# Georgia Institute of Technology Research Reactor

# Final Survey Package 19

# Bismuth Leak Area

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# Section 1

# Survey Package 19 Worksheet for the Bismuth Leak Area

Duratek Inc.
Survey Package Worksheet for Bismuth Leak Area
Georgia Institute of Technology Research Reactor

| | |
|---|---|
| Package Identification No.: 19 | Prepared by: Paul Jones |
| Location: Bismuth Leak Area of Basement | Date prepared: 07/9/2001 |
| Area Classification: Suspect Affected | |

## Area Description

The survey area consists of the bismuth leak area in the basement. This area is located immediately outside the experiment room in the basement. This package includes the bio-medical door pit. The floor of the bismuth leak area is approximately 12 square meters.

This bismuth leak area package does not have a wall 4 (this is the opening to the basement area 04, see package 16).

## Historical Information

This area was decontaminated during the fall of 2000. The decontamination consisted of the removal of concrete portions of the floor and walls of this area.

## General Survey Instructions

Floor and walls of the bismuth leak area.

1) Ensure the area is gridded as shown on the grid map(s).
2) Perform a 100% beta scan on the floor and walls to identify areas of elevated activity.
3) Obtain 1 direct beta measurement for each 1 $m^2$.
4) Obtain 1 smear for removable beta and alpha contamination for each 1 $m^2$ of area.
5) Obtain 1 exposure rate measurement at one meter above the floor at the corresponding direct beta measurement location.
6) Obtain required smears for H-3 analysis (See special Instructions for the minimum number of smears required). Denote location of all smears on map.

Use only the Package ID, L2, L7 and L8 codes when labeling smears for counting.

Use all location codes provided below when taking fixed beta readings.

Survey Pa... ~~1~~ 19 ...ge: continued
JM 8/10/01

| Special Instructions |
|---|
| Source check meters to Tc-99 for beta measurements. |
| Use gas flow proportional detector model numbers 43-68 and 43-106 for surveys. |
| Use GM detector model number 44-40 for surveys on heavily scabbled concrete surfaces. |
| The direct beta, smears, and the exposure rate measurements should be taken in the center of each grid at one meter above the floor. |
| Verify that the MDA is less than 600dpm/100cm2 for direct beta measurements after obtaining initial background. |
| Obtain background readings at each grid location for the floor, ceiling, and wall 2. Obtain a minimum of 2 ten-minute backgrounds for other surfaces. |
| During scanning the detector is to be kept as close to the surface as possible and moved across the surface at a slow speed (scan speed shall not exceed one probe width per sec). The scan should be performed using the audible output and using headphones whenever necessary. |

Survey performance (Initial and date as each survey is complete)

| Location Code | | | | | General Description | Beta Scan | Direct Beta | 1 meter Gamma | Smear Gross α/β | LS Smear |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | L2 | L6 | L7 | L8 | | | | | | |
| Georgia Tech Research Reactor Ground Floor General Area | | | | | | | | | | |
| A0219 | 01F01 | B0002, B000 | A - D | 1 thru 6 | Floor | ~~BSK~~ 7-10-01 | (20) ~~BSK~~ 7-10-01 | (20) DJS 7-16-01 | (20) WMB 7-17-01 | (10) WMB 7-17-01 |
| A0219 | 01W01 | B9999 | A thru B | 1 thru 4 | Wall 1 | ~~BSK~~ 7-10-01 | (8) ~~BSK~~ 7-10-01 | N/A | (8 WMB 7-17-01 | (2) WMB 7-17-01 |
| A0219 | 01W02 | B0002 | A thru C | 1 thru 5 (see grid map) | Wall 2 | ~~BSK~~ 7-10-01 | (13) ~~BSK~~ 7-10-01 | N/A | (13) WMB 7-17-01 | (4) WMB 7-17-01 |
| A0219 | 01W03 | B0002, B0001 | A thru B | 1 thru 5 (see grid map, 3rd grid is missing) | Wall 3 | DJS 7-25-01 | (8) DJS 7-17-01 | N/A | (8) WMB 7-17-01 | (4) WMB 7-17-01 |

Survey performance (Initial and date as each survey is complete)

| Location Code | | | | | General Description | Beta Scan | Direct Beta | 1 meter Gamma | Smear Gross α/β | LS Smear |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | L2 | L6 | L7 | L8 | | | | | | |
| A0219 | 01T01 | B0002 | ZZZZZ | 1 thru 10 | Trench 1 | BSK 7-14-01 | (10) BSK 7-14-01 | N/A | (10) [illegible] 7-17-01 | (4) [illegible] 7-17-01 |
| A0219 | 01C01 | B0002 | A thru D | 1 thru 6 | Ceiling | BSK 7-14-01 | (20) BSK 7-14-01 | N/A | (20) [illegible] 7-17-01 | (4) [illegible] 7-17-01 |
| A0219 | 01EQ1 | B9999 | ZZZZZ | 1 thru 10 | Biomedical Door | BSK 7-14-01 | (10) BSK 7-14-01 | N/A | (10) [illegible] 7-17-01 | (2) [illegible] 7-17-01 |

A

N

| Package Review | |
|---|---|
| Date Package Completed | 5/22/02 |
| Package Reviewed by and Date | Pat James 5/22/02 |

| Survey Comments |
|---|
| |
| |
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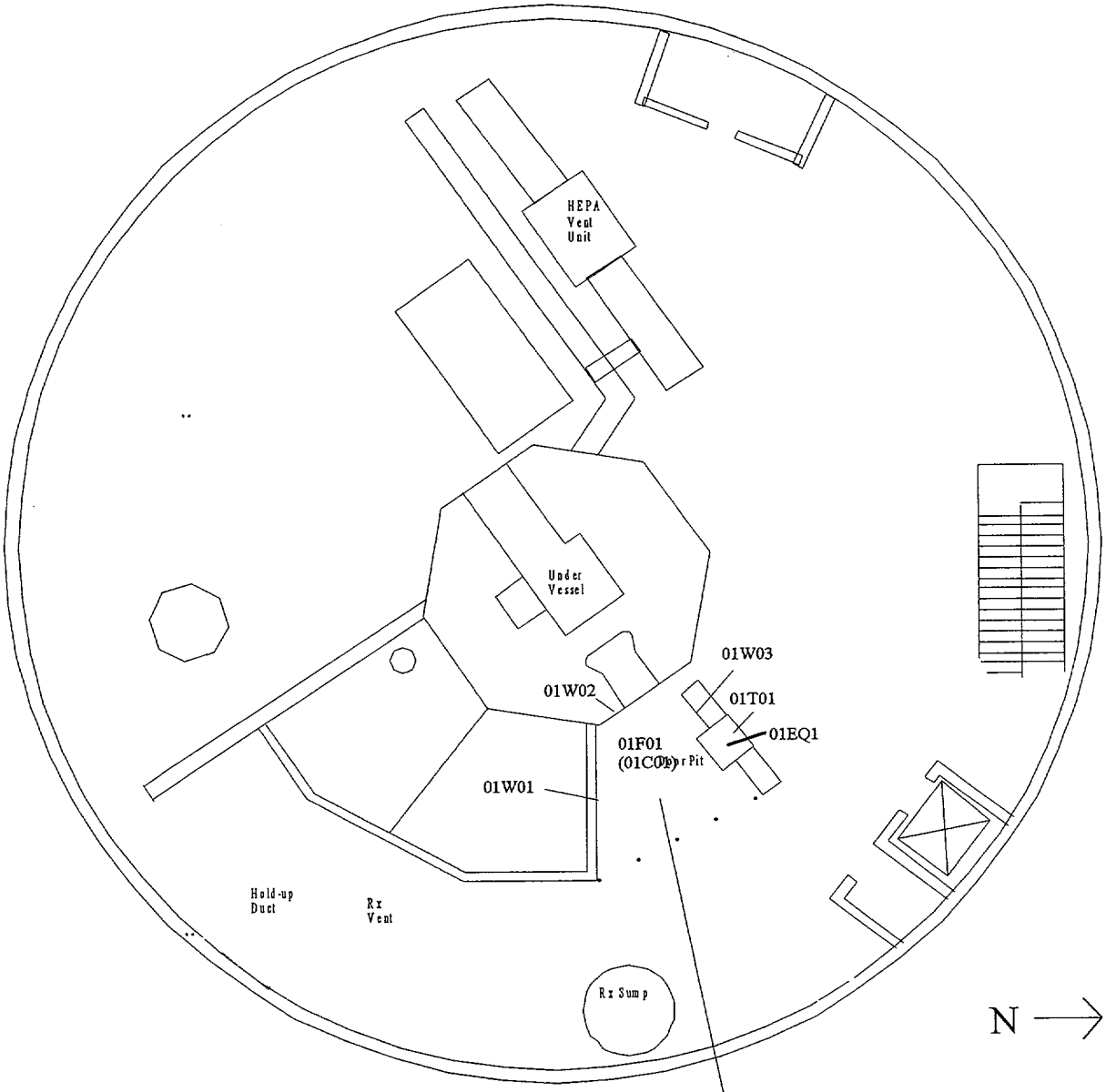
| |
| |
| |

# Section 2

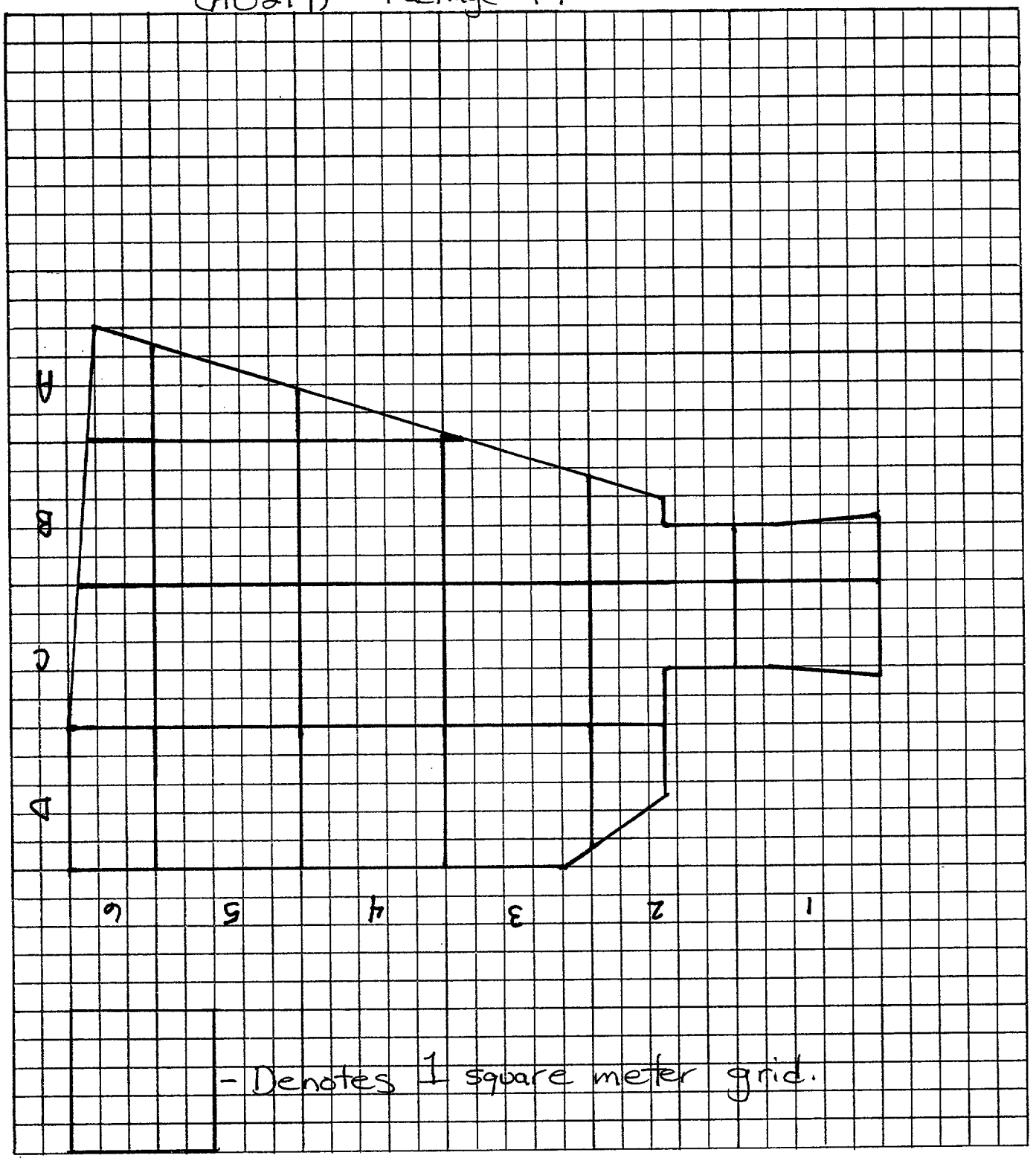
# Package 19
# Drawings

# Bismuth Leak Area

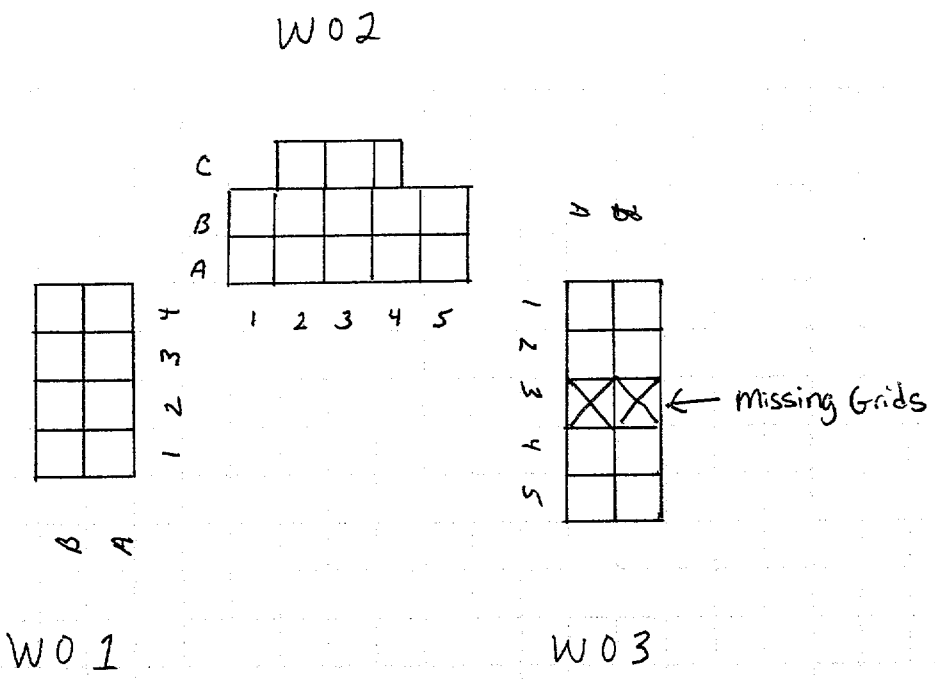



Bismuth Leak Area

(A0219) Package 19



(A0219) Package 19




□ - Denotes 1 square meter grid

# Section 3

# Package 19
# Direct Beta Survey Report for the Suspect Affected Bismuth Leak Area (including download reports)

Direct

Package A0219 ~~Fixed~~ Beta Survey Report (Suspect Affected Bismuth Leak Area)

RJ 5/22/02

| Desc. | File | Sample Number | Gross Counts | Count Time (sec) | Material Type | Detector Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Activity (dpm/100$cm^2$) | Natural Background (dpm/100$cm^2$) | Net Activity (dpm/100$cm^2$) | MDA (dpm/100$cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 182 | 57 | 659 | 60 | B0002 | 126 | 01C01 | FLDCT | A | 00004 | 0.211 | 535 | 466 | 354 | 112 | 336 |
| | 182 | 58 | 672 | 60 | B0002 | 126 | 01C01 | FLDCT | A | 00005 | 0.211 | 488 | 692 | 354 | 338 | 323 |
| | 182 | 59 | 659 | 60 | B0002 | 126 | 01C01 | FLDCT | A | 00006 | 0.211 | 483 | 662 | 354 | 308 | 322 |
| | 182 | 60 | 793 | 60 | B0002 | 126 | 01C01 | FLDCT | B | 00001 | 0.211 | 537 | 963 | 354 | 609 | 336 |
| | 182 | 61 | 682 | 60 | B0002 | 126 | 01C01 | FLDCT | B | 00002 | 0.211 | 501 | 681 | 354 | 327 | 327 |
| | 182 | 62 | 713 | 60 | B0002 | 126 | 01C01 | FLDCT | B | 00003 | 0.211 | 486 | 854 | 354 | 500 | 323 |
| | 182 | 63 | 632 | 60 | B0002 | 126 | 01C01 | FLDCT | B | 00004 | 0.211 | 539 | 350 | 354 | -4 | 337 |
| | 182 | 64 | 683 | 60 | B0002 | 126 | 01C01 | FLDCT | B | 00005 | 0.211 | 460 | 839 | 354 | 485 | 316 |
| | 182 | 65 | 486 | 60 | B9999 | 126 | 01C01 | FLDCT | B | 00006 | 0.211 | 429 | 214 | 0 | 214 | 279 |
| | 182 | 66 | 842 | 60 | B0002 | 126 | 01C01 | FLDCT | C | 00001 | 0.211 | 577 | 997 | 354 | 643 | 346 |
| | 182 | 67 | 730 | 60 | B0002 | 126 | 01C01 | FLDCT | C | 00002 | 0.211 | 539 | 718 | 354 | 364 | 337 |
| | 182 | 68 | 621 | 60 | B0002 | 126 | 01C01 | FLDCT | C | 00003 | 0.211 | 512 | 410 | 354 | 56 | 330 |
| | (182 | 69 | 672 | 60 | B0002 | 126 | 01C01 | FLDCT | C | 00004 | 0.211 | 476 | 737 | 354 | 383 | 320 |
| | 182 | 70 | 622 | 60 | B0002 | 126 | 01C01 | FLDCT | C | 00005 | 0.211 | 489 | 500 | 354 | 146 | 324 |
| | 182 | 71 | 656 | 60 | B0002 | 126 | 01C01 | FLDCT | C | 00006 | 0.211 | 480 | 662 | 354 | 308 | 321 |
| | 182 | 72 | 680 | 60 | B0002 | 126 | 01C01 | FLDCT | D | 00002 | 0.211 | 503 | 666 | 354 | 312 | 327 |
| | 182 | 73 | 617 | 60 | B0002 | 126 | 01C01 | FLDCT | D | 00003 | 0.211 | 480 | 515 | 354 | 161 | 321 |
| | 182 | 74 | 606 | 60 | B0002 | 126 | 01C01 | FLDCT | D | 00004 | 0.211 | 454 | 572 | 354 | 218 | 314 |
| | 182 | 75 | 658 | 60 | B0002 | 126 | 01C01 | FLDCT | D | 00005 | 0.211 | 416 | 910 | 354 | 556 | 303 |
| | 182 | 76 | 716 | 60 | B0002 | 126 | 01C01 | FLDCT | D | 00006 | 0.211 | 499 | 816 | 354 | 462 | 326 |
| | | | | | | | | | | | | | | | | |
| | 182 | 78 | 106 | 20 | B9999 | 126 | 01EQ1 | FLDCT | ZZZZZ | 00001 | 0.211 | 313 | 19 | 0 | 19 | 416 |
| | 182 | 79 | 108 | 20 | B9999 | 126 | 01EQ1 | FLDCT | ZZZZZ | 00002 | 0.211 | 313 | 41 | 0 | 41 | 416 |
| | 182 | 80 | 115 | 20 | B9999 | 126 | 01EQ1 | FLDCT | ZZZZZ | 00003 | 0.211 | 313 | 120 | 0 | 120 | 416 |
| | 182 | 81 | 140 | 20 | B9999 | 126 | 01EQ1 | FLDCT | ZZZZZ | 00004 | 0.211 | 313 | 402 | 0 | 402 | 416 |
| | 182 | 82 | 118 | 20 | B9999 | 126 | 01EQ1 | FLDCT | ZZZZZ | 00005 | 0.211 | 313 | 154 | 0 | 154 | 416 |
| | 182 | 83 | 109 | 20 | B9999 | 126 | 01EQ1 | FLDCT | ZZZZZ | 00006 | 0.211 | 313 | 53 | 0 | 53 | 416 |
| | 182 | 84 | 119 | 20 | B9999 | 126 | 01EQ1 | FLDCT | ZZZZZ | 00007 | 0.211 | 313 | 166 | 0 | 166 | 416 |
| | 182 | 85 | 97 | 20 | B9999 | 126 | 01EQ1 | FLDCT | ZZZZZ | 00008 | 0.211 | 313 | -83 | 0 | -83 | 416 |
| | 182 | 86 | 141 | 20 | B9999 | 126 | 01EQ1 | FLDCT | ZZZZZ | 00009 | 0.211 | 313 | 414 | 0 | 414 | 416 |
| | 182 | 87 | 113 | 20 | B9999 | 126 | 01EQ1 | FLDCT | ZZZZZ | 00010 | 0.211 | 313 | 98 | 0 | 98 | 416 |
| | | | | | | | | | | | | | | | | |
| | 176 | 20 | 758 | 60 | B0003 | 126 | 01F01 | FLDCT | A | 00004 | 0.212 | 478 | 1048 | 399 | 649 | 322 |
| | 176 | 21 | 703 | 60 | B0003 | 126 | 01F01 | FLDCT | A | 00005 | 0.212 | 471 | 869 | 399 | 470 | 321 |
| | 176 | 22 | 739 | 60 | B0003 | 126 | 01F01 | FLDCT | A | 00006 | 0.212 | 484 | 955 | 399 | 556 | 324 |
| | 176 | 23 | 757 | 60 | B0002 | 126 | 01F01 | FLDCT | B | 00001 | 0.212 | 538 | 820 | 354 | 466 | 335 |
| | 176 | 24 | 713 | 60 | B0002 | 126 | 01F01 | FLDCT | B | 00002 | 0.212 | 489 | 839 | 354 | 485 | 322 |
| | 176 | 25 | 791 | 60 | B0002 | 126 | 01F01 | FLDCT | B | 00003 | 0.212 | 518 | 1022 | 354 | 668 | 330 |
| | 176 | 26 | 719 | 60 | B0002 | 126 | 01F01 | FLDCT | B | 00004 | 0.212 | 510 | 782 | 354 | 428 | 328 |
| | 176 | 27 | 787 | 60 | B0002 | 126 | 01F01 | FLDCT | B | 00005 | 0.212 | 526 | 977 | 354 | 623 | 332 |
| | 176 | 28 | 776 | 60 | B0003 | 126 | 01F01 | FLDCT | B | 00006 | 0.212 | 457 | 1194 | 399 | 795 | 317 |
| | 176 | 29 | 735 | 60 | B0002 | 126 | 01F01 | FLDCT | C | 00001 | 0.212 | 530 | 767 | 354 | 413 | 333 |
| | 176 | 30 | 785 | 60 | B0002 | 126 | 01F01 | FLDCT | C | 00002 | 0.212 | 503 | 1056 | 354 | 702 | 326 |
| | 176 | 31 | 960 | 60 | B0002 | 126 | 01F01 | FLDCT | C | 00003 | 0.212 | 536 | 1587 | 354 | 1233 | 335 |
| | 176 | 32 | 769 | 60 | B0002 | 126 | 01F01 | FLDCT | C | 00004 | 0.212 | 513 | 958 | 354 | 604 | 329 |
| | 176 | 33 | 755 | 60 | B0003 | 126 | 01F01 | FLDCT | C | 00005 | 0.212 | 507 | 928 | 399 | 529 | 330 |
| | 176 | 34 | 782 | 60 | B0003 | 126 | 01F01 | FLDCT | C | 00006 | 0.212 | 547 | 880 | 399 | 481 | 340 |
| | 176 | 35 | 899 | 60 | B0002 | 126 | 01F01 | FLDCT | D | 00002 | 0.212 | 560 | 1269 | 354 | 915 | 341 |
| | 176 | 36 | 858 | 60 | B0002 | 126 | 01F01 | FLDCT | D | 00003 | 0.212 | 526 | 1243 | 354 | 889 | 332 |
| | 176 | 37 | 724 | 60 | B0002 | 126 | 01F01 | FLDCT | D | 00004 | 0.212 | 453 | 1015 | 354 | 661 | 312 |
| | 176 | 38 | 824 | 60 | B0003 | 126 | 01F01 | FLDCT | D | 00005 | 0.212 | 507 | 1187 | 399 | 788 | 330 |
| | 176 | 39 | 775 | 60 | B0003 | 126 | 01F01 | FLDCT | D | 00006 | 0.212 | 517 | 966 | 399 | 567 | 333 |

Direct

Package A0219 ~~Fixed~~ Beta Survey Report (Suspect Affected Bismuth Leak Area)

6/03/02

| Desc. | File | Sample Number | Gross Counts | Count Time (sec) | Material Type | Detector Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Activity (dpm/100$cm^2$) | Natural Background (dpm/100$cm^2$) | Net Activity (dpm/100$cm^2$) | MDA (dpm/100$cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 182 | 27 | 938 | 60 | B0002 | 126 | 01T01 | FLDCT | ZZZZZ | 00001 | 0.211 | 614 | 1219 | 354 | 865 | 356 |
| | 182 | 28 | 867 | 60 | B0002 | 126 | 01T01 | FLDCT | ZZZZZ | 00002 | 0.211 | 571 | 1113 | 354 | 759 | 345 |
| | 182 | 29 | 756 | 60 | B0002 | 126 | 01T01 | FLDCT | ZZZZZ | 00003 | 0.211 | 503 | 952 | 354 | 598 | 327 |
| | 182 | 30 | 727 | 60 | B0002 | 126 | 01T01 | FLDCT | ZZZZZ | 00004 | 0.211 | 493 | 880 | 354 | 526 | 325 |
| | 182 | 31 | 803 | 60 | B0002 | 126 | 01T01 | FLDCT | ZZZZZ | 00005 | 0.211 | 537 | 1001 | 354 | 647 | 336 |
| | 182 | 32 | 748 | 60 | B0002 | 126 | 01T01 | FLDCT | ZZZZZ | 00006 | 0.211 | 514 | 880 | 354 | 526 | 330 |
| | 182 | 33 | 760 | 60 | B0002 | 126 | 01T01 | FLDCT | ZZZZZ | 00007 | 0.211 | 515 | 922 | 354 | 568 | 331 |
| | 182 | 34 | 733 | 60 | B0002 | 126 | 01T01 | FLDCT | ZZZZZ | 00008 | 0.211 | 483 | 940 | 354 | 586 | 322 |
| | 182 | 35 | 727 | 60 | B0002 | 126 | 01T01 | FLDCT | ZZZZZ | 00009 | 0.211 | 556 | 643 | 354 | 289 | 341 |
| | 182 | 36 | 752 | 60 | B0002 | 126 | 01T01 | FLDCT | ZZZZZ | 00010 | 0.211 | 493 | 974 | 354 | 620 | 325 |
| | | | | | | | | | | | | | | | | |
| | 176 | 41 | 159 | 20 | B9999 | 126 | 01W01 | FLDCT | A | 00001 | 0.212 | 442 | 131 | 0 | 131 | 486 |
| | 176 | 42 | 145 | 20 | B9999 | 126 | 01W01 | FLDCT | A | 00002 | 0.212 | 442 | -26 | 0 | -26 | 486 |
| | 176 | 43 | 176 | 20 | B9999 | 126 | 01W01 | FLDCT | A | 00003 | 0.212 | 442 | 322 | 0 | 322 | 486 |
| | 176 | 44 | 143 | 20 | B9999 | 126 | 01W01 | FLDCT | A | 00004 | 0.212 | 442 | -49 | 0 | -49 | 486 |
| | 176 | 45 | 183 | 20 | B9999 | 126 | 01W01 | FLDCT | B | 00001 | 0.212 | 442 | 401 | 0 | 401 | 486 |
| | 176 | 46 | 138 | 20 | B9999 | 126 | 01W01 | FLDCT | B | 00002 | 0.212 | 442 | -105 | 0 | -105 | 486 |
| | 176 | 47 | 144 | 20 | B9999 | 126 | 01W01 | FLDCT | B | 00003 | 0.212 | 442 | -37 | 0 | -37 | 486 |
| | 176 | 48 | 162 | 20 | B9999 | 126 | 01W01 | FLDCT | B | 00004 | 0.212 | 442 | 165 | 0 | 165 | 486 |
| | | | | | | | | | | | | | | | | |
| | 176 | 63 | 739 | 60 | B0002 | 126 | 01W02 | FLDCT | A | 00001 | 0.212 | 454 | 1067 | 354 | 713 | 313 |
| | 176 | 64 | 802 | 60 | B0002 | 126 | 01W02 | FLDCT | A | 00002 | 0.212 | 545 | 962 | 354 | 608 | 337 |
| | 176 | 65 | 918 | 60 | B0002 | 126 | 01W02 | FLDCT | A | 00003 | 0.212 | 544 | 1400 | 354 | 1046 | 337 |
| | 176 | 66 | 844 | 60 | B0002 | 126 | 01W02 | FLDCT | A | 00004 | 0.212 | 553 | 1089 | 354 | 735 | 339 |
| | 176 | 67 | 752 | 60 | B0002 | 126 | 01W02 | FLDCT | A | 00005 | 0.212 | 511 | 902 | 354 | 548 | 328 |
| | 176 | 68 | 747 | 60 | B0002 | 126 | 01W02 | FLDCT | B | 00001 | 0.212 | 498 | 932 | 354 | 578 | 325 |
| | 176 | 69 | 559 | 60 | B0002 | 126 | 01W02 | FLDCT | B | 00002 | 0.212 | 498 | 228 | 354 | -126 | 325 |
| | 176 | 70 | 849 | 60 | B0002 | 126 | 01W02 | FLDCT | B | 00003 | 0.212 | 542 | 1149 | 354 | 795 | 336 |
| | 176 | 71 | 822 | 60 | B0002 | 126 | 01W02 | FLDCT | B | 00004 | 0.212 | 546 | 1033 | 354 | 679 | 337 |
| | 176 | 72 | 746 | 60 | B0002 | 126 | 01W02 | FLDCT | B | 00005 | 0.212 | 504 | 906 | 354 | 552 | 326 |
| | 176 | 73 | 655 | 60 | B0002 | 126 | 01W02 | FLDCT | C | 00002 | 0.212 | 470 | 693 | 354 | 339 | 317 |
| | 176 | 74 | 725 | 60 | B0002 | 126 | 01W02 | FLDCT | C | 00003 | 0.212 | 521 | 764 | 354 | 410 | 331 |
| | 176 | 75 | 712 | 60 | B0002 | 126 | 01W02 | FLDCT | C | 00004 | 0.212 | 487 | 842 | 354 | 488 | 322 |
| | | | | | | | | | | | | | | | | |
| | 182 | 6 | 192 | 20 | B0001 | 126 | 01W03 | FLDCT | A | 00001 | 0.211 | 496 | 301 | 346 | -45 | 559 |
| | 182 | 7 | 189 | 20 | B0002 | 126 | 01W03 | FLDCT | A | 00002 | 0.211 | 476 | 342 | 354 | -12 | 551 |
| | 182 | 8 | 200 | 20 | B0001 | 126 | 01W03 | FLDCT | A | 00004 | 0.211 | 496 | 391 | 346 | 45 | 559 |
| | 182 | 9 | 222 | 20 | B0001 | 126 | 01W03 | FLDCT | A | 00005 | 0.211 | 496 | 639 | 346 | 293 | 559 |
| | 182 | 10 | 196 | 20 | B0001 | 126 | 01W03 | FLDCT | B | 00001 | 0.211 | 496 | 346 | 346 | 0 | 559 |
| | 182 | 11 | 193 | 20 | B0002 | 126 | 01W03 | FLDCT | B | 00002 | 0.211 | 476 | 387 | 354 | 33 | 551 |
| | 182 | 12 | 220 | 20 | B0001 | 126 | 01W03 | FLDCT | B | 00004 | 0.211 | 496 | 617 | 346 | 271 | 559 |
| | 182 | 13 | 204 | 20 | B0001 | 126 | 01W03 | FLDCT | B | 00005 | 0.211 | 496 | 436 | 346 | 90 | 559 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | # Measurements | 89 | |
| | | | | | | | | | | | | | | Average | 400 | |
| | | | | | | | | | | | | | | Maximum | 1233 | |
| | | | | | | | | | | | | | | STD DEV | 288 | |
| | | | | | | | | | | | | | | 95% CL on Mean | 460 | |



014

The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #176

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Print
Technician: Name: D. Schumaker Signature: [signature] Station: 2
File: 176
Serial No. Verification: Model 2350: ☑ Detector: ☑ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kjos User ID BSK 0490 Signature: Betty S Kjos Date: 7-10-01

Print Name: BSK Floor Bel User ID ____ Signature: ____ Date: ____

Survey Unit Description: A0219 Bismuth Leak Area, Floor, 01W01, 01W02
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12-6-01 Detector: 12-6-01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☑ Beta β | 091050 | 43-68B | .212 | 5350/422 | 174 | 176 |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| | | | | | | |

Local Area Background Measurements — MEAN Value in cpm

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 Minutes β Beta | 1436/446 | 2 | 3 | 4 | 5 | 6 | 442 |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: ____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 176 | Survey Description: A0219: BISMUTH LEAK AREA FLOOR, WALL 01,02 | | |
| Survey Reason: TERMINATION | User ID: BSK0490 | Technician name: B.S. Kjos | |
| Instrument Model: 2350-1 | S/N: 129429 | Calibration Due: 12/06/01 | Group: 2 |
| Detector Model: 43-68B | Detector S/N: 091050 | Type: 126 cm2 Gas Proportional Detector, Beta Window | |
| Background: 442 cpm | Beta Efficiency: .212 | | Survey Date: 7/10/01 |

Pre and Post source checks are included on this download: Yes ____ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 174 Post File #: 176

Technician Review:

I have reveiwed this cover sheet and 3 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: Betty S. Kjos (Print name) / Betty S Kjos (Signature) Date: 7-11-01

and,

I performed this survey: _____ (Print name) / _____ (Signature) Date: _____

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES (Print name) / [signature] (Signature) Date: 7/16/01

Survey Date: 7/10/01 Report Date: 7/10/01 Page: 1
File: 176 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0219 | 01F01 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B0003 | A | 00004 | 0 | 60 | 478 | 135 | |
| FLDBK | B0003 | A | 00005 | 1 | 60 | 471 | 109 | |
| FLDBK | B0003 | A | 00006 | 2 | 60 | 484 | 157 | |
| FLDBK | B0002 | B | 00001 | 3 | 60 | 538 | 359 | |
| FLDBK | B0002 | B | 00002 | 4 | 60 | 489 | 176 | |
| FLDBK | B0002 | B | 00003 | 5 | 60 | 518 | 285 | |
| FLDBK | B0002 | B | 00004 | 6 | 60 | 510 | 255 | |
| FLDBK | B0003 | B | 00005 | 7 | 60 | 526 | 314 | |
| FLDBK | B0003 | B | 00006 | 8 | 60 | 457 | 56 | |
| FLDBK | B0002 | C | 00001 | 9 | 60 | 530 | 329 | |
| FLDBK | B0002 | C | 00002 | 10 | 60 | 503 | 228 | |
| FLDBK | B0002 | C | 00003 | 11 | 60 | 536 | 352 | |
| FLDBK | B0002 | C | 00004 | 12 | 60 | 513 | 266 | |
| FLDBK | B0003 | C | 00005 | 13 | 60 | 507 | 243 | |
| FLDBK | B0003 | C | 00006 | 14 | 60 | 547 | 393 | |
| FLDBK | B0002 | D | 00002 | 15 | 60 | 560 | 442 | |
| FLDBK | B0002 | D | 00003 | 16 | 60 | 526 | 314 | |
| FLDBK | B0002 | D | 00004 | 17 | 60 | 453 | 41 | |
| FLDBK | B0003 | D | 00005 | 18 | 60 | 507 | 243 | |
| FLDBK | B0003 | D | 00006 | 19 | 60 | 517 | 281 | |
| | | | | | | Group Average: | 249 | |
| FLDCT | B0003 | A | 00004 | 20 | 60 | 758 | 1183 | |
| FLDCT | B0003 | A | 00005 | 21 | 60 | 703 | 977 | |
| FLDCT | B0003 | A | 00006 | 22 | 60 | 739 | 1112 | |
| FLDCT | B0002 | B | 00001 | 23 | 60 | 757 | 1179 | |
| FLDCT | B0002 | B | 00002 | 24 | 60 | 713 | 1015 | |
| FLDCT | B0002 | B | 00003 | 25 | 60 | 791 | 1307 | |
| FLDCT | B0002 | B | 00004 | 26 | 60 | 719 | 1037 | |
| FLDCT | B0002 | B | 00005 | 27 | 60 | 787 | 1292 | |
| FLDCT | B0003 | B | 00006 | 28 | 60 | 776 | 1250 | |
| FLDCT | B0002 | C | 00001 | 29 | 60 | 735 | 1097 | |
| FLDCT | B0002 | C | 00002 | 30 | 60 | 785 | 1284 | |
| FLDCT | B0002 | C | 00003 | 31 | 60 | 960 | 1939 | |
| FLDCT | B0002 | C | 00004 | 32 | 60 | 769 | 1224 | |
| FLDCT | B0003 | C | 00005 | 33 | 60 | 755 | 1172 | |
| FLDCT | B0003 | C | 00006 | 34 | 60 | 782 | 1273 | |
| FLDCT | B0002 | D | 00002 | 35 | 60 | 899 | 1711 | |
| FLDCT | B0002 | D | 00003 | 36 | 60 | 858 | 1557 | |
| FLDCT | B0002 | D | 00004 | 37 | 60 | 724 | 1056 | |
| FLDCT | B0003 | D | 00005 | 38 | 60 | 824 | 1430 | |
| FLDCT | B0003 | D | 00006 | 39 | 60 | 775 | 1247 | |
| | | | | | | Group Average: | 1267 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0219 | 01W01 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00000 | 40 | 600 | 4366 | -20 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 49 | 600 | 4464 | 16 | |
| | | | | | | Group Average: | -2 | |
| FLDCT | B9999 | A | 00001 | 41 | 20 | 159 | 131 | |
| FLDCT | B9999 | A | 00002 | 42 | 20 | 145 | -26 | |
| FLDCT | B9999 | A | 00003 | 43 | 20 | 176 | 322 | |
| FLDCT | B9999 | A | 00004 | 44 | 20 | 143 | -49 | |

