

LICENSE TERMINATION REPORT

USNRC LICENSE NO. SNM-951

FINAL RADIOLOGICAL SURVEY OF INCINERATOR BUILDING

DECEMBER 11, 1992

WESTINGHOUSE ELECTRIC CORPORATION

LARGE, PA

Report #005

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PDR ADOCK 07000997
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FINAL RADIOLOGICAL SURVEY OF INCINERATOR BUILDING

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Report #005

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FINAL RADIOLOGICAL SURVEY OF INCINERATOR BUILDING

Purpose

The Westinghouse Electric Corporation is preparing to request the termination of USNRC License Number SNM-951 for the site located in Large, PA. This report is one of a series of reports that presents the necessary information to establish that the site meets all applicable regulatory requirements so that the license can be terminated by the United States Nuclear Regulatory Commission.

Scope

This report presents the results of a radiological survey of the Incinerator Building located on the Westinghouse Site in Large, Pennsylvania. The information includes the radiological survey of the building, the interior of the incinerator within the building, the chimney adjacent to the building, and the analytical results for the ashes removed from the incinerator and chimney. This information is statistically analyzed to demonstrate that the building meets the applicable criteria for release for unrestricted use.

Background

The Incinerator Building is a small brick building housing a gas fired incinerator. Adjacent to the building and connected to the incinerator is a tall brick stack. Figure 1 provides a plot plan for the site and indicates the specific location of these structures. Operation of the incinerator is authorized by the Allegheny County Health Department, Bureau of Air Pollution Control (see Appendix B) to burn waste paper. Historically, the only types of materials burned have been classified documents. Incineration of materials contaminated with radioactive materials is not authorized by USNRC License Number SNM-951 or the Operating Permit.

In preparation for the radiological survey of these structures, all the accumulated ash in the incinerator and the chimney was removed and placed in drums. Samples from each drum were submitted for radiological analysis. A radiological survey was then made of the building, the interior of the incinerator and the interior of the chimney. The physical conditions within the chimney limited what surveys could be conducted since there is several inches of water on the floor which could not be easily removed and it was not feasible to do survey above a normal reach from the base level.

Analysis of Ash Samples

Table 1 presents a summary of the analytical results obtained for the samples taken from the thirty-five 55-gallon drums of ash removed. The original analytical data sheets are included as Appendix A. The statistical analysis of the data shown on Table 1 demonstrates that the ash meets the concentration criteria of 1.0 pCi/gram for U-235. This criteria is equivalent to 30 pCi/grams for total uranium. (See Report #004 for justification). The stated average concentration by gamma spectrometry of 0.412 pCi/grams U-235 is conservative since the large majority of the results are "less than" numbers and the gamma spectrometry method provides conservative results (see Report #004 for discussion).

Radiological Survey of the Incinerator Building

Table 2 presents a summary of the results of the radiological survey. The survey data sheets showing the location of the survey points are included in Appendix C. With the exception of the results for the gamma survey at 1 meter, the radiological survey results indicate that the acceptance criteria are met at the 95% confidence level. The gamma dose rates within this building are above the site background values due to the composition of the incinerator brick material. This is discussed in the next section.

Radiological Survey of the Interior of the Incinerator

Table 3 presents a summary of the results of the radiological survey of the interior surfaces of the incinerator. The survey data sheets showing the location of the survey points are included in Appendix C. The incinerator is a gas fired unit that is lined with a ceramic brick material. The average gamma dose rate within the incinerator is about 60 micro R/hour which is about six times the background value for the site. In addition, the average fixed beta activity is about 2000 dpm/100 cm² which is about 40% of the acceptance criteria. These elevated readings are due to the presence of naturally occurring radioactive material in the brick lining of the furnace. Three samples were taken of the lining and submitted for analysis. Table 4 presents a summary of the results and the analytical data report sheets are included in Appendix A. The presence of the daughter product of Thorium indicates that the radioactive material is naturally occurring Thorium in the incinerator lining. Although the gamma dose rate within the incinerator is higher than the acceptance criteria of 5 micro R/hour above the natural background for the site, no further action will be taken since these results are due to naturally occurring materials. No detectable removable radioactivity was found.

Radiological Survey of the Chimney

The exhaust gas from the incinerator flows into a tall brick chimney adjacent to the incinerator building. The base of the chimney is below grade and subject to an influx of groundwater. For safety reasons, no effort was made to conduct surveys above a normal reach from the base. The ash samples of the material removed from the chimney did not indicate the presence of any radioactive materials. Table 5 presents a summary of the results of the radiological survey. The survey data sheets showing the location of the survey points are included in Appendix C. The base of the chimney was covered with several inches of water so only gamma surveys at 1 meter above the base were taken. Beta scan surveys were taken at 8 locations on the walls along with a smear sample at each location. The gamma dose rates and the beta scans are above the site background levels. This is apparently due to the presence of naturally occurring radioactive materials present in the materials of construction. No detectable removable radioactivity was found.

Current Status

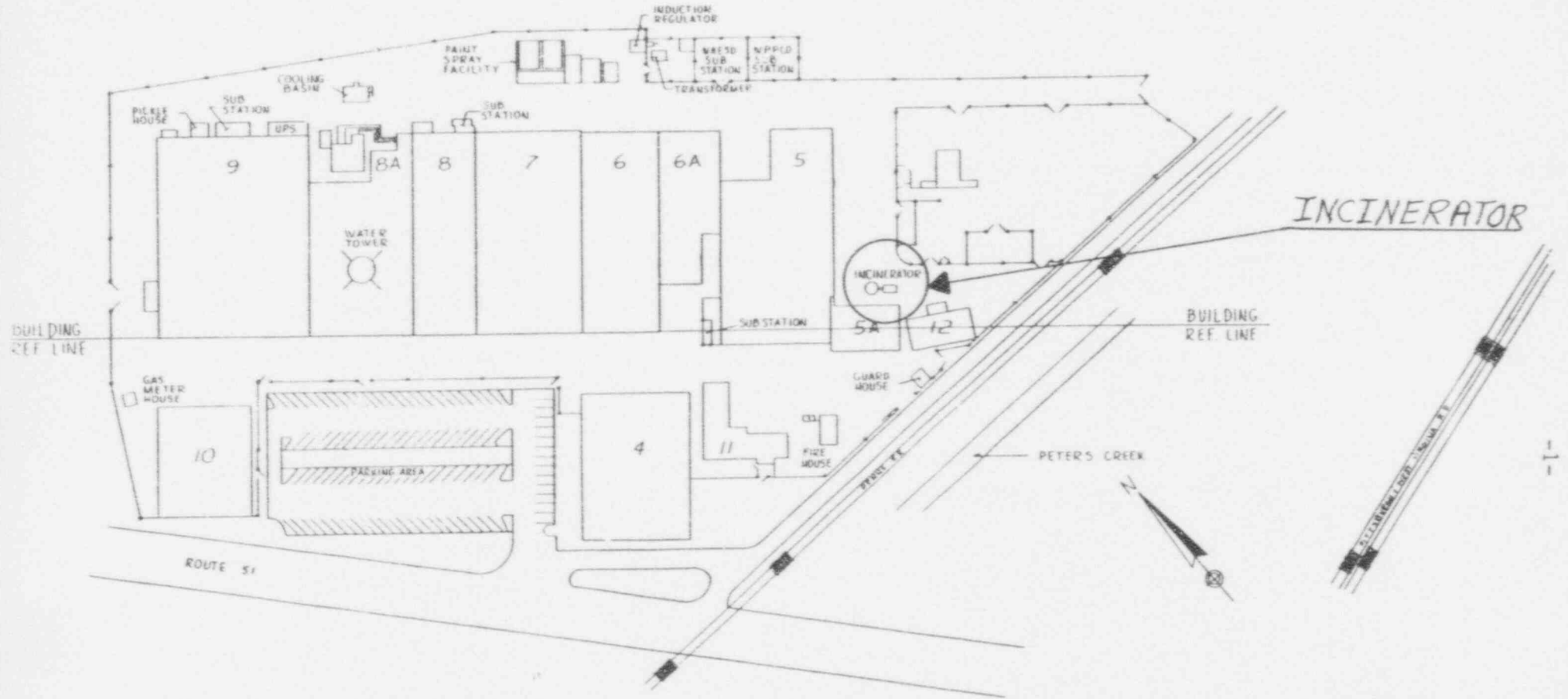
All the accumulated ash in the incinerator complex was removed and disposed of as normal waste as a part of this survey project. The incinerator itself is functional and has been returned to use to burn classified documents. There is no potential for the incinerator to become contaminated since there is no longer any use of radioactive material on the site.

