DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96, P.O. BOX 9
ROMULUS, NEW YORK 14541-0009

September 2, 2004

REPLY TO
ATTENTION OF
Caretaker Office

MS16
J-7
SUC-1275
04008526

Mr. James Kottan
U.S. Nuclear Regulatory Commission
Region 1
Division of Nuclear Materials Safety
Nuclear Materials Safety Branch 2
475 Allendale Road
King of Prussia, PA 19406-1415

RECEIVED
REGION 1
'04 SEP -7 AM 10

SUBJECT: Response to Request for Additional Information Concerning NRC License Termination Report for Seneca Army Depot Activity (Control Number 135163)- letter from NRC dated August 9, 2004

Dear Mr. Kottan,

The United States Army is pleased to submit the additional information requested regarding the License Termination Report for Seneca Army Depot Activity (SEDA) in Romulus, New York. The NRC, in a letter dated August 9, 2004, made the request for additional information.

The goal of the License Termination Report for SEDA, which follows the *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM; NRC, 2000) and other applicable guidance, is to demonstrate that the license termination requirements for NRC license SUC-1275 (NRC Docket No. 040-08526) have been met and to remove SEDA from Licenses SUC-1380, 45-16023-01NA, SUB-834, BML 12-00722-07, and STC-133.

Attached with this letter are revised Tables 3-11, 3-13, 4-10, 4-12, and 5-9 from the License Termination Report for SEDA. Please replace the tables submitted in the June 2004 Report with the revised tables.

We appreciate the opportunity to provide you with this additional information for a report that is of great importance to the United States Army. Should you have any questions regarding the document, please do not hesitate to contact me (607) 869-1235.

Sincerely,

Stephen M. Absolom
Installation Manager

135163

NMSS/RGN1 MATERIALS-002

Response to Comments from the Nuclear Regulatory Commission

Subject: NRC License Termination Report
Seneca Army Depot Activity
Romulus, New York

Comments Dated: August 9, 2004

Date of Comment Response: September 2, 2004

General Comments:

Comment 1: This is in reference to your letter dated June 15, 2004 requesting to amend Nuclear Regulatory Commission License No. SUC-1275. In order to continue our review, we need the following additional information.

Response 1: Acknowledged.

Comment 2: In accordance with 10 CFR 2.390, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC website at http://www.nrc.gov/reading-rm.html.

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office and refer mail to Mail Control No. 135163. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5214.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we shall assume that you do not wish to pursue your application.

Response 2: Acknowledged.

Specific Comments:

Comment 1: Your compliance approach does not appear to follow that recommended in MARSSIM. The null hypothesis recommended for use in MARSSIM is: "the residual radioactivity in the survey unit exceeds the release criteria." This statement directly addresses the issue of compliance with the DCGL, and requires significant evidence that the residual radioactivity in the survey unit is less than the DCGL to reject the null hypothesis and pass the survey unit. Distinguishability from background is not addressed under this hypothesis. Additionally, Appendix 1A of your submittal, License Termination and License Release Plan (LTP), Table 5-4, footnote 6, states that the alpha value in Table 5-4 is the acceptable level of Type I decision error, when the null hypothesis is that survey unit exceeds the clean-up standard. This statement is consistent with the recommended null hypothesis in

MARSSIM. Please discuss the statistical methods you used for determining compliance to the DCGLs relative to the null hypothesis recommended in MARSSIM and presented in Table 5-4 of your LTP. Also please provide the retrospective power curves.

Response 1: The MARSSIM guidance suggests two possible scenarios for a null hypothesis:

- Scenario A: Where the assumption for the null hypothesis is that the survey unit exceeds the release criterion.
- Scenario B: Where the assumption for the null hypothesis is that the survey unit is indistinguishable from background.

In determining compliance with the release criteria, it was decided that Scenario B would best fit the situation at SEDA because the background data exhibited variability and the primary radionuclides of concern (U-234, U-235, and U-238, as depleted uranium) were present in background. These criteria for use of Scenario B are based on recommendations by NUREG-1505 (NRC, 1998) and other references (Abelquist, 2001). Per NUREG-1505, a Kruskal-Wallis test was performed on the 2002 Igloo background data set that was collected from five unaffected concrete Igloos and used in the evaluation of the DU Storage Igloos (Section 3 of the LTR). Based on the alpha, beta, and gamma measurements from each of the five igloos and a test Type I (α) error of 0.05, the datasets collected from one type of material (i.e., concrete) demonstrated sufficient variability to warrant the use of Scenario B (see attached Table A). Additional background data collected at Building 722 (used in the evaluation of the DU Storage Building data) were collected from several different types of material (e.g., concrete, tile, wood) that also demonstrated significant variability.

In addition, previously conducted MARSSIM-based radiological surveys (at SEAD-12) and CERCLA-based chemical risk assessments at SEDA used the "indistinguishable from background" null hypothesis during the statistical analysis of data. The use of Scenario B maintains consistency with these previous investigations.

The statistical method that was used to accept or reject the null hypothesis followed that recommended in Section 8.4 of MARSSIM. Type I (α) and Type II (β) errors were both conservatively set to 0.05. In the License Termination Plan (LTP) for SEDA it was stated that the Type II (β) error would be 0.1; however, a Type II (β) error of 0.05 was used because a smaller β error increases the statistical power of a test (NUREG-1505). In addition, it is implied in Table 4-5 of the LTP that the Scenario A null hypothesis would be used; however, as stated above, Scenario B was used because of the background variability and for consistency with previous investigations. The statistical process used is detailed in Section 2.6 of the License Termination Report.

It is recognized that power curves can be useful in illustrating that an adequate number of measurements have been collected to support the acceptance of the null hypothesis. Based on the

above information, the standard deviations provided (see response to Specific Comment 4 below), and the abundance of sample measurements collected, it is believed that sufficient statistical power to support our conclusions has been provided. However, if after reviewing these responses, NRC still wishes to request retrospective power curves to further support that there was adequate statistical power to support our conclusions, they can be provided.

Comment 2: MARSSIM recommends that when gross activity DCGLs are used, an appropriate weighted total efficiency should be used for the radiological surveys. ***[A]*** Please provide the calculations for determining the weighted total efficiencies used for the radiological surveys. If weighted total efficiencies were not used, please provide the basis for not using weighted total efficiencies. ***[B]*** In addition, MARSSIM states that the total efficiency for survey instruments may be considered to represent the product of two factors, the instrument efficiency and the source efficiency. Please provide the instrument efficiencies and source efficiencies used in the determination of the total efficiencies for the radiation survey instruments used to perform the radiological surveys. If the total efficiencies [sic], please provide the basis for not using these efficiencies for determining the total efficiency.

Response 2: **[A]** Given the primary constituents of concern (i.e., depleted uranium) at the site, it is believed that weighted efficiencies would not be necessary. The U-238, U-235, and U-234 present in depleted uranium have similar decay characteristics (e.g., alpha emissions between 4.2 and 4.7 MeV, low-energy gamma emissions). The instrument efficiencies were calculated using the daily instrument response checks to similar energy and radiation type (Th-230 with alpha emission at 4.6-4.7 MeV and Am-241 gamma emissions at 13, 26.4, and 59.5 keV) and similar measurement geometry (approximately 1 cm [0.39 inches] for alpha/beta instruments and 1 inch [2.54 cm] for gamma instruments).

[B] Both the instrument and source efficiency were considered in the calculation of the MDA, as shown in Response 3 below. The source efficiency was assumed to be 0.54 for all radiation types, based on the example calculation for scanning on concrete surfaces in Section 6 of NUREG-1507 (NRC, 1997). Only the instrument efficiency was used in the conversion of DCGL from units of dpm/100cm^2 to cpm, per the example data evaluation described in MARSSIM Appendix A.

Comment 3: Please provide examples of the calculations for the MDAs presented in Tables 3-3, 4-3, 5-3, and 6-2.

Response 3: MDAs for direct and scanning measurements were calculated in an Excel spreadsheet (see attached Table B) for each instrument using the following equations from MARSSIM:

$$MDCR = d' \sqrt{b_i} \times (60/i)$$

$$MDA = \frac{MDCR}{\sqrt{p}\varepsilon_i\varepsilon_s \frac{probe\ area}{100\ cm^2}}$$

where:

$MDCR$ = minimum detectable count rate (cpm)

d' = index of sensitivity; for a correct detection rate of 95% and a false positive rate of 60%, d' is equal to 1.38.

b_i = background counts during observation interval i, using the average measurement from the background dataset appropriate to the site (e.g., igloos or buildings).

i = scanning observation interval, equal to 1 second for beta and gamma scanning and 2 seconds for alpha scanning (since alpha and beta scanning was performed simultaneously, the 2-second observation interval was used).

p = surveyor efficiency, equal to 0.5 for scanning and 1.0 for direct measurements.

