiological Environmental Monitoring Program (REMP) conducted during 2002 for the Three Mile Island, Unit 2, (TMI-2), Independent Spent Fuel Storage Installation (ISFSI). The first shipment of TMI-2 core debris was received and stored at the ISFSI on March 31, 1999. Nine additional shipments were received and stored at the ISFSI during 2000. The remaining nineteen shipments were received during 2001 and completed on April 20, 2001.

The REMP was implemented from January through December 2002. Results of the loose surface radioactive contamination surveys indicated no increase in either gross beta or Cs-137 radioactivity attributed to the facility operation. The results of the airborne radioactivity sampling did not indicate releases of airborne particulate radioactivity from the loaded Horizontal Storage Modules (HSM) that would contribute to an increase in the estimated maximum potential dose commitment to the general public. The results of the thermoluminescent dosimetry network did not indicate an increase in radiation levels above ambient background attributed to the facility operation.

The monitoring program results support the conclusion reached in the Final Environmental Impact Statement that operation of the facility would not result in a significant dose commitment to the Maximum Exposed Individual.

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INTRODUCTION

The Three Mile Island, Unit 2, Independent Spent Fuel Storage Installation (TMI-2 ISFSI) is a spent fuel dry storage facility designed for interim storage of the TMI-2 core debris. The TMI-2 ISFSI, located within the Idaho Nuclear Technology and Engineering Center (INTEC) at the Idaho National Engineering and Environmental Laboratory (INEEL), is operated by Bechtel BWXT Idaho, LLC for the Department of Energy (DOE). The TMI-2 ISFSI was licensed on March 19, 1999 by the Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 72 for authorization to receive, possess, store, and transfer spent fuel and fuel debris, resulting from the 1979 TMI-2 accident, for a twenty-year term.[1, 2]

The TMI-2 ISFSI is a modified NUHOMS spent fuel storage system, designated NUHOMS-12T. Each of the thirty NUHOMS-12T modules within the facility provide for the horizontal dry storage of up to twelve TMI-2 stainless steel canisters inside a dry shielded canister (DSC) which is placed inside a concrete horizontal storage module (HSM). The NUHOMS-12T modification includes venting of the DSC through high efficiency particulate air (HEPA) grade filters during storage. The vent system allows for release of hydrogen gas, generated due to radiolysis, and monitoring and/or purging of the system during operation.

The TMI-2 core debris, which had been stored in stainless steel canisters in a fuel pool at the Test Area North (TAN) site within the INEEL, has been transferred to the TMI-2 ISFSI for interim storage. A Settlement Agreement entered into by the State of Idaho, the Department of Energy, and the Department of the Navy in October 1995 established a schedule for commencing core debris transfers by March 31, 1999, and completing such transfers by June 1, 2001.[3] The first core debris transfer was completed on March 31, 1999. Nine additional transfers were completed during 2000. The remaining nineteen transfers were completed during 2001, with the last one completed on April 20, 2001. A summary of the TMI-2 core debris storage status is provided in Appendix A, Table 1.

A Radiological Environmental Monitoring Program (REMP) was developed for the TMI-2 ISFSI and implemented in accordance with 10 CFR 72.44. This report presents the REMP results during the TMI-2 ISFSI operation in 2002.

PROGRAM DESCRIPTION

The REMP is designed to monitor the two predominant radiation exposure pathways inherent with the facility design: potential airborne radioactivity releases and direct radiation. The airborne radioactivity release pathway is monitored using a combination of loose surface radioactive contamination surveys and periodic airborne radioactivity sampling. The direct radiation exposure pathway is monitored using thermoluminescent dosimetry (TLD) located along the outer perimeter fence of the TMI-2 ISFSI. Contact radiation levels on the HSM front doors, rear panel doors, and end shield walls are also measured either within the first twenty-four hours or seven days following the HSM loading, or during monthly or quarterly scheduled surveillances performed in accordance with the Technical Specifications.