Conclusions

Based on the radiological survey results presented in this report, the following conclusions are reached:

- 1) The analytical analysis of the ash samples supports the conclusion that there was no inadvertent incineration of contaminated materials.
- 2) The elevated gamma dose rates recorded with the incinerator and the chimney are due to the presence of naturally occurring radioactive material in the materials of construction. No further action is required.
- 3) All other measurements meet the acceptance criteria at the 95% confidence level.
- 4) The incinerator building including the incinerator and adjoining chimney meet the requirements for release for unrestricted use.

FIGURE 1
SITE PLOT PLAN



| REV | NO. | DESCRIPTION | DATE | BY | CHKD | REVISION |
|---|-----------|-------------|----------------|--|-------|----------|
| | | | PARTS LIST | | | |
| UNLESS OTHERWISE SPECIFIED | | | CONTRACT NO. | 1219 Westinghouse Advanced Energy Systems Division Pittsburgh, Pennsylvania | | |
| DIMENSIONS ARE PER FIELD AND SHEETS, UNLESS OTHERWISE NOTED. | | | OFFICE | NEXT TO | | |
| TOLERANCES -- DO NOT SCALE | | | DESIGN | BY | | |
| FIN. DIM. | FIN. DIM. | FIN. DIM. | DATE | THREE | | |
| A | A | A | DATE | SPECIFY | | |
| SPECIFICATION TYPE | | | DATE | NO. | | |
| DWG CODE NO. | | | SCALE | BY | DATE | NO. |
| | | | 14883 | | JN030 | |
| | | | VAE5D LARGE PA | | | |

TABLE 1

SAMPLE ANALYSIS DATA FOR INCINERATOR BUILDING AND CHIMNEY

| SAMPLE IDENT. | | SAMPLE DESCRIPTION | U-235 (Wet basis) pCi/gm |
|-----------------|-----------------|------------------------|--------------------------------|
| PROJECT ID # | LAB SAMPLE # | | |
| 449 | 92-2814 | Ashes from incinerator | < 8.70E-01 |
| 450 | 92-2815 | Ashes from incinerator | < 9.90E-01 |
| 451 | 92-2816 | Ashes from incinerator | < 9.60E-01 |
| 452 | 92-2817 | Ashes from incinerator | < 7.90E-01 |
| 454 | 92-2822 | Ashes from chimney | 1.76E-01 |
| 455 | 92-2823 | Ashes from chimney | < 3.80E-01 |
| 456 | 92-2824 | Ashes from chimney | < 8.30E-01 |
| 457 | 92-2825 | Ashes from chimney | < 6.80E-01 |
| 458 | 92-2826 | Ashes from chimney | < 3.20E-01 |
| 459 | 92-2827 | Ashes from chimney | < 7.10E-01 |
| 460 | 92-2828 | Ashes from chimney | < 7.70E-01 |
| 461 | 92-2829 | Ashes from chimney | < 6.80E-01 |
| 464 | 92-2832 | Ashes from chimney | < 4.30E-01 |
| 465 | 92-2833 | Ashes from chimney | 3.83E-01 |
| 466 | 92-2834 | Ashes from chimney | < 3.80E-01 |
| 467 | 92-2835 | Ashes from chimney | < 3.50E-01 |
| 472 | 92-2846 | Ashes from chimney | < 1.60E-01 |
| 473 | 92-2847 | Ashes from chimney | 1.50E-01 |
| 474 | 92-2848 | Ashes from chimney | < 1.70E-01 |
| 475 | 92-2849 | Ashes from chimney | < 1.80E-01 |
| 476 | 92-2850 | Ashes from chimney | < 3.40E-01 |
| 477 | 92-2851 | Ashes from chimney | < 3.30E-01 |
| 478 | 92-2852 | Ashes from chimney | < 2.30E-01 |
| 479 | 92-2853 | Ashes from chimney | < 3.30E-01 |
| 480 | 92-2854 | Ashes from chimney | < 2.60E-01 |
| 481 | 92-2855 | Ashes from chimney | < 4.00E-01 |
| 482 | 92-2856 | Ashes from chimney | < 2.70E-01 |
| 483 | 92-2857 | Ashes from chimney | < 3.10E-01 |
| 484 | 92-2858 | Ashes from chimney | 1.63E-01 |
| 485 | 92-2859 | Ashes from chimney | < 2.90E-01 |
| 486 | 92-2860 | Ashes from chimney | < 1.70E-01 |
| 487 | 92-2861 | Ashes from chimney | < 3.20E-01 |
| 488 | 92-2862 | Ashes from chimney | < 2.40E-01 |
| 489 | 92-2863 | Ashes from chimney | < 2.10E-01 |
| 490 | 92-2864 | Ashes from chimney | < 2.10E-01 |

STATISTICAL ANALYSIS

| | |
|---|----------|
| NUMBER OF SAMPLES | 35 |
| MINIMUM | 1.50E-01 |
| MAXIMUM | 9.90E-01 |
| AVERAGE | 4.12E-01 |
| STANDARD DEVIATION | 2.51E-01 |
| LIMIT | 1.00E+00 |
| DATA TEST PARAMETER | 0.48 |
| "NUMBER OF SAMPLES" FACTOR | 2.34 |
| DOES DATA SATISFY LIMIT CRITERIA? | YES |
| ARE THERE AN ADEQUATE NUMBER OF SAMPLES? | YES |

TABLE 2

| ANALYSIS OF SURVEY RESULTS AND COMPARISON WITH LIMITS | | | | | | | | | | |
|---|----------|-----------------------------------|--------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--|
| INCINERATOR BLDG | SURVEY # | GAMMA SURVEY @1 METER (microR/hr) | BETA/GAMMA SURVEY ON CONTACT (mR/hr) | SCAN RESULTS | | TOTAL FIXED ACTIVITY | | REMOVABLE ACTIVITY | | |
| | | | | MAXIMUM BETA | AVERAGE BETA | ALPHA | BETA | ALPHA | BETA | |
| | | | | (dpm/100cm ²) | (dpm/100cm ²) | (dpm/100cm ²) | (dpm/100cm ²) | (dpm/100cm ²) | (dpm/100cm ²) | |
| 1 | 15 | 0.030 | 38.7 | 28.8 | 0.00 | 2.03 | -0.31 | -9.88 | | |
| 2 | 15 | 0.010 | 88.4 | 78.5 | 2.51 | 18.63 | -0.31 | -38.93 | | |
| 3 | 17 | 0.020 | 38.7 | 28.8 | -0.23 | 6.10 | -0.31 | 42.41 | | |
| 4 | 21 | 0.010 | 68.5 | 38.7 | 0.91 | 27.44 | -0.31 | -62.17 | | |
| 5 | 17 | 0.010 | 48.7 | 28.8 | 0.23 | 9.82 | -0.31 | 54.03 | | |
| 6 | 16 | 0.020 | 98.3 | 28.8 | 1.14 | 8.47 | -0.31 | -38.93 | | |
| 7 | 17 | 0.022 | 48.7 | 28.8 | -0.91 | 40.65 | -0.31 | 7.55 | | |
| 8 | 13 | 0.015 | -45.7 | -70.5 | -1.14 | -16.60 | 2.75 | -38.93 | | |
| 9 | 12 | 0.010 | -70.5 | -80.4 | -0.68 | -14.90 | -0.31 | -15.69 | | |
| 10 | 12 | 0.020 | -60.6 | -80.4 | -0.68 | 1.02 | -0.31 | -15.69 | | |
| 11 | 12 | 0.030 | 28.8 | -30.8 | -0.91 | 0.34 | -0.31 | -50.55 | | |
| 12 | 15 | 0.030 | -1.0 | -40.7 | 0.68 | 0.68 | -0.31 | -15.69 | | |
| 13 | 14 | 0.020 | -20.9 | -80.4 | -0.68 | -37.26 | -0.31 | 77.27 | | |
| 14 | 19 | 0.015 | 8.9 | -20.9 | 1.14 | -3.39 | -0.31 | 7.55 | | |
| 15 | 20 | 0.014 | 8.9 | -30.8 | 0.23 | 6.10 | -0.31 | -15.69 | | |
| 16 | 22 | 0.011 | -10.9 | -30.8 | 0.23 | 7.79 | -0.31 | 30.79 | | |
| 17 | 20 | 0.025 | 8.9 | -20.9 | -0.23 | -14.56 | -0.31 | -62.17 | | |
| 18 | 24 | 0.030 | 48.7 | 8.9 | -0.91 | -1.69 | -0.31 | -62.17 | | |