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/10/01 Report Date: 7/10/01 Page: 2
File: 176 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0219 | 01W01 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| FLDCT | B9999 | B | 00001 | 45 | 20 | 183 | 401 | |
| FLDCT | B9999 | B | 00002 | 46 | 20 | 138 | -105 | |
| FLDCT | B9999 | B | 00003 | 47 | 20 | 144 | -37 | |
| FLDCT | B9999 | B | 00004 | 48 | 20 | 162 | 165 | |
| | | | | | | Group Average: | 100 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0219 | 01W02 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B0002 | A | 00001 | 50 | 60 | 454 | 45 | |
| FLDBK | B0002 | A | 00002 | 51 | 60 | 545 | 386 | |
| FLDBK | B0002 | A | 00003 | 52 | 60 | 544 | 382 | |
| FLDBK | B0002 | A | 00004 | 53 | 60 | 553 | 416 | |
| FLDBK | B0002 | A | 00005 | 54 | 60 | 511 | 258 | |
| FLDBK | B0002 | B | 00001 | 55 | 60 | 498 | 210 | |
| FLDBK | B0002 | B | 00002 | 56 | 60 | 498 | 210 | |
| FLDBK | B0002 | B | 00003 | 57 | 60 | 542 | 374 | |
| FLDBK | B0002 | B | 00004 | 58 | 60 | 546 | 389 | |
| FLDBK | B0002 | B | 00005 | 59 | 60 | 504 | 232 | |
| FLDBK | B0002 | C | 00002 | 60 | 60 | 470 | 105 | |
| FLDBK | B0002 | C | 00003 | 61 | 60 | 521 | 296 | |
| FLDBK | B0002 | C | 00004 | 62 | 60 | 487 | 168 | |
| | | | | | | Group Average: | 267 | |
| FLDCT | B0002 | A | 00001 | 63 | 60 | 739 | 1112 | |
| FLDCT | B0002 | A | 00002 | 64 | 60 | 802 | 1348 | |
| FLDCT | B0002 | A | 00003 | 65 | 60 | 918 | 1782 | |
| FLDCT | B0002 | A | 00004 | 66 | 60 | 844 | 1505 | |
| FLDCT | B0002 | A | 00005 | 67 | 60 | 752 | 1161 | |
| FLDCT | B0002 | B | 00001 | 68 | 60 | 747 | 1142 | |
| FLDCT | B0002 | B | 00002 | 69 | 60 | 559 | 438 | |
| FLDCT | B0002 | B | 00003 | 70 | 60 | 849 | 1524 | |
| FLDCT | B0002 | B | 00004 | 71 | 60 | 822 | 1423 | |
| FLDCT | B0002 | B | 00005 | 72 | 60 | 746 | 1138 | |
| FLDCT | B0002 | C | 00002 | 73 | 60 | 655 | 797 | |
| FLDCT | B0002 | C | 00003 | 74 | 60 | 725 | 1059 | |
| FLDCT | B0002 | C | 00004 | 75 | 60 | 712 | 1011 | |
| | | | | | | Group Average: | 1188 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | ZZZZZ | EZ260 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 77 | 60 | 5530 | 19048 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00001 | 78 | 60 | 6062 | 21039 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00002 | 79 | 60 | 5672 | 19579 | * |
| | | | | | | Group Average: | 19889 | |

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/10/01 Report Date: 7/10/01 Page: 3
File: 176 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 |
|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02200 |

Setup Number 0
Det Cal Due: 12/06/01

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| PTBBK | ZZZZZ | ZZZZZ | 00000 | 76 | 600 | 4191 | -86 | |
| | | | | | | Group Average: | -86 | |

Total Number of Measurements on this Report: 80

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 2400 dpm/100 cm2

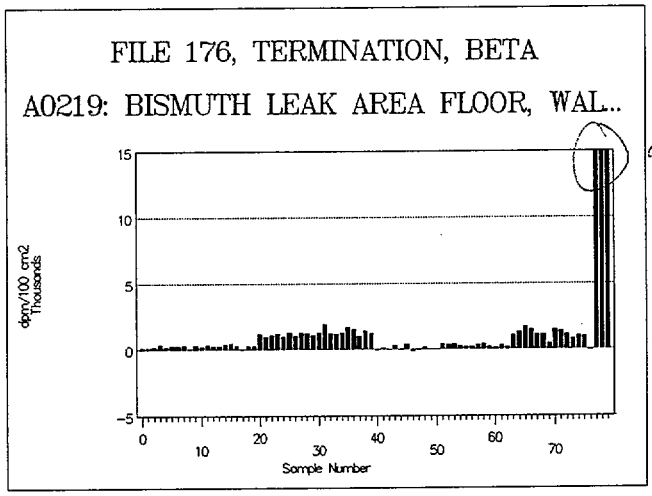
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/10/2001 Graph of File 176 Station: 2

Survey Date: 7/10/2001 Survey Start Time: 12:42:36

Description: A0219: BISMUTH LEAK AREA FLOOR, WALL 01,02




Post S/C

Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #182

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Print
Technician: Name: Don Schumacker Signature: [signature] Station: 2 File: 182
Serial No. Verification: Model 2350: ☑ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kjos User ID BSK 0490 Signature: Betty S Kjos Date: 7-12-01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0219, Bismuth leak Area, Wall 3, Trench, Ceiling + Biomed. door
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12-6-01 Detector: 12-6-01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☑ Beta β | 091050 | 43-68B | .211 | 5309 / 387 | 182 | 182 |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| | | | | | | |

01W03(B0001) = 496 cpm 01W03(B0002) = 476 cpm 01EQ1 = 313 cpm

Local Area Background Measurements — MEAN Value in cpm !

| 10 minutes | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 14889 / 5032 | 24715 / 4906 | 3 3131 / 3138 | 4 6195 | 5 | 6 | 456 |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 182 | Survey Description: A0219: BISMUTH LEAK AREA, WALL 3,TRENCH,CEILING, DOOR | | |
| Survey Reason: TERMINATION | User ID: BSK0490 | Technician name: B.S. Kjos | |
| Instrument Model: 2350-1 | S/N: 129429 | Calibration Due: 12/06/01 | Group: 2 |
| Detector Model: 43-68B | Detector S/N: 091050 | Type: 126 cm2 Gas Proportional Detector, Beta Window | |
| Background: 456 cpm | Beta Efficiency: .211 | | Survey Date: 7/12/01 |

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 3 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: Betty S. Kjos (Print name) / Betty S Kjos (Signature) Date: 7-12-01

and,

I performed this survey: _____ (Print name) / _____ (Signature) Date: _____

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES (Print name) / Paul A Jones (Signature) Date: 7/16/01

Survey Date: 7/12/01 Report Date: 7/12/01 Page: 1
File: 182 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0219 | 01C01 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B0002 | A | 00004 | 37 | 60 | 535 | 297 | |
| FLDBK | B0002 | A | 00005 | 38 | 60 | 488 | 120 | |
| FLDBK | B0002 | A | 00006 | 39 | 60 | 483 | 102 | |
| FLDBK | B0002 | B | 00001 | 40 | 60 | 537 | 305 | |
| FLDBK | B0002 | B | 00002 | 41 | 60 | 501 | 169 | |
| FLDBK | B0002 | B | 00003 | 42 | 60 | 486 | 113 | |
| FLDBK | B0002 | B | 00004 | 43 | 60 | 539 | 312 | |
| FLDBK | B0002 | B | 00005 | 44 | 60 | 460 | 15 | |
| FLDBK | B9999 | B | 00006 | 45 | 60 | 429 | -102 | |
| FLDBK | B0002 | C | 00001 | 46 | 60 | 577 | 455 | |
| FLDBK | B0002 | C | 00002 | 47 | 60 | 539 | 312 | |
| FLDBK | B0002 | C | 00003 | 48 | 60 | 512 | 211 | |
| FLDBK | B0002 | C | 00004 | 49 | 60 | 476 | 75 | |
| FLDBK | B0002 | C | 00005 | 50 | 60 | 489 | 124 | |
| FLDBK | B0002 | C | 00006 | 51 | 60 | 480 | 90 | |
| FLDBK | B0002 | D | 00002 | 52 | 60 | 503 | 177 | |
| FLDBK | B0002 | D | 00003 | 53 | 60 | 480 | 90 | |
| FLDBK | B0002 | D | 00004 | 54 | 60 | 454 | -8 | |
| FLDBK | B0002 | D | 00005 | 55 | 60 | 416 | -150 | |
| FLDBK | B0002 | D | 00006 | 56 | 60 | 499 | 162 | |
| | | | | | | Group Average: | 143 | |
| FLDCT | B0002 | A | 00004 | 57 | 60 | 659 | 764 | |
| FLDCT | B0002 | A | 00005 | 58 | 60 | 672 | 812 | |
| FLDCT | B0002 | A | 00006 | 59 | 60 | 659 | 764 | |
| FLDCT | B0002 | B | 00001 | 60 | 60 | 793 | 1268 | |
| FLDCT | B0002 | B | 00002 | 61 | 60 | 682 | 850 | |
| FLDCT | B0002 | B | 00003 | 62 | 60 | 713 | 967 | |
| FLDCT | B0002 | B | 00004 | 63 | 60 | 632 | 662 | |
| FLDCT | B0002 | B | 00005 | 64 | 60 | 683 | 854 | |
| FLDCT | B9999 | B | 00006 | 65 | 60 | 486 | 113 | |
| FLDCT | B0002 | C | 00001 | 66 | 60 | 842 | 1452 | |
| FLDCT | B0002 | C | 00002 | 67 | 60 | 730 | 1031 | |
| FLDCT | B0002 | C | 00003 | 68 | 60 | 621 | 621 | |
| FLDCT | B0002 | C | 00004 | 69 | 60 | 672 | 812 | |
| FLDCT | B0002 | C | 00005 | 70 | 60 | 622 | 624 | |
| FLDCT | B0002 | C | 00006 | 71 | 60 | 656 | 752 | |
| FLDCT | B0002 | D | 00002 | 72 | 60 | 680 | 843 | |
| FLDCT | B0002 | D | 00003 | 73 | 60 | 617 | 606 | |
| FLDCT | B0002 | D | 00004 | 74 | 60 | 606 | 564 | |
| FLDCT | B0002 | D | 00005 | 75 | 60 | 658 | 760 | |
| FLDCT | B0002 | D | 00006 | 76 | 60 | 716 | 978 | |
| | | | | | | Group Average: | 805 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0219 | 01EQ1 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00000 | 77 | 600 | 3131 | -538 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 88 | 600 | 3138 | -535 | |
| | | | | | | Group Average: | -536 | |
| FLDCT | B9999 | ZZZZZ | 00001 | 78 | 20 | 106 | -519 | |
| FLDCT | B9999 | ZZZZZ | 00002 | 79 | 20 | 108 | -497 | |
| FLDCT | B9999 | ZZZZZ | 00003 | 80 | 20 | 115 | -418 | |
| FLDCT | B9999 | ZZZZZ | 00004 | 81 | 20 | 140 | -135 | |

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/12/01 Report Date: 7/12/01 Page: 2
File: 182 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0219 | 01EQ1 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDCT | B9999 | ZZZZZ | 00005 | 82 | 20 | 118 | -384 | |
| FLDCT | B9999 | ZZZZZ | 00006 | 83 | 20 | 109 | -485 | |
| FLDCT | B9999 | ZZZZZ | 00007 | 84 | 20 | 119 | -372 | |
| FLDCT | B9999 | ZZZZZ | 00008 | 85 | 20 | 97 | -621 | |
| FLDCT | B9999 | ZZZZZ | 00009 | 86 | 20 | 141 | -124 | |
| FLDCT | B9999 | ZZZZZ | 00010 | 87 | 20 | 113 | -440 | |
| | | | | | | Group Average: | -399 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0219 | 01T01 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B0002 | ZZZZZ | 00000 | 16 | 600 | 6195 | 615 | |
| FLDBK | B0002 | ZZZZZ | 00001 | 17 | 60 | 614 | 594 | |
| FLDBK | B0002 | ZZZZZ | 00002 | 18 | 60 | 571 | 433 | |
| FLDBK | B0002 | ZZZZZ | 00003 | 19 | 60 | 503 | 177 | |
| FLDBK | B0002 | ZZZZZ | 00004 | 20 | 60 | 493 | 139 | |
| FLDBK | B0002 | ZZZZZ | 00005 | 21 | 60 | 537 | 305 | |
| FLDBK | B0002 | ZZZZZ | 00006 | 22 | 60 | 514 | 218 | |
| FLDBK | B0002 | ZZZZZ | 00007 | 23 | 60 | 515 | 222 | |
| FLDBK | B0002 | ZZZZZ | 00008 | 24 | 60 | 483 | 102 | |
| FLDBK | B0002 | ZZZZZ | 00009 | 25 | 60 | 556 | 376 | |
| FLDBK | B0002 | ZZZZZ | 00010 | 26 | 60 | 493 | 139 | |
| | | | | | | Group Average: | 302 | |
| FLDCT | B0002 | ZZZZZ | 00001 | 27 | 60 | 938 | 1813 | |
| FLDCT | B0002 | ZZZZZ | 00002 | 28 | 60 | 867 | 1546 | |
| FLDCT | B0002 | ZZZZZ | 00003 | 29 | 60 | 756 | 1128 | |
| FLDCT | B0002 | ZZZZZ | 00004 | 30 | 60 | 727 | 1019 | |
| FLDCT | B0002 | ZZZZZ | 00005 | 31 | 60 | 803 | 1305 | |
| FLDCT | B0002 | ZZZZZ | 00006 | 32 | 60 | 748 | 1098 | |
| FLDCT | B0002 | ZZZZZ | 00007 | 33 | 60 | 760 | 1143 | |
| FLDCT | B0002 | ZZZZZ | 00008 | 34 | 60 | 733 | 1042 | |
| FLDCT | B0002 | ZZZZZ | 00009 | 35 | 60 | 727 | 1019 | |
| FLDCT | B0002 | ZZZZZ | 00010 | 36 | 60 | 752 | 1113 | |
| | | | | | | Group Average: | 1223 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0219 | 01W03 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B0001 | ZZZZZ | 00000 | 4 | 600 | 4889 | 124 | |
| FLDBK | B0002 | ZZZZZ | 00000 | 5 | 600 | 4715 | 58 | |
| FLDBK | B0001 | ZZZZZ | 00000 | 14 | 600 | 5032 | 178 | |
| FLDBK | B0002 | ZZZZZ | 00000 | 15 | 600 | 4806 | 93 | |
| | | | | | | Group Average: | 113 | |
| FLDCT | B0001 | A | 00001 | 6 | 20 | 192 | 451 | |
| FLDCT | B0002 | A | 00002 | 7 | 20 | 189 | 418 | |
| FLDCT | B0001 | A | 00004 | 8 | 20 | 200 | 542 | |

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/12/01 Report Date: 7/12/01 Page: 3
File: 182 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0219 | 01W03 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDCT | B0001 | A | 00005 | 9 | 20 | 222 | 790 | |
| FLDCT | B0001 | B | 00001 | 10 | 20 | 196 | 497 | |
| FLDCT | B0002 | B | 00002 | 11 | 20 | 193 | 463 | |
| FLDCT | B0001 | B | 00004 | 12 | 20 | 220 | 767 | |
| FLDCT | B0001 | B | 00005 | 13 | 20 | 204 | 587 | |
| | | | | | | Group Average: | 564 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | ZZZZZ | EZ260 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 1 | 60 | 5620 | 19424 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 2 | 60 | 5736 | 19860 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 3 | 60 | 5733 | 19849 | * |
| | | | | | | Group Average: | 19711 | |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 90 | 60 | 5613 | 19397 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 91 | 60 | 5865 | 20345 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 92 | 60 | 5809 | 20135 | * |
| | | | | | | Group Average: | 19959 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 0 | 600 | 3867 | -261 | |
| | | | | | | Group Average: | -261 | |
| PTBBK | ZZZZZ | ZZZZZ | 00000 | 89 | 600 | 4306 | -96 | |
| | | | | | | Group Average: | -96 | |

Total Number of Measurements on this Report: 93

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 2400 dpm/100 cm2

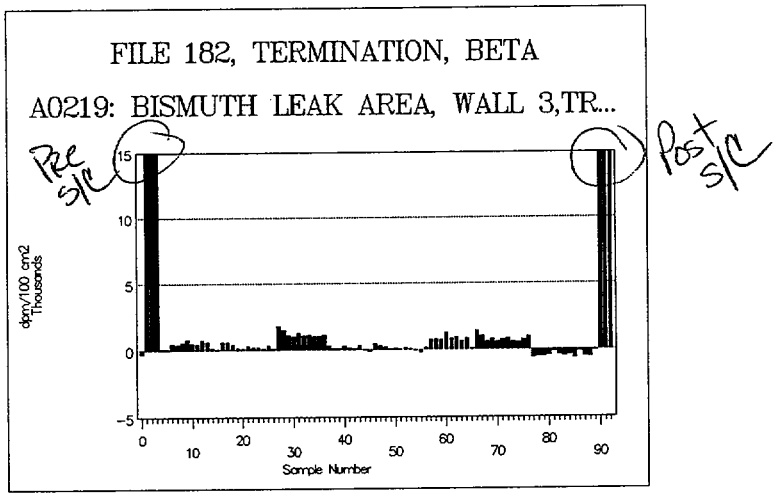
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/12/2001 Graph of File 182 Station: 2

Survey Date: 7/12/2001 Survey Start Time: 09:37:14

Description: A0219: BISMUTH LEAK AREA, WALL 3,TRENCH,CEILING, DOOR




Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

# Section 4

# Package 19
# Exposure Rate Measurements for the Bismuth Leak Area

## ATTACHMENT 6.14
## SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: D. Schumacher Signature: [signature] Station: 2 File: 188

Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumacher User ID DS 4133 Signature: [signature] Date: 7-16-01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0219: Bismuth Leak Area Gamma Reading
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 126182

Instrument and Detector Calibration Due Dates: Survey Meter: 9-22-01 Detector: 12-6-01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☐ Beta β | | 43-68B | | | | |
| ☐ Alpha α | | 43-68A | | | | |
| ☑ Gamma γ | 091034 | 44-2 | N/A | N/A | 187 | 189 |
| | | | | | | |

| Local Area Background Measurements | | | | | | | MEAN Value in cpm |
|---|---|---|---|---|---|---|---|
| β Beta | 1 | 2 | 3 | 4 | 5 | 6 | |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Gamma Radiation Survey Report, Micro-R/hour - Integrated Measurement

| | | | |
|---|---|---|---|
| File Number: 188 | Survey Description: A0219: BISMUTH LEAK AREA GAMMA READINGS | | |
| Survey Reason: TERMINATION | User ID: DPS4133 | Technician name: Don Schumaker | |
| Instrument Model: M2350-1 | S/N: 126182 | Calibration Due: 9/22/01 | Group: 2 |
| Detector Model: 44-2 | Detector S/N: 091034 | Type: High Energy Gamma Scintillator, 1x1 NaI | |
| Background: 0.0 uR/hr | Gamma Calibration Constant: 1.70095 E10 c/R | PIC ratio: 1.000 (PIC/NaI) | Survey Date: 7/16/01 |

Pre and Post source checks are included on this download: Yes ___ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 187 Post File #: 189

Technician Review:

I have reveiwed this cover sheet and 1 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: D. Schumaker / [signature] Date: 7/16/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and reason (required):

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 7/16/01
Print name Signature

Survey Date: 7/16/01 Report Date: 7/16/01 Station: 2
File: 188 Page: 1

| Survey Code | L1 | L2 | L3 | L4 | L5 | L6 |
|---|---|---|---|---|---|---|
| | A0219 | 01F01 | TAT01 | 03100 | FLDCT | B0002 |

Setup Number 2
Det Cal Due: 12/06/01

| L7 Code Grid ID | L8 Code Location Number | Sample Number | Count Time (sec) | Gross Counts | Gross Micro R/hr | Hi |
|---|---|---|---|---|---|---|
| B | 00001 | 3 | 10 | 914 | 19.3 | * |
| B | 00002 | 4 | 10 | 863 | 18.3 | * |
| B | 00003 | 5 | 10 | 757 | 16.0 | * |
| B | 00004 | 6 | 10 | 761 | 16.1 | * |
| C | 00001 | 9 | 10 | 886 | 18.8 | * |
| C | 00002 | 10 | 10 | 817 | 17.3 | * |
| C | 00003 | 11 | 10 | 784 | 16.6 | * |
| C | 00004 | 12 | 10 | 735 | 15.6 | * |
| D | 00002 | 15 | 10 | 836 | 17.7 | * |
| D | 00003 | 16 | 10 | 829 | 17.5 | * |
| D | 00004 | 17 | 10 | 747 | 15.8 | * |

Group Average: 4870 cpm Average uR/hr: 17.2
Number of measurements: 11

| Survey Code | L1 | L2 | L3 | L4 | L5 | L6 |
|---|---|---|---|---|---|---|
| | A0219 | 01F01 | TAT01 | 03100 | FLDCT | B0003 |

Setup Number 2
Det Cal Due: 12/06/01

| L7 Code Grid ID | L8 Code Location Number | Sample Number | Count Time (sec) | Gross Counts | Gross Micro R/hr | Hi |
|---|---|---|---|---|---|---|
| A | 00004 | 0 | 10 | 764 | 16.2 | * |
| A | 00005 | 1 | 10 | 800 | 16.9 | * |
| A | 00006 | 2 | 10 | 778 | 16.5 | * |
| B | 00005 | 7 | 10 | 728 | 15.4 | * |
| B | 00006 | 8 | 10 | 788 | 16.7 | * |
| C | 00005 | 13 | 10 | 787 | 16.7 | * |
| C | 00006 | 14 | 10 | 792 | 16.8 | * |
| D | 00005 | 18 | 10 | 816 | 17.3 | * |
| D | 00006 | 19 | 10 | 793 | 16.8 | * |

Group Average: 4697 cpm Average uR/hr: 16.6
Number of measurements: 9

Total Number of Measurements on this Report: 20

Comments

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 15.0 micro-R/hr.

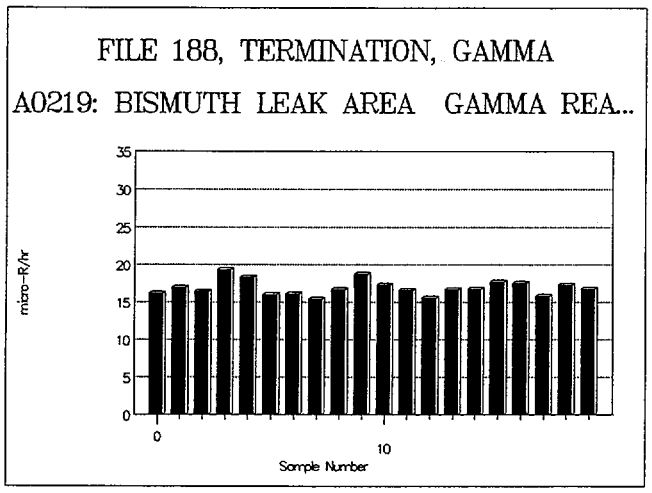
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/16/2001 Graph of File 188 Station: 2

Survey Date: 7/16/2001 Survey Start Time: 07:53:16

Description: A0219: BISMUTH LEAK AREA GAMMA READINGS




Flag set for 15 micro-R/hr. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: D. Schumacher Signature: [signature] Station: 2 File: 189
Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumacher User ID DT 4133 Signature: [signature] Date: 7/16/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0218, A0219: Post s/c For File # 187, 188
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 126182

Instrument and Detector Calibration Due Dates: Survey Meter: 9-22-01 Detector: 12-6-01

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☐ Beta β | | 43-68B | | | | |
| ☐ Alpha α | | 43-68A | | | | |
| ☒ Gamma γ | 091034 | 44-2 | N/A | N/A | 187 | 189 |
| | | | | | | |

Local Area Background Measurements — MEAN Value in cpm ↓

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 1 | 2 | 3 | 4 | 5 | 6 | |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Gamma Radiation Survey Report, Micro-R/hour - Integrated Measurement

| | | | |
|---|---|---|---|
| File Number: 189 | Survey Description: A0218,A0219: POST SOURCE CHECK FOR FILE # 187,188 | | |
| Survey Reason: TERMINATION | User ID: DPS4133 | Technician name: Don Schumaker | |
| Instrument Model: M2350-1 | S/N: 126182 | Calibration Due: 9/22/01 | Group: 2 |
| Detector Model: 44-2 | Detector S/N: 091034 | Type: High Energy Gamma Scintillator, 1x1 NaI | |
| Background: uR/hr | Gamma Calibration Constant: 1.70095 E10 c/R | PIC ratio: 1.000 (PIC/NaI) | Survey Date: 7/16/01 |

Pre and Post source checks are included on this download: Yes ___ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 187 Post File #: 189

Technician Review:

I have reveiwed this cover sheet and 01 pages of the report, 01 pages of comments, and 01 graph.

I performed this survey: Don Schumaker / [signature] Date: 7/16/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and reason (required):

Comment Resolution:

Survey Reviewed and Approved by: Paul Jones / [signature] Date: 7/16/01
Print name Signature

Survey Date: 7/16/01 Report Date: 7/16/01 Station: 2
File: 189 Page: 1

Comments

| Survey Code | L1 | L2 | L3 | L4 | L5 | L6 | Setup Number 2 |
|---|---|---|---|---|---|---|---|
| | ZZZZZ | 19453 | TAT01 | 03100 | PTB00 | ZZZZZ | Det Cal Due: 12/06/01 |

| L7 Code Grid ID | L8 Code Location Number | Sample Number | Count Time (sec) | Gross Counts | Gross Micro R/hr | H i |
|---|---|---|---|---|---|---|
| ZZZZZ | 00001 | 1 | 60 | 538489 | 1899.5 | |
| ZZZZZ | 00002 | 2 | 60 | 14871 | 52.5 | |
| ZZZZZ | 00004 | 4 | 60 | 5240 | 18.5 | |

Group Average: 186200 cpm Average uR/hr: 656.8
Number of measurements: 3

| Survey Code | L1 | L2 | L3 | L4 | L5 | L6 | Setup Number 2 |
|---|---|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 03100 | PTBBK | ZZZZZ | Det Cal Due: 12/06/01 |

| L7 Code Grid ID | L8 Code Location Number | Sample Number | Count Time (sec) | Gross Counts | Gross Micro R/hr | H i |
|---|---|---|---|---|---|---|
| ZZZZZ | 00000 | 0 | 300 | 19556 | 13.8 | |

Group Average: 3911 cpm Average uR/hr: 13.8
Number of measurements: 1

Total Number of Measurements on this Report: 4

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at micro-R/hr.

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7/16/01 Comments Report for File 189 Station: 2

| Comment Number | Comment |
|---|---|
| 1 | Deleted sample numbers from 3 to 3. IN THE PROCESS OF DOING PAPERWORK SOURCE JIG WAS BUMPED. |

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

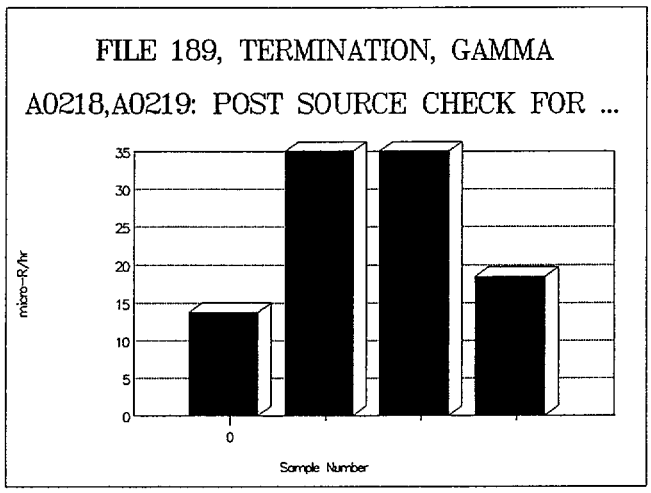
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/16/2001 Graph of File 189 Station: 2

Survey Date: 7/16/2001 Survey Start Time: 09:03:48

Description: A0218,A0219: POST SOURCE CHECK FOR FILE # 187,188




Flag set for micro-R/hr. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

# Section 5

# Package 19
# Removable Beta Contamination for the Bismuth Leak Area (including lab reports)

Removable Beta Contamination Package A0219 (Bismuth Leak Area)

| Desc. | Gross Counts | Count Time (sec) | Sample Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Net Activity ($dpm/100cm^2$) | MDA ($dpm/100cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | 5 | 90 | 100 | 01C01 | FLDCT | A | 00004 | 0.3425 | 2 | 5 | 16 |
| | 3 | 90 | 100 | 01C01 | FLDCT | A | 00005 | 0.3425 | 2 | 1 | 16 |
| | 2 | 90 | 100 | 01C01 | FLDCT | A | 00006 | 0.3425 | 2 | -1 | 16 |
| | 1 | 90 | 100 | 01C01 | FLDCT | B | 00001 | 0.3425 | 2 | -3 | 16 |
| | 0 | 90 | 100 | 01C01 | FLDCT | B | 00002 | 0.3425 | 2 | -5 | 16 |
| | 2 | 90 | 100 | 01C01 | FLDCT | B | 00003 | 0.3425 | 2 | -2 | 16 |
| | 0 | 90 | 100 | 01C01 | FLDCT | B | 00004 | 0.3425 | 2 | -5 | 16 |
| | 4 | 90 | 100 | 01C01 | FLDCT | B | 00005 | 0.3425 | 2 | 2 | 16 |
| | 2 | 90 | 100 | 01C01 | FLDCT | B | 00006 | 0.3425 | 2 | -3 | 16 |
| | 0 | 90 | 100 | 01C01 | FLDCT | C | 00001 | 0.3425 | 2 | -5 | 16 |
| | 2 | 90 | 100 | 01C01 | FLDCT | C | 00002 | 0.3425 | 2 | -1 | 16 |
| | 5 | 90 | 100 | 01C01 | FLDCT | C | 00003 | 0.3425 | 2 | 5 | 16 |
| | 2 | 90 | 100 | 01C01 | FLDCT | C | 00004 | 0.3425 | 2 | -1 | 16 |
| | 0 | 90 | 100 | 01C01 | FLDCT | C | 00005 | 0.3425 | 2 | -5 | 16 |
| | 1 | 90 | 100 | 01C01 | FLDCT | C | 00006 | 0.3425 | 2 | -3 | 16 |
| | 2 | 90 | 100 | 01C01 | FLDCT | D | 00002 | 0.3425 | 2 | -1 | 16 |
| | 2 | 90 | 100 | 01C01 | FLDCT | D | 00003 | 0.3425 | 2 | -1 | 16 |
| | 3 | 90 | 100 | 01C01 | FLDCT | D | 00004 | 0.3425 | 2 | 1 | 16 |
| | 0 | 90 | 100 | 01C01 | FLDCT | D | 00005 | 0.3425 | 2 | -5 | 16 |
| | 3 | 90 | 100 | 01C01 | FLDCT | D | 00006 | 0.3425 | 2 | 1 | 16 |
| | | | | | | | | | | | |
| | 3 | 90 | 100 | 01EQ1 | FLDCT | ZZZZZ | 00001 | 0.3425 | 2 | 1 | 16 |
| | 1 | 90 | 100 | 01EQ1 | FLDCT | ZZZZZ | 00002 | 0.3425 | 2 | -2 | 16 |
| | 1 | 90 | 100 | 01EQ1 | FLDCT | ZZZZZ | 00003 | 0.3425 | 2 | -2 | 16 |
| | 3 | 90 | 100 | 01EQ1 | FLDCT | ZZZZZ | 00004 | 0.3425 | 2 | 1 | 16 |
| | 3 | 90 | 100 | 01EQ1 | FLDCT | ZZZZZ | 00005 | 0.3425 | 2 | 1 | 16 |
| | 2 | 90 | 100 | 01EQ1 | FLDCT | ZZZZZ | 00006 | 0.3425 | 2 | 0 | 16 |
| | 0 | 90 | 100 | 01EQ1 | FLDCT | ZZZZZ | 00007 | 0.3425 | 2 | -4 | 16 |
| | 12 | 90 | 100 | 01EQ1 | FLDCT | ZZZZZ | 00008 | 0.3425 | 2 | 19 | 16 |
| | 12 | 90 | 100 | 01EQ1 | FLDCT | ZZZZZ | 00009 | 0.3425 | 2 | 19 | 16 |
| | 3 | 90 | 100 | 01EQ1 | FLDCT | ZZZZZ | 00010 | 0.3425 | 2 | 1 | 16 |
| | | | | | | | | | | | |
| | 7 | 90 | 100 | 01F01 | FLDCT | A | 00004 | 0.3425 | 2 | 9 | 16 |
| | 7 | 90 | 100 | 01F01 | FLDCT | A | 00005 | 0.3425 | 2 | 9 | 16 |
| | 3 | 90 | 100 | 01F01 | FLDCT | A | 00006 | 0.3425 | 2 | 1 | 16 |
| | 4 | 90 | 100 | 01F01 | FLDCT | B | 00001 | 0.3425 | 2 | 3 | 16 |
| | 2 | 90 | 100 | 01F01 | FLDCT | B | 00002 | 0.3425 | 2 | -1 | 16 |

Removable Beta Contamination Package A0219 (Bismuth Leak Area)

| Desc. | Gross Counts | Count Time (sec) | Sample Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Net Activity ($dpm/100cm^2$) | MDA ($dpm/100cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | 6 | 90 | 100 | 01F01 | FLDCT | B | 00003 | 0.3425 | 2 | 7 | 16 |
| | 4 | 90 | 100 | 01F01 | FLDCT | B | 00004 | 0.3425 | 2 | 3 | 16 |
| | 3 | 90 | 100 | 01F01 | FLDCT | B | 00005 | 0.3425 | 2 | 1 | 16 |
| | 2 | 90 | 100 | 01F01 | FLDCT | B | 00006 | 0.3425 | 2 | -1 | 16 |
| | 3 | 90 | 100 | 01F01 | FLDCT | C | 00001 | 0.3425 | 2 | 1 | 16 |
| | 3 | 90 | 100 | 01F01 | FLDCT | C | 00002 | 0.3425 | 2 | 1 | 16 |
| | 3 | 90 | 100 | 01F01 | FLDCT | C | 00003 | 0.3425 | 2 | 1 | 16 |
| | 11 | 90 | 100 | 01F01 | FLDCT | C | 00004 | 0.3425 | 2 | 16 | 16 |
| | 2 | 90 | 100 | 01F01 | FLDCT | C | 00005 | 0.3425 | 2 | -1 | 16 |
| | 3 | 90 | 100 | 01F01 | FLDCT | C | 00006 | 0.3425 | 2 | 0 | 16 |
| | 5 | 90 | 100 | 01F01 | FLDCT | D | 00002 | 0.3425 | 2 | 5 | 16 |
| | 3 | 90 | 100 | 01F01 | FLDCT | D | 00003 | 0.3425 | 2 | 1 | 16 |
| | 3 | 90 | 100 | 01F01 | FLDCT | D | 00004 | 0.3425 | 2 | 1 | 16 |
| | 4 | 90 | 100 | 01F01 | FLDCT | D | 00005 | 0.3425 | 2 | 3 | 16 |
| | 5 | 90 | 100 | 01F01 | FLDCT | D | 00006 | 0.3425 | 2 | 5 | 16 |
| | | | | | | | | | | | |
| | 7 | 90 | 100 | 01T01 | FLDCT | ZZZZZ | 00001 | 0.3425 | 1 | 10 | 15 |
| | 1 | 90 | 100 | 01T01 | FLDCT | ZZZZZ | 00002 | 0.3425 | 1 | -2 | 15 |
| | 2 | 90 | 100 | 01T01 | FLDCT | ZZZZZ | 00003 | 0.3425 | 1 | 0 | 15 |
| | 3 | 90 | 100 | 01T01 | FLDCT | ZZZZZ | 00004 | 0.3425 | 1 | 2 | 15 |
| | 2 | 90 | 100 | 01T01 | FLDCT | ZZZZZ | 00005 | 0.3425 | 1 | 0 | 15 |
| | 1 | 90 | 100 | 01T01 | FLDCT | ZZZZZ | 00006 | 0.3425 | 1 | -2 | 15 |
| | 4 | 90 | 100 | 01T01 | FLDCT | ZZZZZ | 00007 | 0.3425 | 1 | 4 | 15 |
| | 1 | 90 | 100 | 01T01 | FLDCT | ZZZZZ | 00008 | 0.3425 | 1 | -2 | 15 |
| | 2 | 90 | 100 | 01T01 | FLDCT | ZZZZZ | 00009 | 0.3425 | 1 | 0 | 15 |
| | 7 | 90 | 100 | 01T01 | FLDCT | ZZZZZ | 00010 | 0.3425 | 1 | 10 | 15 |
| | | | | | | | | | | | |
| | 1 | 90 | 100 | 01W01 | FLDCT | A | 00001 | 0.3425 | 2 | -3 | 16 |
| | 5 | 90 | 100 | 01W01 | FLDCT | A | 00002 | 0.3425 | 2 | 5 | 16 |
| | 2 | 90 | 100 | 01W01 | FLDCT | A | 00003 | 0.3425 | 2 | -1 | 16 |
| | 1 | 90 | 100 | 01W01 | FLDCT | A | 00004 | 0.3425 | 2 | -3 | 16 |
| | 3 | 90 | 100 | 01W01 | FLDCT | B | 00001 | 0.3425 | 2 | 1 | 16 |
| | 3 | 90 | 100 | 01W01 | FLDCT | B | 00002 | 0.3425 | 2 | 1 | 16 |
| | 3 | 90 | 100 | 01W01 | FLDCT | B | 00003 | 0.3425 | 2 | 1 | 16 |
| | 4 | 90 | 100 | 01W01 | FLDCT | B | 00004 | 0.3425 | 2 | 3 | 16 |
| | | | | | | | | | | | |
| | 3 | 90 | 100 | 01W02 | FLDCT | A | 00001 | 0.3425 | 2 | 1 | 16 |