Loose surface radioactive contamination surveys are performed at the vent and purge ports of each DSC as well as the drain port of each loaded HSM. The survey frequency is monthly during the first year, quarterly during the second through fifth years, and annually thereafter. The survey frequency for each DSC and loaded HSM begins after DSC insertion into the HSM. The frequency coincides with the radiation monitoring surveillance schedule required by the TMI-2 ISFSI Technical Specifications.[4] Sample media is analyzed for gross beta radioactivity. Depending on the amount of gross beta radioactivity detected, gamma isotopic analysis is either performed for each sample or for an annual sample composite. The presence of Cs-137 is determined and quantified during the gamma isotopic analysis with a required Lower Limit of Detection (LLD) no greater than 5 nCi.

Twenty-two TLD stations are located and maintained along the outer perimeter fence of the TMI-2 ISFSI. Four additional TLD stations were maintained outside occupied buildings (CPP-665 and CPP-666) within 100 meters of the TMI-2 ISFSI, but were removed during 2002 due to extremely low building occupancy factors. The TLD station locations are noted in Figure 1. Dosimetry is changed out on a monthly frequency. The minimum detectable dose demonstrated is no greater than 10 mrem.

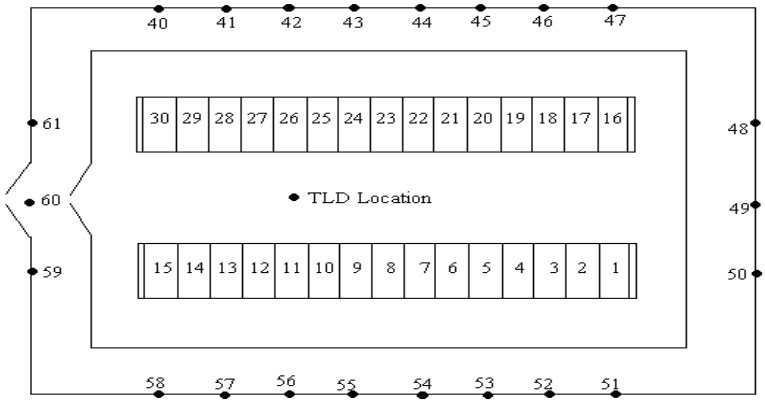

Figure 1. TMI-2 ISFSI TLD Station Locations.

A low-volume air sampler is used to collect approximately 5.0E5 liters of air particulate during a seven-day period each month. The air sampler is located between the two rows of HSMs inside the TMI-2 ISFSI. Each air particulate sample is analyzed for gross beta radioactivity with an LLD no greater than 0.01 pCi/m^3. Depending on the amount of gross beta radioactivity detected, gamma isotopic analysis is either performed for each air particulate sample or for an annual sample composite. The presence of Cs-137 is determined and quantified during the gamma isotopic analysis with a required LLD no greater than 0.01 pCi/m^3.

RESULTS

The highest radiation levels measured on the HSM front doors, rear panel doors, and end shield walls remain less than or equal to 2 mrem/h, 5 mrem/h, and 1 mrem/h respectively; well below the respective Technical Specification limits. The highest radiation levels measured on the purge and vent port filter housings during monthly or quarterly radiation monitoring operations in 2002 are summarized in Appendix A, Table 2. Radiation levels measured at the purge and vent ports are attributed primarily to Compton scatter from inside the HSM. All loaded HSMs are posted as Radioactive Material Areas. HSM rear panel doors are also posted as Radiation Areas. Neutron radiation detected in HSMs 4 and 22 (1 to 5 mrem/h) is attributed to AmBeCm neutron startup sources stored in these locations.[5]

The loose surface contamination survey results for the purge, vent, and drain ports are summarized in Appendix A, Table 3. All analytical gross beta and alpha results were less than the Minimum Detectable Activity (MDA) calculated in accordance with NUREG/CR-1507.[6] There were no individual samples characterized as having either positive gross beta or alpha radioactivity, hence none required reanalysis using gamma spectroscopy.

The gamma isotopic results for the purge, vent, and drain port composite samples from each HSM are summarized in Appendix A, Table 4 in units of radioactivity per sample. Fission product (Cs-137) radioactivity was identified in three of eighty-seven composite samples; from the drain port of HSM 6, and the purge ports of HSM 7 and 29. Comparable levels of radon daughter progeny (Pb-214, Bi-211, Bi-214, and Tl-210) were also identified. The average MDA of 7E-3 +/- 3E-3 nCi/sample was well below the required LLD of 5 nCi/sample.