STATISTICAL ANALYSIS

FACTOR FOR COMPARISON OF SURVEY DATA @95%:
(FROM TABLE B-1 OF NUREG-5849) 1.740

| | | | | | | | | |
|---|-------|--------|--------|--------|---------|--------|---------|--------|
| NUMBER OF SAMPLES | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| MINIMUM | 12.00 | 0.01 | -70.51 | -80.45 | -1.14 | -37.26 | -0.31 | -62.17 |
| MAXIMUM | 24.00 | 0.03 | 98.32 | 78.46 | 2.51 | 40.65 | 2.75 | 77.27 |
| AVERAGE | 16.72 | 0.02 | 18.04 | -12.03 | 0.04 | 2.26 | -0.14 | -11.49 |
| STANDARD DEVIATION | 3.52 | 0.01 | 46.41 | 46.57 | 0.93 | 16.80 | 0.70 | 40.24 |
| LIMIT | 15 | 1 | 5000 | 5000 | 5000 | 5000 | 1000 | 1000 |
| DATA TEST PARAMETER | 16.72 | 0.02 | 37.08 | 7.07 | 0.04 | 2.26 | -0.14 | -11.49 |
| "NUMBER OF SAMPLES" FACTOR | -0.49 | 133.09 | 107.34 | 107.62 | 5364.57 | 297.46 | 1426.87 | 25.13 |
| DOES DATA SATISFY LIMIT CRITERIA? | NO | YES | YES | YES | YES | YES | YES | YES |
| WERE AN ADEQUATE NUMBER OF SAMPLES TAKEN? | NO | YES | YES | YES | YES | YES | YES | YES |

TABLE 3

| ANALYSIS OF SURVEY RESULTS AND COMPARISON WITH LIMITS | | | | | | | | | |
|--|-----------------------------------|--------------------------------------|--|--|---------------------------------|--------------------------------|---------------------------------|--------------------------------|---------|
| | GAMMA SURVEY @1 METER (microR/hr) | BETA/GAMMA SURVEY ON CONTACT (mR/hr) | SCAN RESULTS | | TOTAL FIXED ACTIVITY | | REMOVABLE ACTIVITY | | |
| | | | MAXIMUM BETA (dpm/100cm ²) | AVERAGE BETA (dpm/100cm ²) | ALPHA (dpm/100cm ²) | BETA (dpm/100cm ²) | ALPHA (dpm/100cm ²) | BETA (dpm/100cm ²) | |
| INSIDE INCINERATOR | 19 | 16 | 0.040 | 1999 | 1463 | -4 | 1946 | -0.31 | 7.55 |
| " | 20 | 50 | 0.020 | 927 | 659 | -26 | 678 | -0.31 | -73.79 |
| " | 21 | 48 | 0.020 | 927 | 659 | -11 | 665 | 2.75 | -27.31 |
| " | 22 | 55 | 0.030 | 1195 | 659 | -11 | 691 | -0.31 | -73.79 |
| " | 23 | | 0.030 | 2535 | 1999 | -18 | 2321 | -0.31 | 100.51 |
| " | 24 | 60 | 0.040 | 2803 | 2267 | -22 | 2482 | -0.31 | -27.31 |
| " | 25 | 60 | 0.060 | 3071 | 2535 | -22 | 2348 | -0.31 | -27.31 |
| " | 26 | 60 | 0.025 | 2535 | 2133 | -22 | 2428 | -0.31 | -15.69 |
| " | 27 | 60 | 0.040 | 2267 | 1999 | -18 | 2160 | -0.31 | -85.41 |
| " | 28 | 60 | 0.060 | 2535 | 2267 | -22 | 2455 | -0.31 | -108.65 |
| " | 29 | 60 | 0.030 | 2803 | 2535 | -26 | 2428 | -0.31 | -85.41 |
| " | 30 | 60 | 0.040 | 2803 | 2267 | -11 | 2348 | -0.31 | -50.55 |
| INNER INCIN. WALLS | 'A' | | | 3071 | 2535 | | | | |
| " | 'B' | | | 3339 | 2535 | | | | |
| " | 'C' | | | 3339 | 2535 | | | | |
| " | 'D' | | | 2535 | 1999 | | | | |
| " | 'E' | | | 2803 | 1999 | | | | |
| " | 'F' | | | 2535 | 1999 | | | | |
| " | 'G' | | | 2535 | 1999 | | | | |
| " | 'H' | | | 1999 | 1195 | | | | |
| STATISTICAL ANALYSIS FACTOR FOR COMPARISON OF SURVEY DATA @95%: (FROM TABLE B-1 OF NUREG-5849) | | | | | | | | | |
| FACTOR FROM TABLE B-1 | 1.812 | 1.796 | | 1.729 | 1.729 | 1.796 | 1.796 | 1.796 | 1.796 |
| NUMBER OF SAMPLES | 11 | 12 | | 20 | 20 | 12 | 12 | 12 | 12 |
| MINIMUM | 16.00 | 0.02 | | 927.28 | 659.28 | -25.83 | 664.64 | -0.31 | -108.65 |
| MAXIMUM | 60.00 | 0.06 | | 3339.28 | 2535.28 | -3.69 | 2481.68 | 2.75 | 100.51 |
| AVERAGE | 53.55 | 0.04 | | 2428.05 | 1912.15 | -17.84 | 1912.40 | -0.05 | -38.93 |
| STANDARD DEVIATION | 12.60 | 0.01 | | 690.59 | 626.06 | 6.71 | 726.28 | 0.85 | 53.46 |
| LIMIT | 15 | 1 | | 5000 | 5000 | 5000 | 5000 | 1000 | 1000 |
| DATA TEST PARAMETER | 60.43 | 0.04 | | 2741.33 | 2208.26 | -14.36 | 2288.95 | 0.39 | -11.21 |
| "NUMBER OF SAMPLES" FACTOR | -3.06 | 75.48 | | 3.72 | 4.93 | 747.94 | 4.25 | 1182.46 | 19.43 |
| DOES DATA SATISFY LIMIT CRITERIA? | NO | YES | | YES | YES | YES | YES | YES | YES |
| WERE AN ADEQUATE NUMBER OF SAMPLES TAKEN? | NO | YES | | YES | YES | YES | YES | YES | YES |

TABLE 4
 SAMPLE ANALYSIS FOR BRICK LINING OF INCINERATOR

| SAMPLE IDENTITY | | SAMPLE DESCRIPTION | GAMMA SPECTROMETRY | | | | ALPHA |
|-----------------|----------|---------------------------|--------------------|----------|----------|----------|--------------------|
| PROJECT | LAB | | U-235 | Th-228 | Ra-226 | Ra-228 | SPECTROMETRY |
| ID # | SAMPLE # | | pCi/gram | pCi/gram | pCi/gram | pCi/gram | Th-232 pCi/gram |
| 518 | 92-2978 | Incinerator brick sample | <3.28E-01 | 3.42E+00 | NA | NA | NA |
| 526 | 92-3009 | Incinerator mortar sample | 3.25E-01 | 2.30E+00 | 1.84E+00 | 2.06E+00 | NA |
| 527 | 92-3010 | Incinerator brick sample | 1.49E-01 | 1.37E+00 | 9.68E-01 | 1.24E+00 | 2.10E+01 |