041

Removable Beta Contamination Package A0219 (Bismuth Leak Area)

| Desc. | Gross Counts | Count Time (sec) | Sample Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Net Activity ($dpm/100cm^2$) | MDA ($dpm/100cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | 3 | 90 | 100 | 01W02 | FLDCT | A | 00002 | 0.3425 | 2 | 1 | 16 |
| | 4 | 90 | 100 | 01W02 | FLDCT | A | 00003 | 0.3425 | 2 | 3 | 16 |
| | 4 | 90 | 100 | 01W02 | FLDCT | A | 00004 | 0.3425 | 2 | 2 | 16 |
| | 1 | 90 | 100 | 01W02 | FLDCT | A | 00005 | 0.3425 | 2 | -3 | 16 |
| | 0 | 90 | 100 | 01W02 | FLDCT | B | 00001 | 0.3425 | 2 | -5 | 16 |
| | 3 | 90 | 100 | 01W02 | FLDCT | B | 00002 | 0.3425 | 2 | 1 | 16 |
| | 0 | 90 | 100 | 01W02 | FLDCT | B | 00003 | 0.3425 | 2 | -5 | 16 |
| | 11 | 90 | 100 | 01W02 | FLDCT | B | 00004 | 0.3425 | 2 | 16 | 16 |
| | 4 | 90 | 100 | 01W02 | FLDCT | B | 00005 | 0.3425 | 2 | 3 | 16 |
| | 2 | 90 | 100 | 01W02 | FLDCT | C | 00002 | 0.3425 | 2 | -1 | 16 |
| | 2 | 90 | 100 | 01W02 | FLDCT | C | 00003 | 0.3425 | 2 | -1 | 16 |
| | 2 | 90 | 100 | 01W02 | FLDCT | C | 00004 | 0.3425 | 2 | -1 | 16 |
| | | | | | | | | | | | |
| | 3 | 90 | 100 | 01W03 | FLDCT | A | 00001 | 0.3425 | 2 | 1 | 16 |
| | 6 | 90 | 100 | 01W03 | FLDCT | A | 00002 | 0.3425 | 2 | 7 | 16 |
| | 4 | 90 | 100 | 01W03 | FLDCT | A | 00004 | 0.3425 | 2 | 3 | 16 |
| | 2 | 90 | 100 | 01W03 | FLDCT | A | 00005 | 0.3425 | 2 | -1 | 16 |
| | 0 | 90 | 100 | 01W03 | FLDCT | B | 00001 | 0.3425 | 2 | -6 | 16 |
| | 2 | 90 | 100 | 01W03 | FLDCT | B | 00002 | 0.3425 | 2 | -1 | 16 |
| | 7 | 90 | 100 | 01W03 | FLDCT | B | 00004 | 0.3425 | 2 | 9 | 16 |
| | 7 | 90 | 100 | 01W03 | FLDCT | B | 00005 | 0.3425 | 2 | 9 | 16 |
| | | | | | | | | | | | |
| | | | | | | | | # Measurements | | 89 | |
| | | | | | | | | | Average | 1 | |
| | | | | | | | | | Maximum | 19 | |
| | | | | | | | | | STD DEV | 5 | |
| | | | | | | | | 95% CL on Mean | | 2 | |
| | | | | | | | | | | | |



042

FINAL SURVEY 01F01 A PIN 19

PIC IPC9025 216712

| | | | ALPHA | | | | BETA | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 4 | 1 | 0.67 | 1.91 | | 7 | 2.77 | 8.08 | | 07-11-2001 | 14:00:25 |
| 002 | 00 | 5 | 0 | 0.00 | 0.00 | | 7 | 2.97 | 8.66 | | 07-11-2001 | 14:02:24 |
| 003 | 00 | 6 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 | 14:04:23 |

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01F01 B PIN 19

PIC IPC9025 216712

| | | | ALPHA Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | BETA Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SN | RFT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | 4 | 0.97 | 2.82 | | 07-11-2001 | 14:11:48 |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-11-2001 | 14:13:47 |
| 003 | 00 | 3 | 0 | 0.00 | 0.00 | | 6 | 2.30 | 6.72 | | 07-11-2001 | 14:15:46 |
| 004 | 00 | 4 | 0 | 0.00 | 0.00 | | 4 | 0.97 | 2.82 | | 07-11-2001 | 14:17:45 |
| 005 | 00 | 5 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 | 14:19:44 |
| 006 | 00 | 6 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-11-2001 | 14:21:43 |

Performed By: [signature] Date: 7/16/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01F01 C PIN 19
PIC IPC9025 216712

| | | | ALPHA | | | | BETA | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 | 14:33:57 |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 | 14:35:57 |
| 003 | 00 | 3 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 | 14:37:56 |
| 004 | 00 | 4 | 0 | 0.00 | 0.00 | | 11 | 5.63 | 16.45 | | 07-11-2001 | 14:39:55 |
| 005 | 00 | 5 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-11-2001 | 14:41:54 |
| 006 | 00 | 6 | 1 | 0.67 | 1.91 | | 3 | 0.10 | 0.29 | | 07-11-2001 | 14:43:53 |

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01F01 D PIN 19
PIC IPC9025 216712

| | | | ALPHA Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | BETA Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE TIME |
| 001 | 00 | 2 | 0 | 0.00 | 0.00 | | 5 | 1.63 | 4.77 | | 07-11-2001 14:48:29 |
| 002 | 00 | 3 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 14:50:28 |
| 003 | 00 | 4 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 14:52:27 |
| 004 | 00 | 5 | 0 | 0.00 | 0.00 | | 4 | 0.97 | 2.82 | | 07-11-2001 14:54:26 |
| 005 | 00 | 6 | 2 | 1.33 | 3.81 | | 5 | 1.24 | 3.61 | | 07-11-2001 14:56:25 |

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01W01 A FIN 19

PIC IPC9025 Z16712

| | | | ALPHA | | | | BETA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | 1 | -1.03 | -3.02 | | 07-11-2001 | 14:59:35 |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | 5 | 1.63 | 4.77 | | 07-11-2001 | 15:01:34 |
| 003 | 00 | 3 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-11-2001 | 15:03:33 |
| 004 | 00 | 4 | 0 | 0.00 | 0.00 | | 1 | -1.03 | -3.02 | | 07-11-2001 | 15:05:32 |

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01W01 B PIN 19
PIC IPC9025 216712

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ALPHA | | | | | BETA | | | | | | | |
| | | | Eff: 34.97% | Bkg: 0.00 cpm | MDA: 5.17 dpm | | | Eff: 34.25% | Bkg: 1.70 cpm | MDA: 19.73 dpm | | | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | | COUNTS | NET CPM | DPM | LIMITS | | DATE | TIME | |
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | | 3 | 0.30 | 0.88 | | | 07-11-2001 | 15:09:21 | |

FINAL SURVEY 01W01 B PIN 19
PIC IPC9025 216712

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ALPHA | | | | | BETA | | | | | | | |
| | | | Eff: 34.97% | Bkg: 0.00 cpm | MDA: 5.17 dpm | | | Eff: 34.25% | Bkg: 1.70 cpm | MDA: 19.73 dpm | | | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | | COUNTS | NET CPM | DPM | LIMITS | | DATE | TIME | |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | | 3 | 0.30 | 0.88 | | | 07-11-2001 | 15:14:48 | |
| 003 | 00 | 3 | 0 | 0.00 | 0.00 | | | 3 | 0.30 | 0.88 | | | 07-11-2001 | 15:16:47 | |
| 004 | 00 | 4 | 0 | 0.00 | 0.00 | | | 4 | 0.97 | 2.82 | | | 07-11-2001 | 15:18:46 | |

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/14/01

FINAL SURVEY 01W02 A PIN 15

PIC IPC9025 216712

| | | | ALPHA Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | BETA Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 | 15:26:05 |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 | 15:28:05 |
| 003 | 00 | 3 | 0 | 0.00 | 0.00 | | 4 | 0.97 | 2.82 | | 07-11-2001 | 15:30:04 |
| 004 | 00 | 4 | 1 | 0.67 | 1.91 | | 4 | 0.77 | 2.24 | | 07-11-2001 | 15:32:03 |
| 005 | 00 | 5 | 0 | 0.00 | 0.00 | | 1 | -1.03 | -3.02 | | 07-11-2001 | 15:34:02 |

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/11/01

FINAL SURVEY 01W02 B PIN 19
PIC IPC9025 216712

| SN | RPT | ID | ALPHA COUNTS (Eff: 34.97%) | ALPHA NET CPM (Bkg: 0.00 cpm) | ALPHA DPM (MDA: 5.17 dpm) | ALPHA LIMITS | BETA COUNTS (Eff: 34.25%) | BETA NET CPM (Bkg: 1.70 cpm) | BETA DPM (MDA: 19.73 dpm) | BETA LIMITS | DATE | TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | 0 | -1.70 | -4.96 | | 07-11-2001 | 15:36:53 |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 | 15:38:52 |
| 003 | 00 | 3 | 0 | 0.00 | 0.00 | | 0 | -1.70 | -4.96 | | 07-11-2001 | 15:40:51 |
| 004 | 00 | 4 | 0 | 0.00 | 0.00 | | 11 | 5.63 | 16.45 | | 07-11-2001 | 15:42:50 |
| 005 | 00 | 5 | 0 | 0.00 | 0.00 | | 4 | 0.97 | 2.82 | | 07-11-2001 | 15:44:49 |

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01W02 C FIN 19
PIC IPD9025 216712

| | | | ALPHA | | | | BETA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% | Bkg: 0.00 cpm | MDA: 5.17 dpm | | Eff: 34.25% | Bkg: 1.70 cpm | MDA: 19.73 dpm | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 2 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-11-2001 | 15:51:42 |
| 002 | 00 | 3 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-11-2001 | 15:53:41 |
| 003 | 00 | 4 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-11-2001 | 15:55:40 |

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01W03 A PIN 19

PIC IPC9025 216712

| | | | ALPHA | | | | BETA | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% | Bkg: 0.00 cpm | MDA: 5.17 dpm | | Eff: 34.25% | Bkg: 1.70 cpm | MDA: 19.73 dpm | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-11-2001 | 15:59:03 |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | 6 | 2.30 | 6.72 | | 07-11-2001 | 16:01:02 |
| 003 | 00 | 4 | 0 | 0.00 | 0.00 | | 4 | 0.97 | 2.82 | | 07-11-2001 | 16:03:01 |
| 004 | 00 | 5 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-11-2001 | 16:05:00 |

Performed By: _____ Date: 7/11/01

Reviewed By: _____ Date: 7/16/01

FINAL SURVEY 01W03 B FIN 19
PIC IPC9025 216712

| | | | ALPHA Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | BETA Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 1 | 0.67 | 1.91 | | 0 | -1.90 | -5.54 | | 07-12-2001 | 09:52:15 |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 09:54:15 |
| 003 | 00 | 4 | 0 | 0.00 | 0.00 | | 7 | 2.97 | 8.66 | | 07-12-2001 | 09:56:14 |
| 004 | 00 | 5 | 0 | 0.00 | 0.00 | | 7 | 2.97 | 8.66 | | 07-12-2001 | 09:58:13 |

Performed By: [signature] Date: 7/12/01

Reviewed By: [signature] Date: 7/12/01

FINAL SURVEY 01C01 A FIN 19

PIC IPC9025 216712

| | | | ALPHA | | | | BETA | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 4 | 0 | 0.00 | 0.00 | | 5 | 1.63 | 4.77 | | 07-12-2001 | 10:03:27 |
| 002 | 00 | 5 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-12-2001 | 10:05:26 |
| 003 | 00 | 6 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 10:07:25 |

Performed By: [illegible] Date: 7/16/01

Reviewed By: [illegible] Date: 7/16/01

FINAL SURVEY 01C01 B FIN 19

PIC IPC9025 216712

| | | | ALPHA | | | | BETA | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | 1 | -1.03 | -3.02 | | 07-12-2001 | 10:18:14 |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | 0 | -1.70 | -4.96 | | 07-12-2001 | 10:20:13 |
| 003 | 00 | 3 | 2 | 1.33 | 3.81 | | 2 | -0.76 | -2.23 | | 07-12-2001 | 10:22:12 |
| 004 | 00 | 4 | 0 | 0.00 | 0.00 | | 0 | -1.70 | -4.96 | | 07-12-2001 | 10:24:11 |
| 005 | 00 | 5 | 1 | 0.67 | 1.91 | | 4 | 0.77 | 2.24 | | 07-12-2001 | 10:26:10 |
| 006 | 00 | 6 | 3 | 2.00 | 5.72 | | 2 | -0.96 | -2.81 | | 07-12-2001 | 10:28:09 |

Performed By: [signature] Date: 7/12/01

Reviewed By: [signature] Date: 7/12/01

FINAL SURVEY 01C01 C PIN 19
PIC IPC9025 216712

| SN | RPT | ID | ALPHA COUNTS | ALPHA NET CPM | ALPHA DPM | ALPHA LIMITS | BETA COUNTS | BETA NET CPM | BETA DPM | BETA LIMITS | DATE | TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | | | |
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | 0 | -1.70 | -4.96 | | 07-12-2001 | 13:48:45 |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 13:50:44 |
| 003 | 00 | 3 | 0 | 0.00 | 0.00 | | 5 | 1.63 | 4.77 | | 07-12-2001 | 13:52:43 |
| 004 | 00 | 4 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 13:54:42 |
| 005 | 00 | 5 | 0 | 0.00 | 0.00 | | 0 | -1.70 | -4.96 | | 07-12-2001 | 13:56:41 |
| 006 | 00 | 6 | 1 | 0.67 | 1.91 | | 1 | -1.23 | -3.60 | | 07-12-2001 | 13:58:40 |

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01C01 D PIN 19

PIC IPC9025 216712

| | | | ALPHA | | | | BETA | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 2 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 14:03:02 |
| 002 | 00 | 3 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 14:05:01 |
| 003 | 00 | 4 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-12-2001 | 14:07:00 |
| 004 | 00 | 5 | 0 | 0.00 | 0.00 | | 0 | -1.70 | -4.96 | | 07-12-2001 | 14:08:59 |
| 005 | 00 | 6 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-12-2001 | 14:10:58 |

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01E01 [Z] PIN 19

PIC IPC9025 216712

| | | | ALPHA | | | | BETA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.10 cpm MDA: 8.60 dpm | | | | Eff: 34.25% Bkg: 1.50 cpm MDA: 18.85 dpm | | | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | -0.10 | -0.29 | | 3 | 0.50 | 1.46 | | 07-13-2001 | 14:49:0 |
| 002 | 00 | 2 | 1 | 0.57 | 1.62 | | 1 | -1.00 | -2.93 | | 07-13-2001 | 14:51:0 |
| 003 | 00 | 3 | 0 | -0.10 | -0.29 | | 1 | -0.83 | -2.43 | | 07-13-2001 | 14:53:0 |
| 004 | 00 | 4 | 0 | -0.10 | -0.29 | | 3 | 0.50 | 1.46 | | 07-13-2001 | 14:55:0 |
| 005 | 00 | 5 | 0 | -0.10 | -0.29 | | 3 | 0.50 | 1.46 | | 07-13-2001 | 14:57:0 |
| 006 | 00 | 6 | 0 | -0.10 | -0.29 | | 2 | -0.17 | -0.49 | | 07-13-2001 | 14:59:0 |
| 007 | 00 | 7 | 0 | -0.10 | -0.29 | | 0 | -1.50 | -4.38 | | 07-13-2001 | 15:01:0 |
| 008 | 00 | 8 | 0 | -0.10 | -0.29 | | 12 | 6.50 | 18.98 | | 07-13-2001 | 15:02:5 |
| 009 | 00 | 9 | 0 | -0.10 | -0.29 | | 12 | 6.50 | 18.98 | | 07-13-2001 | 15:04:5 |
| 010 | 00 | 10 | 0 | -0.10 | -0.29 | | 3 | 0.50 | 1.46 | | 07-13-2001 | 15:06:5 |

Performed By: _____ Date: 7/16/01

Reviewed By: _____ Date: 7/16/01

FINAL SURVEY 01T01 [Z] PIN 19

PIC IPC9025 216712

| | | | ALPHA | | | | BETA | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.10 cpm MDA: 8.60 dpm | | | | Eff: 34.25% Bkg: 1.30 cpm MDA: 17.91 dpm | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | -0.10 | -0.29 | | 7 | 3.37 | 9.83 | | 07-16-2001 | 07:50:3 |
| 002 | 00 | 2 | 0 | -0.10 | -0.29 | | 1 | -0.63 | -1.85 | | 07-16-2001 | 07:52:3 |
| 003 | 00 | 3 | 0 | -0.10 | -0.29 | | 2 | 0.03 | 0.10 | | 07-16-2001 | 07:54:3 |
| 004 | 00 | 4 | 1 | 0.57 | 1.62 | | 3 | 0.53 | 1.55 | | 07-16-2001 | 07:56:3 |
| 005 | 00 | 5 | 0 | -0.10 | -0.29 | | 2 | 0.03 | 0.10 | | 07-16-2001 | 07:58:3 |
| 006 | 00 | 6 | 0 | -0.10 | -0.29 | | 1 | -0.63 | -1.85 | | 07-16-2001 | 08:00:3 |
| 007 | 00 | 7 | 1 | 0.57 | 1.62 | | 4 | 1.20 | 3.50 | | 07-16-2001 | 08:02:3 |
| 008 | 00 | 8 | 0 | -0.10 | -0.29 | | 1 | -0.63 | -1.85 | | 07-16-2001 | 08:04:3 |
| 009 | 00 | 9 | 0 | -0.10 | -0.29 | | 2 | 0.03 | 0.10 | | 07-16-2001 | 08:06:3 |
| 010 | 00 | 10 | 0 | -0.10 | -0.29 | | 7 | 3.37 | 9.83 | | 07-16-2001 | 08:08:3 |

Performed By: _____ Date: 7/16/01

Reviewed By: _____ Date: 7/16/01

# Section 6

# Package 19
# H-3 Removable Beta Contamination
# Summary Data Table (including lab reports)

| Carrier No. | CPM | Count Time (sec) | Sample Area ($cm^2$) | Surface | Row | Location | Beta Efficiency | Beta Background (cpm) | Activity ($dpm/100cm^2$) | Net Activity ($dpm/100cm^2$) | MDA ($dpm/100cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 38 | 60 | 100 | 01F01 | A | 00005 | 14.090% | 0.00 | 270 | 270 | 19 |
| 2 | 26 | 60 | 100 | 01F01 | B | 00001 | 14.270% | 0.00 | 182 | 182 | 19 |
| 3 | 28 | 60 | 100 | 01F01 | B | 00003 | 9.450% | 0.00 | 296 | 296 | 29 |
| 4 | 31 | 60 | 100 | 01F01 | B | 00004 | 14.450% | 0.00 | 215 | 215 | 19 |
| 5 | 26 | 60 | 100 | 01F01 | C | 00002 | 9.719% | 0.00 | 268 | 268 | 28 |
| 6 | 26 | 60 | 100 | 01F01 | C | 00003 | 10.560% | 0.00 | 246 | 246 | 26 |
| 7 | 24 | 60 | 100 | 01F01 | C | 00004 | 9.719% | 0.00 | 247 | 247 | 28 |
| 8 | 24 | 60 | 100 | 01F01 | C | 00006 | 16.320% | 0.00 | 147 | 147 | 17 |
| 9 | 25 | 60 | 100 | 01F01 | D | 00002 | 10.710% | 0.00 | 233 | 233 | 25 |
| 10 | 31 | 60 | 100 | 01F01 | D | 00005 | 8.928% | 0.00 | 347 | 347 | 30 |
| 11 | 26 | 60 | 100 | 01W01 | A | 00002 | 23.610% | 0.00 | 110 | 110 | 11 |
| 12 | 31 | 60 | 100 | 01W01 | B | 00004 | 30.530% | 0.00 | 102 | 102 | 9 |
| 13 | 23 | 60 | 100 | 01W02 | A | 00001 | 28.020% | 0.00 | 82 | 82 | 10 |
| 14 | 30 | 60 | 100 | 01W02 | A | 00005 | 31.390% | 0.00 | 96 | 96 | 9 |
| 15 | 20 | 60 | 100 | 01W02 | B | 00004 | 30.530% | 0.00 | 66 | 66 | 9 |
| 16 | 20 | 60 | 100 | 01W02 | C | 00002 | 24.360% | 0.00 | 82 | 82 | 11 |
| 17 | 30 | 60 | 100 | 01W03 | A | 00002 | 29.120% | 0.00 | 103 | 103 | 9 |
| 18 | 37 | 60 | 100 | 01W03 | A | 00005 | 28.290% | 0.00 | 131 | 131 | 10 |
| 19 | 24 | 60 | 100 | 01W03 | B | 00001 | 29.680% | 0.00 | 81 | 81 | 9 |
| 20 | 30 | 60 | 100 | 01W03 | B | 00004 | 16.720% | 0.00 | 179 | 179 | 16 |
| 21 | 35 | 60 | 100 | 01C01 | A | 00006 | 19.430% | 0.00 | 180 | 180 | 14 |
| 22 | 45 | 60 | 100 | 01C01 | B | 00005 | 20.310% | 0.00 | 222 | 222 | 13 |
| 23 | 29 | 60 | 100 | 01C01 | C | 00003 | 17.940% | 0.00 | 162 | 162 | 15 |
| 24 | 30 | 60 | 100 | 01C01 | D | 00004 | 21.690% | 0.00 | 138 | 138 | 12 |
| 25 | 26 | 60 | 100 | 01EQ1 | ZZZZZ | 00007 | 26.420% | 0.00 | 98 | 98 | 10 |
| 26 | 33 | 60 | 100 | 01EQ1 | ZZZZZ | 00004 | 30.810% | 0.00 | 107 | 107 | 9 |
| 27 | 38 | 60 | 100 | 01T01 | ZZZZZ | 00003 | 13.570% | 0.00 | 280 | 280 | 20 |
| 28 | 30 | 60 | 100 | 01T01 | ZZZZZ | 00005 | 24.110% | 0.00 | 124 | 124 | 11 |
| 29 | 32 | 60 | 100 | 01T01 | ZZZZZ | 00007 | 29.960% | 0.00 | 107 | 107 | 9 |
| 30 | 37 | 60 | 100 | 01T01 | ZZZZZ | 00009 | 24.610% | 0.00 | 150 | 150 | 11 |
| | | | | | | | | | # Measurements | 30 | |
| | | | | | | | | | Average | 168 | |
| | | | | | | | | | Maximum | 347 | |
| | | | | | | | | | STD DEV | 75 | |
| | | | | | | | | | 95% CL on Mean | 200 | |



061

SCR: 1 ID:SMEARS PRESET TIME: 1.00 FRI 13 JUL 2001 15:23
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AQC:N QCF:N RCM:N 2 PHASE MONITOR:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 2-LL: 0 UL: 670 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 3-LL: 0 UL:1000 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON SUN 24 JUN 2001 16:19
UNKNOWN ID:SMEARS UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS):N
QUENCH COEFF A: 4.328559 B:-0.0051270 C:-0.0000122 D:-0.0000000212
STANDARD ID:
QUENCH LIMITS LOW:90.00 HIGH:390.0

| SAM | POS | CH | CPM | 2SIG% | TIME | EL TIME | AVG H# | ERR |
|---|---|---|---|---|---|---|---|---|
| 1 | 2- 1 | 1 | 38.00 | 32.44 | 1.00 | 1.31 | 200.0 | |
| | | 2 | 65.00 | 24.81 | | | | |
| | | 3 | 92.00 | 20.85 | | | | |
| | | | | | %EFF:14.09 | ISO1 DPM | :269.6684 | |
| 2 | 2- 2 | 1 | 26.00 | 39.22 | 1.00 | 2.79 | 199.0 | |
| | | 2 | 58.00 | 26.26 | | | | |
| | | 3 | 85.00 | 21.69 | | | | |
| | | | | | %EFF:14.27 | ISO1 DPM | :182.2138 | |
| 3 | 2- 3 | 1 | 28.00 | 37.80 | 1.00 | 4.27 | 230.0 | |
| | | 2 | 64.00 | 25.00 | | | | |
| | | 3 | 77.00 | 22.79 | | | | |
| | | | | | %EFF:9.450 | ISO1 DPM | :296.2911 | |
| 4 | 2- 4 | 1 | 31.00 | 35.92 | 1.00 | 5.74 | 198.0 | |
| | | 2 | 76.00 | 22.94 | | | | |
| | | 3 | 94.00 | 20.63 | | | | |
| | | | | | %EFF:14.45 | ISO1 DPM | :214.5626 | |
| 5 | 2- 5 | 1 | 26.00 | 39.22 | 1.00 | 7.23 | 228.0 | |
| | | 2 | 57.00 | 26.49 | | | | |
| | | 3 | 72.00 | 23.57 | | | | |
| | | | | | %EFF:9.719 | ISO1 DPM | :267.5063 | |
| 6 | 2- 6 | 1 | 26.00 | 39.22 | 1.00 | 8.71 | 222.0 | |
| | | 2 | 61.00 | 25.61 | | | | |
| | | 3 | 84.00 | 21.82 | | | | |
| | | | | | %EFF:10.56 | ISO1 DPM | :246.1932 | |
| 7 | 2- 7 | 1 | 24.00 | 40.82 | 1.00 | 10.19 | 228.0 | |
| | | 2 | 52.00 | 27.74 | | | | |
| | | 3 | 64.00 | 25.00 | | | | |
| | | | | | %EFF:9.719 | ISO1 DPM | :246.9289 | |
| 8 | 2- 8 | 1 | 24.00 | 40.82 | 1.00 | 11.68 | 188.0 | |
| | | 2 | 52.00 | 27.74 | | | | |
| | | 3 | 66.00 | 24.62 | | | | |
| | | | | | %EFF:16.32 | ISO1 DPM | :147.0252 | |
| 9 | 2- 9 | 1 | 25.00 | 40.00 | 1.00 | 13.15 | 221.0 | |
| | | 2 | 58.00 | 26.26 | | | | |
| | | 3 | 70.00 | 23.90 | | | | |
| | | | | | %EFF:10.71 | ISO1 DPM | :233.5139 | |

Performed By: [signature] Date: 7/16/01

Reviewed By: [signature] Date: 7/16/01

| SAM | POS | CH | CPM | 2SIG% | TIME | EL TIME | AVG H# | ERR |
|---|---|---|---|---|---|---|---|---|
| 10 | 2-10 | 1 | 31.00 | 35.92 | 1.00 | 14.63 | 234.0 | |
| | | 2 | 64.00 | 25.00 | | | | |
| | | 3 | 72.00 | 23.57 | | | | |
| | | | | | %EFF:8.928 | ISO1 | DPM | :347.2254 |
| 11 | 2-11 | 1 | 26.00 | 39.22 | 1.00 | 16.11 | 155.0 | |
| | | 2 | 54.00 | 27.22 | | | | |
| | | 3 | 90.00 | 21.08 | | | | |
| | | | | | %EFF:23.61 | ISO1 | DPM | :110.1067 |
| 12 | 2-12 | 1 | 31.00 | 35.92 | 1.00 | 17.58 | 129.0 | |
| | | 2 | 61.00 | 25.61 | | | | |
| | | 3 | 90.00 | 21.08 | | | | |
| | | | | | %EFF:30.53 | ISO1 | DPM | :101.5457 |
| 13 | 3- 1 | 1 | 23.00 | 41.70 | 1.00 | 19.12 | 138.0 | |
| | | 2 | 48.00 | 28.57 | | | | |
| | | 3 | 79.00 | 22.65 | | | | |
| | | | | | %EFF:28.02 | ISO1 | DPM | :82.07933 |
| 14 | 3- 2 | 1 | 30.00 | 36.51 | 1.00 | 20.61 | 126.0 | |
| | | 2 | 53.00 | 27.47 | | | | |
| | | 3 | 79.00 | 22.50 | | | | |
| | | | | | %EFF:31.39 | ISO1 | DPM | :95.57417 |
| 15 | 3- 3 | 1 | 20.00 | 44.72 | 1.00 | 22.08 | 129.0 | |
| | | 2 | 52.00 | 27.74 | | | | |
| | | 3 | 76.00 | 22.94 | | | | |
| | | | | | %EFF:30.53 | ISO1 | DPM | :65.51334 |
| | 3- 4 | 1 | 20.00 | 44.72 | 1.00 | 23.57 | 152.0 | |
| | | 2 | 54.00 | 27.22 | | | | |
| | | 3 | 80.00 | 22.36 | | | | |
| | | | | | %EFF:24.36 | ISO1 | DPM | :82.10253 |
| 17 | 3- 5 | 1 | 30.00 | 36.51 | 1.00 | 25.05 | 134.0 | |
| | | 2 | 67.00 | 24.43 | | | | |
| | | 3 | 91.00 | 20.97 | | | | |
| | | | | | %EFF:29.12 | ISO1 | DPM | :103.0177 |
| 18 | 3- 6 | 1 | 37.00 | 32.88 | 1.00 | 26.53 | 137.0 | |
| | | 2 | 70.00 | 23.90 | | | | |
| | | 3 | 97.00 | 20.31 | | | | |
| | | | | | %EFF:28.29 | ISO1 | DPM | :130.7676 |
| 19 | 3- 7 | 1 | 24.00 | 40.82 | 1.00 | 28.01 | 132.0 | |
| | | 2 | 55.00 | 26.97 | | | | |
| | | 3 | 87.00 | 21.44 | | | | |
| | | | | | %EFF:29.68 | ISO1 | DPM | :80.86346 |
| 20 | 3- 8 | 1 | 30.00 | 36.51 | 1.00 | 29.50 | 186.0 | |
| | | 2 | 66.00 | 24.62 | | | | |
| | | 3 | 89.00 | 21.32 | | | | |
| | | | | | %EFF:16.72 | ISO1 | DPM | :179.4539 |
| 21 | 3- 9 | 1 | 35.00 | 33.81 | 1.00 | 30.98 | 173.0 | |
| | | 2 | 72.00 | 23.57 | | | | |
| | | 3 | 97.00 | 20.31 | | | | |
| | | | | | %EFF:19.43 | ISO1 | DPM | :180.1570 |
| 22 | 3-10 | 1 | 45.00 | 29.81 | 1.00 | 32.47 | 169.0 | |
| | | 2 | 73.00 | 23.41 | | | | |
| | | 3 | 95.00 | 20.52 | | | | |
| | | | | | %EFF:20.31 | ISO1 | DPM | :221.5193 |

Performed By: [signature] Date: 7/16/01

Reviewed By: [signature] Date: 7/16/01

| SAM | POS | CH | CPM | ISIG% | TIME | EL TIME | AVG | H# | ERR |
|---|---|---|---|---|---|---|---|---|---|
| 23 | 3-11 | 1 | 29.00 | 37.14 | 1.00 | 33.95 | 180.0 | | |
| | | 2 | 43.00 | 25.20 | | | | | |
| | | 3 | 22.00 | 22.09 | | | | | |
| | | | | | %EFF: | 17.94 | ISO1 | DPM | :161.6902 |
| 24 | 3-12 | 1 | 30.00 | 36.51 | 1.00 | 35.43 | 163.0 | | |
| | | 2 | 46.00 | 24.62 | | | | | |
| | | 3 | 89.00 | 21.72 | | | | | |
| | | | | | %EFF: | 21.69 | ISO1 | DPM | :138.3047 |
| 25 | 6- 1 | 1 | 26.00 | 39.22 | 1.00 | 36.97 | 144.0 | | |
| | | 2 | 42.00 | 25.40 | | | | | |
| | | 3 | 57.00 | 21.44 | | | | | |
| | | | | | %EFF: | 26.42 | ISO1 | DPM | :98.42297 |
| 26 | 6- 2 | 1 | 33.00 | 34.82 | 1.00 | 38.45 | 128.0 | | |
| | | 2 | 49.00 | 24.08 | | | | | |
| | | 3 | 101.00 | 19.50 | | | | | |
| | | | | | %EFF: | 30.81 | ISO1 | DPM | :107.0956 |
| 27 | 6- 3 | 1 | 39.00 | 32.44 | 1.00 | 39.92 | 203.0 | | |
| | | 2 | 63.00 | 25.20 | | | | | |
| | | 3 | 78.00 | 22.65 | | | | | |
| | | | | | %EFF: | 13.57 | ISO1 | DPM | :280.0809 |
| 28 | 6- 4 | 1 | 30.00 | 36.51 | 1.00 | 41.41 | 153.0 | | |
| | | 2 | 41.00 | 25.61 | | | | | |
| | | 3 | 89.00 | 21.32 | | | | | |
| | | | | | %EFF: | 24.11 | ISO1 | DPM | :124.4317 |
| | 6- 5 | 1 | 32.00 | 35.36 | 1.00 | 42.89 | 131.0 | | |
| | | 2 | 57.00 | 26.49 | | | | | |
| | | 3 | 94.00 | 20.63 | | | | | |
| | | | | | %EFF: | 29.96 | ISO1 | DPM | :106.8055 |
| 30 | 6- 6 | 1 | 37.00 | 32.88 | 1.00 | 44.38 | 151.0 | | |
| | | 2 | 61.00 | 25.61 | | | | | |
| | | 3 | 92.00 | 20.85 | | | | | |
| | | | | | %EFF: | 24.61 | ISO1 | DPM | :150.3362 |

Performed By: [signature] Date: 7/16/01

Reviewed By: _____ Date: _____

# Georgia Institute of Technology Research Reactor

# Final Survey Package 20

# Reactor Ventilation Above 2 Meters

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# Section 1

# Survey Package 20 Worksheet for Reactor Ventilation System Above 2 Meters

Duratek Inc.
Survey Package Worksheet for Reactor Ventilation System Above 2 Meters
Georgia Institute of Technology Research Reactor

| | |
|---|---|
| Package Identification No.: 20 | Prepared by: Paul Jones |
| Location: Process Reactor Ventilation System Above 2 Meters | Date prepared: 07/09/2001 |
| Area Classification: Non-Suspect Affected | |

## Area Description

The survey area consists of all areas 2 meters above the floor up to and including any ceilings in the following areas;

1) Reactor Building Stack Main Vent Room,
2) Stack Kanne Chamber Room, and
3) The Reactor Building Stack.

These areas are accessed either through the door located immediately adjacent to the stack dilution air intake grate on the west side of the reactor building exterior or through the personnel hatch in the stack.

## Historical Information

No decontamination was required in this area.

## General Survey Instructions

Overhead (Non-Suspect Affected):

1) Perform a minimum of 10% scan of accessible surfaces. The surface scanned should be biased towards surfaces with a higher potential of being contaminated, (i.e. tops of lamps and other tops of horizontal surfaces).
2) Obtain 1 direct beta measurement in the overhead for each 20 square meters of surface area (See Special Instructions for the minimum number of readings required). Denote location of all readings on map
3) Obtain 1 smear for gross alpha/beta analysis at each measurement location.
4) Obtain required smears for H-3 analysis (See Special Instructions for the minimum number of smears required). Denote location of all smears on map.

Use only the Package ID, L2, L7 and L8 codes when labeling smears for counting.