ε_i = instrument-specific efficiency

ε_s = surface efficiency, equal to 0.54.

The direct measurement MDAs for all instruments were calculated using the above equations, but modified to reflect a 1-minute, rather than a 1- or 5-second, observation interval, and a surveyor efficiency of 100% rather than 50%. Both the scanning and direct measurement MDAs were calculated with a d' of 1.38, corresponding to a measurement true positive rate of 95% and a false positive rate of 60%, per MARSSIM (Section 6.7.2).

Comment 4: Please provide the method used to determine the mean cpm in Tables 3-11 and 4-10. Also please provide the standard deviation for these mean values.

Response 4: Upon review, the averages originally presented in Tables 3-11 and 4-10 were found to be incorrect because they did not report weighted averages. In the revised tables provided, for each survey grid that was scanned, a mean scanning measurement was determined by taking the average of the minimum and maximum scanning results. To determine a mean scanning measurement for the survey unit, the average of the individual survey grid averages was then calculated. The standard deviations of each mean survey unit scanning measurement were also calculated. Updated versions of Tables 3-11 and 4-10 have been attached to this letter.

Comment 5: ***[A]*** MARSSIM states that sample results should be reported along with their associated uncertainties. For smear sample results in Tables 3-13, 4-12, 5-9, and 6-5, please provide the uncertainties for the results and the standard deviation for the average results. ***[B]*** Also, for the sample results in Table 3-14 and 4-13, please define the reported uncertainties. For example, do they represent the counting uncertainty (at some confidence interval) or the total propagated uncertainty (at some confidence interval).

Response 5: [A] Smear samples for the DU Igloos (Table 3-13), the DU Buildings (Table 4-12), and Building 612 (Table 5-9) were analyzed by an offsite laboratory and the measurement uncertainties for the smear results were not reported. The standard deviations for the calculated survey unit averages have been added to their respective tables (the revised tables are attached). Standard deviations for the smears collected at Warehouse 356 (Table 6-5), which were analyzed on-site using a NMC gas-proportional counter, were not reported because the results were primarily all below the lower limit of detection (LLD). It should be noted that per MARSSIM (Section 8.5.3), smears were used as a diagnostic tool to determine if further investigation is necessary, not as a means of determining compliance with the release criteria.

[B] The uncertainties for the results listed in Table 3-14 and 4-13 are considered to be the total propagated uncertainty at a 95% confidence level.

Comment 6: [A] Section 5.3.3 of the report on page 5-3 states: "Per MARSSIM for Class 1 survey units all direct and scanning measurements from each building were compared directly with the $DCGL_{EMC}$ for DU". A following sentence in Section 5.3.3 states: "Scanning measurements from Building 612 were not available to perform the $DCGL_{EMC}$ comparison". Table 5-3 indicates that the instrumentation used for the survey of Building 612 included a floor monitor. However, no scanning measurements are included in the data tables for Section 5 of the report. Were scanning measurements made during the survey of Building 612? If so, please provide these measurements. [B] Table 5-3 also reports an efficiency of 0.75% for the FIDLER, resulting in a scanning MDA of 167,867 dpm/100cm2 which is above the DCGLW for DU. The FIDLER efficiencies presented in Table 3-3 and 4-3 are 15%. Please explain the difference in the FIDLER efficiencies.

Response 6: [A] The surveys for Building 612 were completed in 1999 by the Army Radiological Assistance Team and the data collected has been evaluated using the MARSSIM guidance. Although data logger printouts exist indicating possible alpha/beta scanning with the floor monitor and hand-held gas proportional instruments, the manner in which the scanning was performed cannot be verified, and it was determined that the data should not be used. Records indicate that gamma scanning was performed using the FIDLER; however, that data cannot be located. Based on the analysis for DU, no datasets from Building 612 exceeded the $DCGL_W$, and only one dataset was determined to be above background, contributing a dose of 0.6 mrem/yr. Without the FIDLER scanning data to evaluate, it is still believed that there is sufficient information to conclude that Building 612 meets the release criterion for unrestricted use.

[B] Both efficiencies cited in the comment were determined by the daily FIDLER response checks using an Am-241 source. The earlier surveys conducted in 1999 by the Army at Building 612 were performed by taking measurements at a distance of 1 foot (0.30 meters) from the surface. Consequently, the instrument checks during the Building 612 surveys were performed using a 1-foot

(0.30 meters) jig. For the subsequent surveys in 2002 at the DU Storage Igloos and DU Storage Buildings, measurements were taken at a distance of approximately 1 inch (2.54 cm) from the surface. The response check jig used during the 2002 surveys had a distance from the source of 1 inch (2.54 cm).

REFERENCES:

Abelquist, 2001. *Decommissioning Health Physics: A Handbook for MARSSIM Users*, Institute of Physics Publishing, Philadelphia, PA.

NRC, 1997. *Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions*, NUREG-1507, U.S. Nuclear Regulatory Commission, December.

NRC, 1998. *A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys*, NUREG-1505, U.S. Nuclear Regulatory Commission.

Table A
Kruskal-Wallis Test (per NUREG-1505)
(see Specific Comment-Response 1 from Response to Comments from the NRC Letter dated August 9, 2004)
License Termination Report
Seneca Army Depot Activity

Background Dataset	Reference Area	Average Measurement (cpm)	St Dev (cpm)	Sum of Ranks	Number of Measurements	K	k-1	Kc	K > Kc?
2002 Igloo Alpha	A1107	13.3	19	3800	30	75.1	4	9.5	Yes
	B0806	6.7	15	2841.5	30				
	C0912	1.8	2	1379.5	30				
	D0405	2.1	1	1771.5	30				
	E0403	2.8	6	1532.5	30				
2002 Igloo Beta	A1107	242.8	78.1	2682.5	30	12.5	4	9.5	Yes
	B0806	211.6	53.7	1935.5	30				
	C0912	204.7	39.1	1748.5	30				
	D0405	237.2	48.9	2669	30				
	E0403	215.1	42.1	2289.5	30				
2002 Igloo Gamma	A1107	6695.8	897.8	2150	30	73.9	4	9.5	Yes
	B0806	7002.2	843.2	2868.5	30				
	C0912	4616.1	518.3	620	30				
	D0405	7168.0	870.4	3309	30				
	E0403	6741.1	1009.9	2377.5	30				

K calculated using equation 13-3 from NUREG-1505
k-1 is based on k=5 datasets
Kc is from Table 13.1, NUREG-1505 for k-1=4 and an α of 0.05.
If K > Kc, the null hypothesis that there is no difference between the populations is rejected (i.e., variability exists between the datasets).

Table B
MDA Calculations
(see Specific Comment-Response 3 from Response to Comments from the NRC Letter dated August 9, 2004)
License Termination Report
Seneca Army Depot Activity

Calculation for MDA per MARSSIM Section 6.7.2 for Alpha Phoswich

Value of d-prime 1.38
This is from Table 6.5 per MARSSIM example on page 6-41.
Therefore the true positive proportion is 95% and false positive percent is 60%.

	First Stage	Second Stage	Static 1 min	Static 10 min
Value of b sub i	0.17	0.42	5.00	50.00
Background Count Rate	5	5	5	5
Count time (sec)	60	60	60	60
Observ. Interval (sec)	2	5	60	600
Value of s sub i	0.56	0.89	3.09	9.76
MDCR (cpm)	17	11	3	1
MDCR Surveyor (cpm)	24	15	3	1
Instrument Efficiency	15%	15%	15%	15%
Surface Efficiency	0.54	0.54	0.54	0.54
Surveyor Efficiency	0.5	0.5	1	1
Probe Area (cm2)	75	75	75	75
MDCR Surveyor (dpm)	291	184	38	12
MDA (dpm/100cm2)	388	246	50	16

Calculation for MDA per MARSSIM Section 6.7.2 for Beta Phoswich

Value of d-prime 1.38
This is from Table 6.5 per MARSSIM example on page 6-41.
Therefore the true positive proportion is 95% and false positive percent is 60%.