N/A = NOT ANALYZED

TABLE 5

| ANALYSIS OF SURVEY RESULTS AND COMPARISON WITH LIMITS | | | | | | | | | | | |
|---|-------|------|----------|--------------|-------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| > SURFACE DESCRIPTION | GRID | > X, | > REFERE | GAMMA SURVEY | BETA/GAMMA SURVEY | SCAN RESULTS | | TOTAL FIXED ACTIVITY | | REMOVABLE ACTIVITY | |
| | | | | | | @1 METER | ON CONTACT | MAXIMUM BETA | AVERAGE BETA | ALPHA | BETA |
| | | | POII | (microR/hr) | (mR/hr) | (dpm/100cm ²) | (dpm/100cm ²) | (dpm/100cm ²) | (dpm/100cm ²) | (dpm/100cm ²) | (dpm/100cm ²) |
| > Inside Incinerator | > N/A | > 1 | | 28 | | | | | | | |
| > chimney | > " | > 2 | | 30 | | | | | | | |
| > " | > " | > 3 | | 28 | | | | | | | |
| > " | > " | > 4 | | 30 | | | | | | | |
| > " | > " | > 5 | | 32 | | | | | | | |
| > " | > " | > 6 | | 32 | | | | | | | |
| > " | > " | > 7 | | 32 | | | | | | | |
| > " | > " | > 8 | | 28 | | | | | | | |
| > " | > " | > 9 | | 28 | | | | | | | |
| > " | > " | > 10 | | 28 | | | | | | | |
| > " | > " | > 11 | | | | 857.6 | 455.6 | | | -0.15 | 1.21 |
| > " | > " | > 12 | | | | 991.6 | 455.6 | | | -0.15 | 1.21 |
| > " | > " | > 13 | | | | 857.6 | 455.6 | | | -0.15 | 5.24 |
| > " | > " | > 14 | | | | 1125.6 | 589.6 | | | -0.15 | -0.81 |
| > " | > " | > 15 | | | | 1125.6 | 589.6 | | | -0.15 | 3.22 |
| > " | > " | > 16 | | | | 1125.6 | 589.6 | | | -0.15 | 7.25 |
| > " | > " | > 17 | | | | 857.6 | 455.6 | | | 2.56 | 3.22 |
| > " | > " | > 18 | | | | 857.6 | 455.6 | | | -0.15 | 1.21 |
| > Outside Chimney | > " | > 19 | | 18 | | | | | | | |
| > " | > " | > 20 | | 20 | | | | | | | |

| STATISTICAL ANALYSIS | FACTOR FOR COMPARISON OF SURVEY DATA @95%: VARIES | | | |
|--|---|---------|--------|---------|
| | (FROM TABLE B-1 OF NUREG-5849) | | | |
| FACTOR FROM TABLE B-1 | 1.796 | 1.895 | 1.895 | 1.895 |
| NUMBER OF SAMPLES | 12 | 8 | 8 | 8 |
| MINIMUM | 18.00 | 857.60 | 455.60 | -0.15 |
| MAXIMUM | 32.00 | 1125.60 | 589.60 | -0.81 |
| AVERAGE | 27.83 | 974.85 | 505.85 | 2.56 |
| STANDARD DEVIATION | 4.28 | 124.22 | 64.87 | 0.19 |
| LIMIT | 15 | 5000 | 5000 | 0.89 |
| DATA TEST PARAMETER | 30.05 | 1058.08 | 549.31 | 2.72 |
| "NUMBER OF SAMPLES" FACTOR | -3.00 | 32.40 | 69.28 | 4.34 |
| DOES DATA SATISFY LIMIT CRITERIA? | NO | YES | YES | 1117.20 |
| ARE THERE AN ADEQUATE NUMBER OF SAMPLES? | NO | YES | YES | 412.87 |
| | | | | YES |
| | | | | YES |

APPENDIX A

ANALYTICAL LABORATORY

REPORT SHEETS

Westinghouse Electric Corporation
Advanced Programs - Analytical Laboratory
Waltz Mill Site

REPORT

Request# 14876

TO: Larry Smith/Joe Nardi
Environmental & Regulatory Services
Westinghouse Electric Corporation

Received: 9/23/92
Reported: 10/8/92

[RESULTS OF ANALYSIS]

GAMMA SPECTROMETRY ANALYSIS (@September 23, 1992)

| Originator ID | Lab.Spl# | U-235 (Wet Basis) | |
|---------------|----------|-------------------|-------------|
| | | pCi/gram | 2 sigma |
| 443 | 92-2808 | <4.7E-01 | |
| 444 | 92-2809 | 1.48E+00 | +/- 2.4E-01 |
| 445 | 92-2810 | <1.7E-01 | |
| 446 | 92-2811 | 4.55E-01 | +/- 3.0E-01 |
| 447 | 92-2812 | 5.86E-01 | +/- 1.8E-01 |
| 448 | 92-2813 | <3.2E-01 | |
| 449 | 92-2814 | <8.7E-01 | |
| 450 | 92-2815 | <9.9E-01 | |
| 451 | 92-2816 | <9.6E-01 | |
| 452 | 92-2817 | <7.9E-01 | |
| 453 | 92-2818 | <4.6E-01 | |

Remarks: Gamma Spectrometry Analysis for U-235

References: Request# 14876
Procedures: A-524
Analyst: WTF, MRK, TRK

Approved: 

REPORT

Westinghouse Electric Corporation
Advanced Programs - Analytical Laboratory
Waltz Mill Site

Request# 14878

TO: Larry Smith/Joe Nardi
Environmental & Regulatory Services
Westinghouse Electric Corporation

Received: 9/24/92
Reported: 10/1/92

[RESULTS OF ANALYSIS]

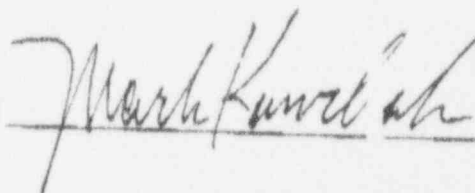
GAMMA SPECTROMETRY ANALYSIS (@September 30, 1992)

| Originator ID | Lab.Spl# | U-235 (Wet Basis) | |
|---------------|----------|-------------------|-------------|
| | | pCi/gram | 2 sigma |
| 454 | 92-2822 | 1.76E-01 | +/- 1.7E-01 |
| 455 | 92-2823 | <3.8E-01 | |
| 456 | 92-2824 | <8.3E-01 | |
| 457 | 92-2825 | <6.8E-01 | |
| 458 | 92-2826 | <3.2E-01 | |
| 459 | 92-2827 | <7.1E-01 | |
| 460 | 92-2828 | <7.7E-01 | |
| 461 | 92-2829 | <6.8E-01 | |
| 462 | 92-2830 | 2.82E-01 | +/- 2.6E-01 |
| 463 | 92-2831 | 2.87E-01 | +/- 2.6E-01 |
| 464 | 92-2832 | <4.3E-01 | |
| 465 | 92-2833 | 3.83E-01 | +/- 1.9E-01 |
| 466 | 92-2834 | <3.8E-01 | |
| 467 | 92-2835 | <3.5E-01 | |

Remarks: Gamma Spectrometry Analysis for U-235

References: Request# 14878
Procedures: A-524
Analyst: WTF, MRK, TRK

Approved:



REPORT

Westinghouse Electric Corporation
Advanced Programs - Analytical Laboratory
Waltz Mill Site

Request# 14882

TO: Larry Smith/Joe Nardi
Environmental & Regulatory Services
Westinghouse Electric Corporation

Received: 9/29/92
Reported: 10/13/92

[RESULTS OF ANALYSIS]

GAMMA SPECTROMETRY ANALYSIS (9 September 29, 1992)

| Originator ID | Lab.Spl# | U-235 (Wet Basis) | | Cs-137 (Wet Basis) | |
|---------------|----------|-------------------|---------|--------------------|---------|
| | | pCi/gram | 2 sigma | pCi/gram | 2 sigma |
| 468 | 92-2842 | <1.9E-01 | | | |
| 469 | 92-2843 | <1.6E-01 | | 4.73E-01 +/- | 2.4E-01 |
| 470 | 92-2844 | 3.35E-01 +/- | 1.9E-01 | 5.25E-01 +/- | 1.7E-01 |
| 471 | 92-2845 | <3.8E-01 | | 4.75E-01 +/- | 3.6E-01 |
| 472 | 92-2846 | <1.6E-01 | | | |
| 473 | 92-2847 | 1.50E-01 +/- | 1.2E-01 | | |
| 474 | 92-2848 | <1.7E-01 | | | |
| 475 | 92-2849 | <1.8E-01 | | | |
| 476 | 92-2850 | <3.4E-01 | | | |
| 477 | 92-2851 | <3.3E-01 | | | |
| 478 | 92-2852 | <2.3E-01 | | | |
| 479 | 92-2853 | <3.3E-01 | | | |
| 480 | 92-2854 | <2.6E-01 | | | |
| 481 | 92-2855 | <4.0E-01 | | | |
| 482 | 92-2856 | <2.7E-01 | | | |
| 483 | 92-2857 | <3.1E-01 | | | |