Use all location codes provided below when taking fixed beta readings.

| Special Instructions |
|---|
| Source check meters to Tc-99 for beta measurements.<br><br>Use gas flow proportional detector model numbers 43-68 and 43-106 for surveys.<br><br>Perform a minimum of two 10-minute backgrounds on each surface to be surveyed.<br><br>Verify that the MDA is less than 600 dpm/100cm2 for direct beta measurements after obtaining initial background.<br><br>The direct beta measurements and smears should be taken equidistant throughout the survey area.<br><br>During scanning the detector is to be kept as close to the surface as possible and moved across the surface at a slow speed (scan speed shall not exceed on probe width per sec). The scan should be performed using the audible output and using headphones whenever necessary. |

Survey performance (Initial and date as each survey is complete)

| Location Code | | | | | General Description | Beta Scan | Direct Beta | 1 meter Gamma | Smear Gross α/β | LS Smear |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | L2 | L6 | L7 | L8 | | | | | | |
| Georgia Tech Research Reactor ~~2nd Floor Lower Walls and Floor~~ Reactor ventilation system below 2 meters. | | | | | | | | | | |
| A0220 | 01OH1 | B0002, B9999 | ZZZZZ | 1 thru 30 | Overhead areas above 2 meters. | BK 7-4-01 | (30) BK 7-4-01 | N/A | (30) BK 7-4-01 | (30) BK 7-4-01 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | A | | | | |
| | | | | | N | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |



003

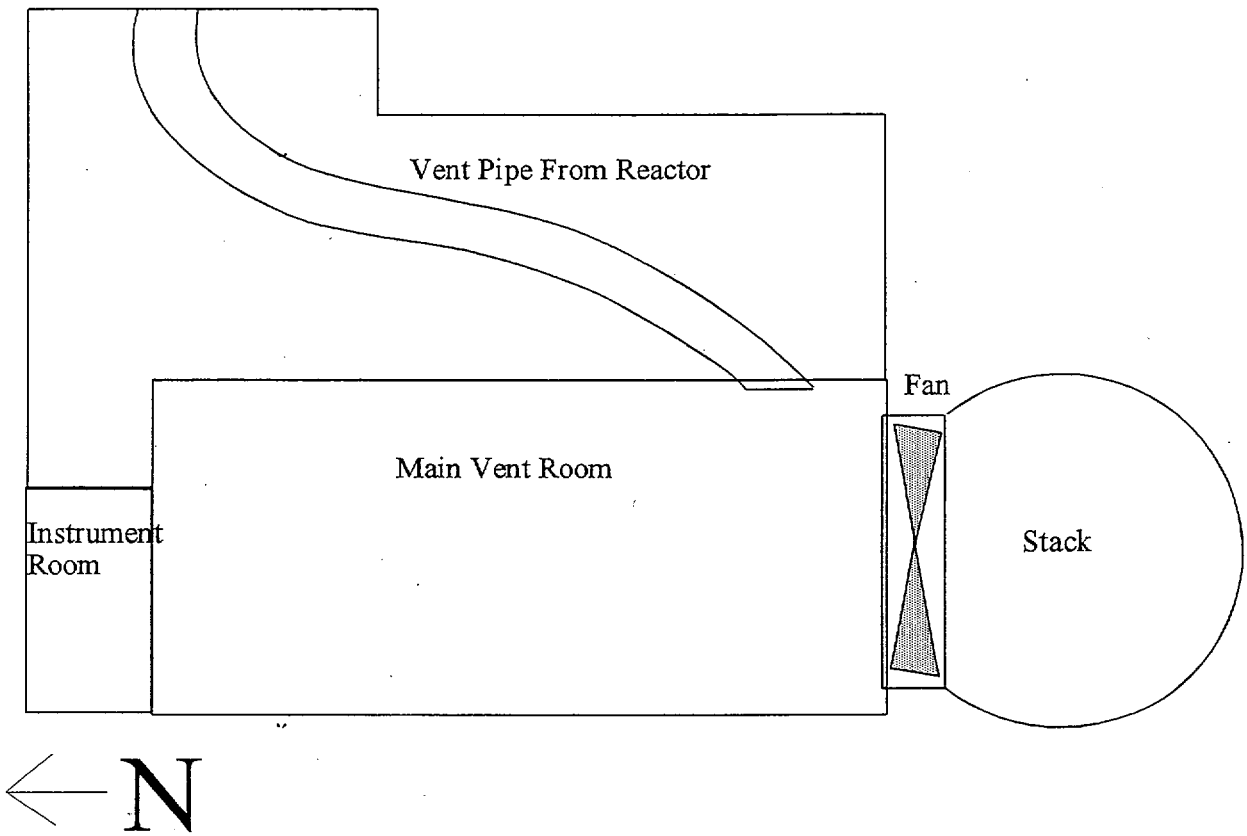
| Package Review |
| --- |
| Date Package Completed |
| Package Reviewed by and Date |

| Survey Comments |
| --- |
| |
| |
| |
| |
| |
| |
| |
| |
| |

# Section 2

# Package 20
# Drawing

# Reactor Ventilation Above 2 Meters



# Section 3

# Package 20
# Direct Beta Survey Report for the Non-Suspect Affected Process Reactor Ventilation System (including download reports)

| Desc. | File | Sample Number | Gross Counts | Count Time (sec) | Material Type | Detector Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Activity ($dpm/100cm^2$) | Natural Background ($dpm/100cm^2$) | Net Activity ($dpm/100cm^2$) | MDA ($dpm/100cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 010H1 | 178 | 29 | 104 | 20 | B9999 | 126 | 010H1 | FLDCT | ZZZZZ | 00001 | 0.209 | 336 | -91 | 0 | -91 | 434 |
| | 178 | 30 | 107 | 20 | B9999 | 126 | 010H1 | FLDCT | ZZZZZ | 00002 | 0.209 | 336 | -57 | 0 | -57 | 434 |
| | 178 | 31 | 123 | 20 | B9999 | 126 | 010H1 | FLDCT | ZZZZZ | 00003 | 0.209 | 336 | 125 | 0 | 125 | 434 |
| | 178 | 32 | 114 | 20 | B9999 | 126 | 010H1 | FLDCT | ZZZZZ | 00004 | 0.209 | 336 | 23 | 0 | 23 | 434 |
| | 178 | 33 | 100 | 20 | B9999 | 126 | 010H1 | FLDCT | ZZZZZ | 00005 | 0.209 | 336 | -137 | 0 | -137 | 434 |
| | 178 | 36 | 219 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00006 | 0.209 | 465 | 729 | 354 | 375 | 551 |
| | 178 | 37 | 173 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00007 | 0.209 | 465 | 205 | 354 | -149 | 551 |
| | 178 | 38 | 166 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00008 | 0.209 | 465 | 125 | 354 | -229 | 551 |
| | 178 | 39 | 147 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00009 | 0.209 | 465 | -91 | 354 | -445 | 551 |
| | 178 | 40 | 165 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00010 | 0.209 | 465 | 114 | 354 | -240 | 551 |
| | 178 | 41 | 172 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00011 | 0.209 | 465 | 194 | 354 | -160 | 551 |
| | 178 | 42 | 209 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00012 | 0.209 | 465 | 615 | 354 | 261 | 551 |
| | 178 | 43 | 177 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00013 | 0.209 | 465 | 251 | 354 | -103 | 551 |
| | 178 | 44 | 180 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00014 | 0.209 | 465 | 285 | 354 | -69 | 551 |
| | 178 | 45 | 191 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00015 | 0.209 | 465 | 410 | 354 | 56 | 551 |
| | 178 | 46 | 190 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00016 | 0.209 | 465 | 399 | 354 | 45 | 551 |
| | 178 | 47 | 191 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00017 | 0.209 | 465 | 410 | 354 | 56 | 551 |
| | 178 | 48 | 184 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00018 | 0.209 | 465 | 330 | 354 | -24 | 551 |
| | 178 | 49 | 198 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00019 | 0.209 | 465 | 490 | 354 | 136 | 551 |
| | 178 | 50 | 205 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00020 | 0.209 | 465 | 570 | 354 | 216 | 551 |
| | 178 | 51 | 235 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00021 | 0.209 | 465 | 911 | 354 | 557 | 551 |
| | 178 | 52 | 229 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00022 | 0.209 | 465 | 843 | 354 | 489 | 551 |
| | 178 | 53 | 188 | 20 | B0002 | 126 | 010H1 | FLDCT | ZZZZZ | 00023 | 0.209 | 465 | 376 | 354 | 22 | 551 |
| | 178 | 55 | 126 | 20 | B9999 | 126 | 010H1 | FLDCT | ZZZZZ | 00024 | 0.209 | 435 | -216 | 0 | -216 | 490 |
| | 178 | 56 | 136 | 20 | B9999 | 126 | 010H1 | FLDCT | ZZZZZ | 00025 | 0.209 | 435 | -103 | 0 | -103 | 490 |
| | 178 | 57 | 235 | 20 | B9999 | 126 | 010H1 | FLDCT | ZZZZZ | 00026 | 0.209 | 435 | 1025 | 0 | 1025 | 490 |
| | 178 | 58 | 252 | 20 | B9999 | 126 | 010H1 | FLDCT | ZZZZZ | 00027 | 0.209 | 435 | 1219 | 0 | 1219 | 490 |
| | 178 | 59 | 175 | 20 | B9999 | 126 | 010H1 | FLDCT | ZZZZZ | 00028 | 0.209 | 435 | 342 | 0 | 342 | 490 |
| | 181 | 40 | 85 | 20 | B9999 | 126 | 01H01 | FLDCT | ZZZZZ | 00029 | 0.218 | 287 | -116 | 0 | -116 | 387 |
| | 181 | 41 | 92 | 20 | B9999 | 126 | 01H01 | FLDCT | ZZZZZ | 00030 | 0.218 | 287 | -40 | 0 | -40 | 387 |
| | | | | | | | | | | | | | | # Measurements | 30 | |
| | | | | | | | | | | | | | | Average | 92 | |
| | | | | | | | | | | | | | | Maximum | 1219 | |
| | | | | | | | | | | | | | | STD DEV | 352 | |
| | | | | | | | | | | | | | | 95% CL on Mean | 218 | |



010

The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #178

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

012

Download Technician: Print Name: Don Schumacker Signature: [signature] Station: 2 File: 178
Serial No. Verification: Model 2350: ☑ Detector: ☑ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kyes User ID BSKDA90 Signature: Betty S Kyes Date: 7-12-01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0220, Rx Ventilation System Above 2 Meters
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12-6-01 Detector: 12-6-01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☑ Beta β | 091050 | 43-68B | .209 | 5279 \| 399 | 178 | 178 |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| | | | | | | |

Local Area Background Measurements — MEAN Value in cpm

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 13263 \| 3454 | 24651 | 34421 \| 4288 | 4 | 5 | 6 | 401 |
| α Alpha | 1 avg = 336 | 2 | 3 avg = 435 | 4 | 5 | 6 | |

COMMENTS: Points 29 + 30 (010H) are on download file. #181.

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 178 | Survey Description: A0220: RX VENTILATION SYS. ABOVE 2 METERS | | |
| Survey Reason: TERMINATION | User ID: BSK0490 | Technician name: B.S. Kjos | |
| Instrument Model: 2350-1 | S/N: 129429 | Calibration Due: 12/06/01 | Group: 2 |
| Detector Model: 43-68B | Detector S/N: 091050 | Type: 126 cm2 Gas Proportional Detector, Beta Window | |
| Background: 427 cpm | Beta Efficiency: .209 | | Survey Date: 7/11/01 |

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 2 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: Betty S. Kjos (Print name) / Betty S Kjos (Signature) Date: 7-12-01

and,

I performed this survey: _____ (Print name) / _____ (Signature) Date: _____

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: Ron Jones (Print name) / [signature] (Signature) Date: 12/1/01

Survey Date: 7/11/01 Report Date: 7/12/01 Page: 1
File: 178 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0220 | 010H1 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00000 | 28 | 600 | 3263 | -382 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 34 | 600 | 3454 | -310 | |
| FLDBK | B0002 | ZZZZZ | 00000 | 35 | 600 | 4651 | 145 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 54 | 600 | 4421 | 57 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 60 | 600 | 4288 | 7 | |
| | | | | | | Group Average: | -97 | |
| FLDCT | B9999 | ZZZZZ | 00001 | 29 | 20 | 104 | -437 | |
| FLDCT | B9999 | ZZZZZ | 00002 | 30 | 20 | 107 | -403 | |
| FLDCT | B9999 | ZZZZZ | 00003 | 31 | 20 | 123 | -220 | |
| FLDCT | B9999 | ZZZZZ | 00004 | 32 | 20 | 114 | -323 | |
| FLDCT | B9999 | ZZZZZ | 00005 | 33 | 20 | 100 | -482 | |
| FLDCT | B0002 | ZZZZZ | 00006 | 36 | 20 | 219 | 873 | * |
| FLDCT | B0002 | ZZZZZ | 00007 | 37 | 20 | 173 | 349 | |
| FLDCT | B0002 | ZZZZZ | 00008 | 38 | 20 | 166 | 270 | |
| FLDCT | B0002 | ZZZZZ | 00009 | 39 | 20 | 147 | 53 | |
| FLDCT | B0002 | ZZZZZ | 00010 | 40 | 20 | 165 | 258 | |
| FLDCT | B0002 | ZZZZZ | 00011 | 41 | 20 | 172 | 338 | |
| FLDCT | B0002 | ZZZZZ | 00012 | 42 | 20 | 209 | 759 | * |
| FLDCT | B0002 | ZZZZZ | 00013 | 43 | 20 | 177 | 395 | |
| FLDCT | B0002 | ZZZZZ | 00014 | 44 | 20 | 180 | 429 | |
| FLDCT | B0002 | ZZZZZ | 00015 | 45 | 20 | 191 | 554 | |
| FLDCT | B0002 | ZZZZZ | 00016 | 46 | 20 | 190 | 543 | |
| FLDCT | B0002 | ZZZZZ | 00017 | 47 | 20 | 191 | 554 | |
| FLDCT | B0002 | ZZZZZ | 00018 | 48 | 20 | 184 | 475 | |
| FLDCT | B0002 | ZZZZZ | 00019 | 49 | 20 | 198 | 634 | * |
| FLDCT | B0002 | ZZZZZ | 00020 | 50 | 20 | 205 | 714 | * |
| FLDCT | B0002 | ZZZZZ | 00021 | 51 | 20 | 235 | 1056 | * |
| FLDCT | B0002 | ZZZZZ | 00022 | 52 | 20 | 229 | 987 | * |
| FLDCT | B0002 | ZZZZZ | 00023 | 53 | 20 | 188 | 520 | |
| FLDCT | B9999 | ZZZZZ | 00024 | 55 | 20 | 126 | -186 | |
| FLDCT | B9999 | ZZZZZ | 00025 | 56 | 20 | 136 | -72 | |
| FLDCT | B9999 | ZZZZZ | 00026 | 57 | 20 | 235 | 1056 | * |
| FLDCT | B9999 | ZZZZZ | 00027 | 58 | 20 | 252 | 1249 | * |
| FLDCT | B9999 | ZZZZZ | 00028 | 59 | 20 | 175 | 372 | |
| | | | | | | Group Average: | 368 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | ZZZZZ | EZ260 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 1 | 60 | 5424 | 18975 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 2 | 60 | 5772 | 20297 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 3 | 60 | 5837 | 20544 | * |
| | | | | | | Group Average: | 19939 | |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 86 | 60 | 5501 | 19268 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 87 | 60 | 5822 | 20487 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 88 | 60 | 5723 | 20111 | * |
| | | | | | | Group Average: | 19955 | |

* Hi flag set at 600 dpm/100 cm2

Survey Date: 7/11/01 Report Date: 7/12/01 Page: 2
File: 178 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 |
|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02200 |

Setup Number 0
Det Cal Due: 12/06/01

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 0 | 600 | 3989 | -107 | |
| | | | | | | Group Average: | -107 | |
| PTBBK | ZZZZZ | ZZZZZ | 00000 | 85 | 600 | 4112 | -60 | |
| | | | | | | Group Average: | -60 | |

Total Number of Measurements on this Report: 41

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 600 dpm/100 cm2

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/12/01 Comments Report for File 178 Station: 2

| Comment Number | Comment |
|---|---|
| 1 | Deleted sample numbers from 4 to 27. SEE FILE # 177 FOR THESE DATA POINTS. |
| 2 | Deleted sample numbers from 61 to 84. SEE FILE # 177 FOR THESE DATA POINTS. |

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

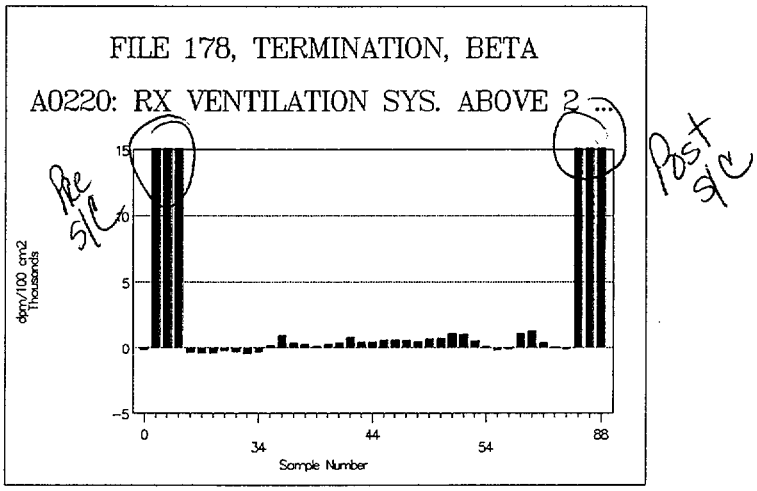
GEORGIA INSTITUTE OF TECHNOLOGY

7/12/2001 Graph of File 178 Station: 2

---

Survey Date: 7/11/2001 Survey Start Time: 10:16:48

Description: A0220: RX VENTILATION SYS. ABOVE 2 METERS



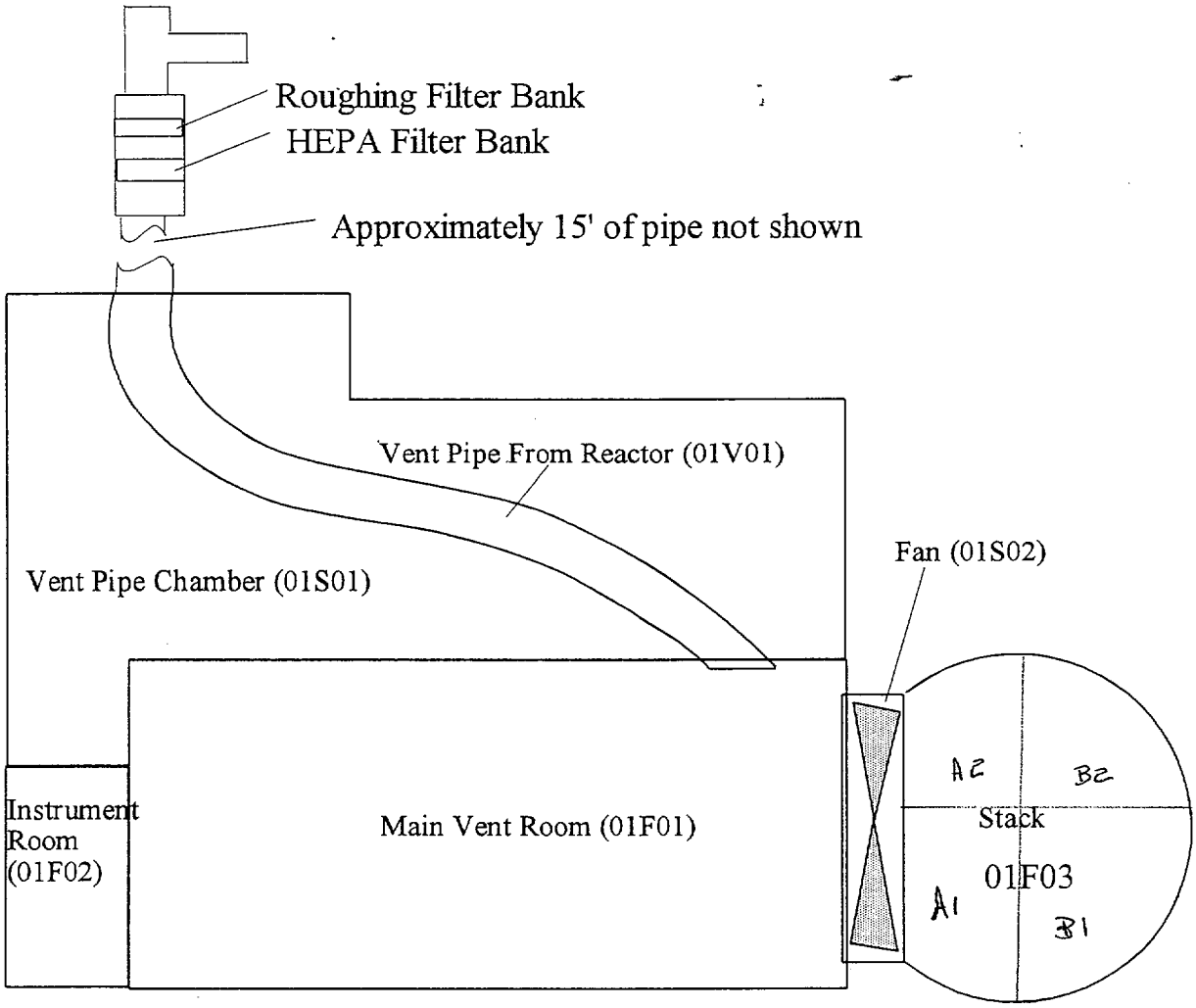

Flag set for 600 dpm/100 cm2. Review values greater than this value.

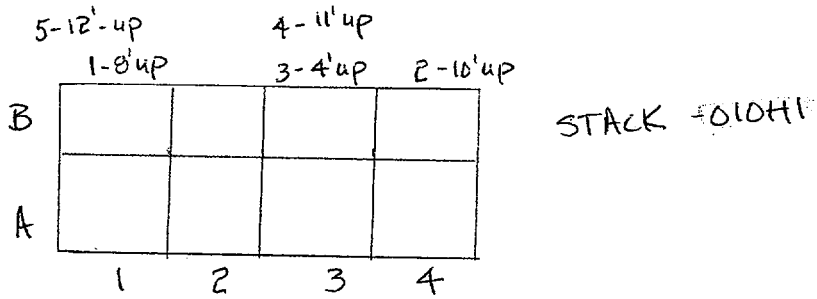
Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

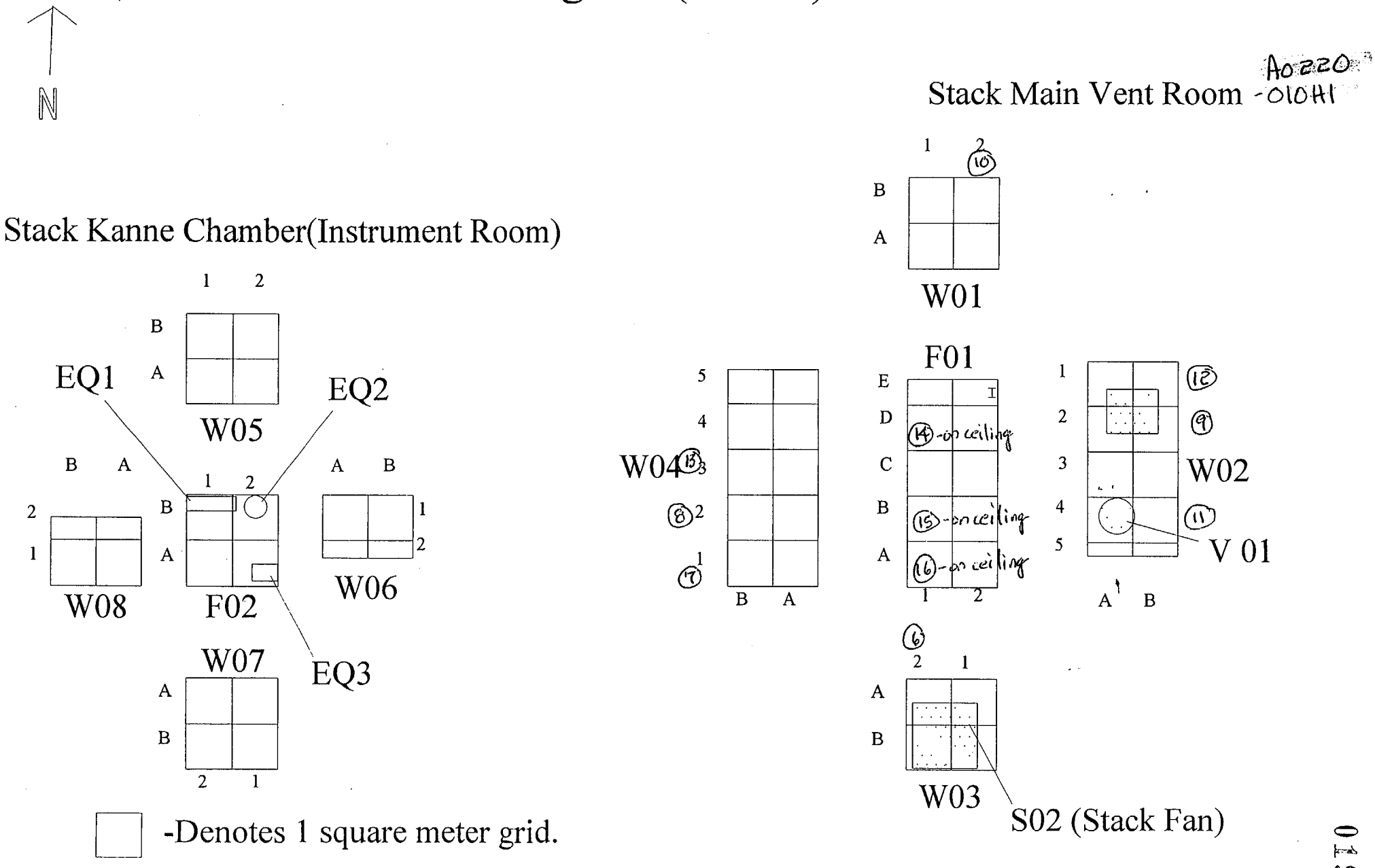
A0220 018
010H1

# REACTOR BUILDING VENTILATION ROOM AND STACK



# Package 07 (A0207)

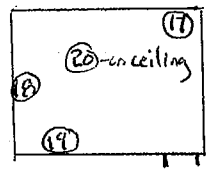



0149

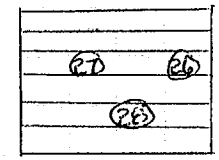
020

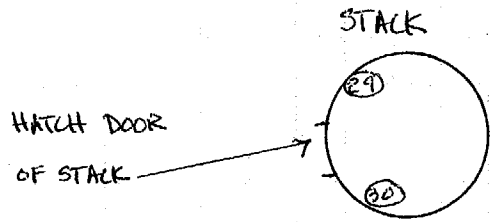
A0220
010H1

STACK MAIN Vent Room
Area @ top of ladder




STACK MAIN VENT ROOM
VENTS @ TOP OF LADDER



The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #181

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

022

Download Technician: Print Name: D. Schumacker Signature: [signature] Station: 2 File: 181

Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: RA LEIGH User ID RAL7103 Signature: RA Leigh Date: 7-18-01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0220: Rx Ventilation Sys Above 2 rectors #29, 30 1/s TRACK
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 129433

Instrument and Detector Calibration Due Dates: Survey Meter: 11-24-01 Detector: ~~091629~~ 12-21-01 ~~7-14-01~~

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☒ Beta β | ~~091029~~ 095080 | 43-68B | .218 | 5497/426 | 181 | 181 |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| | | | | | | |

Local Area Background Measurements — MEAN Value in cpm

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 1 2877 | 2 2865 | 3 | 4 | 5 | 6 | 287 |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 181 | Survey Description: A0220: RX VENTILATION SYS. ABOVE 2 METERS #29&30 I/S STACK | | |
| Survey Reason: TERMINATION | User ID: RAL7103 | Technician name: R.A. Leigh | |
| Instrument Model: 2350-1 | S/N: 129433 | Calibration Due: 10/24/01 | Group: 2 |
| Detector Model: 43-68 | Detector S/N: 095080 | Type: 126 cm2 Gas Proportional Detector | |
| Background: 287 cpm | Beta Efficiency: .218 | | Survey Date: 7/12/01 |

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and RAL 1 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: R.A. LEIGH (Print name) / RAL (Signature) Date: 7-18-01

and,

I performed this survey: _____ (Print name) / _____ (Signature) Date: _____

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: Paul Jones (Print name) / Paul Jones (Signature) Date: 12/1/01

Survey Date: 7/12/01 Report Date: 7/14/01 Page: 1
File: 181 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0220 | 01H01 | TAT01 | 02200 | Det Cal Due: 12/21/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00000 | 39 | 600 | 2877 | 3 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 42 | 600 | 2865 | -2 | |
| | | | | | | Group Average: | 0 | |
| FLDCT | B9999 | ZZZZZ | 00029 | 40 | 20 | 85 | -116 | |
| FLDCT | B9999 | ZZZZZ | 00030 | 41 | 20 | 92 | -40 | |
| | | | | | | Group Average: | -78 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | ZZZZZ | EZ260 | TAT01 | 02200 | Det Cal Due: 12/21/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 1 | 60 | 5778 | 19991 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 2 | 60 | 6089 | 21123 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 3 | 60 | 5850 | 20253 | * |
| | | | | | | Group Average: | 20455 | |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 44 | 60 | 6029 | 20904 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 45 | 60 | 6144 | 21323 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 46 | 60 | 6075 | 21072 | * |
| | | | | | | Group Average: | 21100 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02200 | Det Cal Due: 12/21/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 0 | 600 | 4133 | 460 | |
| | | | | | | Group Average: | 460 | |
| PTBBK | ZZZZZ | ZZZZZ | 00000 | 43 | 600 | 4235 | 497 | |
| | | | | | | Group Average: | 497 | |

Total Number of Measurements on this Report: 12

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 600 dpm/100 cm2

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/14/01 Comments Report for File 181 Station: 2

| Comment Number | Comment |
|---|---|
| 1 | Deleted sample numbers from 4 to 38. SEE FILE # 183 FOR THESE DATA POINTS. |

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

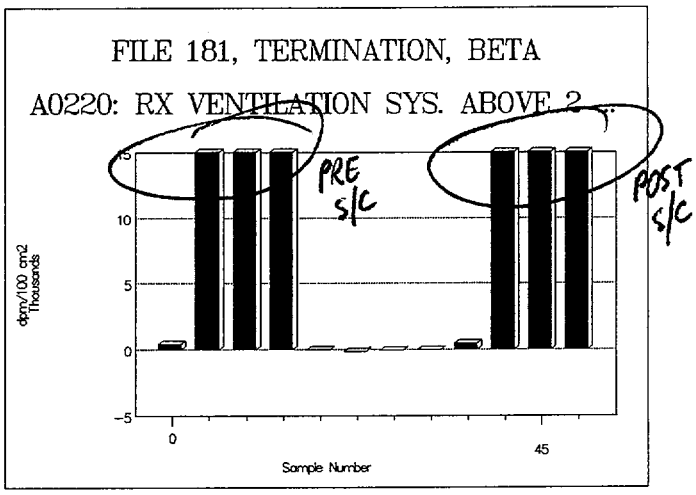
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/14/2001 Graph of File 181 Station: 2

Survey Date: 7/12/2001 Survey Start Time: 11:04:34

Description: A0220: RX VENTILATION SYS. ABOVE 2 METERS #29&30 I/S STACK

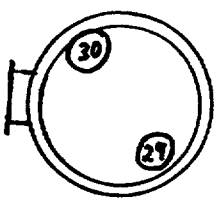



Flag set for 600 dpm/100 cm2. Review values greater than this value.

PLOT.SC

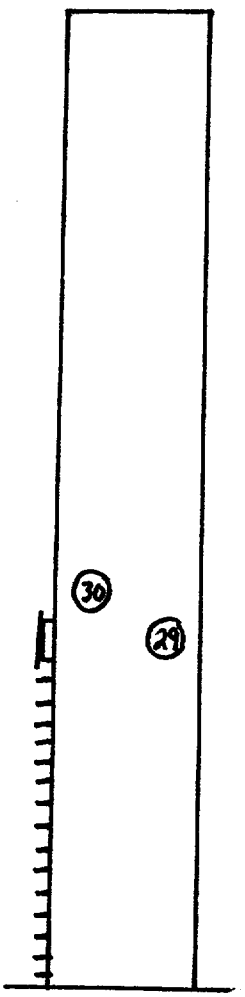
A0220
REACTOR VENTILATION SYSTEM
ABOVE 2 METERS
1/5 STACK

TOP VIEW



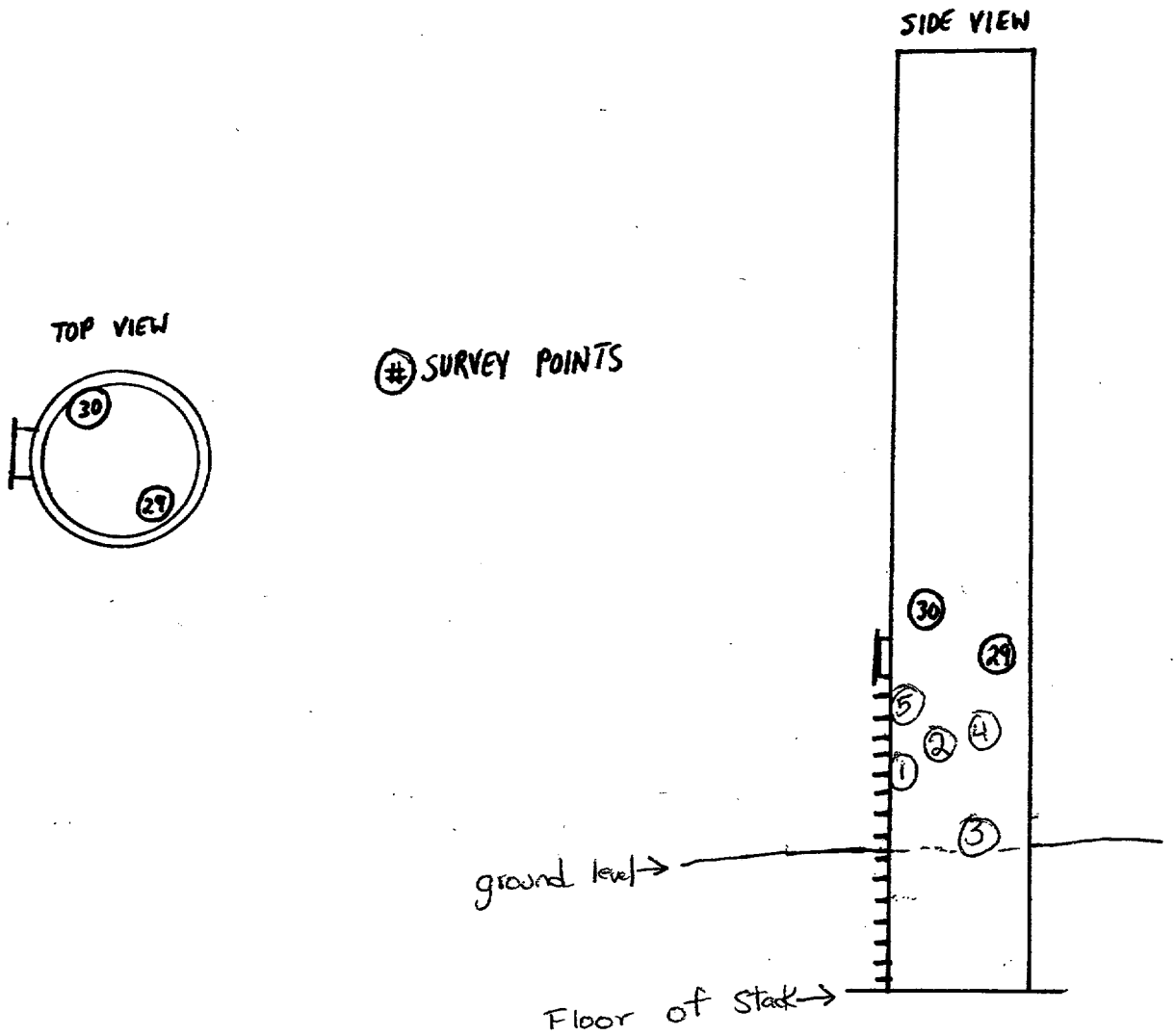

(#) SURVEY POINTS

SIDE VIEW




R.G. Zil
7-19-01

A0220
REACTOR VENTILATION SYSTEM
ABOVE 2 METERS
1/5 STACK
(combined drawing)
download files 178 and 181 Stack Drawing




R.G. Zi
7-19-01

P. Jones

# Section 4

# Package 20
# Removable Beta Contamination for the Ventilation System Above 2 Meters Non-Suspect Affected (including lab reports)