TLD results for the TMI-2 ISFSI are presented in Appendix A, Table 5 in units of mrem/d. TLD results include an artificial phantom backscatter correction of 3% to express the results in dose equivalent units. One TLD (Location No. 47) was unaccounted for during October. Monthly standard deviations were generally less than 0.1 mrem/d. Analysis of variance results indicated monthly variances were different than the pre-operational baseline variance measured in March 1999. T-test results indicated monthly mean TLD responses were significantly lower than the pre-operational baseline mean every month due to implementation of a new environmental dosimeter and processing system in June 1999.[7] It was also noted that mean TLD responses for locations in the south southwest perimeter of the TMI-2 ISFSI were generally the highest with a mean response of 0.8 mrem/d. This is attributed to direct radiation from outdoor mixed waste storage areas in CPP-1617, which are located 200 meters from the TMI-2 ISFSI. All other TLD locations had mean responses of 0.6 to 0.7 mrem/d.

The mean response of TLD's located in one building within the 100 meter perimeter of the TMI-2 ISFSI were consistently lower than those at the perimeter fence. The mean response of TLD's located in a second building within the 100 meter perimeter of the TMI-2 ISFSI were consistently higher than those at the perimeter fence. The consistently lower responses at the one building (TLD Location No. 62/63) have been attributed to a building modification which shielded the TLD location from the TMI-2 ISFSI. The consistently higher radiation dose rates at the second building (TLD Location No. 64/65) have been attributed to loaded spent nuclear fuel shipping cask traffic and staging adjacent to this TLD location unrelated to the TMI-2 ISFSI operations. Radiation monitoring at these locations at the 100 meter perimeter was discontinued beginning in July due to extremely low building occupancy factors.

Monthly air sampling gross beta radioactivity results for the TMI-2 ISFSI are presented in Appendix A, Table 6. Gamma spectroscopy results of the composited air samples did not indicate the presence of fission or activation product activity. The required LLD of 0.01 pCi/m^3 for Cs-137 was demonstrated with a calculated MDA of 5.6 pCi/sample for the analytical system, and a composite air sample volume of 8.5E3 m^3, hence 7E-4 pCi/m^3.

DISCUSSION

The TMI-2 ISFSI REMP was conducted in accordance with established procedures. However, due to personnel error, sample media for eleven HSM contamination surveys performed in September 2002 (HSMs 4, 5, 6, 7, 8, 16, 17, 18, 21, 25, and 26) could not be cross-referenced to the surveyed HSMs after gross beta analyses were completed. The contamination survey sample media was composited for gamma spectroscopy analysis, so no data was lost. Analytical results indicated no fission or activation

product activity, with an average Cs-137 MDA of <5.5E-3 +/- 0.7E-3 nCi/sample. With the exception of the discontinued TLD monitoring at the 100 meter perimeter, there were no changes in sampling locations during the monitoring period. With the exception of the one unaccounted for TLD during October, there were no deviations from the established sampling schedule.

Review of the gross beta radioactivity results (all less than MDA) and vent port radiation survey results (stable trend) neither indicate a build up of radioactivity in the vent port HEPA filters, nor a breach of DSC containment. The relatively low loose surface Cs-137 radioactivity detected in three samples is attributed to the resuspension of radioactivity during range fires and dust storms. The loose surface radioactive contamination surveying and airborne radioactivity sampling results indicate there has been no measurable release of radioactive material from the DSCs stored in the HSMs at the ISFSI above and beyond that projected in the Final Environmental Impact Statement (EIS), estimated for 40 CFR 61 reporting purposes, and summarized in Appendix A, Table 7.[8, 9, 10] Radioanalytical results are not significantly different from pre-operational results as well as those projected in the EIS and reported in accordance with 40 CFR 61.

The radiation dosimetry results indicate there has been no measurable increase in ambient background radiation levels outside the TMI-2 ISFSI perimeter fence attributed to storage of the TMI-2 core debris, however the results do indicate an influence from an outdoor mixed waste storage facility adjacent to the ISFSI. The absence of any significant increase in radiation levels outside the TMI-2 ISFSI perimeter fence is also supported by conclusions reached in the EIS.