	First Stage	Second Stage	Static 1 min	Static 10 min
Value of b sub i	3.70	18.50	222.00	2220.00
Background Count Rate	222	222	222	222
Count time (sec)	60	60	60	60
Observ. Interval (sec)	1	5	60	600
Value of s sub i	2.65	5.94	20.56	65.02
MDCR (cpm)	159	71	21	7
MDCR Surveyor (cpm)	225	101	21	7
Instrument Efficiency	11%	11%	11%	11%
Surface Efficiency	0.54	0.54	0.54	0.54
Surveyor Efficiency	0.5	0.5	1	1
Probe Area (cm2)	75	75	75	75
MDCR Surveyor (dpm)	3792	1696	346	109
MDA (dpm/100cm2)	5056	2261	462	146

Calculation for MDA per MARSSIM Section 6.7.2 for FIDLER

Value of d-prime 1.38
This is from Table 6.5 per MARSSIM example on page 6-41.
Therefore the true positive proportion is 95% and false positive percent is 60%.

	First Stage	Second Stage	Static 1 min	Static 10 min
Value of b sub i	108	542	6500	390000
Background Count Rate	6500	6500	6500	6500
Count time (sec)	60	60	60	60
Observ. Interval (sec)	1	5	60	3600
Value of s sub i	14.36	32.12	111.26	861.81
MDCR (cpm)	862	385	111	14
MDCR Surveyor (cpm)	1219	545	111	14
Instrument Efficiency	15%	15%	15%	15%
Surface Efficiency	0.54	0.54	0.54	0.54
Surveyor Efficiency	0.5	0.5	1	1
Probe Area (cm2)	126	126	126	126
MDCR Surveyor (dpm)	15047	6729	1374	177
MDA (dpm/100cm2)	11942	5341	1090	141

Table 3-11 (revised September 2004)
Summary of Igloo Scanning Results
DU Storage Igloos
License Termination Report
Seneca Army Depot Activity

Igloo	Number of Measurements	Alpha/Beta Scanning Minimum (cpm) [1,2]	Alpha/Beta Scanning Maximum (cpm)	Average of Alpha/Beta Scanning Mean (cpm)	Standard Deviation of Alpha/Beta Scanning Mean (cpm)	Is Maximum Reading Greater than Alpha/Beta Flag? [3]	Gamma Scanning Minimum (cpm)	Gamma Scanning Maximum (cpm)	Gamma Scanning Mean (cpm)	Standard Deviation of Gamma Scanning Mean	Is Maximum Reading Greater than Alpha/Beta Flag? [3]
A0201	30	100	340	236	48	No	1500	7000	4423	1077	No
A0316	30	80	340	208	38	No	1000	7000	4308	1251	No
A0317	30	80	340	210	41	No	2000	10000	6962	1677	No
A0508	30	60	400	201	46	No	2000	11000	7115	1816	No
A0701	30	60	380	201	42	No	1000	7000	4154	774	No
A0706	30	100	700	240	84	No	3000	10000	6962	1198	No
A0707	30	60	460	226	59	No	3000	11000	7346	987	No
A0710	30	100	460	242	49	No	2000	6000	4462	803	No
A0711	30	100	500	233	57	No	3000	10000	7038	1127	No
A0901	30	100	500	243	55	No	1800	6000	4223	850	No
A0905	30	100	480	249	63	No	1000	7000	4231	665	No
A1107	30	100	900	261	93	No	2000	8000	6423	1205	No
A1108	30	60	400	193	47	No	3000	8000	6500	1080	No
A1109	30	100	400	222	45	No	1000	7000	4231	927	No
B0109	30	80	360	192	42	No	3000	8000	6615	893	No
B0411	30	100	360	218	33	No	2000	7000	4077	732	No
B0501	30	60	300	178	34	No	1000	10000	6538	1738	No
B0602	30	80	360	190	35	No	3000	10000	6885	1044	No
B0603	30	80	360	195	41	No	3000	10000	7077	976	No
B0609	30	100	400	219	32	No	3000	10000	7231	1285	No
B0610	30	80	340	195	36	No	3000	10000	7038	1163	No
B0701	30	80	460	213	47	No	3000	11000	7154	1281	No
B0705	30	80	380	210	51	No	3000	10000	7000	1118	No
B0707	30	80	380	208	46	No	3000	10000	6654	774	No
B0708	30	80	300	178	29	No	2000	10000	6808	1164	No
B0709	30	40	360	202	47	No	2000	10000	6500	1258	No
B0711	30	80	340	202	29	No	3000	10000	7000	1080	No
B0801	30	100	280	188	18	No	1000	7000	4269	696	No
B0802	30	60	360	198	38	No	2000	7000	4154	516	No
B0804	30	100	380	202	33	No	1000	6000	4038	721	No
B0806	30	80	600	218	61	No	3000	10000	7115	870	No
B0809	30	80	600	230	89	No	3000	10000	6731	881	No
B0810	30	100	440	231	57	No	3000	10000	6923	1115	No
B0811	30	60	380	195	39	No	3000	10000	7269	1092	No
B0909	30	80	500	212	69	No	3000	11000	7308	1200	No
C0203	30	80	380	200	42	No	3000	10000	6769	1013	No
C0303	30	60	600	210	94	No	3000	9000	6385	1024	No
C0307	30	80	600	219	74	No	3000	9000	6462	1050	No
C0308	30	120	600	232	84	No	3000	10000	6769	971	No
C0401	30	80	600	204	95	No	3000	10000	7115	982	No
C0403	30	60	500	193	53	No	3000	11000	6962	1050	No
C0405	30	40	500	201	58	No	3000	9000	6615	939	No
C0406	30	100	500	218	63	No	3000	10000	6962	1163	No
C0407	30	80	440	195	47	No	3000	10000	6923	1058	No
C0408	30	40	300	182	26	No	3000	9000	6577	1115	No
C0501	30	80	300	174	21	No	3000	10000	6769	927	No
C0503	30	100	500	200	47	No	3000	10000	6962	877	No
C0504	30	100	300	186	29	No	3000	10000	6846	1028	No
C0505	30	100	500	198	52	No	3000	10000	6923	1058	No
C0508	30	80	500	191	55	No	3000	11000	6962	946	No

Table 3-11 (revised September 2004)
Summary of Igloo Scanning Results
DU Storage Igloos
License Termination Report
Seneca Army Depot Activity