Removable Beta Contamination Package A0220 (Ventilation System Above 2 Metes Non Suspect Affected)

| Desc. | Gross Counts | Count Time (sec) | Sample Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Net Activity ($dpm/100cm^2$) | MDA ($dpm/100cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | 4 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00001 | 0.3425 | 2 | 3 | 16 |
| | 5 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00002 | 0.3425 | 2 | 5 | 16 |
| | 2 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00003 | 0.3425 | 2 | -1 | 16 |
| | 0 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00004 | 0.3425 | 2 | -5 | 16 |
| | 5 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00005 | 0.3425 | 2 | 5 | 16 |
| | 2 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00006 | 0.3425 | 2 | -1 | 16 |
| | 1 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00007 | 0.3425 | 2 | -3 | 16 |
| | 1 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00008 | 0.3425 | 2 | -3 | 16 |
| | 0 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00009 | 0.3425 | 2 | -5 | 16 |
| | 5 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00010 | 0.3425 | 2 | 5 | 16 |
| | 2 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00011 | 0.3425 | 2 | -2 | 16 |
| | 9 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00012 | 0.3425 | 2 | 12 | 16 |
| | 4 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00013 | 0.3425 | 2 | 3 | 16 |
| | 2 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00014 | 0.3425 | 2 | -1 | 16 |
| | 0 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00015 | 0.3425 | 2 | -5 | 16 |
| | 2 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00016 | 0.3425 | 2 | -1 | 16 |
| | 5 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00017 | 0.3425 | 2 | 4 | 16 |
| | 17 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00018 | 0.3425 | 2 | 28 | 16 |
| | 15 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00019 | 0.3425 | 2 | 24 | 16 |
| | 5 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00020 | 0.3425 | 2 | 4 | 16 |
| | 0 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00021 | 0.3425 | 2 | -5 | 16 |
| | 3 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00022 | 0.3425 | 2 | 1 | 16 |
| | 3 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00023 | 0.3425 | 2 | 1 | 16 |
| | 1 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00024 | 0.3425 | 2 | -3 | 16 |
| | 4 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00025 | 0.3425 | 2 | 3 | 16 |
| | 7 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00026 | 0.3425 | 2 | 7 | 16 |
| | 1 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00027 | 0.3425 | 2 | -4 | 16 |
| | 10 | 90 | 100 | 010H1 | FLDCT | ZZZZZ | 00028 | 0.3425 | 2 | 15 | 16 |
| | 2 | 90 | 100 | 01H01 | FLDCT | ZZZZZ | 00029 | 0.3425 | 2 | -1 | 16 |
| | 1 | 90 | 100 | 01H01 | FLDCT | ZZZZZ | 00030 | 0.3425 | 2 | -3 | 16 |
| | | | | | | | | | | | |
| | | | | | | | | | # Measurements | 30 | |
| | | | | | | | | | Average | 2 | |
| | | | | | | | | | Maximum | 28 | |
| | | | | | | | | | STD DEV | 8 | |
| | | | | | | | | | 95% CL on Mean | 5 | |



030

FINAL SURVEY 010M1 [Z] PIN 20

PIC IPC9025 216712



| | | | ALPHA Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | BETA Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | 4 | 0.97 | 2.82 | | 07-12-2001 | 14:20:05 |
| 002 | 00 | 2 | 0 | 0.00 | 0.00 | | 5 | 1.63 | 4.77 | | 07-12-2001 | 14:22:07 |
| 003 | 00 | 3 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 14:24:06 |
| 004 | 00 | 4 | 0 | 0.00 | 0.00 | | 0 | -1.70 | -4.96 | | 07-12-2001 | 14:26:05 |
| 005 | 00 | 5 | 0 | 0.00 | 0.00 | | 5 | 1.63 | 4.77 | | 07-12-2001 | 14:28:04 |
| 006 | 00 | 6 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 14:30:03 |
| 007 | 00 | 7 | 0 | 0.00 | 0.00 | | 1 | -1.03 | -3.02 | | 07-12-2001 | 14:32:02 |
| 008 | 00 | 8 | 0 | 0.00 | 0.00 | | 1 | -1.03 | -3.02 | | 07-12-2001 | 14:34:01 |
| 009 | 00 | 9 | 1 | 0.67 | 1.91 | | 0 | -1.90 | -5.54 | | 07-12-2001 | 14:36:00 |
| 010 | 00 | 10 | 0 | 0.00 | 0.00 | | 5 | 1.63 | 4.77 | | 07-12-2001 | 14:37:59 |
| 011 | 00 | 11 | 1 | 0.67 | 1.91 | | 2 | -0.57 | -1.65 | | 07-12-2001 | 14:39:58 |
| 012 | 00 | 12 | 1 | 0.67 | 1.91 | | 9 | 4.10 | 11.97 | | 07-12-2001 | 14:41:57 |
| 013 | 00 | 13 | 0 | 0.00 | 0.00 | | 4 | 0.97 | 2.82 | | 07-12-2001 | 14:43:56 |
| 014 | 00 | 14 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 14:45:55 |
| 015 | 00 | 15 | 0 | 0.00 | 0.00 | | 0 | -1.70 | -4.96 | | 07-12-2001 | 14:47:54 |

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 010H1 [2] PIN 20

PIC IPD9025 216712



| | | | ALPHA | | | | BETA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% | Bkg: 0.00 cpm | MDA: 5.17 dpm | | Eff: 34.25% | Bkg: 1.70 cpm | MDA: 19.73 dpm | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 016 | 00 | 16 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 14:51:37 |
| 017 | 00 | 17 | 2 | 1.33 | 3.81 | | 5 | 1.24 | 3.61 | | 07-12-2001 | 14:53:36 |
| 018 | 00 | 18 | 0 | 0.00 | 0.00 | | 17 | 9.63 | 28.13 | | 07-12-2001 | 14:55:35 |
| 019 | 00 | 19 | 0 | 0.00 | 0.00 | | 15 | 8.30 | 24.23 | | 07-12-2001 | 14:57:34 |
| 020 | 00 | 20 | 2 | 1.33 | 3.81 | | 5 | 1.24 | 3.61 | | 07-12-2001 | 14:59:33 |
| 021 | 00 | 21 | 0 | 0.00 | 0.00 | | 0 | -1.70 | -4.96 | | 07-12-2001 | 15:01:32 |
| 022 | 00 | 22 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-12-2001 | 15:03:31 |
| 023 | 00 | 23 | 0 | 0.00 | 0.00 | | 3 | 0.30 | 0.88 | | 07-12-2001 | 15:05:30 |
| 024 | 00 | 24 | 0 | 0.00 | 0.00 | | 1 | -1.03 | -3.02 | | 07-12-2001 | 15:07:29 |
| 025 | 00 | 25 | 0 | 0.00 | 0.00 | | 4 | 0.97 | 2.82 | | 07-12-2001 | 15:09:28 |
| 026 | 00 | 26 | 3 | 2.00 | 5.72 | | 7 | 2.37 | 6.92 | | 07-12-2001 | 15:11:27 |
| 027 | 00 | 27 | 1 | 0.67 | 1.91 | | 1 | -1.23 | -3.60 | | 07-12-2001 | 15:13:26 |
| 028 | 00 | 28 | 0 | 0.00 | 0.00 | | 10 | 4.97 | 14.50 | | 07-12-2001 | 15:15:25 |
| 029 | 00 | 29 | 0 | 0.00 | 0.00 | | 2 | -0.37 | -1.07 | | 07-12-2001 | 15:17:24 |
| 030 | 00 | 30 | 0 | 0.00 | 0.00 | | 1 | -1.03 | -3.02 | | 07-12-2001 | 15:19:23 |

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

# Section 5

# Package 20
# H-3 Removable Beta Contamination
# Summary Data Table (including lab reports)

| Carrier No. | CPM | Count Time (sec) | Sample Area ($cm^2$) | Surface | Row | Location | Beta Efficiency | Beta Background (cpm) | Activity ($dpm/100cm^2$) | Net Activity ($dpm/100cm^2$) | MDA ($dpm/100cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25 | 60 | 100 | 01OH1 | ZZZZZ | 00001 | 0.270 | 0.00 | 93 | 93 | 10 |
| 2 | 19 | 60 | 100 | 01OH1 | ZZZZZ | 00002 | 0.229 | 0.00 | 83 | 83 | 12 |
| 3 | 32 | 60 | 100 | 01OH1 | ZZZZZ | 00003 | 0.259 | 0.00 | 124 | 124 | 10 |
| 4 | 27 | 60 | 100 | 01OH1 | ZZZZZ | 00004 | 0.254 | 0.00 | 106 | 106 | 11 |
| 5 | 33 | 60 | 100 | 01OH1 | ZZZZZ | 00005 | 0.226 | 0.00 | 146 | 146 | 12 |
| 6 | 20 | 60 | 100 | 01OH1 | ZZZZZ | 00006 | 0.283 | 0.00 | 71 | 71 | 10 |
| 7 | 28 | 60 | 100 | 01OH1 | ZZZZZ | 00007 | 0.288 | 0.00 | 97 | 97 | 9 |
| 8 | 29 | 60 | 100 | 01OH1 | ZZZZZ | 00008 | 0.294 | 0.00 | 99 | 99 | 9 |
| 9 | 34 | 60 | 100 | 01OH1 | ZZZZZ | 00009 | 0.264 | 0.00 | 129 | 129 | 10 |
| 10 | 28 | 60 | 100 | 01OH1 | ZZZZZ | 00010 | 0.236 | 0.00 | 119 | 119 | 11 |
| 11 | 28 | 60 | 100 | 01OH1 | ZZZZZ | 00011 | 0.323 | 0.00 | 87 | 87 | 8 |
| 12 | 32 | 60 | 100 | 01OH1 | ZZZZZ | 00012 | 0.219 | 0.00 | 146 | 146 | 12 |
| 13 | 27 | 60 | 100 | 01OH1 | ZZZZZ | 00013 | 0.181 | 0.00 | 149 | 149 | 15 |
| 14 | 23 | 60 | 100 | 01OH1 | ZZZZZ | 00014 | 0.353 | 0.00 | 65 | 65 | 8 |
| 15 | 25 | 60 | 100 | 01OH1 | ZZZZZ | 00015 | 0.344 | 0.00 | 73 | 73 | 8 |
| 16 | 31 | 60 | 100 | 01OH1 | ZZZZZ | 00016 | 0.270 | 0.00 | 115 | 115 | 10 |
| 17 | 19 | 60 | 100 | 01OH1 | ZZZZZ | 00017 | 0.074 | 0.00 | 258 | 258 | 37 |
| 18 | 34 | 60 | 100 | 01OH1 | ZZZZZ | 00018 | 0.259 | 0.00 | 131 | 131 | 10 |
| 19 | 38 | 60 | 100 | 01OH1 | ZZZZZ | 00019 | 0.034 | 0.00 | 1133 | 1133 | 81 |
| 20 | 32 | 60 | 100 | 01OH1 | ZZZZZ | 00020 | 0.156 | 0.00 | 206 | 206 | 17 |
| 21 | 33 | 60 | 100 | 01OH1 | ZZZZZ | 00021 | 0.246 | 0.00 | 134 | 134 | 11 |
| 22 | 23 | 60 | 100 | 01OH1 | ZZZZZ | 00022 | 0.297 | 0.00 | 77 | 77 | 9 |
| 23 | 42 | 60 | 100 | 01OH1 | ZZZZZ | 00023 | 0.234 | 0.00 | 180 | 180 | 12 |
| 24 | 20 | 60 | 100 | 01OH1 | ZZZZZ | 00024 | 0.171 | 0.00 | 117 | 117 | 16 |
| 25 | 28 | 60 | 100 | 01OH1 | ZZZZZ | 00025 | 0.097 | 0.00 | 288 | 288 | 28 |
| 26 | 18 | 60 | 100 | 01OH1 | ZZZZZ | 00026 | 0.143 | 0.00 | 126 | 126 | 19 |
| 27 | 33 | 60 | 100 | 01OH1 | ZZZZZ | 00027 | 0.058 | 0.00 | 573 | 573 | 47 |
| 28 | 28 | 60 | 100 | 01OH1 | ZZZZZ | 00028 | 0.028 | 0.00 | 983 | 983 | 95 |
| 29 | 37 | 60 | 100 | 01OH1 | ZZZZZ | 00029 | 0.072 | 0.00 | 517 | 517 | 38 |
| 30 | 24 | 60 | 100 | 01OH1 | ZZZZZ | 00030 | 0.157 | 0.00 | 152 | 152 | 17 |
| | | | | | | | | | # Measurements | 30 | |
| | | | | | | | | | Average | 219 | |
| | | | | | | | | | Maximum | 1133 | |
| | | | | | | | | | STD DEV | 253 | |
| | | | | | | | | | 95% CL on Mean | 323 | |

USER: 1 ID:SMEARS PRESET TIME: 1.00 THU 12 JUL 2001 14:43
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AOC:N QCF:N RCM:N 2 PHASE MONITOR:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 2-LL: 0 UL: 670 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 3-LL: 0 UL:1000 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON SUN 24 JUN 2001 16:19
UNKNOWN ID:SMEARS UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS):N
QUENCH COEFF A: 4.328559 B:-0.0051270 C:-0.0000122 D:-0.0000000212
STANDARD ID:
QUENCH LIMITS LOW:90.00 HIGH:390.0

| SAM | POS | CH | CPM | 2SIG% | TIME | EL TIME | AVG H# | ERR |
|---|---|---|---|---|---|---|---|---|
| 1 | 8- 1 | 1 | 25.00 | 40.00 | 1.00 | 1.31 | 142.0 | |
| | | 2 | 60.00 | 25.82 | | | | |
| | | 3 | 85.00 | 21.69 | | | | |
| | | | | | %EFF:26.95 | ISO1 DPM | :92.77919 | |
| 2 | 8- 2 | 1 | 19.00 | 45.88 | 1.00 | 2.79 | 158.0 | |
| | | 2 | 38.00 | 32.44 | | | | |
| | | 3 | 60.00 | 25.82 | | | | |
| | | | | | %EFF:22.88 | ISO1 DPM | :83.03809 | |
| 3 | 8- 3 | 1 | 32.00 | 35.36 | 1.00 | 4.28 | 146.0 | |
| | | 2 | 63.00 | 25.20 | | | | |
| | | 3 | 88.00 | 21.32 | | | | |
| | | | | | %EFF:25.89 | ISO1 DPM | :123.5844 | |
| 4 | 8- 4 | 1 | 27.00 | 38.49 | 1.00 | 5.75 | 148.0 | |
| | | 2 | 50.00 | 28.28 | | | | |
| | | 3 | 69.00 | 24.08 | | | | |
| | | | | | %EFF:25.38 | ISO1 DPM | :106.3989 | |
| 5 | 8- 5 | 1 | 33.00 | 34.82 | 1.00 | 7.23 | 159.0 | |
| | | 2 | 54.00 | 27.22 | | | | |
| | | 3 | 81.00 | 22.22 | | | | |
| | | | | | %EFF:22.64 | ISO1 DPM | :145.7591 | |
| 6 | 8- 6 | 1 | 20.00 | 44.72 | 1.00 | 8.72 | 137.0 | |
| | | 2 | 42.00 | 30.86 | | | | |
| | | 3 | 73.00 | 23.41 | | | | |
| | | | | | %EFF:28.29 | ISO1 DPM | :70.68519 | |
| 7 | 8- 7 | 1 | 28.00 | 37.80 | 1.00 | 10.20 | 135.0 | |
| | | 2 | 54.00 | 27.22 | | | | |
| | | 3 | 86.00 | 21.57 | | | | |
| | | | | | %EFF:28.84 | ISO1 DPM | :97.07360 | |
| 8 | 8- 8 | 1 | 29.00 | 37.14 | 1.00 | 11.68 | 133.0 | |
| | | 2 | 51.00 | 28.01 | | | | |
| | | 3 | 77.00 | 22.79 | | | | |
| | | | | | %EFF:29.40 | ISO1 DPM | :98.64037 | |
| 9 | 8- 9 | 1 | 34.00 | 34.30 | 1.00 | 13.17 | 144.0 | |
| | | 2 | 62.00 | 25.40 | | | | |
| | | 3 | 84.00 | 21.82 | | | | |
| | | | | | %EFF:26.42 | ISO1 DPM | :128.7070 | |

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

| SAM | POS | CH | CPM | 2SIG% | TIME | EL TIME | AVG H# | ERR |
|---|---|---|---|---|---|---|---|---|
| 10 | 8-10 | 1 | 28.00 | 37.80 | 1.00 | 14.65 | 155.0 | |
| | | 2 | 55.00 | 26.97 | | | | |
| | | 3 | 79.00 | 22.80 | | | | |
| | | | | | %EFF: | 23.61 | ISO1 DPM | :118.5764 |
| 11 | 8-11 | 1 | 28.00 | 37.80 | 1.00 | 16.14 | 123.0 | |
| | | 2 | 50.00 | 28.28 | | | | |
| | | 3 | 86.00 | 21.57 | | | | |
| | | | | | %EFF: | 32.26 | ISO1 DPM | :86.78757 |
| 12 | 8-12 | 1 | 32.00 | 35.36 | 1.00 | 17.63 | 162.0 | |
| | | 2 | 69.00 | 24.08 | | | | |
| | | 3 | 93.00 | 20.74 | | | | |
| | | | | | %EFF: | 21.93 | ISO1 DPM | :145.9451 |
| 13 | 7- 1 | 1 | 27.00 | 38.49 | 1.00 | 19.15 | 179.0 | |
| | | 2 | 58.00 | 26.26 | | | | |
| | | 3 | 76.00 | 22.94 | | | | |
| | | | | | %EFF: | 18.14 | ISO1 DPM | :148.8105 |
| 14 | 7- 2 | 1 | 23.00 | 41.70 | 1.00 | 20.63 | 113.0 | |
| | | 2 | 53.00 | 27.47 | | | | |
| | | 3 | 79.00 | 22.50 | | | | |
| | | | | | %EFF: | 35.26 | ISO1 DPM | :65.22385 |
| 15 | 7- 3 | 1 | 25.00 | 40.00 | 1.00 | 22.12 | 116.0 | |
| | | 2 | 59.00 | 26.04 | | | | |
| | | 3 | 77.00 | 22.79 | | | | |
| | | | | | %EFF: | 34.35 | ISO1 DPM | :72.78199 |
| | 7- 4 | 1 | 31.00 | 35.92 | 1.00 | 23.59 | 142.0 | |
| | | 2 | 51.00 | 28.01 | | | | |
| | | 3 | 79.00 | 22.50 | | | | |
| | | | | | %EFF: | 26.95 | ISO1 DPM | :115.0462 |
| 17 | 7- 5 | 1 | 19.00 | 45.88 | 1.00 | 25.07 | 247.0 | |
| | | 2 | 52.00 | 27.74 | | | | |
| | | 3 | 63.00 | 25.20 | | | | |
| | | | | | %EFF: | 7.377 | ISO1 DPM | :257.5454 |
| 18 | 7- 6 | 1 | 34.00 | 34.30 | 1.00 | 26.56 | 146.0 | |
| | | 2 | 66.00 | 24.62 | | | | |
| | | 3 | 86.00 | 21.57 | | | | |
| | | | | | %EFF: | 25.89 | ISO1 DPM | :131.3084 |
| 19 | 7- 7 | 1 | 38.00 | 32.44 | 1.00 | 28.16 | 295.0 | |
| | | 2 | 68.00 | 24.25 | | | | |
| | | 3 | 79.00 | 22.50 | | | | |
| | | | | | %EFF: | 3.354 | ISO1 DPM | :1133.005 |
| 20 | 7- 8 | 1 | 32.00 | 35.36 | 1.00 | 29.65 | 192.0 | |
| | | 2 | 73.00 | 23.41 | | | | |
| | | 3 | 99.00 | 20.10 | | | | |
| | | | | | %EFF: | 15.55 | ISO1 DPM | :205.7220 |
| 21 | 7- 9 | 1 | 33.00 | 34.82 | 1.00 | 31.13 | 151.0 | |
| | | 2 | 59.00 | 26.04 | | | | |
| | | 3 | 86.00 | 21.57 | | | | |
| | | | | | %EFF: | 24.61 | ISO1 DPM | :134.0836 |
| 22 | 7-10 | 1 | 23.00 | 41.70 | 1.00 | 32.62 | 132.0 | |
| | | 2 | 48.00 | 28.87 | | | | |
| | | 3 | 69.00 | 24.08 | | | | |
| | | | | | %EFF: | 29.68 | ISO1 DPM | :77.49414 |

Performed By: [signature] Date: 7/13/07

Reviewed By: [signature] Date: 7/16/01

| SAM | POS | CH | CPM | 2SIG% | TIME | EL TIME | AVG H# | ERR |
|---|---|---|---|---|---|---|---|---|
| 23 | 7-11 | 1 | 42.00 | 30.36 | 1.00 | 34.10 | 156.0 | |
| | | 2 | 71.00 | 23.74 | | | | |
| | | 3 | 98.00 | 21.32 | | | | |
| | | | | | %EFF: | 23.37 | ISO1 DPM | :179.7330 |
| 24 | 7-12 | 1 | 20.00 | 44.72 | 1.00 | 35.58 | 184.0 | |
| | | 2 | 45.00 | 29.61 | | | | |
| | | 3 | 58.00 | 26.26 | | | | |
| | | | | | %EFF: | 17.12 | ISO1 DPM | :116.8423 |
| 25 | 8- 1 | 1 | 28.00 | 37.80 | 1.00 | 37.12 | 228.0 | |
| | | 2 | 62.00 | 25.40 | | | | |
| | | 3 | 69.00 | 24.08 | | | | |
| | | | | | %EFF: | 9.719 | ISO1 DPM | :288.0837 |
| 26 | 8- 2 | 1 | 18.00 | 47.14 | 1.00 | 38.60 | 199.0 | |
| | | 2 | 48.00 | 28.87 | | | | |
| | | 3 | 65.00 | 24.25 | | | | |
| | | | | | %EFF: | 14.27 | ISO1 DPM | :126.1480 |
| 27 | 8- 3 | 1 | 33.00 | 34.82 | 1.00 | 40.08 | 263.0 | |
| | | 2 | 59.00 | 26.04 | | | | |
| | | 3 | 67.00 | 24.43 | | | | |
| | | | | | %EFF: | 5.758 | ISO1 DPM | :573.0901 |
| 28 | 8- 4 | 1 | 28.00 | 37.80 | 1.00 | 41.57 | 304.0 | |
| | | 2 | 65.00 | 24.81 | | | | |
| | | 3 | 73.00 | 23.41 | | | | |
| | | | | | %EFF: | 2.849 | ISO1 DPM | :982.9003 |
| | 8- 5 | 1 | 37.00 | 32.88 | 1.00 | 43.07 | 249.0 | |
| | | 2 | 71.00 | 23.74 | | | | |
| | | 3 | 87.00 | 21.44 | | | | |
| | | | | | %EFF: | 7.158 | ISO1 DPM | :516.9059 |
| 30 | 8- 6 | 1 | 24.00 | 40.82 | 1.00 | 44.55 | 191.0 | |
| | | 2 | 56.00 | 26.73 | | | | |
| | | 3 | 65.00 | 24.81 | | | | |
| | | | | | %EFF: | 15.74 | ISO1 DPM | :152.4310 |

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

# Georgia Institute of Technology Research Reactor

# Final Survey Package 21

# Elevator Equipment Room and Elevator Shaft

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# Section 1

# Survey Package 21 Worksheet for Elevator Equipment Area and Elevator Shaft

Duratek Inc.
Survey Package Worksheet for Elevator Equipment Area and Elevator Shaft
Georgia Institute of Technology Research Reactor

| | |
|---|---|
| Package Identification No.: **21** | Prepared by: Paul Jones |
| Location: Elevator Equipment Area and Elevator Shaft | Date prepared: 07/12/2001 |
| Area Classification: ~~Non-Suspect Affected~~ Unaffected RJ 3/15/02 | |

## Area Description

This area consists of the elevator equipment area and the elevator shaft. Access to these areas is from the North side of the basement.

## Historical Information

No decontamination was required in these areas. No known radioactive materials were transported through these areas.

## General Survey Instructions

Elevator shaft and elevator equipment room (~~Non-suspect Affected~~ Unaffected):

1) Perform a minimum of 10% scan of accessible surfaces. The surface scanned should be biased towards surfaces with a higher potential of being contaminated, (i.e. floors, tops of horizontal surfaces).
2) Obtain 1 direct beta measurement for each 20 square meters of surface area (See Special Instructions for the minimum number of readings required). Denote location of all readings on map.
3) Obtain 1 smear for gross alpha/beta analysis at each measurement location.
4) Obtain required smears for H-3 analysis (See Special Instructions for the minimum number of smears required). Denote location of all smears on map.

Use only the Package ID, L2, L7 and L8 codes when labeling smears for counting.

Use all location codes provided below when taking fixed beta readings.

## Special Instructions

Source check meters to Tc-99 for beta measurements.

Use gas flow proportional detector model numbers 43-68 and 43-106 for surveys.

Verify that the MDA is less than 600 dpm/100cm2 for direct beta measurements after obtaining initial background.

A minimum of 4 direct beta measurements and smears should be taken at all 3 elevations of the survey area.

During scanning the detector is to be kept as close to the surface as possible and moved across the surface at a slow speed (scan speed shall not exceed on probe width per sec). The scan should be performed using the audible output and using headphones whenever necessary.

## Survey performance (Initial and date as each survey is complete)

| Location Code | | | | | General Description | Beta Scan | Direct Beta | 1 meter Gamma (#2) | Smear Gross α/β | LS Smear |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | L2 | L6 | L7 | L8 | | | | | | |
| Georgia Tech Research Reactor ~~Areas Outside the Process Area Room Above 2 Meters~~ Elevator Equip Area & Shaft. | | | | | | | | | | |
| A02~~17~~ 21 7/25/01 | 01S01 | B0001, B0002, B9999 | ZZZZZ | 1 thru 15 | Elevator Shaft. | 7-19-01 | (15) DB 7-17-01 | N/A (#2) | (15) RGZ 7-25-01 | (15) RGZ 7-25-01 |
| A02~~17~~ 21 7/25/01 | 02S02 | B0001, B0002, B9999 | ZZZZZ | 1 thru 15 | Elevator Equipment Room. | RGZ 7-25-01 | (15) DB 7-17-01 | N/A (#2) | (15) RGZ 7-25-01 | (15) RGZ 7-25-01 |
| | | | | | | | | | | |
| | | | | | A | | | | | |
| | | | | N | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |



0055

| Package Review | |
|---|---|
| Date Package Completed | 5/24/02 |
| Package Reviewed by and Date | P. A. Jones 5/24/02 |

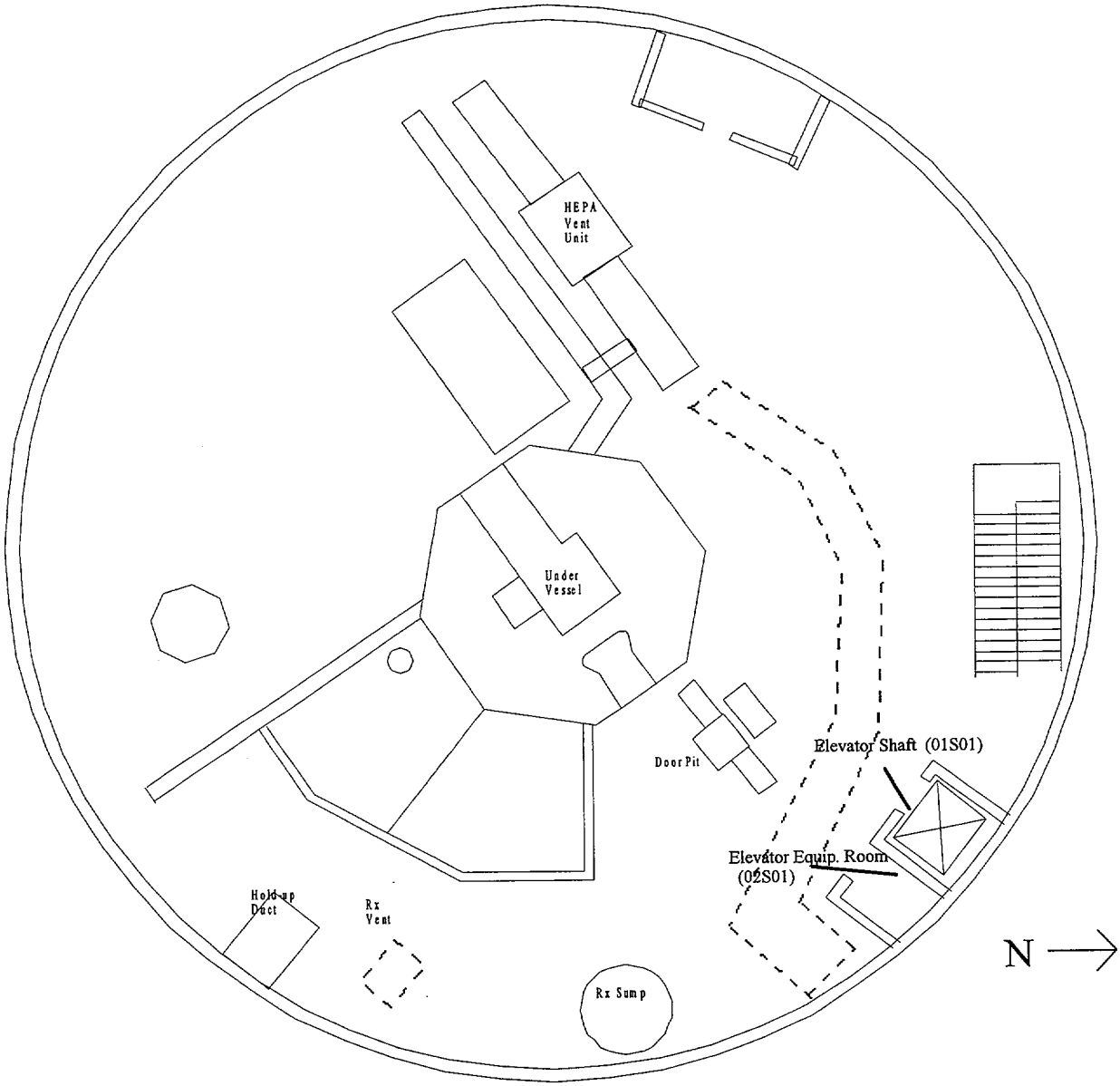
| Survey Comments |
|---|
| * Note: This package was reclassified to unaffected to assure compliance with the Final Survey Plan. P. Jones 3/13/02 |
| |
| (*2) Note 2: A total of six exposure rate readings were taken at one meter above the floor at the ~~floor~~ PJ 3/18/02 corresponding direct beta locations of the elevator equipment room and elevator shaft. P. Jones 3/18/02 |
| |
| |
| |

# Section 2

# Package 21
# Drawings

# Package 21

# Elevator Equipment Room and Shaft



# Section 3

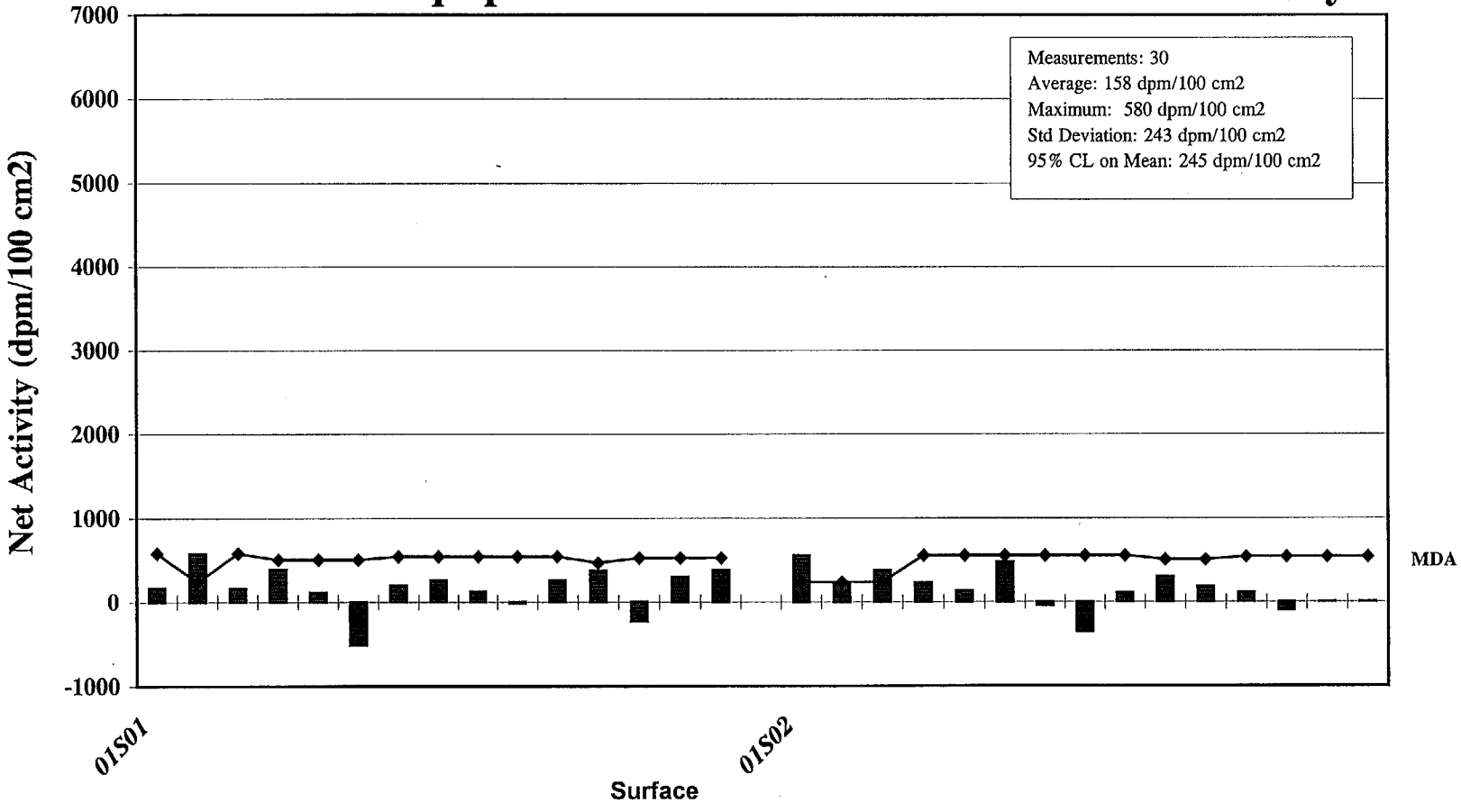
# Package 21
# Direct Beta Survey Report for the Unaffected Elevator Equipment Room and Shaft (including download reports)

Package 21_A0221 FBSR (Non-Suspect Affected Elevator Equip. Room and Shaft

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01S01 | 195 | 20 | 221 | 20 | B0002 | 126 | 01S01 | FLDCT | ZZZZZ | 00001 | 0.206 | 527 | 524 | 354 | 170 | 587 |
| | 236 | 1 | 1481 | 120 | B0002 | 126 | 01S01 | FLDCT | ZZZZZ | 00002 | 0.21 | 493 | 934 | 354 | 580 | 238 |
| | 195 | 22 | 220 | 20 | B0002 | 126 | 01S01 | FLDCT | ZZZZZ | 00003 | 0.206 | 527 | 512 | 354 | 158 | 587 |
| | 195 | 25 | 186 | 20 | B9999 | 126 | 01S01 | FLDCT | ZZZZZ | 00004 | 0.206 | 457 | 389 | 0 | 389 | 508 |
| | 195 | 26 | 162 | 20 | B9999 | 126 | 01S01 | FLDCT | ZZZZZ | 00005 | 0.206 | 457 | 112 | 0 | 112 | 508 |
| | 195 | 27 | 108 | 20 | B9999 | 126 | 01S01 | FLDCT | ZZZZZ | 00006 | 0.206 | 457 | -512 | 0 | -512 | 508 |
| | 195 | 30 | 196 | 20 | B0001 | 126 | 01S01 | FLDCT | ZZZZZ | 00007 | 0.206 | 448 | 539 | 346 | 193 | 549 |
| | 195 | 31 | 202 | 20 | B0001 | 126 | 01S01 | FLDCT | ZZZZZ | 00008 | 0.206 | 448 | 609 | 346 | 263 | 549 |
| | 195 | 32 | 190 | 20 | B0001 | 126 | 01S01 | FLDCT | ZZZZZ | 00009 | 0.206 | 448 | 470 | 346 | 124 | 549 |
| | 195 | 33 | 178 | 20 | B0001 | 126 | 01S01 | FLDCT | ZZZZZ | 00010 | 0.206 | 448 | 331 | 346 | -15 | 549 |
| | 195 | 34 | 202 | 20 | B0001 | 126 | 01S01 | FLDCT | ZZZZZ | 00011 | 0.206 | 448 | 609 | 346 | 263 | 549 |
| | 195 | 37 | 161 | 20 | B9999 | 126 | 01S01 | FLDCT | ZZZZZ | 00012 | 0.206 | 386 | 374 | 0 | 374 | 470 |
| | 195 | 39 | 147 | 20 | B0001 | 126 | 01S01 | FLDCT | ZZZZZ | 00013 | 0.206 | 411 | 116 | 346 | -230 | 531 |
| | 195 | 40 | 193 | 20 | B0001 | 126 | 01S01 | FLDCT | ZZZZZ | 00014 | 0.206 | 411 | 647 | 346 | 301 | 531 |
| | 195 | 41 | 200 | 20 | B0001 | 126 | 01S01 | FLDCT | ZZZZZ | 00015 | 0.206 | 411 | 728 | 346 | 382 | 531 |
| | | | | | | | | | | | | | | | | |
| 01S02 | 236 | 3 | 1484 | 120 | B0001 | 126 | 01S02 | FLDCT | ZZZZZ | 00001 | 0.21 | 503 | 903 | 346 | 557 | 240 |
| | 236 | 4 | 1307 | 120 | B0001 | 126 | 01S02 | FLDCT | ZZZZZ | 00002 | 0.21 | 503 | 569 | 346 | 223 | 240 |
| | 236 | 5 | 1387 | 120 | B0001 | 126 | 01S02 | FLDCT | ZZZZZ | 00003 | 0.21 | 503 | 720 | 346 | 374 | 240 |
| | 195 | 8 | 206 | 20 | B0001 | 126 | 01S02 | FLDCT | ZZZZZ | 00004 | 0.206 | 470 | 570 | 346 | 224 | 559 |
| | 195 | 9 | 198 | 20 | B0001 | 126 | 01S02 | FLDCT | ZZZZZ | 00005 | 0.206 | 470 | 478 | 346 | 132 | 559 |
| | 195 | 10 | 228 | 20 | B0001 | 126 | 01S02 | FLDCT | ZZZZZ | 00006 | 0.206 | 470 | 824 | 346 | 478 | 559 |
| | 195 | 11 | 183 | 20 | B0001 | 126 | 01S02 | FLDCT | ZZZZZ | 00007 | 0.206 | 470 | 304 | 346 | -42 | 559 |
| | 195 | 12 | 156 | 20 | B0001 | 126 | 01S02 | FLDCT | ZZZZZ | 00008 | 0.206 | 470 | -8 | 346 | -354 | 559 |
| | 195 | 13 | 196 | 20 | B0001 | 126 | 01S02 | FLDCT | ZZZZZ | 00009 | 0.206 | 470 | 455 | 346 | 109 | 559 |
| | 195 | 16 | 178 | 20 | B9999 | 126 | 01S02 | FLDCT | ZZZZZ | 00010 | 0.206 | 457 | 297 | 0 | 297 | 508 |
| | 195 | 17 | 168 | 20 | B9999 | 126 | 01S02 | FLDCT | ZZZZZ | 00011 | 0.206 | 457 | 181 | 0 | 181 | 508 |
| | 195 | 44 | 185 | 20 | B0002 | 126 | 01S02 | FLDCT | ZZZZZ | 00012 | 0.206 | 434 | 466 | 354 | 112 | 543 |
| | 195 | 45 | 167 | 20 | B0002 | 126 | 01S02 | FLDCT | ZZZZZ | 00013 | 0.206 | 434 | 258 | 354 | -96 | 543 |
| | 195 | 46 | 175 | 20 | B0002 | 126 | 01S02 | FLDCT | ZZZZZ | 00014 | 0.206 | 434 | 351 | 354 | -3 | 543 |
| | 195 | 47 | 175 | 20 | B0002 | 126 | 01S02 | FLDCT | ZZZZZ | 00015 | 0.206 | 434 | 351 | 354 | -3 | 543 |

| | |
|---|---|
| # Measurements | 30 |
| Average | 158 |
| Maximum | 580 |
| STD DEV | 243 |
| 95% CL on Mean | 245 |