Calibration and quality control of instrumentation used for gross beta analysis of surface contamination and airborne radioactivity sample media is maintained in accordance with procedures used by the INEEL Radiological Control Program.[11] Radioactive sources used for instrumentation calibration and quality control are traceable to the National Institute of Standards and Technology (NIST).

The dosimetry processor participated in the twelfth environmental dosimetry intercomparison program conducted by the DOE Environmental Measurements Laboratory (EML) during 2000, but intercomparison results have not yet been published by EML.

The radioanalytical laboratory that provides gamma spectroscopy services for composite sample analysis participated in a regularly scheduled intercomparison program conducted by the EML. The intercomparison results for the sample geometry used for composite samples of surface contamination survey and air sample media conducted during 2002 are published.[12, 13] The results are summarized in Appendix A, Table 8. A description of the evaluation criteria can be found at the EML website (www.eml.doe.gov). The evaluation results for Cs-137 identification indicate the INEEL was conservative in their reporting by about 17% to 18%.

It can be concluded from the results of the TMI-2 ISFSI REMP that airborne radioactivity releases and direct radiation exposure from the facility during 2002 did not contribute to any increase in the estimate of maximum potential dose commitment to the general public; characterized as 2.7E-3 mrem/y to the Maximum Exposed Individual reported in the EIS. There were no radioactive liquid effluents released from the facility, hence no radionuclides to report.

REFERENCES

1. Materials License SNM-2508 for the Three Mile Island, Unit 2, Independent Spent Fuel Storage Installation (TAC No's L22283 and L22800), March 19, 1999, Docket No. 72-20.

2. 10 CFR 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste”, *Code of Federal Regulations*, Office of the Federal Register, February 2003.

3. Settlement Agreement between the State of Idaho, Department of the Navy, and the Department of Energy, October 16, 1995.

4. Technical Specifications and Bases for the INEEL TMI-2 Independent Spent Fuel Storage Installation.

5. G. G. Hall, *Impact of AmBeCm Sources on the TMI-2 ISFSI Design Basis,* Engineering Design File 1793, Revision 4, March 15, 2001.

6. NUREG/CR-1507, “Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions”, December 1997.

7. P. E. Ruhter, *New Environmental Dosimeter Response*, letter PER-17-99, July 29, 1999.

8. NUREG-1626, “Final Environmental Impact Statement for the Construction and Operation of an Independent Spent Fuel Storage Installation to Store the Three Mile Island Unit 2 Spent Fuel at the Idaho National Engineering and Environmental Laboratory”, Docket No. 72-20, March 1998.

9. 40 CFR 61, “National Emission Standards for Hazardous Air Pollutants”, Subpart H, “National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities”, *Code of Federal Regulations*, Office of the Federal Register, October 2002.

10. G. G. Hall, *Projected Radionuclide Emissions from the TMI-2 ISFSI,* Engineering Design File 3420, February 25, 2003.

11. INEEL, *Radiological Control Manuals 15B and 15C*.

12. EML-617, "Semi-Annual Report of the Department of Energy, Office of Environmental Management, Quality Assessment Program", June 2002.

13. EML-618, "Semi-Annual Report of the Department of Energy, Office of Environmental Management, Quality Assessment Program", December 2002.

APPENDIX A

Table 1. TMI-2 Core Debris Storage Status.

DSC/HSM	Storage Date	DSC/HSM	Storage Date	DSC/HSM	Storage Date
2/16	03/31/99	16/23	01/04/01	21/8	03/12/01
3/17	07/10/00	18/19	01/11/01	22/7	03/20/01
4/20	10/14/00	14/30	01/19/01	23/6	03/27/01
5/22	10/27/00	17/14	01/26/01	24/5	03/31/01
11/24	11/06/00	15/13	02/02/01	1/4	04/06/01
8/27	11/19/00	19/12	02/10/01	26/3	04/09/01
10/28	11/29/00	12/11	02/15/01	27/29	04/13/01
9/21	12/07/00	6/10	02/20/01	28/2	04/16/01
7/26	12/16/00	25/9	02/26/01	29/1	04/20/01
13/25	12/21/00	20/18	03/05/01		

Table 2. Highest Filter Housing Radiation Level Summary (mrem/h).