Remarks: Gamma Spectrometry Analysis for U-235

References: Request# 14882
Procedures: A-524
Analyst: WTF, MRK, TRK, DZ

Approved: Mark Kouchak

REPORT

Westinghouse Electric Corporation
Advanced Programs - Analytical Laboratory
Waltz Mill Site

Reques. # 14882

TO: Larry Smith/Joe Nardi
Environmental & Regulatory Services
Westinghouse Electric Corporation

Received: 9/29/92
Reported: 10/13/92

[RESULTS OF ANALYSIS]

GAMMA SPECTROMETRY ANALYSIS (@ September 29, 1992)

| Originator ID | Lab.Spl# | U-235 (Wet Basis) | | Cs-137 (Wet Basis) | |
|---------------|----------|-------------------|-------------|--------------------|-------------|
| | | pCi/gram | 2 sigma | pCi/gram | 2 sigma |
| 484 | 92-2858 | 1.63E-01 | +/- 1.6E-01 | | |
| 485 | 92-2859 | <2.9E-01 | | 4.73E-01 | +/- 2.4E-01 |
| 486 | 92-2860 | <1.7E-01 | | 5.25E-01 | +/- 1.7E-01 |
| 487 | 92-2861 | <3.2E-01 | | 4.75E-01 | +/- 3.6E-01 |
| 488 | 92-2862 | <2.4E-01 | | | |
| 489 | 92-2863 | <2.1E-01 | | | |
| 490 | 92-2864 | <2.1E-01 | | | |

Remarks: Gamma Spectrometry Analysis for U-235

References: Request# 14882
Procedures: A-524
Analyst: WTF, MRK, TRK, DZ

Approved: 

Westinghouse Electric Corporation
Advanced Programs - Analytical Laboratory
Waltz Mill Site

REPORT

Reques # 14904

TO: Larry Smith/Joe Nardi
Environmental & Regulatory Services
Westinghouse Electric Corporation

Received: 0/16/92
Reported: 0/22/92

[RESULTS OF ANALYSIS]

GAMMA SPECTROMETRY ANALYSIS (@ October 16, 1992)

| Originator ID | Lab.Spl# | U-235 (Wet Basis) | |
|---------------|----------|-------------------|---------|
| | | pCi/gram | 2 sigma |
| 519 | 92-2979 | <3.5E-01 | |
| 520 | 92-2980 | <2.0E-01 | |
| 521 | 92-2981 | <1.9E-01 | |
| 522 | 92-2982 | <2.8E-01 | |
| 523 | 92-2983 | <2.4E-01 | |
| 524 | 92-2984 | <2.3E-01 | |
| 525 | 92-2985 | <2.5E-01 | |

GAMMA SPECTROMETRY ANALYSIS (@ October 16, 1992)

| Originator ID | Lab.Spl# | U-235 (Wet Basis) | | Th-228 (Wet Basis) | |
|---------------|----------|-------------------|-------------|--------------------|-------------|
| | | pCi/gram | 2 sigma | pCi/gram | 2 sigma |
| 518 * | 92-2978 | 3.28E-01 | +/- 3.1E-01 | 3.42E+00 | +/- 1.0E+00 |

* Fire Brick Sample

Remarks: Gamma Spectrometry Analysis for U-235

References: Request# 14904
Procedures: A-524
Analyst: WTF, MRK, TRK, DZ

Approved: 

Westinghouse Electric Corporation
 Advanced Programs - Analytical Laboratory
 Waltz Mill Site

REPORT

Reques # 14915

TO: Larry Smith/Joe Nardi
 Environmental & Regulatory Services
 Westinghouse Electric Corporation

Received: 0/23/92
 Reported: 2/22/92

[RESULTS OF ANALYSIS]

GAMMA SPECTROMETRY ANALYSIS (@ November 23, 1992)

| Originator ID | SAMPLE #526 | | SAMPLE #527 | |
|---------------|---------------|-------------|---------------|--------------|
| | Lab Sample ID | | Lab Sample ID | |
| NUCLIDE | pCi/gram | 2 sigma | pCi/gram | 2 sigma |
| K-40 | 4.69E+00 | +/- 1.3E+00 | 5.22E+00 | +/- 8.8E-01 |
| U-235 | 3.25E-01 | +/- 1.3E-01 | 1.49E-01 | +/- 5.0E-02 |
| Ra-226 | 1.84E+00 | +/- 2.5E-01 | 9.68E-01 | +/- 1.3E-01 |
| Ra-228 | 2.06E+00 | +/- 5.7E-01 | 1.24E+00 | +/- 1.8E-01 |
| Th-228 | 2.30E+00 | +/- 3.4E-01 | 1.37E+00 | +/- 1.9E-01 |
| Th-232 | NA | | 2.10E+01 | +/- 5.25E+00 |

Remarks: Gamma Spectrometry Analysis
 Th-232 ANALYZED BY ALPHA SPECTROMETRY
 nd - not detected

References: Request# 14915
 Procedures: A-524, OI 86-4
 Analyst: WTF, MRK, FRC
 Page 1

Approved: Mark Kawchuk

APPENDIX B

OPERATING PERMIT FOR INCINERATOR

Allegheny County Health Department
Bureau of Air Pollution Control
301 39th Street
Pittsburgh, PA. 15201
(412) 578-8105

20073

APPLICATION FOR
ANNUAL OPERATING PERMIT RENEWAL AND BILLING STATEMENT

1992

WESTINGHOUSE ASTRONUCLEAR LAB
LARGE, PA 15025

| | |
|----------------|-------------------------------|
| SITE | WESTINGHOUSE ASTRONUCLEAR LAB |
| TYPE OF PERMIT | INCINERATOR |
| EQUIPMENT | OTHER INCINERATOR |
| Permit Number | 7052807 000 20600 |
| | ANNUAL PERMIT FEE \$810.00 |

Please submit the amount of the fee shown. If there are no changes affecting your existing Permit, make check or money order payable to the TREASURER OF ALLEGHENY COUNTY. DO NOT SEND CASH. If adjustments are necessary, please specify * and return this statement to the Air Pollution Control office above. *

Return your check/money order with the yellow copy of the billing statement. Keep the pink copy of the billing statement for your records. Send your check and the billing statement to the Accounts Clerk c/o the Air Pollution Control Office listed above.

CHECK/MONEY ORDER # _____ DATE _____

Signature and Title of Applicant

BUREAU'S COPY

Form No. AP-361 (Rev. 6/81)

APPENDIX C

RADIOLOGICAL SURVEY DATA SHEETS

| | | | | | | | | | | | |
|--|-----|---------|-----|----------|--|--------------------|----------|---------|----------|-----------------------|--|
| uR/hr GAMMA INSTRUMENT: R/S PRM-7 S/N: L-2088 234 EFFICIENCY: N/A N/A CORR. FAC.: N/A N/A BACKGROUND: 11.0 LOW ENERGY GAMMA PRS-1 246 N/A N/A Cts. BETA/GAMMA ESP-2 1522 N/A N/A .01 mr/hr (*) ALPHA ESP-2 1517 27.1% 3.69 7 cpm (*) BETA ESP-2 1510 37.3% 2.68 454 cpm FLOOR MONITOR ALPHA BETA LUDLUM LUDLUM 91943 9194 15.7% 23.2% 6.37 4.31 7.0 cpm 571 cpm | | | | | | COUNTING EQUIPMENT | | | | SURVEY DATE: 10/16/92 | |
| | | | | | | ALPHA | | BETA | | COUNT DATE: 10/16/92 | |
| | | | | | | COUNTER# | TENNELEC | ALPHA 3 | TENNELEC | GM 2 | |
| BKG. | cpm | .10 cpm | cpm | 26.7 cpm | | | | | | | |
| EFF. | % | 32.7 % | % | 17.2 % | | | | | | | |
| C.F. | | 3.06 | | 5.81 | | | | | | | |