Igloo	Number of Measurements	Alpha/Beta Scanning Minimum (cpm) [1,2]	Alpha/Beta Scanning Maximum (cpm)	Average of Alpha/Beta Scanning Mean (cpm)	Standard Deviation of Alpha/Beta Scanning Mean (cpm)	Is Maximum Reading Greater than Alpha/Beta Flag? [3]	Gamma Scanning Minimum (cpm)	Gamma Scanning Maximum (cpm)	Gamma Scanning Mean (cpm)	Standard Deviation of Gamma Scanning Mean	Is Maximum Reading Greater than Alpha/Beta Flag? [3]
C0510	30	80	600	202	65	No	3000	10000	6808	947	No
C0511	30	100	300	183	26	No	3000	9000	6038	967	No
C0513	30	40	300	172	33	No	3000	10000	6615	820	No
C0603	30	60	600	183	73	No	3000	10000	6577	838	No
C0604	30	80	600	186	68	No	2000	9000	6346	966	No
C0605	30	80	400	209	51	No	2000	9000	6500	1021	No
C0606	30	60	300	184	32	No	3000	9000	6346	899	No
C0608	30	60	420	193	44	No	2000	7000	5000	1137	No
C0701	30	80	600	193	71	No	3000	9000	6577	1058	No
C0706	30	80	600	194	65	No	3000	9000	6500	1000	No
C0707	30	80	320	204	36	No	3000	10000	6692	902	No
C0708	30	80	360	192	34	No	3000	10000	6846	1008	No
C0801	30	80	320	171	29	No	3000	10000	7154	1049	No
C0803	30	80	280	172	21	No	3000	9000	6538	989	No
C0807	30	80	320	188	29	No	3000	9000	6500	979	No
C0809	30	60	420	192	47	No	3000	9000	6654	1068	No
C0901	30	60	450	177	55	No	3000	9000	6962	1181	No
C0902	30	100	420	209	58	No	3000	10000	7038	1089	No
C0906	30	80	400	197	56	No	3000	11000	7192	1217	No
C0907	30	80	340	184	28	No	3000	9000	6654	1049	No
C0908	30	100	460	205	46	No	3000	10000	7077	1134	No
C0909	30	100	480	194	38	No	2000	7000	4423	813	No
C0912	30	40	420	201	41	No	2000	6000	4327	800	No
D0104	30	80	500	236	58	No	2000	7000	4038	721	No
D0105	30	100	420	216	39	No	2000	6000	3962	477	No
D0107	30	120	450	258	43	No	1000	10000	4577	1239	No
D0108	30	80	600	192	87	No	3000	9000	6577	1017	No
D0110	30	80	360	188	36	No	2000	6000	3808	522	No
D0113	30	40	400	199	41	No	3000	9000	6615	893	No
D0206	30	80	360	198	45	No	2000	6000	3962	431	No
D0207	30	80	440	218	59	No	2000	6000	4000	577	No
D0305	30	100	340	217	48	No	3000	10000	6923	932	No
D0306	30	80	400	188	46	No	3000	11000	7192	1128	No
D0312	30	80	340	198	35	No	2000	10000	6692	1234	No
D0401	30	80	400	197	43	No	2000	6000	3923	572	No
D0405	30	100	400	215	59	No	2000	11000	7115	1244	No
D0406	30	100	400	208	46	No	2000	11000	7385	1402	No
D0407	30	60	440	202	45	No	3000	10000	6731	949	No
D0413	30	100	400	208	61	No	3000	11000	7231	1268	No
D0601	30	100	400	207	46	No	3000	10000	7038	1145	No
D0604	30	100	400	235	35	No	3000	10000	6808	723	No
D0607	30	80	360	193	39	No	2000	6000	3885	506	No
D0704	30	100	440	191	43	No	3000	10000	7115	961	No
D0705	30	100	300	204	25	No	3000	10000	7115	1044	No
D0711	30	60	420	214	51	No	2000	6000	3808	522	No
D0712	30	60	420	206	49	No	1000	7000	4346	658	No
D0801	30	100	280	183	17	No	1000	6000	4115	768	No
D0805	30	100	420	229	35	No	2000	10000	6769	1317	No
E0103	30	80	600	212	51	No	2000	10000	7115	1227	No
E0105	30	100	600	234	89	No	2000	11000	7269	1467	No

Table 3-11 (revised September 2004)
Summary of Igloo Scanning Results
DU Storage Igloos
License Termination Report
Seneca Army Depot Activity

Igloo	Number of Measurements	Alpha/Beta Scanning Minimum (cpm) (1,2)	Alpha/Beta Scanning Maximum (cpm)	Average of Alpha/Beta Scanning Mean (cpm)	Standard Devintion of Alpha/Beta Scanning Mean (cpm)	Is Maximum Reading Greater than Alpha/Beta Flag? (3)	Gamma Scanning Minimum (cpm)	Gamma Scanning Maximum (cpm)	Gamma Scanning Mean (cpm)	Standard Deviation of Gamma Scanning Mean	Is Maximum Reading Greater than Alpha/Beta Flag? (3)
E0112	30	80	400	210	53	No	3000	10000	7000	1275	No
E0211	30	80	500	194	51	No	3000	11000	7077	1239	No
E0301	30	80	340	203	29	No	1000	7000	4231	665	No
E0302	30	60	400	212	46	No	3000	8000	6538	1145	No
E0303	30	100	420	191	57	No	2000	11000	7077	1397	No
E0312	30	60	380	179	43	No	2000	10000	6692	1109	No
E0402	30	80	340	185	27	No	3000	8000	6538	1145	No
E0403	30	80	440	212	44	No	2000	11000	7077	1718	No
E0410	30	80	400	196	43	No	2000	11000	7038	1520	No
E0411	30	80	300	185	30	No	1000	7000	4192	805	No
E0413	30	100	320	213	34	No	3000	9000	6731	1129	No
E0504	30	100	360	233	26	No	3000	10000	7000	1275	No
E0506	30	100	400	218	41	No	2000	11000	7038	1361	No
E0508	30	80	380	215	37	No	3000	10000	7154	1197	No
E0510	30	100	400	222	36	No	2000	12000	7423	1441	No
E0512	30	60	300	173	36	No	1000	7000	4231	971	No
E0602	30	100	1000	255	195	No	1000	6000	4192	663	No
E0604	30	100	600	232	84	No	1000	7000	4269	665	No
E0609	30	100	1200	278	222	No	1000	7000	4308	723	No
E0610	30	100	400	212	44	No	1000	7000	4423	838	No
E0702	30	80	460	214	50	No	1000	8000	4346	922	No
E0706	30	80	500	212	46	No	3000	8000	6462	1145	No
E0711	30	60	300	182	34	No	2000	8000	6269	1301	No
E0801	30	80	400	220	29	No	1000	7000	4346	689	No
E0802	30	100	380	227	44	No	1000	6000	4038	776	No

Notes:
(1) All Alpha/Beta measurements collected in the igloos were collected with a phoswich detector.
(2) cpm = counts per minute
(3) The scanning flag values for measurements in the Class 3 survey units are based on the gross activity DCGL for DU.
Average background is included in the flag value. The alpha/beta flag value, which is 6428 cpm for the phoswich detector, is the sum of the individual alpha and beta DU DCGLw's. The Gamma FIDLER flag value is 12465 cpm.

Table 3-13 (revised September 2004)
Summary of Smear Sampling Results [1, 2, 3]
DU Storage Igloos
NRC License Termination Report
Seneca Army Depot Activity

Igloo	Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)				Tritium Beta (dpm)			
		Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
A0201	30	0.0	0.2	0.5	1.4	0.0	0.9	1.8	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A0316	30	0.0	0.1	0.3	1.4	0.0	1.4	2.2	6.3	0.0	0.0	0.0	0.0	0.0	0.3	1.9	10.5
A0317	30	0.0	0.2	0.5	1.6	0.0	0.7	1.7	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A0508	30	0.0	0.2	0.4	1.2	0.0	0.7	1.5	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A0701	30	0.0	0.2	0.5	2.0	0.0	1.2	2.2	7.5	0.0	0.0	0.0	0.0	-- [5]	--	--	--
A0706	30	0.0	0.8	1.9	10.0	0.0	5.5	9.5	53.9	0.0	0.0	0.0	0.0	--	--	--	--
A0707	30	0.0	0.2	0.7	3.7	0.0	2.5	3.6	15.7	0.0	0.0	0.0	0.0	--	--	--	--
A0710	30	0.0	0.1	0.3	1.2	0.0	3.0	4.6	16.8	0.0	0.0	0.0	0.0	--	--	--	--
A0711	30	0.0	0.3	0.8	3.8	0.0	2.9	4.4	15.5	0.0	0.0	0.0	0.0	--	--	--	--
A0901	30	0.0	0.8	3.0	16.6	0.0	2.8	10.0	55.0	0.0	2.4	13.0	71.0	--	--	--	--
A0905	30	0.0	0.5	1.8	9.8	0.0	4.6	12.3	68.2	0.0	1.6	8.6	47.2	--	--	--	--
A1108	30	0.0	0.3	1.1	5.8	0.0	1.0	3.4	16.4	0.0	0.0	0.0	0.0	--	--	--	--
A1109	30	0.0	0.0	0.0	0.0	0.0	0.6	1.6	5.6	0.0	0.0	0.0	0.0	--	--	--	--
B0109	30	0.0	0.1	0.4	1.4	0.0	2.5	5.0	21.5	0.0	0.0	0.0	0.0	--	--	--	--
B0411	30	0.0	0.0	0.0	0.0	0.0	3.1	3.8	13.1	0.0	0.0	0.0	0.0	--	--	--	--
B0501	30	0.0	0.0	0.0	0.0	0.0	2.1	3.4	15.3	0.0	0.0	0.0	0.0	--	--	--	--
B0602	30	0.0	0.0	0.0	0.0	0.0	1.9	2.7	8.1	0.0	0.0	0.0	0.0	--	--	--	--
B0603	30	0.0	0.1	0.3	1.8	0.0	1.0	2.2	6.3	0.0	0.0	0.0	0.0	--	--	--	--
B0609	30	0.0	0.4	0.7	2.2	0.0	5.8	4.7	16.2	0.0	0.0	0.0	0.0	--	--	--	--
B0610	30	0.0	0.1	0.4	1.4	0.0	1.4	2.1	6.3	0.0	0.0	0.0	0.0	--	--	--	--
B0701	30	0.0	0.1	0.6	2.8	0.0	3.4	3.7	11.3	0.0	12.5	23.2	61.8	--	--	--	--
B0705	30	0.0	0.2	0.5	1.8	0.0	2.7	3.0	8.2	0.0	0.0	0.0	0.0	--	--	--	--
B0707	30	0.0	0.1	0.4	1.9	0.0	2.3	2.9	9.9	0.0	0.0	0.0	0.0	--	--	--	--
B0708	30	0.0	0.0	0.0	0.0	0.0	0.3	1.0	3.6	0.0	9.1	20.7	60.7	--	--	--	--
B0709	30	0.0	0.0	0.2	1.1	0.0	2.5	2.3	6.0	0.0	0.0	0.0	0.0	--	--	--	--
B0711	30	0.0	0.2	0.5	1.9	0.0	2.6	2.3	6.9	0.0	3.6	13.8	57.8	--	--	--	--
B0801	30	0.0	0.3	0.6	2.2	0.0	1.4	2.3	6.8	0.0	0.0	0.0	0.0	--	--	--	--
B0802	30	0.0	0.0	0.0	0.0	0.0	0.3	1.1	5.2	0.0	1.6	8.5	46.8	--	--	--	--
B0804	30	0.0	0.1	0.3	1.6	0.0	0.3	1.0	3.3	0.0	10.5	21.8	68.5	--	--	--	--
B0809	30	0.0	0.1	0.3	1.0	0.0	1.0	1.9	6.1	0.0	0.0	0.0	0.0	--	--	--	--
B0810	30	0.0	0.1	0.3	1.1	0.0	1.1	2.1	6.8	0.0	0.0	0.0	0.0	--	--	--	--
B0811	30	0.0	0.2	1.1	5.9	0.0	1.1	3.1	15.7	0.0	1.5	8.3	45.5	--	--	--	--
B0909	30	0.0	0.3	0.7	2.5	0.0	2.6	3.4	11.7	0.0	0.0	0.0	0.0	--	--	--	--
C0203	30	0.0	0.0	0.0	0.0	0.0	0.1	0.7	4.1	0.0	1.6	8.6	47.1	--	--	--	--
C0303	30	0.0	0.2	1.0	5.7	0.0	0.6	2.6	14.1	0.0	0.0	0.0	0.0	--	--	--	--
C0307	30	0.0	0.1	0.6	3.1	0.0	1.0	3.4	15.4	0.0	0.0	0.0	0.0	--	--	--	--