HSM	Dose Rate	HSM	Dose Rate	HSM	Dose Rate
1	32	11	30	21	30
2	25	12	45	22	127
3	15	13	27	23	10
4	20	14	45	24	27
5	10	15	Empty	25	50
6	37	16	<1	26	35
7	20	17	50	27	15
8	30	18	70	28	6
9	35	19	80	29	20
10	30	20	70	30	100

Table 3. TMI-2 ISFSI Port Survey Gross Beta/Alpha Results (dpm/100 cm^2).

HSM	Beta	Alpha	HSM	Beta	Alpha	HSM	Beta	Alpha
1	<30	<17	11	<33	<16	21	<33	<17
2	<30	<17	12	<33	<18	22	<30	<18
3	<30	<17	13	<33	<18	23	<30	<15
4	<33	<18	14	<30	<15	24	<33	<18
5	<33	<18	15	Empty		25	<33	<17
6	<33	<18	16	<33	<15	26	<33	<17
7	<33	<18	17	<33	<18	27	<33	<18
8	<33	<18	18	<33	<18	28	<33	<18
9	<33	<18	19	<30	<18	29	<30	<18
10	<33	<18	20	<30	<18	30	<30	<18

Table 4. TMI-2 ISFSI Purge (P), Vent (V), and Drain (D) Port Survey Gamma Isotopic Results (nCi/sample).

HSM	Cs-137 Radioactivity (P, V, D)			HSM	Cs-137 Radioactivity (P, V, D)		
1	<0.6E-2	<0.5E-2	<0.5E-2	16	<0.7E-2	<0.6E-2	<0.6E-2
2	<0.5E-2	<0.5E-2	<0.5E-2	17	<0.6E-2	<0.6E-2	<0.6E-2
3	<0.6E-2	<0.5E-2	<0.6E-2	18	<0.5E-2	<0.6E-2	<0.6E-2
4	<0.6E-2	<0.6E-2	<0.5E-2	19	<0.6E-2	<0.6E-2	<0.6E-2
5	<0.6E-2	<0.6E-2	<1.1E-2	20	<0.6E-2	<0.6E-2	<0.6E-2
6	<1.1E-2	<1.1E-2	3.9E-2	21	<0.6E-2	<0.6E-2	<1.1E-2
7	4.4E-2	<1.2E-2	<1.2E-2	22	<1.1E-2	<1.1E-2	<1.1E-2
8	<0.5E-2	<0.5E-2	<0.5E-2	23	<1.1E-2	<1.1E-2	<1.1E-2
9	<0.5E-2	<0.5E-2	<0.5E-2	24	<1.1E-2	<1.1E-2	<1.1E-2
10	<0.5E-2	<0.5E-2	<0.5E-2	25	<0.5E-2	<0.5E-2	<0.5E-2
11	<1.1E-2	<1.1E-2	<1.1E-2	26	<0.5E-2	<0.6E-2	<0.6E-2
12	<1.1E-2	<1.1E-2	<1.2E-2	27	<0.5E-2	<0.5E-2	<0.5E-2
13	<1.1E-2	<1.1E-2	<1.1E-2	28	<0.5E-2	<0.6E-2	<0.6E-2
14	<1.1E-2	<1.3E-2	<1.4E-2	29	1.1E-2	<0.6E-2	<0.6E-2
15	Empty			30	<0.5E-2	<0.6E-2	<0.6E-2

Table 5. TMI-2 ISFSI TLD Results (mrem/d).