# Elevator Equipment Room & Shaft Direct Beta Activity



The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #195

## ATTACHMENT 6.14
## SURVEY DOWNLOAD DATA SHEET

Download Print
Technician: Name: D. Schumaker Signature: [signature] Station: 2 File: 195
Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D P Schumaker User ID DPS 4133 Signature: [signature] Date: 7/17/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: ~~A0217~~ A0021: Elevator Equip. Rm and SHAFT
*(Example: Survey Package description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 12/6/01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☒ Beta β | 091050 | 43-68B | .206 | 5192/391 | 195 | 195 |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| | | | | | | |

Local Area Background Measurements — MEAN Value in cpm

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 min β Beta | 14590/4802 | 24645/4498 | 35361/5173 | 44563/4582 | 54429/4538 | 6 3862 | 453 |
| ~~α Alpha~~ β Beta DS 7-17-01 | 14677/4146 | 24422/4258 | 3 | 4 | 5 | 6 | |

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

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Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 195 | Survey Description: A0021: ELEVATOR SHAFT AND EQUIPMENT ROOM | | |
| Survey Reason: TERMINATION | User ID: DPS4133 | Technician name: Don Schumaker | |
| Instrument Model: 2350-1 | S/N: 129429 | Calibration Due: 12/06/01 | Group: 2 |
| Detector Model: 43-68B | Detector S/N: 091050 | Type: 126 cm2 Gas Proportional Detector, Beta Window | |
| Background: 453 cpm | Beta Efficiency: .206 | | Survey Date: 7/17/01 |

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 2 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: Don Schumaker / [signature] Date: 7/25/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: Paul Jones / [signature] Date: 12/1/01
Print name Signature

Survey Date: 7/17/01 Report Date: 7/25/01 Page: 1
File: 195 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0021 | 01S01 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B0002 | ZZZZZ | 00000 | 19 | 600 | 5361 | 320 | |
| FLDBK | B0002 | ZZZZZ | 00000 | 23 | 600 | 5173 | 248 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 24 | 600 | 4563 | 13 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 28 | 600 | 4582 | 20 | |
| FLDBK | B0001 | ZZZZZ | 00000 | 29 | 600 | 4429 | -39 | |
| FLDBK | B0001 | ZZZZZ | 00000 | 35 | 600 | 4538 | 3 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 36 | 600 | 3862 | -257 | |
| FLDBK | B0001 | ZZZZZ | 00000 | 38 | 600 | 4077 | -175 | |
| FLDBK | B0001 | ZZZZZ | 00000 | 42 | 600 | 4146 | -148 | |
| | | | | | | Group Average: | -2 | |
| FLDCT | B0002 | ZZZZZ | 00001 | 20 | 20 | 221 | 809 | * |
| FLDCT | B0002 | ZZZZZ | 00002 | 21 | 20 | 274 | 1422 | * |
| FLDCT | B0002 | ZZZZZ | 00003 | 22 | 20 | 220 | 798 | * |
| FLDCT | B9999 | ZZZZZ | 00004 | 25 | 20 | 186 | 405 | |
| FLDCT | B9999 | ZZZZZ | 00005 | 26 | 20 | 162 | 127 | |
| FLDCT | B9999 | ZZZZZ | 00006 | 27 | 20 | 108 | -497 | |
| FLDCT | B0001 | ZZZZZ | 00007 | 30 | 20 | 196 | 520 | |
| FLDCT | B0001 | ZZZZZ | 00008 | 31 | 20 | 202 | 589 | |
| FLDCT | B0001 | ZZZZZ | 00009 | 32 | 20 | 190 | 451 | |
| FLDCT | B0001 | ZZZZZ | 00010 | 33 | 20 | 178 | 312 | |
| FLDCT | B0001 | ZZZZZ | 00011 | 34 | 20 | 202 | 589 | |
| FLDCT | B9999 | ZZZZZ | 00012 | 37 | 20 | 161 | 116 | |
| FLDCT | B0001 | ZZZZZ | 00013 | 39 | 20 | 147 | -46 | |
| FLDCT | B0001 | ZZZZZ | 00014 | 40 | 20 | 193 | 485 | |
| LDCT | B0001 | ZZZZZ | 00015 | 41 | 20 | 200 | 566 | |
| | | | | | | Group Average: | 443 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0021 | 01S02 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B0001 | ZZZZZ | 00000 | 4 | 600 | 4590 | 23 | |
| FLDBK | B0001 | ZZZZZ | 00000 | 14 | 600 | 4802 | 105 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 15 | 600 | 4645 | 44 | |
| FLDBK | B9999 | ZZZZZ | 00000 | 18 | 600 | 4498 | -12 | |
| FLDBK | B0002 | ZZZZZ | 00000 | 43 | 600 | 4422 | -42 | |
| FLDBK | B0002 | ZZZZZ | 00000 | 48 | 600 | 4258 | -105 | |
| | | | | | | Group Average: | 2 | |
| FLDCT | B0001 | ZZZZZ | 00001 | 5 | 20 | 254 | 1190 | * |
| FLDCT | B0001 | ZZZZZ | 00002 | 6 | 20 | 244 | 1075 | * |
| FLDCT | B0001 | ZZZZZ | 00003 | 7 | 20 | 263 | 1294 | * |
| FLDCT | B0001 | ZZZZZ | 00004 | 8 | 20 | 206 | 636 | * |
| FLDCT | B0001 | ZZZZZ | 00005 | 9 | 20 | 198 | 543 | |
| FLDCT | B0001 | ZZZZZ | 00006 | 10 | 20 | 228 | 890 | * |
| FLDCT | B0001 | ZZZZZ | 00007 | 11 | 20 | 183 | 370 | |
| FLDCT | B0001 | ZZZZZ | 00008 | 12 | 20 | 156 | 58 | |
| FLDCT | B0001 | ZZZZZ | 00009 | 13 | 20 | 196 | 520 | |
| FLDCT | B9999 | ZZZZZ | 00010 | 16 | 20 | 178 | 312 | |
| FLDCT | B9999 | ZZZZZ | 00011 | 17 | 20 | 168 | 196 | |
| FLDCT | B0002 | ZZZZZ | 00012 | 44 | 20 | 185 | 393 | |
| LDCT | B0002 | ZZZZZ | 00013 | 45 | 20 | 167 | 185 | |
| LDCT | B0002 | ZZZZZ | 00014 | 46 | 20 | 175 | 277 | |
| FLDCT | B0002 | ZZZZZ | 00015 | 47 | 20 | 175 | 277 | |

* Hi flag set at 600 dpm/100 cm2

Survey Date: 7/17/01 Report Date: 7/25/01 Page: 2
File: 195 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0021 | 01S02 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Group Average: | 548 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | ZZZZZ | EZ260 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 1 | 60 | 5517 | 19510 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 2 | 60 | 5815 | 20658 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 3 | 60 | 5416 | 19121 | * |
| | | | | | | Group Average: | 19763 | |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 50 | 60 | 5424 | 19152 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 51 | 60 | 5942 | 21147 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 52 | 60 | 5745 | 20388 | * |
| | | | | | | Group Average: | 20229 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 0 | 600 | 3912 | -238 | |
| | | | | | | Group Average: | -238 | |
| PTBBK | ZZZZZ | ZZZZZ | 00000 | 49 | 600 | 4045 | -187 | |
| | | | | | | Group Average: | -187 | |

Total Number of Measurements on this Report: 53

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 600 dpm/100 cm2

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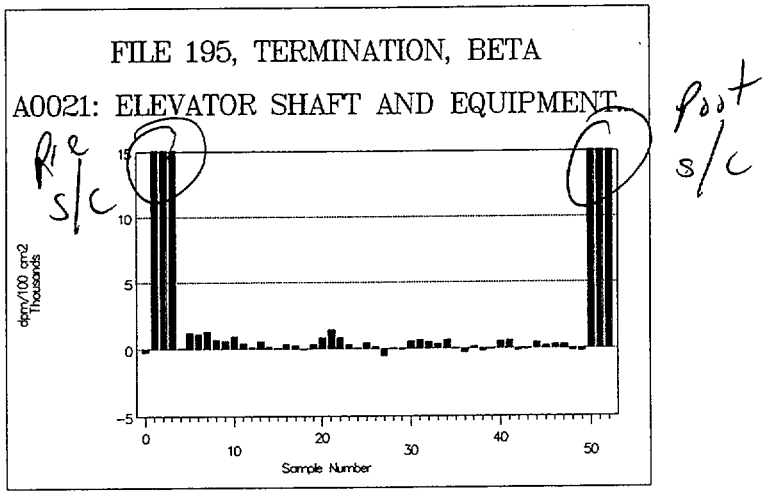
GEORGIA INSTITUTE OF TECHNOLOGY

7/25/2001 Graph of File 195 Station: 2

Survey Date: 7/17/2001 Survey Start Time: 09:59:42

Description: A0021: ELEVATOR SHAFT AND EQUIPMENT ROOM



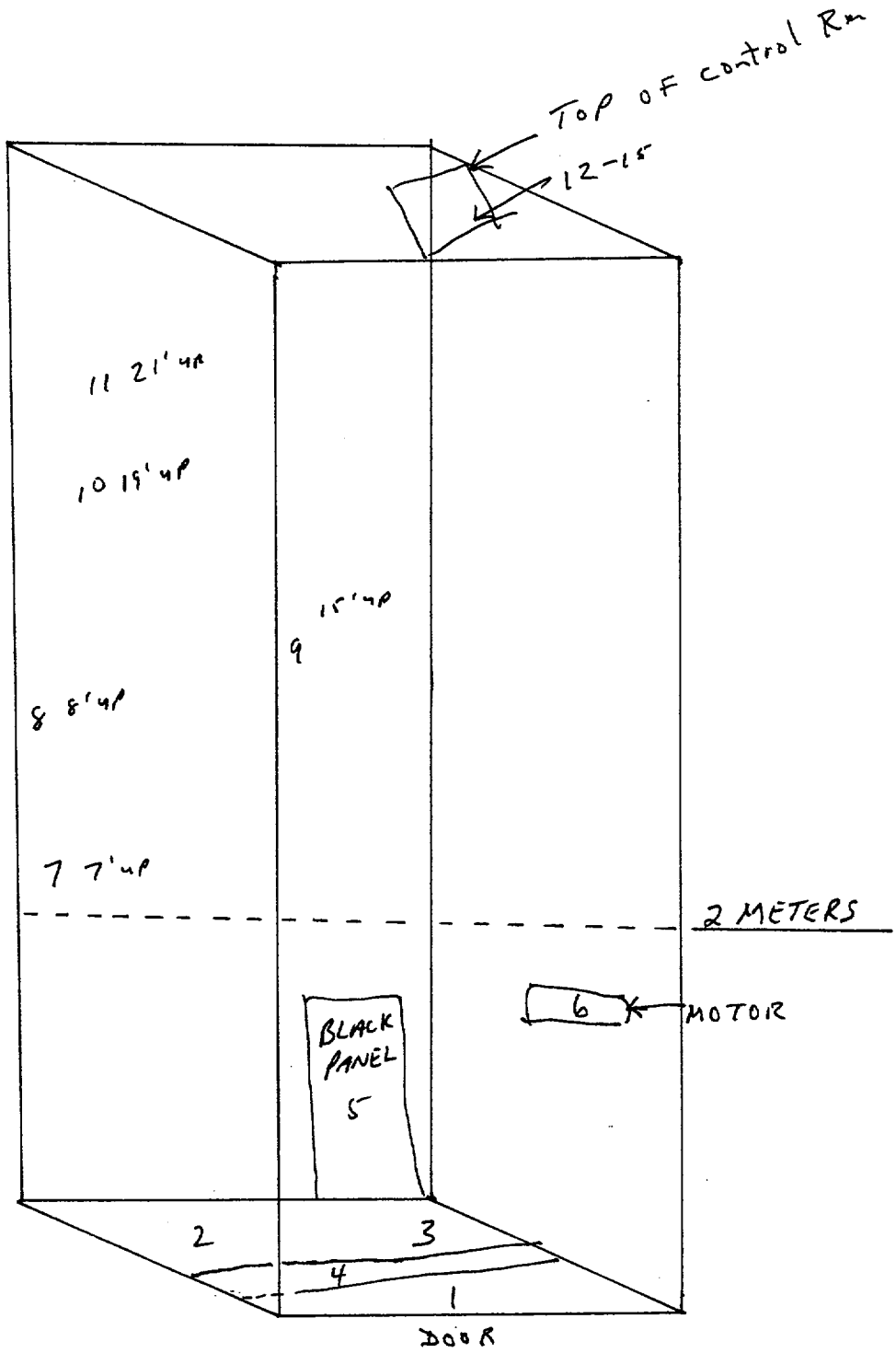

Flag set for 600 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

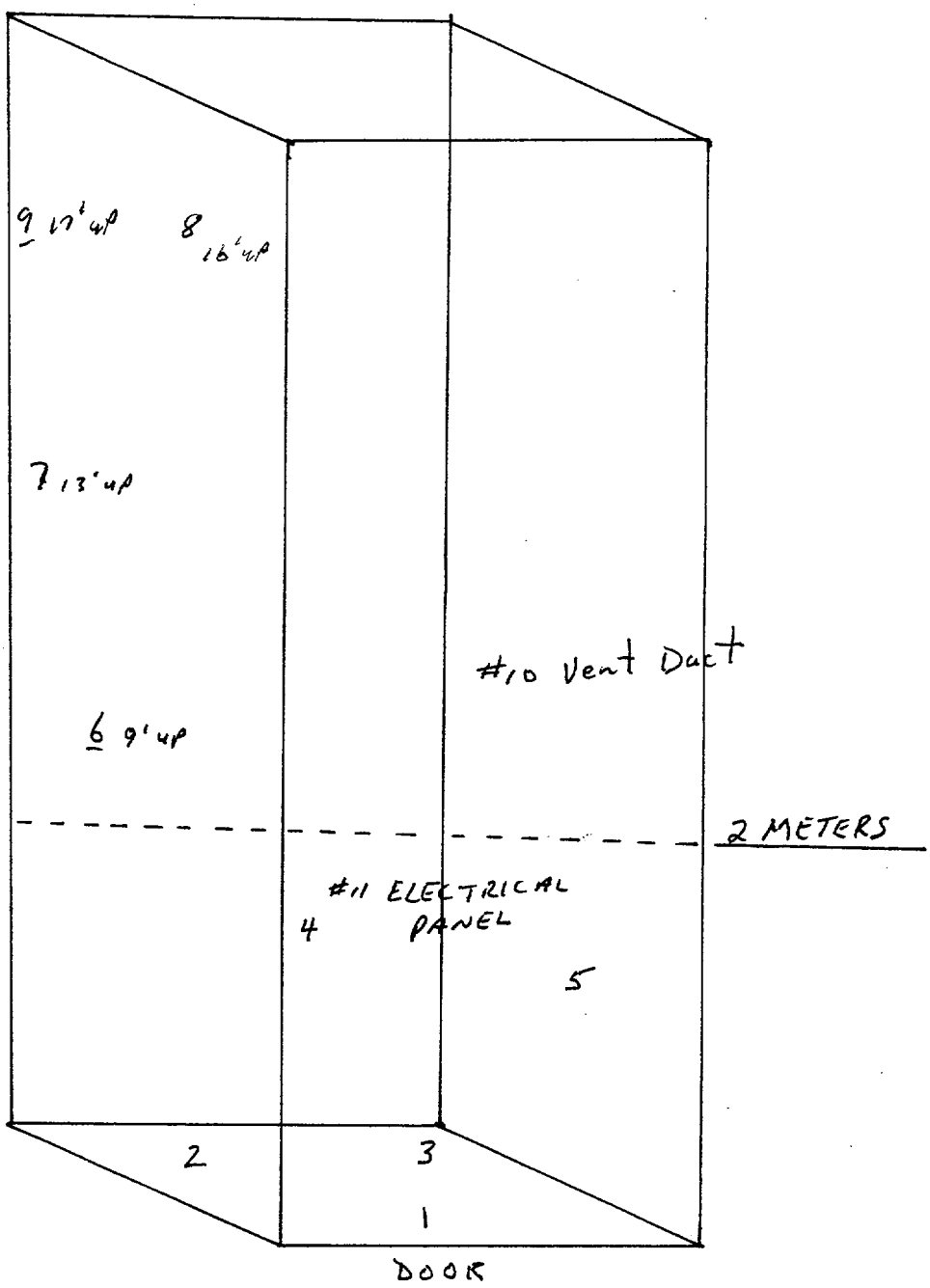
A0021 01501

ELEVATOR SHAFT



A0021
~~A0217~~ 01502

EQUIPMENT Rm.




TRITIUM SMEARS TAKEN AT EACH LOCATION Pt.

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: PAUL JONES Signature: [signature] Station: 2 File: 236
Serial No. Verification: Model 2350: ☑ Detector: ☑ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumaker User ID DPS 4133 Signature: [signature] for D. Schumaker Date: 12/13/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0221 Elevator Shaft & Equipment Room Survey
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 12/6/01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☑ Beta β | 091050 | 43-68B | .210 | N/A | 231 | 237 |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| | | | | | | |

Local Area Background Measurements — MEAN Value in cpm !

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 1 | 2 | 3 | 4 | 5 | 6 | Ø |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: This survey taken using local area backgrounds at each measurement location to verify ~~result~~ 5/31/02 activity levels.

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Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 236 | Survey Description: A0221: Elevator Shaft and Equipment Room | | |
| Survey Reason: TERMINATION | User ID: DPS4133 | Technician name: Don Schumaker | |
| Instrument Model: 2350-1 | S/N: 129429 | Calibration Due: 12/06/01 | Group: 2 |
| Detector Model: 43-68B | Detector S/N: 091050 | Type: 126 cm2 Gas Proportional Detector, Beta Window | |
| Background: 0 cpm | Beta Efficiency: .210 | | Survey Date: 12/06/01 |

Pre and Post source checks are included on this download: Yes ____ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 231 Post File #: 237

Technician Review:

I have reveiwed this cover sheet and _____ pages of the report, _____ pages of comments, and _____ graph.

I performed this survey: Don Schumaker / [signature] Date: 12/13/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 1/12/02
Print name Signature

Survey Date: 12/06/01 Report Date: 12/13/01 Page: 1
File: 236 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0217 | 01S01 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B0002 | ZZZZZ | 00002 | 0 | 600 | 4934 | 1865 | |
| | | | | | | Group Average: | 1865 | |
| FLDCT | B0002 | ZZZZZ | 00002 | 1 | 120 | 1481 | 2799 | * |
| | | | | | | Group Average: | 2799 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 0 |
|---|---|---|---|---|---|
| | A0217 | 01S02 | TAT01 | 02200 | Det Cal Due: 12/06/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B0001 | ZZZZZ | 00000 | 2 | 600 | 5032 | 1902 | |
| | | | | | | Group Average: | 1902 | |
| FLDCT | B0001 | ZZZZZ | 00001 | 3 | 120 | 1484 | 2804 | * |
| FLDCT | B0001 | ZZZZZ | 00002 | 4 | 120 | 1307 | 2470 | * |
| FLDCT | B0001 | ZZZZZ | 00003 | 5 | 120 | 1387 | 2621 | * |
| | | | | | | Group Average: | 2632 | |

Total Number of Measurements on this Report: 6

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 2400 dpm/100 cm2

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12/13/01 Comments Report for File 236 Station: 2

| Comment Number | Comment |
|---|---|
| 1 | Deleted sample numbers from 6 to 45. Because these sample results can be found on other downloads. See files 235 and 237. |

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

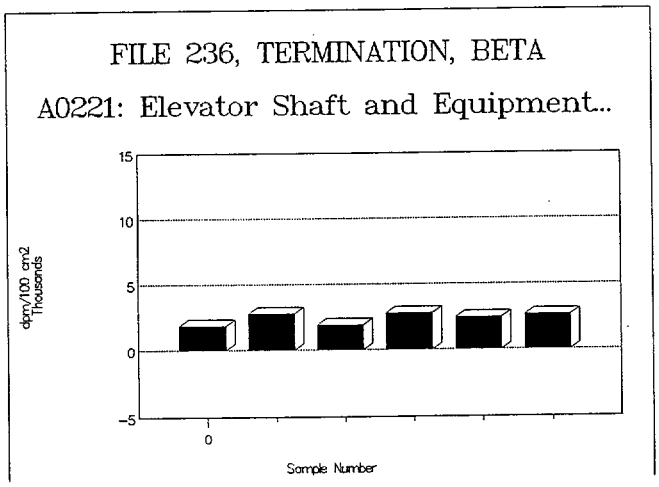
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

12/13/2001 Graph of File 236 Station: 2

Survey Date: 12/06/2001 Survey Start Time: 15:28:06

Description: A0221: Elevator Shaft and Equipment Room



# Section 4

# Package 21
# Exposure Rate Measurement Results for the Elevator Equipment Room

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: PAUL JONES Signature: [signature] Station: 2 File: 238

Serial No. Verification: Model 2350: ☑ Detector: ☑ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: B.S. Kyes User ID 85K0490 Signature: [signature] Date: 3-12-02

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0021; 01501, 01502 ~~; A0304 #9~~ 3/15/02
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 126192

Instrument and Detector Calibration Due Dates: Survey Meter: 8-8-02 Detector: 8-8-02

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☐ Beta β | | 43-68B | | | | |
| ☐ Alpha α | | 43-68A | | | | |
| ☑ Gamma γ | 121806 | 44-2 | N/A | N A | 238 | 238 |
| | | | | | | |

Local Area Background Measurements — MEAN Value in cpm

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 1 | 2 | 3 | 4 | 5 | 6 | |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Gamma Radiation Survey Report, Micro-R/hour - Integrated Measurement

| | | | |
|---|---|---|---|
| File Number: 238 | Survey Description: A0021 (Package#21) 01S01 & 01S02 | | |
| Survey Reason: TERMINATION | User ID: BSK0490 | Technician name: B.S. Kjos | |
| Instrument Model: 2350-1 | S/N: 126192 | Calibration Due: 8/08/02 | Group: 2 |
| Detector Model: 44-2 | Detector S/N: 121806 | Type: High Energy Gamma Scintillator, 1x1 NaI | |
| Background: 0.0 uR/hr | Gamma Calibration Constant: 1.69908 E10 c/R | PIC ratio: 1.000 (PIC/NaI) | Survey Date: 3/12/02 |

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 2 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: Betty S. Kjos (Print name) / BS Kjos (Signature) Date: 3-18-02

and,

I performed this survey: _____ (Print name) / _____ (Signature) Date: _____

Corrections and reason (required):

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES (Print name) / Paul O Jones (Signature) Date: 3/18/02

Survey Date: 3/12/02 Report Date: 3/18/02 Station: 2
File: 238 Page: 1

Comments

| Survey Code | L1 | L2 | L3 | L4 | L5 | L6 | Setup Number 1 |
|---|---|---|---|---|---|---|---|
| | A0021 | 01S01 | TAT01 | 03100 | FLDCT | B0002 | Det Cal Due: 8/08/02 |

| L7 Code Grid ID | L8 Code Location Number | Sample Number | Count Time (sec) | Gross Counts | Gross Micro R/hr | Hi |
|---|---|---|---|---|---|---|
| FLOOR | 00001 | 4 | 10 | 859 | 18.2 | |
| FLOOR | 00002 | 5 | 10 | 918 | 19.5 | |
| FLOOR | 00003 | 6 | 10 | 867 | 18.4 | |

Group Average: 5288 cpm Average uR/hr: 18.7
Number of measurements: 3

| Survey Code | L1 | L2 | L3 | L4 | L5 | L6 | Setup Number 1 |
|---|---|---|---|---|---|---|---|
| | A0021 | 01S02 | TAT01 | 03100 | FLDCT | B0002 | Det Cal Due: 8/08/02 |

| L7 Code Grid ID | L8 Code Location Number | Sample Number | Count Time (sec) | Gross Counts | Gross Micro R/hr | Hi |
|---|---|---|---|---|---|---|
| FLOOR | 00001 | 7 | 10 | 908 | 19.2 | |
| FLOOR | 00002 | 8 | 10 | 757 | 16.0 | |
| FLOOR | 00003 | 9 | 10 | 762 | 16.1 | |

Group Average: 4854 cpm Average uR/hr: 17.1
Number of measurements: 3

| Survey Code | L1 | L2 | L3 | L4 | L5 | L6 | Setup Number 1 |
|---|---|---|---|---|---|---|---|
| | ZZZZZ | 19463 | TAT01 | 03100 | PRG00 | ZZZZZ | Det Cal Due: 8/08/02 |

| L7 Code Grid ID | L8 Code Location Number | Sample Number | Count Time (sec) | Gross Counts | Gross Micro R/hr | Hi |
|---|---|---|---|---|---|---|
| ZZZZZ | 00000 | 1 | 60 | 526982 | 1860.9 | * |
| ZZZZZ | 00000 | 2 | 60 | 14276 | 50.4 | * |
| ZZZZZ | 00000 | 3 | 60 | 5224 | 18.4 | |

Group Average: 182161 cpm Average uR/hr: 643.3
Number of measurements: 3

| Survey Code | L1 | L2 | L3 | L4 | L5 | L6 | Setup Number 1 |
|---|---|---|---|---|---|---|---|
| | ZZZZZ | 19463 | TAT01 | 03100 | PTG00 | ZZZZZ | Det Cal Due: 8/08/02 |

| L7 Code Grid ID | L8 Code Location Number | Sample Number | Count Time (sec) | Gross Counts | Gross Micro R/hr | Hi |
|---|---|---|---|---|---|---|
| ZZZZZ | 00000 | 27 | 60 | 531715 | 1877.7 | * |
| ZZZZZ | 00000 | 28 | 60 | 14064 | 49.7 | * |
| ZZZZZ | 00000 | 29 | 60 | 5184 | 18.3 | |

Group Average: 183654 cpm Average uR/hr: 648.5
Number of measurements: 3

* Hi flag set at 25.0 micro-R/hr.

Survey Date: 3/12/02 Report Date: 3/18/02 Station: 2
File: 238 Page: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | L5 | L6 | Setup Number 1 |
|---|---|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 03100 | PRGBK | ZZZZZ | Det Cal Due: 8/08/02 |

| L7 Code Grid ID | L8 Code Location Number | Sample Number | Count Time (sec) | Gross Counts | Gross Micro R/hr | Hi |
|---|---|---|---|---|---|---|
| ZZZZZ | 00000 | 0 | 300 | 19336 | 13.7 | |

Group Average: 3867 cpm Average uR/hr: 13.7
Number of measurements: 1

| Survey Code | L1 | L2 | L3 | L4 | L5 | L6 | Setup Number 1 |
|---|---|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 03100 | PTGBK | ZZZZZ | Det Cal Due: 8/08/02 |

| L7 Code Grid ID | L8 Code Location Number | Sample Number | Count Time (sec) | Gross Counts | Gross Micro R/hr | Hi |
|---|---|---|---|---|---|---|
| ZZZZZ | 00000 | 26 | 300 | 19577 | 13.8 | |

Group Average: 3915 cpm Average uR/hr: 13.8
Number of measurements: 1

Total Number of Measurements on this Report: 14

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 25.0 micro-R/hr.

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

3/18/02 Comments Report for File 238 Station: 2

| Comment Number | Comment |
|---|---|
| 1 | Deleted sample numbers from 10 to 25. See file # 239 for these results. |

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

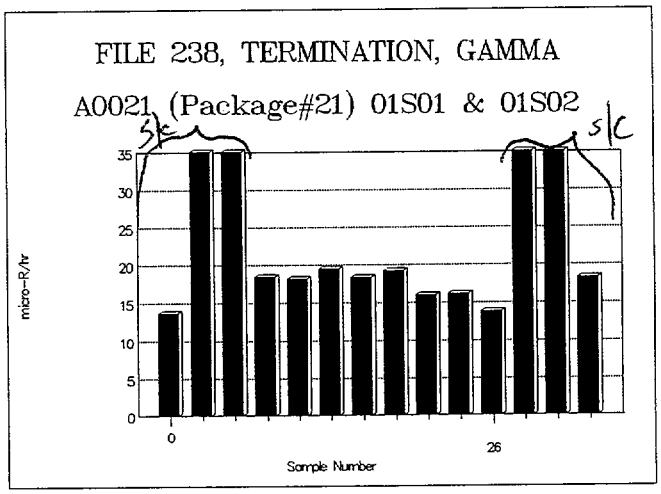
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

3/18/2002 Graph of File 238 Station: 2

Survey Date: 3/12/2002 Survey Start Time: 11:14:48

Description: A0021 (Package#21) 01S01 & 01S02




Flag set for 25 micro-R/hr. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

# Section 5

# Package 21
# Removable Beta Contamination for the Elevator Equipment Room Unaffected (including lab reports)

Removable Beta Contamination Package A0221 (Elevator Equip Room Non Suspect Affected)

| Desc. | Gross Counts | Count Time (sec) | Sample Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Net Activity ($dpm/100cm^2$) | MDA ($dpm/100cm^2$) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00001 | 0.3425 | 1 | 11 | 15 | |
| | 6 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00002 | 0.3425 | 1 | 7 | 15 | |
| | 7 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00003 | 0.3425 | 1 | 10 | 15 | |
| | 27 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00004 | 0.3425 | 1 | 48 | 15 | |
| | 6 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00005 | 0.3425 | 1 | 7 | 15 | |
| | 22 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00006 | 0.3425 | 1 | 39 | 15 | |
| | 5 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00007 | 0.3425 | 1 | 6 | 15 | |
| | 1 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00008 | 0.3425 | 1 | -2 | 15 | |
| | 4 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00009 | 0.3425 | 1 | 4 | 15 | |
| | 1 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00010 | 0.3425 | 1 | -2 | 15 | |
| | 0 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00011 | 0.3425 | 1 | -4 | 15 | |
| | 7 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00012 | 0.3425 | 1 | 10 | 15 | |
| | 5 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00013 | 0.3425 | 1 | 6 | 15 | |
| | 35 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00014 | 0.3425 | 1 | 64 | 15 | |
| | 10 | 90 | 100 | 01S01 | FLDCT | ZZZZZ | 00015 | 0.3425 | 1 | 15 | 15 | |
| | 10 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00001 | 0.3425 | 1 | 15 | 15 | |
| | 3 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00002 | 0.3425 | 1 | 2 | 15 | |
| | 11 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00003 | 0.3425 | 1 | 17 | 15 | |
| | 0 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00004 | 0.3425 | 1 | -4 | 15 | |
| | 3 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00005 | 0.3425 | 1 | 2 | 15 | |
| | 0 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00006 | 0.3425 | 1 | -4 | 15 | |
| | 0 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00007 | 0.3425 | 1 | -4 | 15 | |
| | 2 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00008 | 0.3425 | 1 | 0 | 15 | |
| | 0 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00009 | 0.3425 | 1 | -4 | 15 | |
| | 2 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00010 | 0.3425 | 1 | 0 | 15 | |
| | 7 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00011 | 0.3425 | 1 | 10 | 15 | |
| | 3 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00012 | 0.3425 | 1 | 1 | 15 | |
| | 4 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00013 | 0.3425 | 1 | 4 | 15 | |
| | 3 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00014 | 0.3425 | 1 | 2 | 15 | |
| | 12 | 90 | 100 | 01S02 | FLDCT | ZZZZZ | 00015 | 0.3425 | 1 | 19 | 15 | |
| | | | | | | | | | # Measurements | 30 | | |
| | | | | | | | | | Average | 9 | | |
| | | | | | | | | | Maximum | 64 | | |
| | | | | | | | | | STD DEV | 16 | | |
| | | | | | | | | | 95% CL on Mean | 15 | | |

FINAL SURVEY 01B01 [Z] PIN 21

PIC IPC9025 216712



| | | | ALPHA | | | | BETA | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.10 cpm MDA: 8.60 dpm | | | | Eff: 34.25% Bkg: 1.40 cpm MDA: 18.39 dpm | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | -0.10 | -0.29 | | 8 | 3.93 | 11.48 | | 07-18-2001 | 11:40:38 |
| 002 | 00 | 2 | 1 | 0.57 | 1.62 | | 6 | 2.43 | 7.10 | | 07-18-2001 | 11:42:38 |
| 003 | 00 | 3 | 0 | -0.10 | -0.29 | | 7 | 3.27 | 9.54 | | 07-18-2001 | 11:44:38 |
| 004 | 00 | 4 | 0 | -0.10 | -0.29 | | 27 | 16.60 | 48.47 | | 07-18-2001 | 11:46:38 |
| 005 | 00 | 5 | 1 | 0.57 | 1.62 | | 6 | 2.43 | 7.10 | | 07-18-2001 | 11:48:38 |
| 006 | 00 | 6 | 0 | -0.10 | -0.29 | | 22 | 13.27 | 38.73 | | 07-18-2001 | 11:50:38 |
| 007 | 00 | 7 | 0 | -0.10 | -0.29 | | 5 | 1.93 | 5.64 | | 07-18-2001 | 11:52:38 |
| 008 | 00 | 8 | 0 | -0.10 | -0.29 | | 1 | -0.73 | -2.14 | | 07-18-2001 | 11:54:38 |
| 009 | 00 | 9 | 0 | -0.10 | -0.29 | | 4 | 1.27 | 3.70 | | 07-18-2001 | 11:56:37 |
| 010 | 00 | 10 | 0 | -0.10 | -0.29 | | 1 | -0.73 | -2.14 | | 07-18-2001 | 11:58:37 |
| 011 | 00 | 11 | 0 | -0.10 | -0.29 | | 0 | -1.40 | -4.09 | | 07-18-2001 | 12:00:37 |
| 012 | 00 | 12 | 0 | -0.10 | -0.29 | | 7 | 3.27 | 9.54 | | 07-18-2001 | 12:02:37 |
| 013 | 00 | 13 | 0 | -0.10 | -0.29 | | 5 | 1.93 | 5.64 | | 07-18-2001 | 12:04:37 |
| 014 | 00 | 14 | 1 | 0.57 | 1.62 | | 35 | 21.76 | 63.55 | | 07-18-2001 | 12:06:37 |
| 015 | 00 | 15 | 0 | -0.10 | -0.29 | | 10 | 5.27 | 15.38 | | 07-18-2001 | 12:08:37 |