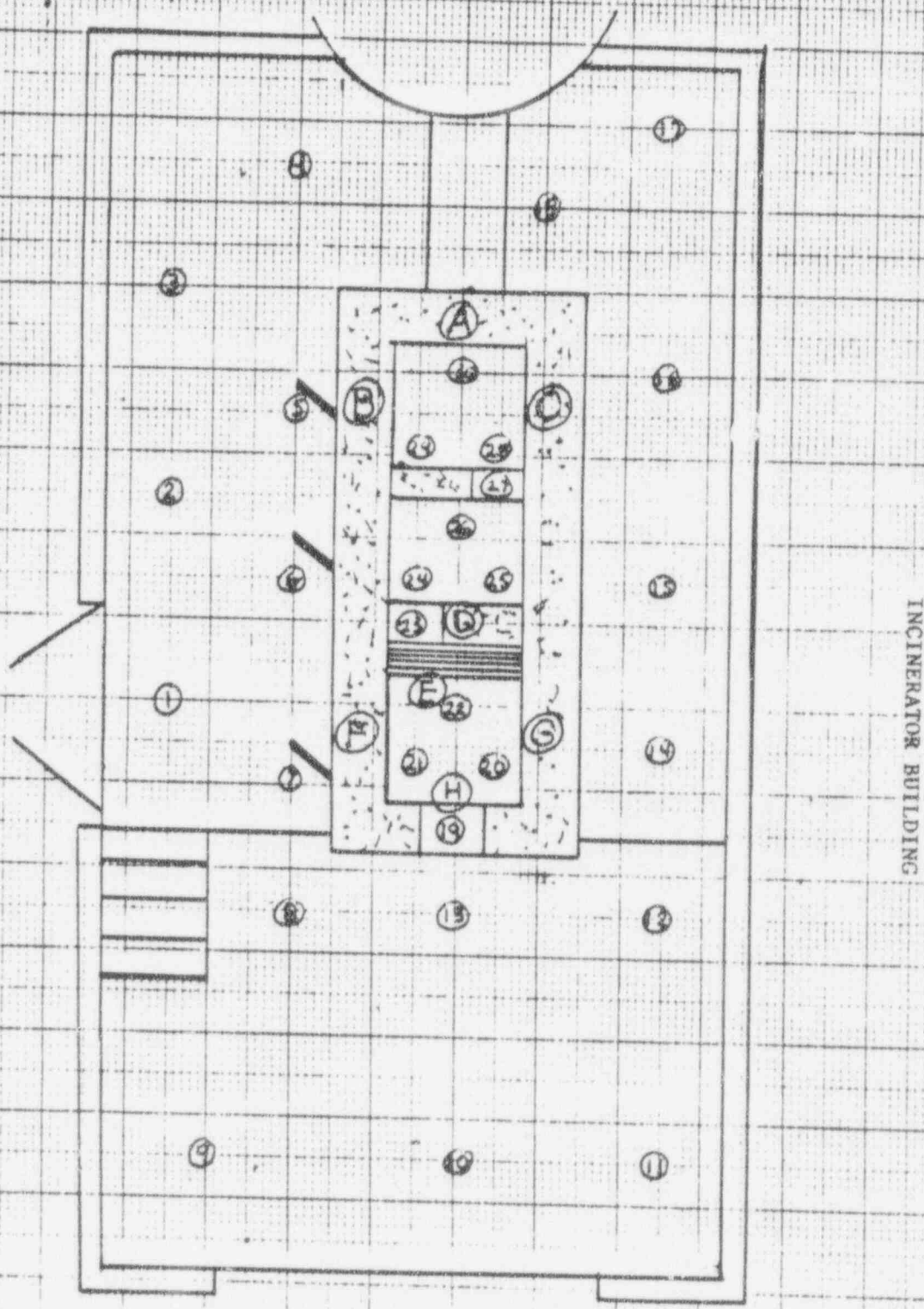
| SURFACE DESCRIPTION | GRID | X, Y REFERENCE POINT | GAMMA @ 1 M. uR/hr | LOW ENERGY GAMMA @ CONTACT 1 Min. gross ct. | BETA/GAMMA CONT.mr/hr | SCAN CONTACT GROSS CPM | | CONTACT GROSS 1 MIN.CT. | | SMEAR LEVELS IN CPM/100cm ² | | COMMENTS |
|---------------------|------|----------------------------|--------------------------|---|--------------------------|------------------------|----------|-------------------------|----------|--|------|-----------|
| | | | | | | MAX BETA | AVG BETA | ALPHA | BETA | ALPHA | BETA | |
| INCINERATOR BLDG. | N/A | 1 | 15 | N/A | .03 | 610 | 600 | 7 | 577 | 0 | 25 | (See Map) |
| " | " | 2 | 15 | " | .01 | 660 | 650 | 18 | 626 | 0 | 20 | " |
| " | " | 3 | 17 | " | .02 | 610 | 600 | 6 | 589 | 0 | 34 | " |
| " | " | 4 | 21 | " | .01 | 640 | 610 | 11 | 652 | 0 | 16 | " |
| " | " | 5 | 17 | " | .01 | 620 | 600 | 8 | 600 | 0 | 36 | " |
| " | " | 6 | 16 | " | .02 | 670 | 600 | 12 | 596 | 0 | 20 | " |
| " | " | 7 | 17 | " | .022 | 620 | 600 | 3 | 691 | 0 | 28 | " |
| " | " | 8 | 13 | " | .015 | 525 | 500 | 2 | 522 | 1 | 20 | " |
| " | " | 9 | 12 | " | .01 | 500 | 490 | 4 | 527 | 0 | 24 | " |
| " | " | 10 | 12 | " | .02 | 510 | 490 | 4 | 574 | 0 | 24 | " |
| " | " | 11 | 12 | " | .03 | 600 | 540 | 3 | 572 | 0 | 18 | " |
| " | " | 12 | 15 | " | .03 | 570 | 530 | 10 | 573 | 0 | 24 | " |
| " | " | 13 | 14 | " | .02 | 550 | 490 | 4 | 461 | 0 | 40 | " |
| " | " | 14 | 19 | " | .015 | 580 | 550 | 12 | 561 | 0 | 28 | " |
| " | " | 15 | 20 | " | .014 | 580 | 540 | 8 | 589 | 0 | 24 | " |
| " | " | 16 | 22 | " | .011 | 560 | 540 | 8 | 594 | 0 | 32 | " |
| " | " | 17 | 20 | " | .025 | 580 | 550 | 6 | 528 | 0 | 16 | " |
| " | " | 18 | 24 | " | .03 | 620 | 580 | 3 | 566 | 0 | 16 | " |
| Inside Incinerator | " | 19 | 16 | " | .04 | (*) 1200 | (*) 1000 | (*) 6 | (*) 1180 | 0 | 28 | " |
| " | " | 20 | 50 | " | .02 | (*) 800 | (*) 700 | (*) 0 | (*) 707 | 0 | 14 | " |

| | | | |
|---|---|--|--------------------------|
| FORM SERIAL #: 28 K-001 (Survey Section - Sequential survey #) | LOCATION # 28 K (Survey Section - Unit # - Sub Unit #) | SURVEY CLASSIFICATION: I (Group I, II, III, IV) | DISK FILE CODE: FDC 0012 |
|---|---|--|--------------------------|