Table 3-13 (revised September 2004)
Summary of Smear Sampling Results [1, 2, 3]
DU Storage Igloos
NRC License Termination Report
Seneca Army Depot Activity

Igloo	Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)				Tritium Beta (dpm)			
		Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
C0308	30	0.0	0.2	0.6	2.3	0.0	1.7	3.1	14.6	0.0	1.5	8.1	44.1	--	--	--	--
C0401	30	0.0	0.0	0.0	0.0	0.0	0.4	1.1	3.8	0.0	0.0	0.0	0.0	--	--	--	--
C0403	30	0.0	0.2	0.8	4.3	0.0	0.9	2.6	12.2	0.0	3.4	13.0	55.0	--	--	--	--
C0405	30	0.0	0.1	0.5	2.6	0.0	0.3	1.0	4.0	0.0	0.0	0.0	0.0	--	--	--	--
C0406	30	0.0	0.0	0.0	0.0	0.0	0.3	1.0	4.3	0.0	0.0	0.0	0.0	--	--	--	--
C0407	30	0.0	0.2	0.8	4.1	0.0	1.0	3.5	18.1	0.0	0.0	0.0	0.0	--	--	--	--
C0408	30	0.0	0.0	0.0	0.0	0.0	0.3	1.1	4.8	0.0	5.0	15.3	57.1	--	--	--	--
C0501	30	0.0	0.2	0.7	3.1	0.0	1.0	2.1	7.8	0.0	1.5	8.2	45.0	--	--	--	--
C0503	30	0.0	0.5	2.0	10.3	0.0	1.2	4.9	26.2	0.0	3.4	13.0	51.6	--	--	--	--
C0504	30	0.0	0.1	0.5	2.5	0.0	0.2	1.1	6.1	0.0	0.0	0.0	0.0	--	--	--	--
C0505	30	0.0	0.0	0.0	0.0	0.0	0.4	2.4	13.1	0.0	11.1	20.5	57.2	--	--	--	--
C0508	30	0.0	0.0	0.0	0.0	0.0	0.2	0.8	4.6	0.0	3.5	13.1	54.5	--	--	--	--
C0510	30	0.0	0.1	0.7	3.9	0.0	1.1	4.2	22.3	0.0	1.5	8.3	45.6	--	--	--	--
C0511	30	0.0	0.0	0.2	1.3	0.0	0.3	1.2	5.6	0.0	2.2	11.8	64.8	--	--	--	--
C0513	30	0.0	0.0	0.0	0.0	0.0	0.3	1.2	5.6	0.0	3.8	14.5	65.4	--	--	--	--
C0603	30	0.0	0.1	0.3	1.9	0.0	0.1	0.6	3.5	0.0	0.0	0.0	0.0	--	--	--	--
C0604	30	0.0	0.3	1.3	7.2	0.0	2.6	6.2	32.3	0.0	0.0	0.0	0.0	--	--	--	--
C0605	30	0.0	0.1	0.6	3.4	0.0	4.9	7.6	27.4	0.0	0.0	0.0	0.0	--	--	--	--
C0606	30	0.0	0.6	1.7	9.0	0.0	2.6	3.4	11.0	0.0	3.5	13.3	57.9	--	--	--	--
C0608	30	0.0	0.2	0.6	2.9	0.0	3.2	4.6	21.8	0.0	3.2	12.3	50.2	--	--	--	--
C0701	30	0.0	0.2	0.5	1.7	0.0	0.8	1.5	4.4	0.0	2.1	11.7	63.9	--	--	--	--
C0706	30	0.0	0.0	0.2	1.1	0.0	0.9	1.7	4.7	0.0	0.0	0.0	0.0	--	--	--	--
C0707	30	0.0	0.1	0.4	1.5	0.0	1.7	2.0	4.7	0.0	0.0	0.0	0.0	--	--	--	--
C0708	30	0.0	0.1	0.4	1.5	0.0	0.9	1.7	4.7	0.0	0.0	0.0	0.0	--	--	--	--
C0801	30	0.0	0.4	0.7	2.5	0.0	1.9	2.2	5.9	0.0	1.7	9.3	50.8	--	--	--	--
C0803	30	0.0	0.4	0.7	2.9	0.0	2.8	2.4	7.4	0.0	6.4	16.6	54.6	--	--	--	--
C0807	30	0.0	0.4	0.9	4.0	0.0	2.8	2.9	11.8	0.0	1.9	10.2	55.7	--	--	--	--
C0809	30	0.0	0.2	0.5	2.1	0.0	1.5	2.3	7.8	0.0	0.0	0.0	0.0	--	--	--	--
C0901	30	0.0	0.3	0.6	1.7	0.0	2.1	4.0	19.5	0.0	0.0	0.0	0.0	--	--	--	--
C0902	30	0.0	0.4	0.9	3.2	0.0	3.9	2.9	9.4	0.0	0.0	0.0	0.0	--	--	--	--
C0906	30	0.0	0.1	0.4	1.3	0.0	1.1	2.0	6.8	0.0	1.8	9.6	52.8	--	--	--	--
C0907	30	0.0	0.1	0.4	1.7	0.0	0.9	1.7	5.0	0.0	0.0	0.0	0.0	--	--	--	--
C0908	30	0.0	0.2	0.7	2.9	0.0	2.3	4.3	21.1	0.0	0.0	0.0	0.0	--	--	--	--
C0909	30	0.0	0.6	0.7	2.1	0.0	2.7	5.3	26.8	0.0	0.0	0.0	0.0	--	--	--	--
D0104	30	0.0	0.1	0.7	3.7	0.0	0.6	1.7	6.7	0.0	0.0	0.0	0.0	--	--	--	--
D0105	30	0.0	0.0	0.0	0.0	0.0	0.3	1.1	5.3	0.0	0.0	0.0	0.0	--	--	--	--
D0107	30	0.0	0.4	1.6	8.9	0.0	1.3	5.4	29.3	0.0	1.6	8.6	47.2	--	--	--	--