LCTN	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
40	0.4	0.7	0.5	0.6	0.6	0.6	0.8	0.8	0.6	0.7	0.6	0.8
41	0.4	0.7	0.5	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.7
42	0.3	0.6	0.5	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.5	0.7
43	0.4	0.6	0.5	0.5	0.6	0.6	0.7	0.7	0.6	0.6	0.5	0.7
44	0.3	0.6	0.5	0.5	0.6	0.5	0.7	0.8	0.6	0.6	0.6	0.8
45	0.4	0.6	0.5	0.5	0.6	0.5	0.7	0.7	0.6	0.6	0.6	0.7
46	0.4	0.6	0.5	0.5	0.6	0.5	0.7	0.7	0.6	0.6	0.5	0.7
47	0.3	0.7	0.5	0.5	0.6	0.5	0.6	0.7	0.6	N/A	0.5	0.7
48	0.3	0.7	0.5	0.5	0.6	0.5	0.6	0.7	0.6	0.6	0.5	0.7
49	0.4	0.6	0.5	0.5	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.7
50	0.4	0.7	0.5	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.7
51	0.4	0.7	0.6	0.6	0.6	0.6	0.8	0.8	0.7	0.7	0.6	0.8
52	0.4	0.7	0.6	0.6	0.7	0.6	0.8	0.8	0.7	0.7	0.6	0.8
53	0.4	0.7	0.6	0.6	0.7	0.7	0.7	0.9	0.7	0.8	0.7	0.9
54	0.4	0.8	0.6	0.6	0.7	0.8	0.8	0.9	0.7	0.8	0.7	0.9
55	0.4	0.8	0.7	0.7	0.7	0.7	0.8	0.9	0.8	0.8	0.8	0.9
56	0.4	0.8	0.6	0.7	0.7	0.7	0.8	0.9	0.8	0.8	0.8	1.0
57	0.4	0.8	0.7	0.7	0.7	0.7	0.8	1.0	0.8	0.8	0.8	0.9
58	0.4	0.8	0.7	0.7	0.7	0.8	0.9	0.9	0.8	0.8	0.8	1.0
59	0.4	0.8	0.6	0.7	0.8	0.8	0.9	1.0	0.8	0.9	0.8	0.9
60	0.4	0.8	0.6	0.6	0.7	0.7	0.8	0.9	0.8	0.8	0.7	0.9
61	0.4	0.8	0.7	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.8
Mean	0.4	0.7	0.6	0.6	0.6	0.6	0.8	0.8	0.7	0.7	0.6	0.8
62	0.3	0.6	0.4	0.4	0.5	0.4	N/A	N/A	N/A	N/A	N/A	N/A
63	0.3	0.6	0.5	0.4	0.5	0.4	N/A	N/A	N/A	N/A	N/A	N/A
64	0.8	1.3	1.3	1.2	1.1	0.5	N/A	N/A	N/A	N/A	N/A	N/A
65	0.4	0.7	0.6	0.6	0.6	0.5	N/A	N/A	N/A	N/A	N/A	N/A
Mean	0.4	0.8	0.7	0.6	0.7	0.4	N/A	N/A	N/A	N/A	N/A	N/A

Table 6. TMI-2 ISFSI Air Sample Results (pCi/m^3).

Sample Date	Gross Beta	Sample Date	Gross Beta
January	0.024	July	0.017
February	0.011	August	0.019
March	0.011	September	0.016
April	0.004	October	0.009
May	0.013	November	0.015
June	0.019	December	0.018

Table 7. Estimated Airborne Radioactive Material Releases During Normal Operations in 2002 (Ci/y).

Radionuclide	Release	Radionuclide	Release	Radionuclide	Release
Cs-137	4.6E-2	Co-60	5.7E-4	H-3	8.0E+2
Sr-90	3.7E-2	Pu-239	7.8E-4	Eu-155	1.3E-4
Pu-241	2.3E-2	Sm-151	6.2E-4	Pu-238	1.9E-4
Kr-85	6.2E+3	Pu-240	4.0E-4	Sb-125	4.9E-5
Pm-147	6.0E-4	Ni-63	3.7E-4	Cs-134	1.4E-5
Am-241	1.3E-7	Eu-154	2.2E-4	I-129	7.4E-2

Table 8. Gamma Spectroscopy Intercomparison Results for June and December 2002 (Bq/filter).

Radionuclide	INEEL Value (Error)	EML Value (Error)	INEEL/EML	Evaluation
Co-60	32.900 (1.180)	30.520 (0.652)	1.078	Acceptable
Cs-137	33.400 (1.130)	28.230 (0.701)	1.183	Acceptable[1]
Mn-54	45.700 (1.690)	38.530 (0.867)	1.186	Acceptable
Co-60	24.600 (1.180)	23.000 (0.059)	1.070	Acceptable
Cs-137	38.000 (1.460)	32.500 (0.777)	1.169	Acceptable[1]
Mn-54	60.600 (2.870)	52.200 (1.170)	1.161	Acceptable

[1]Acceptable with warning, indicating results are within the middle 90% of historical data, but outside the middle 70% of historical data.