| | | | | | | | | | | | | |
|----------------|--------|---------------------|------------|--------------|-------------|---------------|--------|--------------------|---------|----------|----------|-----------------------|
| uR/hr GAMMA | | LOW ENERGY GAMMA | BETA/GAMMA | (*) ALPHA | (*) BETA | FLOOR MONITOR | | COUNTING EQUIPMENT | | | | SURVEY DATE: 10/16/92 |
| INSTRUMENT: | R/S | PRM-7 | ESP-2 | ESP-2 | ESP-2 | ALPHA | BETA | ALPHA | | BETA | | COUNT DATE: 10/16/92 |
| S/N: | L-2088 | 234 | 1522 | 1517 | 1510 | LUDLUM | LUDLUM | TENNELEC | ALPHA 3 | TENNELEC | GM 2 | |
| EFFICIENCY: | N/A | N/A | N/A | 27.1% | 37.3% | 91943 | 91943 | cpm | .10 cpm | cpm | 26.7 cpm | |
| CORR. FAC.: | N/A | N/A | N/A | 3.69 | 2.68 | 6.37 | 4.31 | % | 32.7 % | % | 17.2 % | |
| BACKGROUND: | 11.0 | | Cts. | .01 mr/hr | 7 cpm | 454 cpm | 7 cpm | | 3.06 | | 5.81 | |

| SURFACE DESCRIPTION | GRID | X, Y REFERENCE POINT | GAMMA @ 1 M. uR/hr | LOW ENERGY GAMMA @ CONTACT 1 Min. gross ct. | BETA/GAMMA CONT. mr/hr | SCAN CONTACT GROSS CPM | | CONTACT GROSS 1 MIN. CT. | | SMEAR LEVELS IN CPM/100cm2 | | COMMENTS |
|---------------------|------|----------------------------|--------------------------|---|---------------------------|------------------------|----------|--------------------------|----------|----------------------------|------|-----------|
| | | | | | | MAX BETA | AVG BETA | ALPHA | BETA | ALPHA | BETA | |
| INSIDE INCINERATOR | N/A | 21 | 48 | N/A | .02 | (*) 800 | (*) 700 | (*) 4 | (*) 702 | 1 | 22 | (See map) |
| " | " | 22 | 55 | " | .03 | (*) 900 | (*) 700 | (*) 4 | (*) 712 | 0 | 14 | " |
| " | " | 23 | N/A | " | .03 | (*) 1400 | (*) 1200 | (*) 2 | (*) 1320 | 0 | 44 | " |
| " | " | 24 | 60 | " | .04 | (*) 1500 | (*) 1300 | (*) 1 | (*) 1380 | 0 | 22 | " |
| " | " | 25 | 60 | " | .06 | (*) 1600 | (*) 1400 | (*) 1 | (*) 1330 | 0 | 22 | " |
| " | " | 26 | 60 | " | .025 | (*) 1400 | (*) 1250 | (*) 1 | (*) 1360 | 0 | 24 | " |
| " | " | 27 | 60 | " | .04 | (*) 1300 | (*) 1200 | (*) 2 | (*) 1260 | 0 | 12 | " |
| " | " | 28 | 60 | " | .06 | (*) 1400 | (*) 1300 | (*) 1 | (*) 1370 | 0 | 8 | " |
| " | " | 29 | 60 | " | .03 | (*) 1500 | (*) 1400 | (*) 0 | (*) 1360 | 0 | 12 | " |
| " | " | 30 | 60 | " | .04 | (*) 1500 | (*) 1300 | (*) 4 | (*) 1330 | 0 | 18 | " |
| INNER INC/N. WALLS | " | "A" | N/A | " | N/A | (*) 1600 | (*) 1400 | N/A | N/A | N/A | N/A | " |
| " | " | "B" | " | " | " | (*) 1700 | (*) 1400 | " | " | " | " | " |
| " | " | "C" | " | " | " | (*) 1700 | (*) 1400 | " | " | " | " | " |
| " | " | "D" | " | " | " | (*) 1400 | (*) 1200 | " | " | " | " | " |
| " | " | "E" | " | " | " | (*) 1500 | (*) 1200 | " | " | " | " | " |
| " | " | "F" | " | " | " | (*) 1400 | (*) 1200 | " | " | " | " | " |
| " | " | "G" | " | " | " | (*) 1400 | (*) 1200 | " | " | " | " | " |
| " | " | "H" | " | " | " | (*) 1200 | (*) 900 | " | " | " | " | " |

| | | | |
|---|---|--|--------------------------|
| FORM SERIAL #: 28 K-001 (Survey Section - Sequential survey #) | LOCATION # 28 K (Survey Section - Unit # - Sub Unit #) | SURVEY CLASSIFICATION: I (Group I, II, III, IV) | DISK FILE CODE: FDS-0013 |
|---|---|--|--------------------------|



INCINERATOR BUILDING

SIGNATURE

DATE

CURVE NO

| | | | | | | | | | | | | | |
|-----------------------|--|---------------------|------------|---------|---------|--------------------|----------------|----------|-------|-----------------------|-------|----------------------|-----|
| | | | | | | COUNTING EQUIPMENT | | | | SURVEY DATE: 11/19/92 | | | |
| uR/hr GAMMA | | LOW ENERGY GAMMA | BETA/GAMMA | ALPHA | BETA | FLOOR MONITOR | | ALPHA | | BETA | | COUNT DATE: 11/19/92 | |
| INSTRUMENT: R/S PRM-7 | | PRS-1 | ESP-2 | ESP-2 | ESP-2 | ALPHA LUDLUM | BETA LUDLUM | COUNTER# | | TENNELEC 1 | ALPHA | TENNELEC 1 | GM |
| S/N: L-2088 234 | | 246 | 1522 | 1517 | 1510 | 91943 | 91943 | BKG. | 0.055 | cpm | cpm | 1.40 | cpm |
| EFFICIENCY: N/A N/A | | N/A | N/A | 27.1% | 37.3% | 15.7% | 23.2% | EFF. | 36.97 | % | % | 49.64 | % |
| CORR. FAC.: N/A N/A | | N/A | N/A | 3.69 | 2.68 | 0.09637 | 4.47431 | C.F. | 2.70 | | | 2.01 | |
| BACKGROUND: 12 | | 3924 Cts. | N/A mr/hr | N/A cpm | 425 cpm | MJA 12/4/92 | | | | | | | |

| SURFACE DESCRIPTION | GRID | X,Y REFERENCE POINT | GAMMA @ 1 M. uR/hr | LOW ENERGY GAMMA @ CONTACT 1 Min. gross ct. | BETA/GAMMA CONT.mr/hr | SCAN CONTACT GROSS CPM | | CONTACT GROSS 1 MIN.CT. | | SMEAR LEVELS NET CPM/100cm2 | | COMMENTS |
|---------------------|------|---------------------------|--------------------------|---|--------------------------|------------------------|----------|-------------------------|------|-----------------------------|-------|----------------|
| | | | | | | MAX BETA | AVG BETA | ALPHA | BETA | ALPHA | BETA | |
| Inside Incinerator | N/A | 1 | 28 | 6752 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | See Attached |
| chimney | " | 2 | 30 | 6723 | " | " | " | " | " | " | " | drawing |
| " | " | 3 | 28 | 6834 | " | " | " | " | " | " | " | " |
| " | " | 4 | 30 | 6831 | " | " | " | " | " | " | " | " |
| " | " | 5 | 32 | 7432 | " | " | " | " | " | " | " | " |
| " | " | 6 | 32 | 7349 | " | " | " | " | " | " | " | " |
| " | " | 7 | 32 | 7252 | " | " | " | " | " | " | " | " |
| " | " | 8 | 28 | 7060 | " | " | " | " | " | " | " | " |
| " | " | 9 | 28 | 6768 | " | " | " | " | " | " | " | " |
| " | " | 10 | 28 | 7474 | " | " | " | " | " | " | " | " |
| " | " | 11 | N/A | N/A | " | 800 | 650 | " | " | -0.055 | 0.60 | " |
| " | " | 12 | " | " | " | 850 | 650 | " | " | -0.055 | 0.60 | " |
| " | " | 13 | " | " | " | 800 | 650 | " | " | -0.055 | 2.60 | " |
| " | " | 14 | " | " | " | 900 | 700 | " | " | -0.055 | -0.40 | " |
| " | " | 15 | " | " | " | 900 | 700 | " | " | -0.055 | 1.60 | " |
| " | " | 16 | " | " | " | 900 | 700 | " | " | -0.055 | 3.60 | " |
| " | " | 17 | " | " | " | 800 | 650 | " | " | 0.945 | 1.60 | " |
| " | " | 18 | " | " | " | 800 | 650 | " | " | -0.055 | 0.60 | " |
| Outside Chimney | " | 19 | 18 | " | " | N/A | N/A | " | " | N/A | N/A | Outside G/A |
| " | " | 20 | 20 | " | " | " | " | " | " | " | " | around chimney |