Performed By: [signature] Date: 7/18/01

Reviewed By: [signature] Date: 7/18/01

FINAL SURVEY 01802 [Z] PIN 21

PIC IPD9025 216712

| | | | ALPHA | | | | BETA | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% | Bkg: 0.10 cpm | MDA: 8.60 dpm | | Eff: 34.25% | Bkg: 1.40 cpm | MDA: 18.39 dpm | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | -0.10 | -0.29 | | 10 | 5.27 | 15.38 | | 07-18-2001 | 12:23:32 |
| 002 | 00 | 2 | 0 | -0.10 | -0.29 | | 3 | 0.60 | 1.75 | | 07-18-2001 | 12:25:31 |
| 003 | 00 | 3 | 0 | -0.10 | -0.29 | | 11 | 5.93 | 17.32 | | 07-18-2001 | 12:27:32 |
| 004 | 00 | 4 | 0 | -0.10 | -0.29 | | 0 | -1.40 | -4.09 | | 07-18-2001 | 12:29:32 |
| 005 | 00 | 5 | 0 | -0.10 | -0.29 | | 3 | 0.60 | 1.75 | | 07-18-2001 | 12:31:32 |
| 006 | 00 | 6 | 0 | -0.10 | -0.29 | | 0 | -1.40 | -4.09 | | 07-18-2001 | 12:33:31 |
| 007 | 00 | 7 | 0 | -0.10 | -0.29 | | 0 | -1.40 | -4.09 | | 07-18-2001 | 12:35:31 |
| 008 | 00 | 8 | 0 | -0.10 | -0.29 | | 2 | -0.07 | -0.19 | | 07-18-2001 | 12:37:30 |
| 009 | 00 | 9 | 0 | -0.10 | -0.29 | | 0 | -1.40 | -4.09 | | 07-18-2001 | 12:39:29 |
| 010 | 00 | 10 | 0 | -0.10 | -0.29 | | 2 | -0.07 | -0.19 | | 07-18-2001 | 12:41:28 |
| 011 | 00 | 11 | 0 | -0.10 | -0.29 | | 7 | 3.27 | 9.54 | | 07-18-2001 | 12:43:27 |
| 012 | 00 | 12 | 1 | 0.57 | 1.62 | | 3 | 0.43 | 1.26 | | 07-18-2001 | 12:45:26 |
| 013 | 00 | 13 | 0 | -0.10 | -0.29 | | 4 | 1.27 | 3.70 | | 07-18-2001 | 12:47:25 |
| 014 | 00 | 14 | 0 | -0.10 | -0.29 | | 3 | 0.60 | 1.75 | | 07-18-2001 | 12:49:24 |
| 015 | 00 | 15 | 0 | -0.10 | -0.29 | | 12 | 6.60 | 19.27 | | 07-18-2001 | 12:51:23 |

Performed By: _____ Date: 7/18/01

Reviewed By: _____ Date: 7/18/01

# Section 6

# Package 21
# H-3 Removable Beta Contamination
# Summary Data Table (including lab reports)

| Carrier No. | CPM | Count Time (sec) | Sample Area ($cm^2$) | Surface | Row | Location | Beta Efficiency | Beta Background (cpm) | Activity ($dpm/100cm^2$) | Net Activity ($dpm/100cm^2$) | MDA ($dpm/100cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 98 | 60 | 100 | 01S01 | ZZZZZ | 00001 | 0.087 | 0.00 | 1130 | 1130 | 31 |
| 2 | 59 | 60 | 100 | 01S01 | ZZZZZ | 00002 | 0.091 | 0.00 | 652 | 652 | 30 |
| 3 | 92 | 60 | 100 | 01S01 | ZZZZZ | 00003 | 0.143 | 0.00 | 645 | 645 | 19 |
| 4 | 116 | 60 | 100 | 01S01 | ZZZZZ | 00004 | 0.124 | 0.00 | 935 | 935 | 22 |
| 5 | 64 | 60 | 100 | 01S01 | ZZZZZ | 00005 | 0.177 | 0.00 | 361 | 361 | 15 |
| 6 | 44 | 60 | 100 | 01S01 | ZZZZZ | 00006 | 0.294 | 0.00 | 150 | 150 | 9 |
| 7 | 67 | 60 | 100 | 01S01 | ZZZZZ | 00007 | 0.272 | 0.00 | 246 | 246 | 10 |
| 8 | 77 | 60 | 100 | 01S01 | ZZZZZ | 00008 | 0.197 | 0.00 | 392 | 392 | 14 |
| 9 | 18 | 60 | 100 | 01S01 | ZZZZZ | 00009 | 0.326 | 0.00 | 55 | 55 | 8 |
| 10 | 29 | 60 | 100 | 01S01 | ZZZZZ | 00010 | 0.335 | 0.00 | 87 | 87 | 8 |
| 11 | 36 | 60 | 100 | 01S01 | ZZZZZ | 00011 | 0.270 | 0.00 | 134 | 134 | 10 |
| 12 | 40 | 60 | 100 | 01S01 | ZZZZZ | 00012 | 0.236 | 0.00 | 169 | 169 | 11 |
| 13 | 53 | 60 | 100 | 01S01 | ZZZZZ | 00013 | 0.236 | 0.00 | 224 | 224 | 11 |
| 14 | 33 | 60 | 100 | 01S01 | ZZZZZ | 00014 | 0.278 | 0.00 | 119 | 119 | 10 |
| 15 | 48 | 60 | 100 | 01S01 | ZZZZZ | 00015 | 0.267 | 0.00 | 180 | 180 | 10 |
| 16 | 58 | 60 | 100 | 01S02 | ZZZZZ | 00001 | 0.069 | 0.00 | 835 | 835 | 39 |
| 17 | 38 | 60 | 100 | 01S02 | ZZZZZ | 00002 | 0.152 | 0.00 | 250 | 250 | 18 |
| 18 | 56 | 60 | 100 | 01S02 | ZZZZZ | 00003 | 0.118 | 0.00 | 476 | 476 | 23 |
| 19 | 42 | 60 | 100 | 01S02 | ZZZZZ | 00004 | 0.291 | 0.00 | 144 | 144 | 9 |
| 20 | 54 | 60 | 100 | 01S02 | ZZZZZ | 00005 | 0.314 | 0.00 | 172 | 172 | 9 |
| 21 | 38 | 60 | 100 | 01S02 | ZZZZZ | 00006 | 0.297 | 0.00 | 128 | 128 | 9 |
| 22 | 48 | 60 | 100 | 01S02 | ZZZZZ | 00007 | 0.302 | 0.00 | 159 | 159 | 9 |
| 23 | 53 | 60 | 100 | 01S02 | ZZZZZ | 00008 | 0.323 | 0.00 | 164 | 164 | 8 |
| 24 | 35 | 60 | 100 | 01S02 | ZZZZZ | 00009 | 0.291 | 0.00 | 120 | 120 | 9 |
| 25 | 42 | 60 | 100 | 01S02 | ZZZZZ | 00010 | 0.262 | 0.00 | 161 | 161 | 10 |
| 26 | 33 | 60 | 100 | 01S02 | ZZZZZ | 00011 | 0.217 | 0.00 | 152 | 152 | 12 |
| 27 | 40 | 60 | 100 | 01S02 | ZZZZZ | 00012 | 0.201 | 0.00 | 199 | 199 | 13 |
| 28 | 42 | 60 | 100 | 01S02 | ZZZZZ | 00013 | 0.205 | 0.00 | 204 | 204 | 13 |
| 29 | 42 | 60 | 100 | 01S02 | ZZZZZ | 00014 | 0.246 | 0.00 | 171 | 171 | 11 |
| 30 | 53 | 60 | 100 | 01S02 | ZZZZZ | 00015 | 0.132 | 0.00 | 401 | 401 | 20 |
| | | | | | | | | | # Measurements | 30 | |
| | | | | | | | | | Average | 307 | |
| | | | | | | | | | Maximum | 1130 | |
| | | | | | | | | | STD DEV | 266 | |
| | | | | | | | | | 95% CL on Mean | 417 | |

USER: 1 ID:SMEARS PRESET TIME: 1.00 THU 19 JUL 2001 07:44
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AQC:N QCF:N RCM:N 2 PHASE MONITOR:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 2-LL: 0 UL: 670 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 3-LL: 0 UL:1000 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON SUN 24 JUN 2001 16:19
UNKNOWN ID:SMEARS UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS):N
QUENCH COEFF A: 4.329559 B:-0.0051270 C:-0.0000122 D:-0.0000000212
STANDARD ID:
QUENCH LIMITS LOW:90.00 HIGH:390.0

| SAM | POS | CH | CPM | 2SIG% | TIME | EL TIME | AVG H# | ERR |
|---|---|---|---|---|---|---|---|---|
| 1 | 8- 1 | 1 | 98.00 | 20.20 | 1.00 | 1.32 | 236.0 | |
| | | 2 | 129.00 | 17.61 | | | | |
| | | 3 | 144.00 | 16.67 | | | | |
| | | | | | %EFF:8.675 | ISO1 DPM | :1129.694 | |
| 2 | 8- 2 | 1 | 59.00 | 26.04 | 1.00 | 2.82 | 233.0 | |
| | | 2 | 101.00 | 19.90 | | | | |
| | | 3 | 116.00 | 18.57 | | | | |
| | | | | | %EFF:9.056 | ISO1 DPM | :651.4727 | |
| | 8- 3 | 1 | 92.00 | 20.85 | 1.00 | 4.31 | 199.0 | |
| | | 2 | 136.00 | 17.15 | | | | |
| | | 3 | 150.00 | 16.33 | | | | |
| | | | | | %EFF:14.27 | ISO1 DPM | :644.7566 | |
| 4 | 8- 4 | 1 | 116.00 | 18.57 | 1.00 | 5.80 | 210.0 | |
| | | 2 | 148.00 | 16.44 | | | | |
| | | 3 | 168.00 | 15.43 | | | | |
| | | | | | %EFF:12.40 | ISO1 DPM | :935.6363 | |
| 5 | 8- 5 | 1 | 64.00 | 25.00 | 1.00 | 7.30 | 181.0 | |
| | | 2 | 98.00 | 20.20 | | | | |
| | | 3 | 114.00 | 18.73 | | | | |
| | | | | | %EFF:17.73 | ISO1 DPM | :360.9980 | |
| 6 | 8- 6 | 1 | 44.00 | 30.15 | 1.00 | 8.79 | 133.0 | |
| | | 2 | 83.00 | 21.95 | | | | |
| | | 3 | 106.00 | 19.43 | | | | |
| | | | | | %EFF:29.40 | ISO1 DPM | :149.6613 | |
| 7 | 8- 7 | 1 | 67.00 | 24.43 | 1.00 | 10.28 | 141.0 | |
| | | 2 | 104.00 | 19.61 | | | | |
| | | 3 | 129.00 | 17.61 | | | | |
| | | | | | %EFF:27.21 | ISO1 DPM | :246.2119 | |
| 8 | 8- 8 | 1 | 77.00 | 22.79 | 1.00 | 11.78 | 172.0 | |
| | | 2 | 113.00 | 18.81 | | | | |
| | | 3 | 136.00 | 17.15 | | | | |
| | | | | | %EFF:19.65 | ISO1 DPM | :391.9225 | |
| 9 | 8- 9 | 1 | 18.00 | 47.14 | 1.00 | 13.26 | 122.0 | |
| | | 2 | 44.00 | 30.15 | | | | |
| | | 3 | 77.00 | 22.79 | | | | |
| | | | | | %EFF:32.56 | ISO1 DPM | :55.28801 | |

Performed By: [signature] Date: 7/19/01

Reviewed By: [signature] Date: 8/3/01

| SAM | POS | CH | CPM | 2SIG% | TIME | EL TIME | AVG H# | ERR |
|---|---|---|---|---|---|---|---|---|
| 10 | 8-10 | 1 | 29.00 | 37.14 | 1.00 | 14.73 | 119.0 | |
| | | 2 | 57.00 | 26.49 | | | | |
| | | 3 | 85.00 | 21.69 | | | | |
| | | | | | %EFF: | 33.45 | ISO1 DPM | :86.70484 |
| 11 | 8-11 | 1 | 36.00 | 33.33 | 1.00 | 16.23 | 142.0 | |
| | | 2 | 64.00 | 25.00 | | | | |
| | | 3 | 91.00 | 20.97 | | | | |
| | | | | | %EFF: | 26.95 | ISO1 DPM | :133.6020 |
| 12 | 8-12 | 1 | 40.00 | 31.62 | 1.00 | 17.72 | 155.0 | |
| | | 2 | 76.00 | 22.94 | | | | |
| | | 3 | 102.00 | 19.80 | | | | |
| | | | | | %EFF: | 23.61 | ISO1 DPM | :169.3949 |
| 13 | 6- 1 | 1 | 53.00 | 27.47 | 1.00 | 19.25 | 155.0 | |
| | | 2 | 84.00 | 21.82 | | | | |
| | | 3 | 103.00 | 19.71 | | | | |
| | | | | | %EFF: | 23.61 | ISO1 DPM | :224.4482 ✓ |
| 14 | 6- 2 | 1 | 33.00 | 34.82 | 1.00 | 20.73 | 139.0 | |
| | | 2 | 77.00 | 22.79 | | | | |
| | | 3 | 104.00 | 19.61 | | | | |
| | | | | | %EFF: | 27.75 | ISO1 DPM | :118.9162 |
| 15 | 6- 3 | 1 | 48.00 | 28.87 | 1.00 | 22.22 | 143.0 | |
| | | 2 | 76.00 | 22.94 | | | | |
| | | 3 | 103.00 | 19.71 | | | | |
| | | | | | %EFF: | 26.68 | ISO1 DPM | :179.9083 |
| | 6- 4 | 1 | 58.00 | 26.26 | 1.00 | 23.71 | 251.0 | |
| | | 2 | 101.00 | 19.90 | | | | |
| | | 3 | 115.00 | 18.65 | | | | |
| | | | | | %EFF: | 6.944 | ISO1 DPM | :835.2935 |
| 17 | 6- 5 | 1 | 38.00 | 32.44 | 1.00 | 25.19 | 194.0 | |
| | | 2 | 71.00 | 23.74 | | | | |
| | | 3 | 90.00 | 21.08 | | | | |
| | | | | | %EFF: | 15.18 | ISO1 DPM | :250.3317 |
| 18 | 6- 6 | 1 | 56.00 | 26.73 | 1.00 | 26.68 | 214.0 | |
| | | 2 | 100.00 | 20.00 | | | | |
| | | 3 | 121.00 | 18.18 | | | | |
| | | | | | %EFF: | 11.76 | ISO1 DPM | :476.0950 |
| 19 | 6- 7 | 1 | 42.00 | 30.86 | 1.00 | 28.17 | 134.0 | |
| | | 2 | 74.00 | 23.25 | | | | |
| | | 3 | 95.00 | 20.52 | | | | |
| | | | | | %EFF: | 29.12 | ISO1 DPM | :144.2248 |
| 20 | 6- 8 | 1 | 54.00 | 27.22 | 1.00 | 29.65 | 126.0 | |
| | | 2 | 85.00 | 21.69 | | | | |
| | | 3 | 112.00 | 18.90 | | | | |
| | | | | | %EFF: | 31.39 | ISO1 DPM | :172.0335 |
| 21 | 6- 9 | 1 | 38.00 | 32.44 | 1.00 | 31.12 | 132.0 | |
| | | 2 | 68.00 | 24.25 | | | | |
| | | 3 | 109.00 | 19.16 | | | | |
| | | | | | %EFF: | 29.68 | ISO1 DPM | :128.0338 |
| 22 | 6-10 | 1 | 48.00 | 28.87 | 1.00 | 32.58 | 130.0 | |
| | | 2 | 85.00 | 21.69 | | | | |
| | | 3 | 119.00 | 18.33 | | | | |
| | | | | | %EFF: | 30.24 | ISO1 DPM | :158.7107 |

Performed By: [signature] Date: 7/15/01

Reviewed By: [signature] Date: 8/3/01

| SAM | POS | CH | CPM | 2SIG% | TIME | EL TIME | AVG H# | ERR |
|---|---|---|---|---|---|---|---|---|
| 23 | 6-11 | 1 | 53.00 | 27.47 | 1.00 | 34.06 | 123.0 | |
| | | 2 | 77.00 | 22.79 | | | | |
| | | 3 | 111.00 | 18.98 | | | | |
| | | | | | %EFF: | 32.26 | ISO1 DPM | :164.2765 |
| 24 | 6-12 | 1 | 35.00 | 33.81 | 1.00 | 35.55 | 134.0 | |
| | | 2 | 62.00 | 25.40 | | | | |
| | | 3 | 98.00 | 20.52 | | | | |
| | | | | | %EFF: | 29.12 | ISO1 DPM | :120.1874 |
| 25 | 3- 1 | 1 | 42.00 | 30.86 | 1.00 | 37.07 | 145.0 | |
| | | 2 | 73.00 | 23.09 | | | | |
| | | 3 | 97.00 | 20.31 | | | | |
| | | | | | %EFF: | 26.15 | ISO1 DPM | :160.5863 |
| 26 | 3- 2 | 1 | 33.00 | 34.82 | 1.00 | 38.55 | 163.0 | |
| | | 2 | 69.00 | 24.08 | | | | |
| | | 3 | 84.00 | 21.57 | | | | |
| | | | | | %EFF: | 21.69 | ISO1 DPM | :152.1352 |
| 27 | 3- 3 | 1 | 40.00 | 31.62 | 1.00 | 40.04 | 170.0 | |
| | | 2 | 73.00 | 23.41 | | | | |
| | | 3 | 99.00 | 20.10 | | | | |
| | | | | | %EFF: | 20.09 | ISO1 DPM | :199.1028 |
| 28 | 3- 4 | 1 | 42.00 | 30.86 | 1.00 | 41.52 | 168.0 | |
| | | 2 | 78.00 | 22.65 | | | | |
| | | 3 | 98.00 | 20.20 | | | | |
| | | | | | %EFF: | 20.54 | ISO1 DPM | :204.4810 |
| | 3- 5 | 1 | 42.00 | 30.86 | 1.00 | 43.02 | 151.0 | |
| | | 2 | 79.00 | 22.50 | | | | |
| | | 3 | 100.00 | 20.00 | | | | |
| | | | | | %EFF: | 24.61 | ISO1 DPM | :170.6519 |
| 30 | 3- 6 | 1 | 53.00 | 27.47 | 1.00 | 44.51 | 205.0 | |
| | | 2 | 91.00 | 20.97 | | | | |
| | | 3 | 114.00 | 18.73 | | | | |
| | | | | | %EFF: | 13.23 | ISO1 DPM | :400.7286 |

Performed By: _____ Date: 7/19/07

Reviewed By: _____ Date: 8/3/01

# Georgia Institute of Technology Research Reactor

# Final Survey Package 22

# Miscellaneous Pipes and Penetrations

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# Section 1

# Survey Package 22 Worksheet for Miscellaneous Penetrations

Duratek Inc.
Survey Package Worksheet for Miscellaneous Penetrations
Georgia Institute of Technology Research Reactor

| | |
|---|---|
| Package Identification No.: **22** | Prepared by: Paul Jones |
| Area: **01** | Date prepared: 07/21/2001 |
| Area Classification: Suspect Affected | |

## Area Description

Reactor building penetrations and pipes on all floors that were not specifically identified on other packages.

## Historical Information

None of these penetrations and pipes required decontamination.

## General Survey Instructions

1) Perform a 100% beta scan of all accessible areas of the penetrations and pipes (Denote any areas on map which were inaccessible).
2) Obtain a minimum of 1 direct beta measurement for each penetration.
3) Obtain a minimum of 1 smear on the inside of each penetration for gross alpha/beta analysis..
4) Obtain required smears for H-3 analysis(See Special Instructions for the minimum number of smears required).

Use only the Package ID and L7 and L8 codes when labeling smears for counting.

Use all location codes provided below when taking fixed beta readings.

| Special Instructions |
|---|
| Source check meters to Tc-99 for beta measurements.<br><br>Use pipe detector model numbers 43-94, 43-98, PSL-3R, and SP-175-3M for surveys inside of pipes & penetrations.<br><br>Direct beta readings should be taken at areas with elevated activity, as found during beta scan of inside of pipe. If no elevated areas were identified during the scan then one reading should be taken at the 1st elbow inside each pipe whenever possible.<br><br>Gross α/β and LS smears should be taken at approximately 1 foot inside of ~~each~~ 2 penetration whenever possible. If the smear was taken at a different location then denote on the attached map. See Smear Gross α/β and LS smear blocks below for minimum number of required measurements. PQ 8/22/01 |

| Survey performance (Initial and date as each survey is complete) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | | | Beta Scan | Direct Beta | 1 meter Gamma | Smear Gross α/β | LS Smear |
| L1 | L2 | L6 | L7 | L8 | | | | | |
| Georgia Tech Research Reactor Penetrations | | | | | | | | | |
| | | | | | | | | | |
| A0022 | 01P00 | B9999 | ZZZZZ | 1 thru 93 | 1st floor plug holes | ~~(93)~~ PQ 7/31/01 (91) PQ 7/31/01 | N/A | (93) 8/22/01 | (15) 8/22/01 |
| A0022 | 02P00 | B9999 | ZZZZZ | 1 thru 27 | Other Penetrations & pipes (all floors) | (27) PQ 8/21/01 | N/A | (27) 8/22/01 | (15) 8/22/01 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |



0025

| Package Review |
| --- |
| Date Package Completed |
| Package Reviewed by and Date |

| Survey Comments |
| --- |
| Only 91 direct beta readings required for 01P00 due to the secondary cooling water pipes obstructing the detector from entering penetrations # 92 & #93. |
| 93 Smears were still required in these penetrations. P. Jones 7/31/01 |



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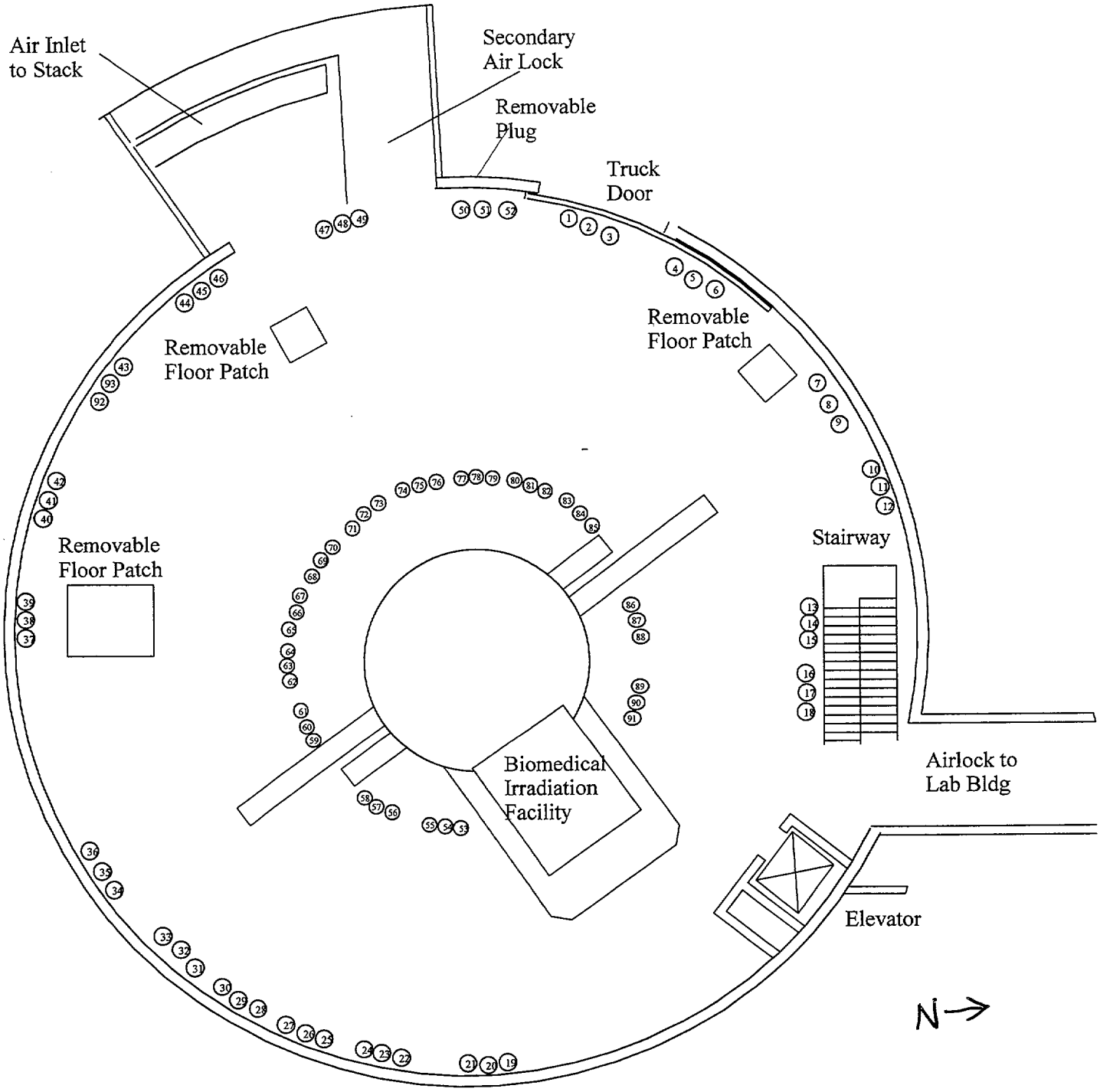
# Section 2

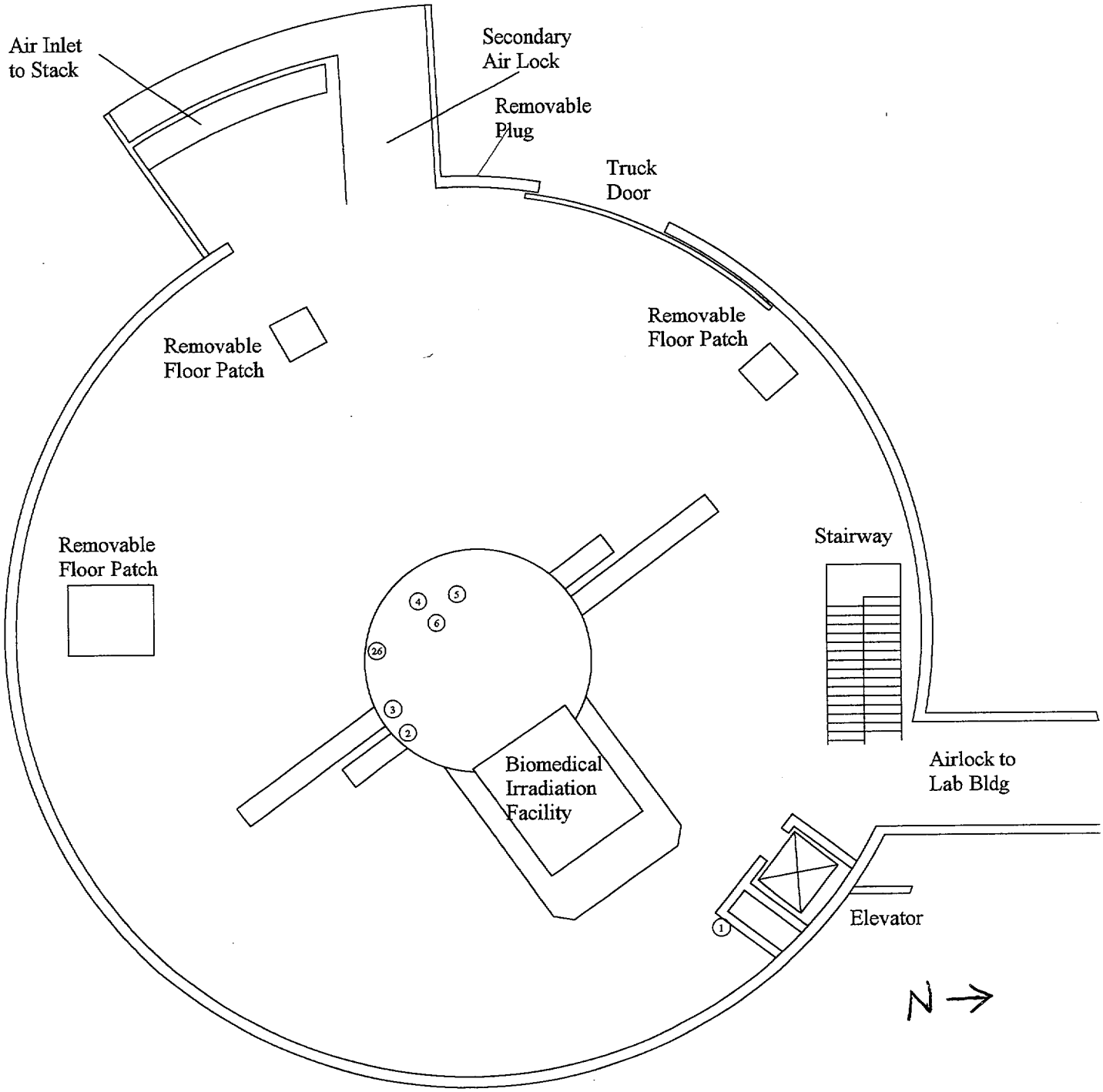
# Package 22
# GTRR Basement Pipes and Penetrations Drawings

# GTRR 1st Floor Pipes and Penetrations Package 22, 01P00



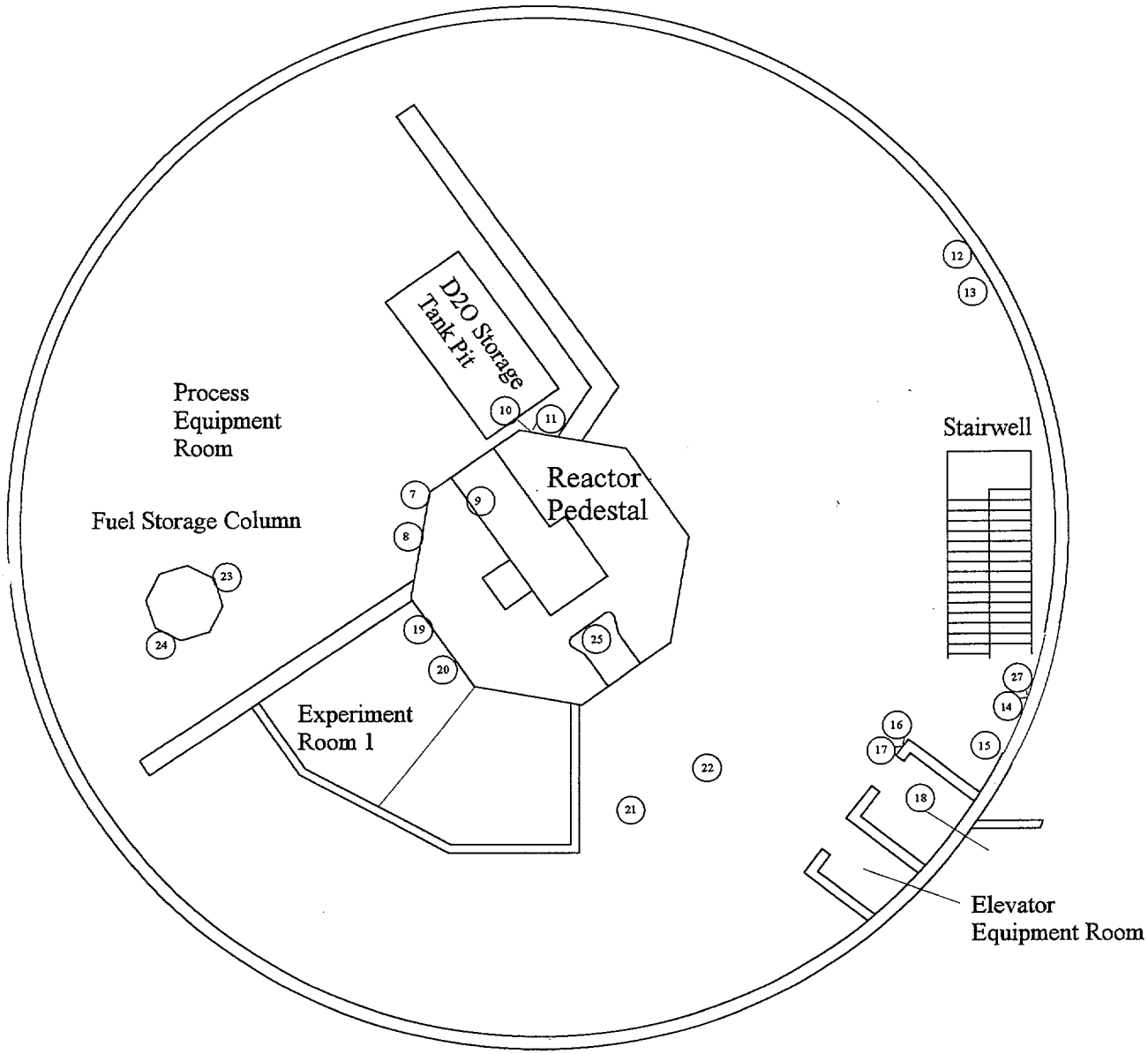

(#) - Denotes L8 number and approximate location of pipe or penetration.

# GTRR 1st Floor Pipes and Penetrations
# Package 22, 02P00




(#) - Denotes L8 number and approximate location of pipe or penetration.

# GTRR Basement Pipes and Penetrations
# Package 22, 02P00




(#) - Denotes L8 number and approximate location of pipe or penetration.