Table 3-13 (revised September 2004)
Summary of Smear Sampling Results [1, 2, 3]
DU Storage Igloos
NRC License Termination Report
Seneca Army Depot Activity

Igloo	Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)				Tritium Beta (dpm)			
		Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
D0108	30	0.0	0.0	0.0	0.0	0.0	0.4	1.1	3.9	0.0	0.0	0.0	0.0	--	--	--	--
D0110	30	0.0	0.4	1.3	6.4	0.0	4.4	5.4	24.8	0.0	4.9	15.0	52.3	--	--	--	--
D0113	30	0.0	0.1	0.5	2.2	0.0	1.5	3.5	17.8	0.0	0.0	0.0	0.0	--	--	--	--
D0206	30	0.0	0.2	0.6	2.2	0.0	2.3	3.2	9.9	0.0	0.0	0.0	0.0	--	--	--	--
D0207	30	0.0	0.6	1.9	10.3	0.0	4.4	12.2	66.0	0.0	0.0	0.0	0.0	--	--	--	--
D0305	30	0.0	0.0	0.0	0.0	0.0	0.7	1.6	5.4	0.0	8.7	19.9	62.7	--	--	--	--
D0306	30	0.0	0.2	0.6	2.2	0.0	0.6	1.7	5.5	0.0	1.6	8.5	46.5	--	--	--	--
D0312	30	0.0	0.0	0.0	0.0	0.0	0.6	1.4	4.8	0.0	3.3	12.7	55.3	--	--	--	--
D0401	30	0.0	0.1	0.8	4.2	0.0	1.8	4.1	21.5	0.0	1.7	9.3	50.7	--	--	--	--
D0405	30	0.0	0.0	0.0	0.0	0.0	3.2	3.8	16.8	0.0	5.1	15.7	56.3	--	--	--	--
D0406	30	0.0	0.1	0.5	1.8	0.0	2.7	3.4	10.2	0.0	3.5	13.4	61.0	--	--	--	--
D0407	30	0.0	0.1	0.8	4.2	0.0	2.8	3.6	14.6	0.0	0.0	0.0	0.0	--	--	--	--
D0413	30	0.0	0.0	0.3	1.4	0.0	0.9	1.7	6.1	0.0	3.2	12.2	48.0	--	--	--	--
D0601	30	0.0	0.1	0.4	2.2	0.0	0.9	1.9	5.8	0.0	0.0	0.0	0.0	--	--	--	--
D0604	30	0.0	0.2	0.5	1.8	0.0	1.0	1.8	5.1	0.0	3.2	12.2	50.5	--	--	--	--
D0607	30	0.0	0.0	0.0	0.0	0.0	2.5	2.9	9.0	0.0	0.0	0.0	0.0	--	--	--	--
D0704	30	0.0	0.8	2.9	15.8	0.0	2.8	8.9	48.7	0.0	0.0	0.0	0.0	--	--	--	--
D0705	30	0.0	0.1	0.4	1.4	0.0	2.6	3.3	9.3	0.0	0.0	0.0	0.0	--	--	--	--
D0711	30	0.0	0.4	1.4	7.4	0.0	1.8	3.4	13.2	0.0	6.2	19.1	71.5	--	--	--	--
D0712	30	0.0	0.2	0.5	2.1	0.0	2.7	3.5	17.2	0.0	0.0	0.0	0.0	--	--	--	--
D0801	30	0.0	0.0	0.0	0.0	0.0	1.7	2.6	9.6	0.0	1.7	9.2	50.2	--	--	--	--
D0805	30	0.0	0.2	0.4	1.4	0.0	4.4	4.0	13.5	0.0	0.0	0.0	0.0	--	--	--	--
E0103	30	0.0	0.4	1.3	5.2	0.0	3.1	4.8	21.2	0.0	0.0	0.0	0.0	--	--	--	--
E0105	30	0.0	0.4	1.4	7.4	0.0	3.9	4.2	17.9	0.0	5.0	15.1	51.9	--	--	--	--
E0112	30	0.0	0.4	0.6	1.7	0.0	4.3	5.9	29.8	0.0	4.9	15.0	51.5	--	--	--	--
E0211	30	0.0	0.4	1.3	6.9	0.0	2.6	7.0	37.6	0.0	0.0	0.0	0.0	--	--	--	--
E0301	30	0.0	0.5	2.1	11.7	0.0	2.3	6.0	31.6	0.0	3.8	14.4	61.3	--	--	--	--
E0302	30	0.0	0.5	0.7	2.2	0.0	2.8	3.7	10.5	0.0	3.1	11.9	47.1	--	--	--	--
E0303	30	0.0	0.3	0.6	1.8	0.0	3.7	3.4	10.5	0.0	0.0	0.0	0.0	--	--	--	--
E0312	30	0.0	0.6	2.1	11.4	0.0	4.9	13.3	73.8	0.0	1.9	10.3	56.2	--	--	--	--
E0402	30	0.0	0.2	0.6	2.4	0.0	2.7	5.7	28.0	0.0	0.0	0.0	0.0	--	--	--	--
E0410	30	0.0	0.3	0.6	2.4	0.0	4.7	5.8	20.3	0.0	0.0	0.0	0.0	--	--	--	--
E0411	30	0.0	0.3	0.9	4.4	0.0	3.1	4.9	21.8	0.0	0.0	0.0	0.0	--	--	--	--
E0413	30	0.0	0.2	0.4	1.7	0.0	2.5	3.2	10.7	0.0	1.8	9.9	54.2	--	--	--	--
E0504	30	0.0	0.2	0.8	3.9	0.0	3.6	3.9	14.8	0.0	0.0	0.0	0.0	--	--	--	--
E0506	30	0.0	0.2	0.4	1.0	0.0	2.3	4.0	16.7	0.0	0.0	0.0	0.0	--	--	--	--
E0508	30	0.0	0.5	1.1	5.2	0.0	3.7	5.1	22.8	0.0	0.0	0.0	0.0	--	--	--	--

Table 3-13 (revised September 2004)
Summary of Smear Sampling Results [1, 2, 3]
DU Storage Igloos
NRC License Termination Report
Seneca Army Depot Activity

Igloo	Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)				Tritium Beta (dpm)			
		Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
E0510	30	0.0	0.9	3.4	18.4	0.0	6.7	23.6	130.1	0.0	7.0	18.4	65.1	--	--	--	--
E0512	30	0.0	0.4	0.8	3.2	0.0	2.9	3.0	9.2	0.0	3.8	14.5	64.6	--	--	--	--
E0602	30	0.0	1.2	3.4	16.5	0.0	5.5	9.1	37.7	0.0	4.4	17.0	77.0	--	--	--	--
E0604	30	0.0	0.1	0.3	1.7	0.0	1.2	2.0	5.9	0.0	1.8	9.7	53.2	--	--	--	--
E0609	30	0.0	0.9	4.1	22.4	0.0	4.0	12.3	67.0	0.0	0.0	0.0	0.0	--	--	--	--
E0610	30	0.0	0.5	1.7	9.1	0.0	6.7	7.5	35.5	0.0	1.9	10.2	55.9	--	--	--	--
E0702	30	0.0	0.1	0.4	2.3	0.0	2.1	3.6	15.0	0.0	1.8	9.9	54.3	--	--	--	--
E0706	30	0.0	0.2	0.6	2.7	0.0	2.7	4.7	22.2	0.0	0.0	0.0	0.0	--	--	--	--
E0711	30	0.0	0.3	0.5	1.9	0.0	1.0	1.9	5.8	0.0	0.0	0.0	0.0	--	--	--	--
E0801	30	0.0	0.3	0.6	1.9	0.0	0.6	1.7	5.8	0.0	0.0	0.0	0.0	--	--	--	--
E0802	30	0.0	0.3	0.5	1.6	0.0	1.4	2.5	8.0	0.0	0.0	0.0	0.0	--	--	--	--

Notes:

(1) 10 CFR 835, Appendix D, removable contamination limits: natural U, U-235, U-238, and assoc. decay products - 1,000 dpm/100cm^2; Tritium - 10,000 beta-gamma/100cm^2.

(2) Smear samples collected over a 100 cm^2 area.