FORM SERIAL #: 28 K-002
(Survey Section - Sequential survey #)

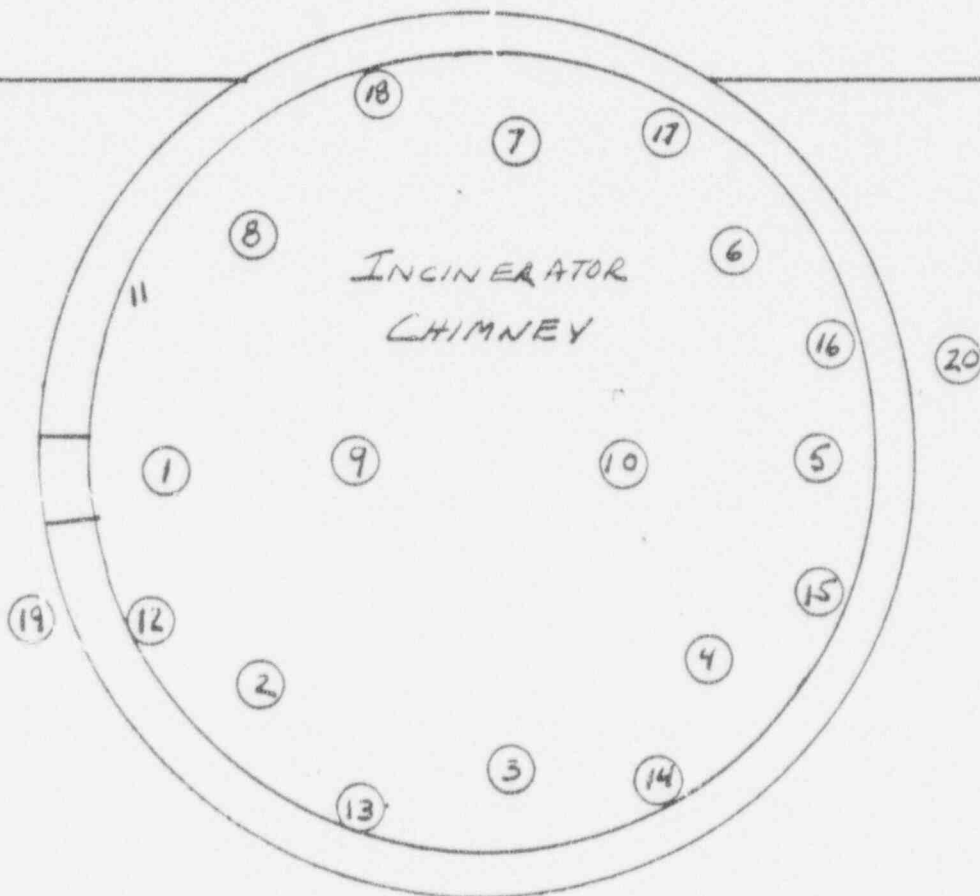
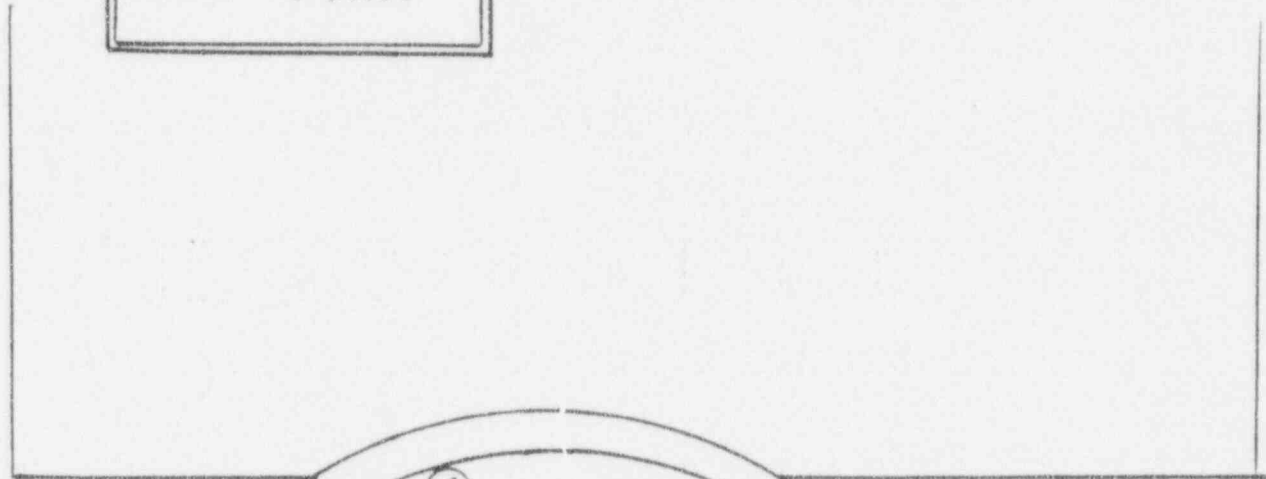
LOCATION # 28 K
(Survey Section - Unit # - Sub Unit #)

SURVEY CLASSIFICATION: I
(Group I, II, III, IV)

DISK FILE CODE: FDS-0054

KEY:

○ - SURVEY POINT



LB5100W Low Background Counting System -- Smear Analysis

Date: 11/19/92
 Counting Unit id: 1
 Data file name: C:\LBD\LINE\1\SME108.XLD
 Batch Ended: 11/19/92 9:25
 Crosstalk Correction: Not Applied

Alpha activity action level (DPM): 10.00
 Beta activity action level (DPM): 200.00
 Certainty level for MDA and flags: 95.00%
 High Voltage Setting: 1450
 Application Revision: 2
 Application Version: Standard

Alpha efficiency log file: po210ab
 Alpha Efficiency: 36.97%
 Alpha to Beta Crosstalk: 5.12%
 Alpha Background (CPM): 0.055263158
 Beta efficiency log file: CS137AB
 Beta Efficiency: 49.64%
 Beta into Alpha Crosstalk: 0.41%
 Beta Background (CPM): 1.401315789

Batch ID: 0

| Carrier | Alpha Activity | | | | Beta Activity | | | | Count time (min) | Alpha CPM | Beta CPM | Completion TOD |
|---------|----------------|----------|-------|-------|---------------|----------|-------|-------|---------------------|--------------|-------------|-------------------|
| | DPM | σ | Flags | MDA | DPM | σ | Flags | MDA | | | | |
| 1 | -0.149 | 0.79 | <MDA | 10.65 | 1.21 | 3.73 | <MDA | 16.60 | 1.00 | -0.055 | 0.60 | 11/19/92 9:17 |
| 2 | -0.149 | 0.79 | <MDA | 10.65 | 1.21 | 3.73 | <MDA | 16.60 | 1.00 | -0.055 | 0.50 | 11/19/92 9:18 |
| 3 | -0.149 | 0.79 | <MDA | 10.65 | 5.24 | 4.70 | <MDA | 16.60 | 1.00 | -0.055 | 2.60 | 11/19/92 9:19 |
| 4 | -0.149 | 0.79 | <MDA | 10.65 | -0.81 | 3.14 | <MDA | 16.60 | 1.00 | -0.055 | -0.40 | 11/19/92 9:20 |
| 5 | -0.149 | 0.79 | <MDA | 10.65 | 3.22 | 4.24 | <MDA | 16.60 | 1.00 | -0.055 | 1.60 | 11/19/92 9:22 |
| 6 | -0.149 | 0.79 | <MDA | 10.65 | 7.25 | 5.11 | <AL | 16.60 | 1.00 | -0.055 | 3.70 | 11/19/92 9:23 |
| 7 | 2.556 | 2.82 | <AL | 10.65 | 3.22 | 4.24 | <MDA | 16.60 | 1.00 | 0.945 | 1.20 | 11/19/92 9:24 |
| 8 | -0.149 | 0.79 | <MDA | 10.65 | 1.21 | 3.73 | <MDA | 16.60 | 1.00 | -0.055 | 0.60 | 11/19/92 9:25 |