(3) The reported detection limits ranged from 2-6 dpm for alpha measurements, 6-8 dpm for beta measurements, 85-93 dpm for gamma measurements, and 21.2 dpm for tritium measurements.

(4) dpm = disintegrations per minute.

(5) "--" = Tritium smears were not collected at this survey unit.

Table 4-10 (revised September 2004)
Summary of Building Scanning Results
DU Buildings
License Termination Report
Seneca Army Depot Activity

Survey Unit (Bldg/Room)		Measurement Type	Number of Grids Scanned	Scanning Minimum (cpm)	Scanning Maximum (cpm)	Average of Scanning Mean (cpm)	Standard Deviation of Scanning Mean (cpm)	Flag Value (cpm)	Maximum Reading Greater than Flag?
ALPHA/BETA FLOOR MONITOR									
5	1	Alpha/Beta	53	300	1200	609	113	32339	No
5	2	Alpha/Beta	14	200	1300	654	117	32339	No
5	3	Alpha/Beta	11	300	900	627	61	32339	No
5	4	Alpha/Beta	11	400	900	659	58	32339	No
5	5	Alpha/Beta	30	400	900	657	64	32339	No
5	6	Alpha/Beta	30	300	1000	645	79	32339	No
5	7	Alpha/Beta	7	600	1100	814	48	32339	No
5	8	Alpha/Beta	13	400	1300	785	149	32339	No
5	9	Alpha/Beta	27	300	1000	685	88	32339	No
5	10	Alpha/Beta	16	400	1200	744	83	32339	No
5	16	Alpha/Beta	8	400	1200	744	105	32339	No
306	10	Alpha/Beta	23	300	1400	643	125	32339	No
306	11	Alpha/Beta	18	300	1200	603	117	32339	No
306	12	Alpha/Beta	42	300	1200	589	89	32339	No
306	13	Alpha/Beta	21	400	1200	660	103	32339	No
2073	1	Alpha/Beta	56	200	900	563	83	32339	No
2073	3	Alpha/Beta	32	200	800	500	97	32339	No
2084	2	Alpha/Beta	20	200	800	615	110	32339	No
2084	3	Alpha/Beta	74	200	1000	572	116	32339	No
2084	6	Alpha/Beta	15	200	800	473	112	32339	No
ALPHA/BETA PHOSWICH									
5	1	Alpha/Beta	32	80	400	176	33	6571	No
5	2	Alpha/Beta	6	80	300	182	32	6571	No
5	3	Alpha/Beta	6	100	380	193	32	6571	No
5	4	Alpha/Beta	6	100	400	222	43	6571	No
5	5	Alpha/Beta	59	40	300	151	23	6571	No
5	6	Alpha/Beta	18	80	280	165	19	6571	No
5	7	Alpha/Beta	17	80	460	247	64	6571	No
5	8	Alpha/Beta	8	100	420	258	50	6571	No
5	9	Alpha/Beta	32	80	320	173	20	6571	No
5	10	Alpha/Beta	9	100	480	220	61	6571	No
5	11	Alpha/Beta	2	100	240	170	28	6571	No
5	12	Alpha/Beta	2	120	380	240	42	6571	No
5	13	Alpha/Beta	4	100	300	193	19	6571	No
5	14	Alpha/Beta	2	80	380	195	78	6571	No
5	15	Alpha/Beta	2	140	380	245	35	6571	No
5	16	Alpha/Beta	5	120	460	238	55	6571	No
306	1	Alpha/Beta	5	60	240	148	16	6571	No
306	2	Alpha/Beta	4	60	300	160	37	6571	No
306	3	Alpha/Beta	1	100	320	210	156	6571	No
306	4	Alpha/Beta	1	180	320	250	99	6571	No
306	5	Alpha/Beta	2	140	400	240	42	6571	No
306	6	Alpha/Beta	3	120	380	247	6	6571	No
306	7	Alpha/Beta	6	100	300	202	19	6571	No
306	8	Alpha/Beta	3	100	360	200	30	6571	No
306	10	Alpha/Beta	18	60	480	184	53	6571	No
306	11	Alpha/Beta	28	60	300	161	19	6571	No
306	12	Alpha/Beta	47	60	300	154	17	6571	No
306	13	Alpha/Beta	21	60	800	195	119	6571	No
2073	1	Alpha/Beta	67	80	300	166	22	6571	No
2073	2	Alpha/Beta	25	60	340	195	29	6571	No
2073	3	Alpha/Beta	31	40	260	157	17	6571	No
2084	2	Alpha/Beta	14	60	220	137	18	6571	No
2084	3	Alpha/Beta	99	40	280	134	20	6571	No
GAMMA FIDLER									
5	1	Gamma	85	2000	14000	5253	1654	17285	No
5	2	Gamma	20	2000	15000	6738	2203	17285	No
5	3	Gamma	17	2000	7000	4368	531	17285	No
5	4	Gamma	17	2000	10000	4824	814	17285	No
5	5	Gamma	89	2000	10000	4480	715	17285	No
5	6	Gamma	48	2000	10000	5182	1345	17285	No
5	7	Gamma	24	2000	16000	8344	2511	17285	No
5	8	Gamma	21	4000	15000	9024	2159	17285	No
5	9	Gamma	59	2000	10000	5140	1507	17285	No
5	10	Gamma	25	3200	13000	6554	1809	17285	No
5	11	Gamma	2	5000	11000	8500	2121	17285	No

Table 4-10 (revised September 2004)
Summary of Building Scanning Results
DU Buildings
License Termination Report
Seneca Army Depot Activity

Survey Unit (Bldg/Room)	Measurement Type	Number of Grids Scanned	Scanning Minimum (cpm)	Scanning Maximum (cpm)	Average of Scanning Mean (cpm)	Standard Deviation of Scanning Mean (cpm)	Flag Value (cpm)	Maximum Reading Greater than Flag?
GAMMA FIDLER (Continued)								
5 12	Gamma	2	8000	13000	10500	0 (3)	17285	No
5 13	Gamma	4	4000	9000	6000	408	17285	No
5 14	Gamma	2	3000	7000	5000	0 (3)	17285	No
5 15	Gamma	2	5000	12000	8750	1768	17285	No
5 16	Gamma	13	3000	13000	7769	1666	17285	No
306 1	Gamma	5	6000	12000	9200	758	17285	No
306 2	Gamma	4	5000	11000	8000	913	17285	No
306 3	Gamma	1	7000	12000	9500	3536	17285	No
306 4	Gamma	1	8000	12000	10000	2828	17285	No
306 5	Gamma	2	5000	10000	7500	0 (3)	17285	No
306 6	Gamma	3	6000	10000	8333	289	17285	No
306 7	Gamma	6	4000	11000	6667	1033	17285	No
306 8	Gamma	3	4000	9000	6333	289	17285	No
306 10	Gamma	41	3000	13000	6510	1613	17285	No
306 11	Gamma	46	3000	10000	6239	861	17285	No
306 12	Gamma	89	2000	12000	5242	1429	17285	No
306 13	Gamma	42	2000	9000	4764	1113	17285	No
2073 1	Gamma	123	1000	8000	3809	816	17285	No
2073 2	Gamma	25	2000	8000	5040	776	17285	No
2073 3	Gamma	63	3000	8000	5083	447	17285	No
2084 2	Gamma	34	2000	8000	5250	448	17285	No
2084 3	Gamma	173	1000	8000	3893	788	17285	No
2084 6	Gamma	15	3000	7000	4933	458	17285	No

Notes:
(1) cpm = counts per minute.
(2) The scanning flag values for measurements in the Class 2 and 3 survey units are based on the gross activity DCGL for DU. Average background is included in the flag value. The alpha/beta flag values are the sum of the individual alpha and beta DU DCGLw's for that instrument (**Table 4-4**).
(3) Two survey grids were scanned with this instrument and each had the same range and average measurement; therefore, the standard deviation for the average scanning measurment for this survey unit is zero.

Table 4-12 (revised September 2004)
Summary of Smear Sampling Results [1,2,3]
DU Buildings
NRC License Termination Report
Seneca Army Depot Activity

Survey Unit (Bldg/Room)		Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)			
			Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
5	1	85	0.0	0.1	0.3	1.9	0.0	0.1	0.6	4.8	0.0	7.1	17.9	67.6
5	2	20	0.0	0.0	0.2	0.9	0.0	0.6	1.1	3.0	0.0	0.0	0.0	0.0
5	3	17	0.0	0.0	0.0	0.0	0.0	0.4	1.0	3.3	0.0	3.1	12.7	52.5
5	4	17	0.0	0.1	0.2	0.9	0.0	0.2	0.8	3.3	0.0	0.0	0.0	0.0
5	5	89	0.0	0.0	0.0	0.0	0.0	0.3	1.0	5.1	0.0	0.0	0.0	0.0
5	6	48	0.0	0.0	0.0	0.0	0.0	0.1	0.5	3.8	0.0	2.1	10.0	52.5
5	7	24	0.0	0.0	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	8	21	0.0	0.0	0.0	0.0	0.0	0.5	1.3	4.0	0.0	0.0	0.0	0.0
5	9	63	0.0	0.2	0.5	2.0	0.0	0.4	1.3	5.4	0.0	8.9	19.7	64.1
5	10	25	0.0	0.5	0.7	2.0	0.0	0.4	1.2	3.7	0.0	0.0	0.0	0.0
5	11	28	0.0	0.0	0.0	0.0	0.0	0.4	1.2	4.1	0.0	1.7	9.1	48.3
5	12	32	0.0	0.1	0.3	1.6	0.0	0.2	0.8	3.2	0.0	4.2	13.3	45.5
5	13	30	0.0	0.0	0.0	0.0	0.0	0.2	0.9	3.7	0.0	6.3	16.2	50.7
5	14	30	0.0	0.1	0.3	1.6	0.0	0.1	0.7	4.1	0.0	1.5	8.1	44.4
5	15	30	0.0	0.1	0.3	0.9	0.0	0.1	0.7	3.7	0.0	0.0	0.0	0.0
5	16	13	0.0	0.2	0.5	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
306	1	30	0.0	0.0	0.2	1.1	0.0	1.1	1.6	4.9	0.0	0.0	0.0	0.0
306	2	30	0.0	0.2	0.5	1.8	0.0	0.1	0.6	3.3	0.0	0.0	0.0	0.0
306	3	30	0.0	0.0	0.2	1.1	0.0	0.4	1.2	4.3	0.0	0.0	0.0	0.0
306	4	30	0.0	0.1	0.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
306	5	30	0.0	0.3	0.6	1.8	0.0	0.2	0.9	3.6	0.0	5.2	15.8	55.2
306	6	30	0.0	0.1	0.3	1.1	0.0	0.8	1.5	4.6	0.0	0.0	0.0	0.0
306	7	30	0.0	0.1	0.3	1.4	0.0	0.1	0.7	4.1	0.0	0.0	0.0	0.0
306	8	30	0.0	0.1	0.3	1.5	0.0	1.0	1.8	5.7	0.0	0.0	0.0	0.0
306	10	41	0.0	0.1	0.3	1.5	0.0	1.0	1.6	4.3	0.0	0.0	0.0	0.0
306	11	46	0.0	0.0	0.1	1.0	0.0	0.2	0.9	4.3	0.0	0.0	0.0	0.0
306	12	89	0.0	0.1	0.3	1.5	0.0	0.9	1.7	5.2	0.0	0.5	4.6	43.0

Table 4-12 (revised September 2004)
Summary of Smear Sampling Results [1,2,3]
DU Buildings
NRC License Termination Report
Seneca Army Depot Activity

Survey Unit (Bldg/Room)		Number of Smears	Alpha (dpm) [4]				Beta (dpm)				Gamma (dpm)			
			Min	Average	St Dev	Max	Min	Average	St Dev	Max	Min	Average	St Dev	Max
306	13	42	0.0	0.2	0.5	2.7	0.0	0.5	1.3	4.8	0.0	0.0	0.0	0.0
2073	1	123	0.0	0.0	0.2	1.7	0.0	0.1	0.7	4.8	0.0	0.6	6.1	67.8
2073	2	25	0.0	0.3	0.5	1.7	0.0	0.4	1.2	3.8	0.0	0.0	0.0	0.0
2073	3	63	0.0	0.1	0.4	1.4	0.0	0.6	1.5	4.8	0.0	2.5	11.3	55.9
2084	2	34	0.0	0.3	0.5	1.7	0.0	0.4	1.1	3.8	0.0	0.0	0.0	0.0
2084	3	173	0.0	0.2	1.2	15.0	0.0	0.9	2.7	27.7	0.0	3.9	18.1	178.7
2084	6	15	0.0	0.12	0.5	1.8	0.0	1.2	2.5	6.5	0.0	0.0	0.0	0.0

Notes:

(1) 10 CFR 835, Appendix D, removable contamination limits: natural U, U-235, U-238, and assoc. decay products - 1,000 dpm/100cm^2; Tritium - 10,000 beta-gamma/100cm^2.

(2) Smear samples collected over a 100 cm^2 area.

(3) The reported detection limits ranged from 2-6 dpm for alpha measurements, 6-8 dpm for beta measurements, and 85-93 dpm for gamma measurements.

(4) dpm = disintegrations per minute.

Table 5-9 (revised September 2004)
Summary of Smear Sampling Results [1,2]
Building 612
Final Status Survey Report
Seneca Army Depot Activity

Survey Unit (Bldg/Room)		Number of Smears	Alpha (dpm)[3]				Beta (dpm)				Gamma (dpm)			
			Min	Average	St. Dev	Max	Min	Average	St. Dev	Max	Min	Average	St. Dev	Max
612	A	59	0.0	0.0	0.2	1.1	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	AA	142	0.0	0.0	0.1	0.8	0.0	0.0	0.3	3.6	0.0	0.0	0.0	0.0
612	B	22	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	BB	37	0.0	0.0	0.1	0.7	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	C	13	0.0	0.2	0.6	1.8	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	D	18	0.0	0.2	0.4	1.3	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	E	22	0.0	0.1	0.2	0.6	0.0	0.1	0.5	2.5	0.0	0.0	0.0	0.0
612	F	45	0.0	0.1	0.3	0.9	0.0	0.5	1.2	3.8	0.0	0.0	0.0	0.0
612	G	9	0.0	0.2	0.5	1.3	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	H	9	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	6.4	19.1	57.2
612	I	16	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	4.7	18.7	74.7
612	J	17	0.0	0.1	0.2	0.9	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	K	32	0.0	0.1	0.3	1.5	0.0	0.1	0.8	4.6	0.0	3.7	14.5	62.0
612	L	29	0.0	0.1	0.3	1.5	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	M	232	0.0	0.0	0.2	1.1	0.0	0.1	0.4	4.5	0.0	0.5	5.6	63.0
612	N	37	0.0	0.1	0.3	1.4	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	O	36	0.0	0.1	0.3	1	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
612	P	41	0.0	0.0	0.2	1.1	0.0	0.1	0.4	2.5	0.0	1.3	8.1	51.9
612	Q	41	0.0	0.1	0.3	1.5	0.0	0.4	1.0	3.8	0.0	0.0	0.0	0.0
612	R	37	0.0	0.1	0.2	1.2	0.0	0.2	0.8	4	0.0	0.0	0.0	0.0
612	S	35	0.0	0.1	0.3	1.5	0.0	0.3	0.8	2.9	0.0	0.0	0.0	0.0
612	T	36	0.0	0.1	0.4	1.2	0.0	0.3	0.9	3.5	0.0	0.0	0.0	0.0
612	U	95	0.0	0.1	0.3	1.4	0.0	0.2	0.7	3.7	0.0	0.0	0.0	0.0
612	V	118	0.0	0.0	0.2	1	0.0	0.1	0.5	4.1	0.0	0.0	0.0	0.0
612	W	103	0.0	0.0	0.2	1.1	0.0	0.2	0.7	3.3	0.0	0.0	0.0	0.0
612	X	107	0.0	0.1	0.3	1.1	0.0	0.0	0.3	3.2	0.0	0.7	6.9	71.5
612	Y	146	0.0	0.0	0.2	1	0.0	0.1	0.6	4.7	0.0	0.0	0.0	0.0
612	Z	93	0.0	0.1	0.3	1.3	0.0	0.0	0.4	4.1	0.0	0.0	0.0	0.0

Notes:

(1) 10 CFR 835, Appendix D, removable contamination limits: natural U, U-235, U-238, and assoc. decay products - 1,000 dpm/100cm^2; Tritium - 10,000 beta-gamma/100cm^2.

(2) Smear samples collected over a 100 cm^2 area.

(3) dpm = decays per minute.