N →

# Section 3

# Package 22
# Direct Beta Survey Report for the Suspect Affected Misc. Pipes and Penetrations
# (including download reports)

| Desc. | File | Sample Number | Gross Counts | Count Time (sec) | Material Type | Detector Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Activity (dpm/100$cm^2$) | Natural Background (dpm/100$cm^2$) | Net Activity (dpm/100$cm^2$) | MDA (dpm/100$cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 215 | 1 | 302 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00001 | 0.038 | 241 | 1605 | 0 | 1605 | 1481 |
| | 215 | 2 | 235 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00002 | 0.038 | 241 | -158 | 0 | -158 | 1481 |
| | 215 | 3 | 257 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00003 | 0.038 | 241 | 421 | 0 | 421 | 1481 |
| | 215 | 4 | 237 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00004 | 0.038 | 241 | -105 | 0 | -105 | 1481 |
| | 215 | 5 | 233 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00005 | 0.038 | 241 | -211 | 0 | -211 | 1481 |
| | 215 | 6 | 276 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00006 | 0.038 | 241 | 921 | 0 | 921 | 1481 |
| | 215 | 7 | 256 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00007 | 0.038 | 241 | 395 | 0 | 395 | 1481 |
| | 215 | 8 | 231 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00008 | 0.038 | 241 | -263 | 0 | -263 | 1481 |
| | 215 | 9 | 248 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00009 | 0.038 | 241 | 184 | 0 | 184 | 1481 |
| | 215 | 10 | 274 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00010 | 0.038 | 241 | 868 | 0 | 868 | 1481 |
| | 215 | 11 | 252 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00011 | 0.038 | 241 | 289 | 0 | 289 | 1481 |
| | 215 | 12 | 242 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00012 | 0.038 | 241 | 26 | 0 | 26 | 1481 |
| | 215 | 13 | 231 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00013 | 0.038 | 241 | -263 | 0 | -263 | 1481 |
| | 215 | 14 | 234 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00014 | 0.038 | 241 | -184 | 0 | -184 | 1481 |
| | 215 | 15 | 240 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00015 | 0.038 | 241 | -26 | 0 | -26 | 1481 |
| | 215 | 16 | 251 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00016 | 0.038 | 241 | 263 | 0 | 263 | 1481 |
| | 215 | 17 | 255 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00017 | 0.038 | 241 | 368 | 0 | 368 | 1481 |
| | 215 | 18 | 216 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00018 | 0.038 | 241 | -658 | 0 | -658 | 1481 |
| | 215 | 20 | 208 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00019 | 0.038 | 241 | -868 | 0 | -868 | 1481 |
| | 215 | 21 | 239 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00020 | 0.038 | 241 | -53 | 0 | -53 | 1481 |
| | 215 | 22 | 233 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00021 | 0.038 | 241 | -211 | 0 | -211 | 1481 |
| | 215 | 23 | 273 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00022 | 0.038 | 241 | 842 | 0 | 842 | 1481 |
| | 215 | 24 | 288 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00023 | 0.038 | 241 | 1237 | 0 | 1237 | 1481 |
| | 215 | 25 | 265 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00024 | 0.038 | 241 | 632 | 0 | 632 | 1481 |
| | 215 | 26 | 228 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00025 | 0.038 | 241 | -342 | 0 | -342 | 1481 |
| | 215 | 27 | 231 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00026 | 0.038 | 241 | -263 | 0 | -263 | 1481 |
| | 215 | 28 | 247 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00027 | 0.038 | 241 | 158 | 0 | 158 | 1481 |
| | 215 | 29 | 276 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00028 | 0.038 | 241 | 921 | 0 | 921 | 1481 |
| | 215 | 30 | 254 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00029 | 0.038 | 241 | 342 | 0 | 342 | 1481 |
| | 215 | 31 | 239 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00030 | 0.038 | 241 | -53 | 0 | -53 | 1481 |
| | 215 | 32 | 298 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00031 | 0.038 | 241 | 1500 | 0 | 1500 | 1481 |
| | 215 | 33 | 299 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00032 | 0.038 | 241 | 1526 | 0 | 1526 | 1481 |
| | 215 | 34 | 298 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00033 | 0.038 | 241 | 1500 | 0 | 1500 | 1481 |
| | 215 | 35 | 272 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00034 | 0.038 | 241 | 816 | 0 | 816 | 1481 |
| | 215 | 36 | 240 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00035 | 0.038 | 241 | -26 | 0 | -26 | 1481 |
| | 215 | 37 | 266 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00036 | 0.038 | 241 | 658 | 0 | 658 | 1481 |
| | 215 | 38 | 255 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00037 | 0.038 | 241 | 368 | 0 | 368 | 1481 |
| | 215 | 39 | 217 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00038 | 0.038 | 241 | -632 | 0 | -632 | 1481 |
| | 215 | 40 | 242 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00039 | 0.038 | 241 | 26 | 0 | 26 | 1481 |
| | 215 | 41 | 239 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00040 | 0.038 | 241 | -53 | 0 | -53 | 1481 |
| | 215 | 42 | 280 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00041 | 0.038 | 241 | 1026 | 0 | 1026 | 1481 |
| | 215 | 43 | 250 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00042 | 0.038 | 241 | 237 | 0 | 237 | 1481 |
| | 215 | 44 | 258 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00043 | 0.038 | 241 | 447 | 0 | 447 | 1481 |
| | 215 | 45 | 254 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00044 | 0.038 | 241 | 342 | 0 | 342 | 1481 |
| | 215 | 46 | 278 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00045 | 0.038 | 241 | 974 | 0 | 974 | 1481 |
| | 215 | 47 | 277 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00046 | 0.038 | 241 | 947 | 0 | 947 | 1481 |
| | 215 | 48 | 250 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00047 | 0.038 | 241 | 237 | 0 | 237 | 1481 |
| | 215 | 49 | 250 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00048 | 0.038 | 241 | 237 | 0 | 237 | 1481 |
| | 215 | 50 | 259 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00049 | 0.038 | 241 | 474 | 0 | 474 | 1481 |
| | 215 | 51 | 248 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00050 | 0.038 | 241 | 184 | 0 | 184 | 1481 |
| | 215 | 52 | 269 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00051 | 0.038 | 241 | 737 | 0 | 737 | 1481 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 215 | 53 | 238 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00052 | 0.038 | 241 | -79 | 0 | -79 | 1481 |
| 215 | 55 | 237 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00053 | 0.038 | 241 | -105 | 0 | -105 | 1481 |
| 215 | 56 | 233 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00054 | 0.038 | 241 | -211 | 0 | -211 | 1481 |
| 215 | 57 | 226 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00055 | 0.038 | 241 | -395 | 0 | -395 | 1481 |
| 215 | 58 | 214 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00056 | 0.038 | 241 | -711 | 0 | -711 | 1481 |
| 215 | 59 | 261 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00057 | 0.038 | 241 | 526 | 0 | 526 | 1481 |
| 215 | 60 | 239 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00058 | 0.038 | 241 | -53 | 0 | -53 | 1481 |
| 215 | 61 | 254 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00059 | 0.038 | 241 | 342 | 0 | 342 | 1481 |
| 215 | 62 | 260 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00060 | 0.038 | 241 | 500 | 0 | 500 | 1481 |
| 215 | 63 | 259 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00061 | 0.038 | 241 | 474 | 0 | 474 | 1481 |
| 215 | 64 | 214 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00062 | 0.038 | 241 | -711 | 0 | -711 | 1481 |
| 215 | 65 | 223 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00063 | 0.038 | 241 | -474 | 0 | -474 | 1481 |
| 215 | 66 | 238 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00064 | 0.038 | 241 | -79 | 0 | -79 | 1481 |
| 215 | 67 | 241 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00065 | 0.038 | 241 | 0 | 0 | 0 | 1481 |
| 215 | 68 | 278 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00066 | 0.038 | 241 | 974 | 0 | 974 | 1481 |
| 215 | 69 | 248 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00067 | 0.038 | 241 | 184 | 0 | 184 | 1481 |
| 215 | 70 | 261 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00068 | 0.038 | 241 | 526 | 0 | 526 | 1481 |
| 215 | 71 | 244 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00069 | 0.038 | 241 | 79 | 0 | 79 | 1481 |
| 215 | 72 | 270 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00070 | 0.038 | 241 | 763 | 0 | 763 | 1481 |
| 215 | 73 | 268 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00071 | 0.038 | 241 | 711 | 0 | 711 | 1481 |
| 215 | 74 | 278 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00072 | 0.038 | 241 | 974 | 0 | 974 | 1481 |
| 215 | 75 | 261 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00073 | 0.038 | 241 | 526 | 0 | 526 | 1481 |
| 215 | 76 | 258 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00074 | 0.038 | 241 | 447 | 0 | 447 | 1481 |
| 215 | 77 | 235 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00075 | 0.038 | 241 | -158 | 0 | -158 | 1481 |
| 215 | 78 | 261 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00076 | 0.038 | 241 | 526 | 0 | 526 | 1481 |
| 215 | 79 | 247 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00077 | 0.038 | 241 | 158 | 0 | 158 | 1481 |
| 215 | 80 | 224 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00078 | 0.038 | 241 | -447 | 0 | -447 | 1481 |
| 215 | 81 | 265 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00079 | 0.038 | 241 | 632 | 0 | 632 | 1481 |
| 215 | 82 | 223 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00080 | 0.038 | 241 | -474 | 0 | -474 | 1481 |
| 215 | 83 | 220 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00081 | 0.038 | 241 | -553 | 0 | -553 | 1481 |
| 215 | 84 | 181 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00082 | 0.038 | 241 | -1579 | 0 | -1579 | 1481 |
| 215 | 85 | 210 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00083 | 0.038 | 241 | -816 | 0 | -816 | 1481 |
| 215 | 87 | 240 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00084 | 0.038 | 241 | -26 | 0 | -26 | 1481 |
| 215 | 88 | 256 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00085 | 0.038 | 241 | 395 | 0 | 395 | 1481 |
| 215 | 89 | 282 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00086 | 0.038 | 241 | 1079 | 0 | 1079 | 1481 |
| 215 | 90 | 255 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00087 | 0.038 | 241 | 368 | 0 | 368 | 1481 |
| 215 | 92 | 210 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00089 | 0.038 | 241 | -816 | 0 | -816 | 1481 |
| 215 | 93 | 215 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00090 | 0.038 | 241 | -684 | 0 | -684 | 1481 |
| 215 | 94 | 240 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00091 | 0.038 | 241 | -26 | 0 | -26 | 1481 |
| 215 | 95 | 278 | 60 | B9999 | 100 | 01P00 | FLDCT | ZZZZZ | 00088 | 0.038 | 241 | 974 | 0 | 974 | 1481 |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 212 | 3 | 1022 | 300 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00001 | 0.017 | 212 | -447 | 0 | -447 | 1814 |
| 212 | 5 | 1000 | 300 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00007 | 0.017 | 214 | -835 | 0 | -835 | 1823 |
| 214 | 7 | 226 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00002 | 0.038 | 242 | -421 | 0 | -421 | 1976 |
| 214 | 8 | 229 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00003 | 0.038 | 232 | -79 | 0 | -79 | 1936 |
| 214 | 9 | 203 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00004 | 0.038 | 199 | 105 | 0 | 105 | 1799 |
| 214 | 10 | 214 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00005 | 0.038 | 230 | -421 | 0 | -421 | 1928 |
| 214 | 11 | 192 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00026 | 0.038 | 212 | -526 | 0 | -526 | 1854 |
| 214 | 13 | 206 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00009 | 0.038 | 187 | 500 | 0 | 500 | 1746 |
| 214 | 15 | 238 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00011 | 0.038 | 243 | -132 | 0 | -132 | 1980 |
| 214 | 19 | 241 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00016 | 0.038 | 211 | 789 | 0 | 789 | 1850 |
| 214 | 20 | 214 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00017 | 0.038 | 191 | 605 | 0 | 605 | 1763 |
| 214 | 22 | 226 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00020 | 0.038 | 225 | 26 | 0 | 26 | 1908 |



014

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 214 | 24 | 209 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00019 | 0.038 | 213 | -105 | 0 | -105 | 1858 |
| | 216 | 6 | 190 | 120 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00015 | 0.048 | 83 | 250 | 0 | 250 | 653 |
| | 216 | 9 | 120 | 120 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00023 | 0.048 | 59 | 21 | 0 | 21 | 555 |
| | 216 | 10 | 139 | 120 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00024 | 0.048 | 59 | 219 | 0 | 219 | 555 |
| | 217 | 3 | 128 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00014 | 0.055 | 43 | 1538 | 0 | 1538 | 607 |
| | 217 | 4 | 134 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00027 | 0.055 | 43 | 1647 | 0 | 1647 | 607 |
| | 217 | 5 | 80 | 60 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00018 | 0.055 | 77 | 58 | 0 | 58 | 791 |
| | 218 | 5 | 332 | 120 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00025 | 0.03 | 113 | 1767 | 0 | 1767 | 1211 |
| | 218 | 8 | 222 | 120 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00012 | 0.03 | 119 | -267 | 0 | -267 | 1241 |
| | 218 | 9 | 247 | 120 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00013 | 0.03 | 118 | 200 | 0 | 200 | 1234 |
| | 218 | 12 | 225 | 120 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00008 | 0.03 | 101 | 400 | 0 | 400 | 1145 |
| | 218 | 13 | 240 | 120 | B9999 | 100 | 02P00 | FLDCT | ZZZZZ | 00010 | 0.03 | 94 | 883 | 0 | 883 | 1106 |
| | 219 | 14 | 153 | 60 | B9999 | 46.5 | 02P00 | FLDCT | ZZZZZ | 00006 | 0.069 | 151 | 62 | 0 | 62 | 1866 |
| | 219 | 18 | 162 | 60 | B9999 | 46.5 | 02P00 | FLDCT | ZZZZZ | 00022 | 0.069 | 142 | 623 | 0 | 623 | 1813 |
| | 219 | 19 | 159 | 60 | B9999 | 46.5 | 02P00 | FLDCT | ZZZZZ | 00021 | 0.069 | 158 | 31 | 0 | 31 | 1907 |
| | | | | | | | | | | | | | | # Measurements | 118 | |
| | | | | | | | | | | | | | | Average | 225 | |
| | | | | | | | | | | | | | | Maximum | 1767 | |
| | | | | | | | | | | | | | | STD DEV | 608 | |
| | | | | | | | | | | | | | | 95% CL on Mean | 335 | |



015

The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #212

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

wnload Print
Technician: Name: D. Schumacher Signature: [signature] Station: 2 File: 212
Serial No. Verification: Model 2350: ☒ Detector: ☒ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumacher User ID DS 4133 Signature: [signature] Date: 2/27/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0022: ~~Area~~ RX Penetrations #1 & 7 3"
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/16/01 Detector: 1-23-02

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☐ Beta β | | 43-68B | | | | |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| ☒ Beta | 123601 | 43-98 | .017 | 1169/170 | 212 | 212 |

Local Area Background Measurements — MEAN Value in cpm

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 1 | 2 | 3 | 4 | 5 | 6 | 0 |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: Background readings were taken at each penetration for this file because many of these penetrations were in different locations throughout the building.

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 212 | Survey Description: A0022: RX PENETRATIONS # 1, # 7 (3") | | |
| Survey Reason: TERMINATION | User ID: DPS4133 | Technician name: Don Schumaker | |
| Instrument Model: 2350-1 | S/N: 129429 | Calibration Due: 12/06/01 | Group: 2 |
| Detector Model: 43-98 | Detector S/N: 123601 | Type: Pipe Probe | |
| Background: 0 cpm | Beta Efficiency: .017 | | Survey Date: 7/26/01 |

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 1 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: Don Schumaker / [signature] Date: 7/27/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: Pam Jones / [signature] Date: 8/22/01
Print name Signature

Survey Date: 7/26/01 Report Date: 7/27/01 Page: 1
File: 212 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number | 4 |
|---|---|---|---|---|---|---|
| | A0022 | 02P00 | TAT01 | 02311 | Det Cal Due: | 1/23/~~02~~ 1/23/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00001 | 2 | 300 | 1060 | 12471 | * |
| FLDBK | B9999 | ZZZZZ | 00007 | 4 | 300 | 1071 | 12600 | * |
| | | | | | | Group Average: | 12535 | |
| FLDCT | B9999 | ZZZZZ | 00001 | 3 | 300 | 1022 | 12024 | * |
| FLDCT | B9999 | ZZZZZ | 00007 | 5 | 300 | 1000 | 11765 | * |
| | | | | | | Group Average: | 11894 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number | 4 |
|---|---|---|---|---|---|---|
| | ZZZZZ | A3762 | TAT01 | 02311 | Det Cal Due: | 1/23/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 1 | 60 | 1339 | 78765 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 7 | 60 | 1361 | 80059 | * |
| | | | | | | Group Average: | 79412 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number | 4 |
|---|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02311 | Det Cal Due: | 1/23/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 0 | 600 | 1703 | 10018 | * |
| | | | | | | Group Average: | 10018 | |
| PTBBK | ZZZZZ | ZZZZZ | 00000 | 6 | 600 | 1870 | 11000 | * |
| | | | | | | Group Average: | 11000 | |

Total Number of Measurements on this Report: 8

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 2400 dpm/100 cm2

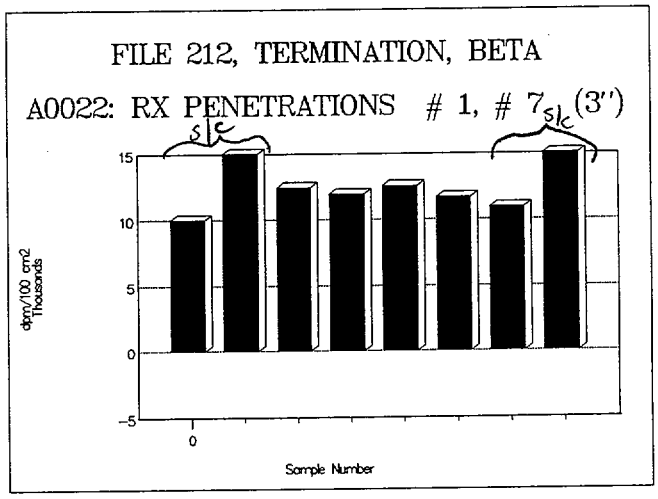
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/27/2001 Graph of File 212 Station: 2

Survey Date: 7/26/2001 Survey Start Time: 14:43:50

Description: A0022: RX PENETRATIONS # 1, # 7 (3")




Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #215

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: PAUL JONES Signature: [signature] Station: 2 File: 215
Serial No. Verification: Model 2350: ☒ Detector: ☒ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ 5034 Signature: [signature] Date: 7/31/01

Print Name: User ID Signature: Date:

Survey Unit Description: A-0022,01P00 Reactor Penetrations (Plug Holes)
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 1/21/02

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☐ Beta β | | 43-68B | | | | |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| Beta | 123601 | 43-98 | .038 | 2659 / 141 | 214 | 215 |

Local Area Background Measurements — MEAN Value in cpm

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 1 2548 | 2 2244 | 3 2422 | 4 2436 | 5 | 6 | 241 |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: Locations 92 & 93 were obstructed ~~from~~ 7/31/01 due to secondary cooling water pipes. These readings were not taken. [signature] 7/31/01

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

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Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 215 | Survey Description: A0022: RX BLDG. PENETRATIONS (PLUG HOLES) | | |
| Survey Reason: TERMINATION | User ID: PAJ5034 | Technician name: Paul Jones | |
| Instrument Model: 2350-1 | S/N: 129429 | Calibration Due: 12/06/01 | Group: 2 |
| Detector Model: 43-98 | Detector S/N: 123601 | Type: Pipe Probe | |
| Background: 241 cpm | Beta Efficiency: .038 | | Survey Date: 7/31/01 |

Pre and Post source checks are included on this download: Yes ___ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 214 Post File #: 215

Technician Review:

I have reveiwed this cover sheet and 3 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: PAUL JONES / [signature] Date: 7/31/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 7/31/01
Print name Signature

Survey Date: 7/31/01 Report Date: 7/31/01 Page: 1
File: 215 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 |
|---|---|---|---|---|
| | A0022 | 01P00 | TAT01 | 02310 |

Setup Number 4
Det Cal Due: 1/23/02

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00001 | 0 | 600 | 2548 | 363 | |
| FLDBK | B9999 | ZZZZZ | 00018 | 19 | 600 | 2244 | -437 | |
| FLDBK | B9999 | ZZZZZ | 00052 | 54 | 600 | 2422 | 32 | |
| FLDBK | B9999 | ZZZZZ | 00091 | 96 | 600 | 2436 | 68 | |
| | | | | | | Group Average: | 7 | |
| FLDCT | B9999 | ZZZZZ | 00001 | 1 | 60 | 302 | 1605 | |
| FLDCT | B9999 | ZZZZZ | 00002 | 2 | 60 | 235 | -158 | |
| FLDCT | B9999 | ZZZZZ | 00003 | 3 | 60 | 257 | 421 | |
| FLDCT | B9999 | ZZZZZ | 00004 | 4 | 60 | 237 | -105 | |
| FLDCT | B9999 | ZZZZZ | 00005 | 5 | 60 | 233 | -211 | |
| FLDCT | B9999 | ZZZZZ | 00006 | 6 | 60 | 276 | 921 | |
| FLDCT | B9999 | ZZZZZ | 00007 | 7 | 60 | 256 | 395 | |
| FLDCT | B9999 | ZZZZZ | 00008 | 8 | 60 | 231 | -263 | |
| FLDCT | B9999 | ZZZZZ | 00009 | 9 | 60 | 248 | 184 | |
| FLDCT | B9999 | ZZZZZ | 00010 | 10 | 60 | 274 | 868 | |
| FLDCT | B9999 | ZZZZZ | 00011 | 11 | 60 | 252 | 289 | |
| FLDCT | B9999 | ZZZZZ | 00012 | 12 | 60 | 242 | 26 | |
| FLDCT | B9999 | ZZZZZ | 00013 | 13 | 60 | 231 | -263 | |
| FLDCT | B9999 | ZZZZZ | 00014 | 14 | 60 | 234 | -184 | |
| FLDCT | B9999 | ZZZZZ | 00015 | 15 | 60 | 240 | -26 | |
| FLDCT | B9999 | ZZZZZ | 00016 | 16 | 60 | 251 | 263 | |
| FLDCT | B9999 | ZZZZZ | 00017 | 17 | 60 | 255 | 368 | |
| FLDCT | B9999 | ZZZZZ | 00018 | 18 | 60 | 216 | -658 | |
| FLDCT | B9999 | ZZZZZ | 00019 | 20 | 60 | 208 | -868 | |
| FLDCT | B9999 | ZZZZZ | 00020 | 21 | 60 | 239 | -53 | |
| FLDCT | B9999 | ZZZZZ | 00021 | 22 | 60 | 233 | -211 | |
| FLDCT | B9999 | ZZZZZ | 00022 | 23 | 60 | 273 | 842 | |
| FLDCT | B9999 | ZZZZZ | 00023 | 24 | 60 | 288 | 1237 | |
| FLDCT | B9999 | ZZZZZ | 00024 | 25 | 60 | 265 | 632 | |
| FLDCT | B9999 | ZZZZZ | 00025 | 26 | 60 | 228 | -342 | |
| FLDCT | B9999 | ZZZZZ | 00026 | 27 | 60 | 231 | -263 | |
| FLDCT | B9999 | ZZZZZ | 00027 | 28 | 60 | 247 | 158 | |
| FLDCT | B9999 | ZZZZZ | 00028 | 29 | 60 | 276 | 921 | |
| FLDCT | B9999 | ZZZZZ | 00029 | 30 | 60 | 254 | 342 | |
| FLDCT | B9999 | ZZZZZ | 00030 | 31 | 60 | 239 | -53 | |
| FLDCT | B9999 | ZZZZZ | 00031 | 32 | 60 | 298 | 1500 | |
| FLDCT | B9999 | ZZZZZ | 00032 | 33 | 60 | 299 | 1526 | |
| FLDCT | B9999 | ZZZZZ | 00033 | 34 | 60 | 298 | 1500 | |
| FLDCT | B9999 | ZZZZZ | 00034 | 35 | 60 | 272 | 816 | |
| FLDCT | B9999 | ZZZZZ | 00035 | 36 | 60 | 240 | -26 | |
| FLDCT | B9999 | ZZZZZ | 00036 | 37 | 60 | 266 | 658 | |
| FLDCT | B9999 | ZZZZZ | 00037 | 38 | 60 | 255 | 368 | |
| FLDCT | B9999 | ZZZZZ | 00038 | 39 | 60 | 217 | -632 | |
| FLDCT | B9999 | ZZZZZ | 00039 | 40 | 60 | 242 | 26 | |
| FLDCT | B9999 | ZZZZZ | 00040 | 41 | 60 | 239 | -53 | |
| FLDCT | B9999 | ZZZZZ | 00041 | 42 | 60 | 280 | 1026 | |
| FLDCT | B9999 | ZZZZZ | 00042 | 43 | 60 | 250 | 237 | |
| FLDCT | B9999 | ZZZZZ | 00043 | 44 | 60 | 258 | 447 | |
| FLDCT | B9999 | ZZZZZ | 00044 | 45 | 60 | 254 | 342 | |
| FLDCT | B9999 | ZZZZZ | 00045 | 46 | 60 | 278 | 974 | |
| FLDCT | B9999 | ZZZZZ | 00046 | 47 | 60 | 277 | 947 | |
| FLDCT | B9999 | ZZZZZ | 00047 | 48 | 60 | 250 | 237 | |
| FLDCT | B9999 | ZZZZZ | 00048 | 49 | 60 | 250 | 237 | |
| FLDCT | B9999 | ZZZZZ | 00049 | 50 | 60 | 259 | 474 | |
| FLDCT | B9999 | ZZZZZ | 00050 | 51 | 60 | 248 | 184 | |
| FLDCT | B9999 | ZZZZZ | 00051 | 52 | 60 | 269 | 737 | |
| FLDCT | B9999 | ZZZZZ | 00052 | 53 | 60 | 238 | -79 | |
| FLDCT | B9999 | ZZZZZ | 00053 | 55 | 60 | 237 | -105 | |
| FLDCT | B9999 | ZZZZZ | 00054 | 56 | 60 | 233 | -211 | |
| FLDCT | B9999 | ZZZZZ | 00055 | 57 | 60 | 226 | -395 | |
| FLDCT | B9999 | ZZZZZ | 00056 | 58 | 60 | 214 | -711 | |
| FLDCT | B9999 | ZZZZZ | 00057 | 59 | 60 | 261 | 526 | |

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/31/01 Report Date: 7/31/01 Page: 2
File: 215 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 4 |
|---|---|---|---|---|---|
| | A0022 | 01P00 | TAT01 | 02310 | Det Cal Due: 1/23/02 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| FLDCT | B9999 | ZZZZZ | 00058 | 60 | 60 | 239 | -53 | |
| FLDCT | B9999 | ZZZZZ | 00059 | 61 | 60 | 254 | 342 | |
| FLDCT | B9999 | ZZZZZ | 00060 | 62 | 60 | 260 | 500 | |
| FLDCT | B9999 | ZZZZZ | 00061 | 63 | 60 | 259 | 474 | |
| FLDCT | B9999 | ZZZZZ | 00062 | 64 | 60 | 214 | -711 | |
| FLDCT | B9999 | ZZZZZ | 00063 | 65 | 60 | 223 | -474 | |
| FLDCT | B9999 | ZZZZZ | 00064 | 66 | 60 | 238 | -79 | |
| FLDCT | B9999 | ZZZZZ | 00065 | 67 | 60 | 241 | 0 | |
| FLDCT | B9999 | ZZZZZ | 00066 | 68 | 60 | 278 | 974 | |
| FLDCT | B9999 | ZZZZZ | 00067 | 69 | 60 | 248 | 184 | |
| FLDCT | B9999 | ZZZZZ | 00068 | 70 | 60 | 261 | 526 | |
| FLDCT | B9999 | ZZZZZ | 00069 | 71 | 60 | 244 | 79 | |
| FLDCT | B9999 | ZZZZZ | 00070 | 72 | 60 | 270 | 763 | |
| FLDCT | B9999 | ZZZZZ | 00071 | 73 | 60 | 268 | 711 | |
| FLDCT | B9999 | ZZZZZ | 00072 | 74 | 60 | 278 | 974 | |
| FLDCT | B9999 | ZZZZZ | 00073 | 75 | 60 | 261 | 526 | |
| FLDCT | B9999 | ZZZZZ | 00074 | 76 | 60 | 258 | 447 | |
| FLDCT | B9999 | ZZZZZ | 00075 | 77 | 60 | 235 | -158 | |
| FLDCT | B9999 | ZZZZZ | 00076 | 78 | 60 | 261 | 526 | |
| FLDCT | B9999 | ZZZZZ | 00077 | 79 | 60 | 247 | 158 | |
| FLDCT | B9999 | ZZZZZ | 00078 | 80 | 60 | 224 | -447 | |
| FLDCT | B9999 | ZZZZZ | 00079 | 81 | 60 | 265 | 632 | |
| FLDCT | B9999 | ZZZZZ | 00080 | 82 | 60 | 223 | -474 | |
| FLDCT | B9999 | ZZZZZ | 00081 | 83 | 60 | 220 | -553 | |
| FLDCT | B9999 | ZZZZZ | 00082 | 84 | 60 | 181 | -1579 | |
| FLDCT | B9999 | ZZZZZ | 00083 | 85 | 60 | 210 | -816 | |
| FLDCT | B9999 | ZZZZZ | 00084 | 87 | 60 | 240 | -26 | |
| LDCT | B9999 | ZZZZZ | 00085 | 88 | 60 | 256 | 395 | |
| FLDCT | B9999 | ZZZZZ | 00086 | 89 | 60 | 282 | 1079 | |
| FLDCT | B9999 | ZZZZZ | 00087 | 90 | 60 | 255 | 368 | |
| FLDCT | B9999 | ZZZZZ | 00089 | 92 | 60 | 210 | -816 | |
| FLDCT | B9999 | ZZZZZ | 00090 | 93 | 60 | 215 | -684 | |
| FLDCT | B9999 | ZZZZZ | 00091 | 94 | 60 | 240 | -26 | |
| FLDCT | B9999 | ZZZZZ | 00088 | 95 | 60 | 278 | 974 | |
| | | | | | | Group Average: | 221 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 4 |
|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02310 | Det Cal Due: 1/23/02 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 98 | 60 | 2812 | 67658 | * |
| | | | | | | Group Average: | 67658 | |
| PTBBK | ZZZZZ | ZZZZZ | 00000 | 97 | 600 | 2154 | -674 | |
| | | | | | | Group Average: | -674 | |

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/31/01 Report Date: 7/31/01 Page: 3
File: 215 Station: 2

Comments

Total Number of Measurements on this Report: 97

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 2400 dpm/100 cm2

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/31/01 Comments Report for File 215 Station: 2

| Comment Number | Comment |
|---|---|
| 1 | Deleted sample number 86. BECAUSE DETECTOR WAS OUT OF PLACE AT START OF READING. SEE RESURVEY SAMPLE # 87. |
| 2 | Deleted sample number 91. BECAUSE DETECTOR WAS NOT IN PLUG HOLE AT START OF READING. SEE SAMPLE # 95 FOR RESURVEY. |

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

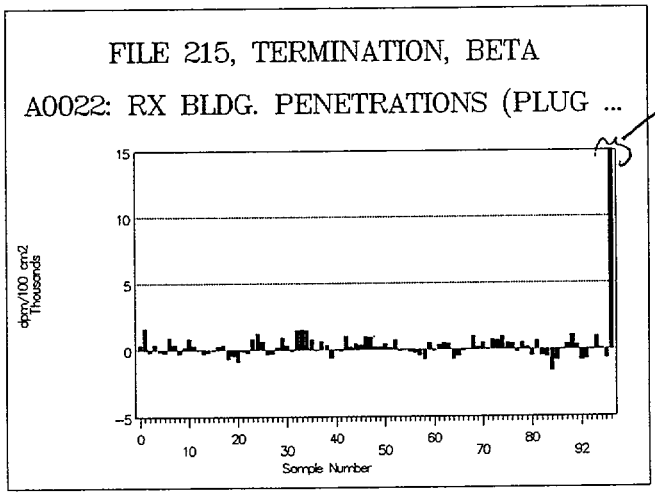
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/31/2001 Graph of File 215 Station: 2

Survey Date: 7/31/2001 Survey Start Time: 14:34:58

Description: A0022: RX BLDG. PENETRATIONS (PLUG HOLES)




Post s/c

The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #214

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

030

wnload Print
Technician: Name: PAUL JONES Signature: Station: 2 File: 214
Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ 5034 Signature: Date: 7/31/01

Print Name: User ID Signature: Date:

Survey Unit Description: A0022: Rx Bldg. Penetrations 2-5, 26, 9, 11, 16, 17, 19 & 20
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 1/21/02

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of easurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☐ Beta β | | 43-68B | | | | |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| Beta | 123601 | 43-98 | .038 | 2659/141 | 214 | 215 |

| Local Area Background Measurements | | | | | | | MEAN Value in cpm ! |
|---|---|---|---|---|---|---|---|
| β Beta | 1 | 2 | 3 | 4 | 5 | 6 | Ø |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: Background readings were taken at each penetration for this file because many of these penetrations were in different locations throughout the building.

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 214 | Survey Description: A0022: RX BLDG. PENETRATIONS 2-5,26,9,11,16,17,19, & 20 | | |
| Survey Reason: TERMINATION | User ID: PAJ5034 | Technician name: Paul Jones | |
| Instrument Model: 2350-1 | S/N: 129429 | Calibration Due: 12/06/01 | Group: 2 |
| Detector Model: 43-98 | Detector S/N: 123601 | Type: Pipe Probe | |
| Background: 0 cpm | Beta Efficiency: .038 | | Survey Date: 7/31/01 |

Pre and Post source checks are included on this download: Yes ___ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 214 Post File #: 215

Technician Review:

I have reveiwed this cover sheet and 2 pages of the report, Ø pages of comments, and 1 graph.

I performed this survey: PAUL JONES / [signature] Date: 7/31/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 7/31/01
Print name Signature

Survey Date: 7/31/01 Report Date: 7/31/01 Page: 1
File: 214 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 4 |
|---|---|---|---|---|---|
| | A0022 | 02P00 | TAT01 | 02310 | Det Cal Due: 1/23/02 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00002 | 2 | 60 | 242 | 6368 | * |
| FLDBK | B9999 | ZZZZZ | 00003 | 3 | 60 | 232 | 6105 | * |
| FLDBK | B9999 | ZZZZZ | 00004 | 4 | 60 | 199 | 5237 | * |
| FLDBK | B9999 | ZZZZZ | 00005 | 5 | 60 | 230 | 6053 | * |
| FLDBK | B9999 | ZZZZZ | 00026 | 6 | 60 | 212 | 5579 | * |
| FLDBK | B9999 | ZZZZZ | 00009 | 12 | 60 | 187 | 4921 | * |
| FLDBK | B9999 | ZZZZZ | 00011 | 14 | 60 | 243 | 6395 | * |
| FLDBK | B9999 | ZZZZZ | 00016 | 16 | 60 | 240 | 6316 | * |
| FLDBK | B9999 | ZZZZZ | 00017 | 17 | 60 | 191 | 5026 | * |
| FLDBK | B9999 | ZZZZZ | 00016 | 18 | 60 | 211 | 5553 | * |
| FLDBK | B9999 | ZZZZZ | 00020 | 21 | 60 | 225 | 5921 | * |
| FLDBK | B9999 | ZZZZZ | 00019 | 23 | 60 | 213 | 5605 | * |
| | | | | | | Group Average: | 5757 | |
| FLDCT | B9999 | ZZZZZ | 00002 | 7 | 60 | 226 | 5947 | * |
| FLDCT | B9999 | ZZZZZ | 00003 | 8 | 60 | 229 | 6026 | * |
| FLDCT | B9999 | ZZZZZ | 00004 | 9 | 60 | 203 | 5342 | * |
| FLDCT | B9999 | ZZZZZ | 00005 | 10 | 60 | 214 | 5632 | * |
| FLDCT | B9999 | ZZZZZ | 00026 | 11 | 60 | 192 | 5053 | * |
| FLDCT | B9999 | ZZZZZ | 00009 | 13 | 60 | 206 | 5421 | * |
| FLDCT | B9999 | ZZZZZ | 00011 | 15 | 60 | 238 | 6263 | * |
| FLDCT | B9999 | ZZZZZ | 00016 | 19 | 60 | 241 | 6342 | * |
| FLDCT | B9999 | ZZZZZ | 00017 | 20 | 60 | 214 | 5632 | * |
| FLDCT | B9999 | ZZZZZ | 00020 | 22 | 60 | 226 | 5947 | * |
| FLDCT | B9999 | ZZZZZ | 00019 | 24 | 60 | 209 | 5500 | * |
| | | | | | | Group Average: | 5737 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 4 |
|---|---|---|---|---|---|
| | ZZZZZ | C389 | TAT01 | 02310 | Det Cal Due: 1/23/02 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 1 | 60 | 2800 | 73684 | * |
| | | | | | | Group Average: | 73684 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 4 |
|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02310 | Det Cal Due: 1/23/02 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 0 | 600 | 1407 | 3703 | * |
| | | | | | | Group Average: | 3703 | |

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/31/01 Report Date: 7/31/01 Page: 2
File: 214 Station: 2

Comments

Total Number of Measurements on this Report: 25

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 2400 dpm/100 cm2

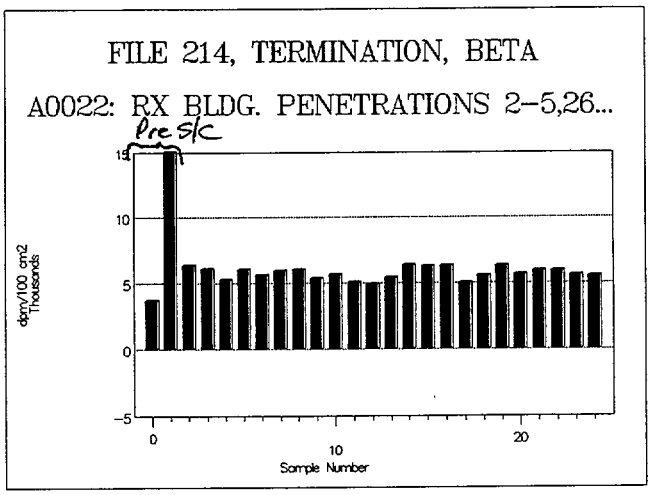
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/31/2001 Graph of File 214 Station: 2

Survey Date: 7/31/2001 Survey Start Time: 09:00:20

Description: A0022: RX BLDG. PENETRATIONS 2-5,26,9,11,16,17,19, & 20




Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #216

036

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: PAUL JONES Signature: [signature] Station: 2 File: 216
Serial No. Verification: Model 2350: ☒ Detector: ☒ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ5034 Signature: [signature] Date: 8/2/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0022, 02P00, Penetrations 15, 23, & 24.
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 9/2/01

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☐ Beta β | | 43-68B | | | | |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| Beta | 124111 | 43-94 | .048 | 3215/114 | 216 | 216 |

Local Area Background Measurements 2 min counts. MEAN Value in cpm ↓

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 1 166 | 2 118 | 3 118 | 4 | 5 | 6 | Ø |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS:

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

PJ 8/22/01

| | | | |
|---|---|---|---|
| File Number: 216 | Survey Description: A0022: RX BLDG. PENETRATIONS #'s ~~14~~,15,23, & 24. | | |
| Survey Reason: TERMINATION | User ID: PAJ5034 | Technician name: Paul Jones | |
| Instrument Model: 2350-1 | S/N: 129429 | Calibration Due: 12/06/01 | Group: 2 |
| Detector Model: 43-94 | Detector S/N: 124111 | Type: PIPE | |
| Background: 0 cpm | Beta Efficiency: .048 | | Survey Date: 8/01/01 |

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 2 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: PAUL JONES / [signature] Date: 8/22/01
Print name / Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name / Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 8/29/01
Print name / Signature

Survey Date: 8/01/01 Report Date: 8/22/01 Page: 1
File: 216 Station: 2

Comments

Sample #13 taken with detector in wrong position. See sample #14 for recount.
P. Jones 8/22/01

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 5 |
|---|---|---|---|---|---|
| | A0022 | 02P00 | TAT01 | 02301 | Det Cal Due: 9/02/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00015 | 5 | 120 | 166 | 1729 | |
| FLDBK | B9999 | ZZZZZ | 00023 | 8 | 120 | 118 | 1229 | |
| FLDBK | B9999 | ZZZZZ | 00024 | 11 | 120 | 118 | 1229 | |
| | | | | | | Group Average: | 1396 | |
| FLDCT | B9999 | ZZZZZ | 00015 | 6 | 120 | 190 | 1979 | |
| FLDCT | B9999 | ZZZZZ | 00023 | 9 | 120 | 120 | 1250 | |
| FLDCT | B9999 | ZZZZZ | 00024 | 10 | 120 | 139 | 1448 | |
| | | | | | | Group Average: | 1559 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 5 |
|---|---|---|---|---|---|
| | ZZZZZ | A3404 | TAT01 | 02301 | Det Cal Due: 9/02/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 1 | 60 | 3329 | 69354 | * |
| | | | | | | Group Average: | 69354 | |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 13 | 60 | 3675 | 76563 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 14 | 60 | 3574 | 74458 | * |
| | | | | | | Group Average: | 75510 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 5 |
|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02301 | Det Cal Due: 9/02/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | H i |
|---|---|---|---|---|---|---|---|---|
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 0 | 600 | 1141 | 2377 | |
| | | | | | | Group Average: | 2377 | |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 12 | 600 | 827 | 1723 | |
| | | | | | | Group Average: | 1723 | |

Total Number of Measurements on this Report: 11

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 2400 dpm/100 cm2

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/22/01 Comments Report for File 216 Station: 2

| Comment Number | Comment |
|---|---|
| 1 | Deleted sample number 7. Because detector was moved during background count. See sample # 8 for resurvey. |
| 2 | Deleted sample numbers from 2 to 4. Because penetrations 14 & 27 required the sleeves to be removed. See file # 217 for resurvey of these penetrations. |

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

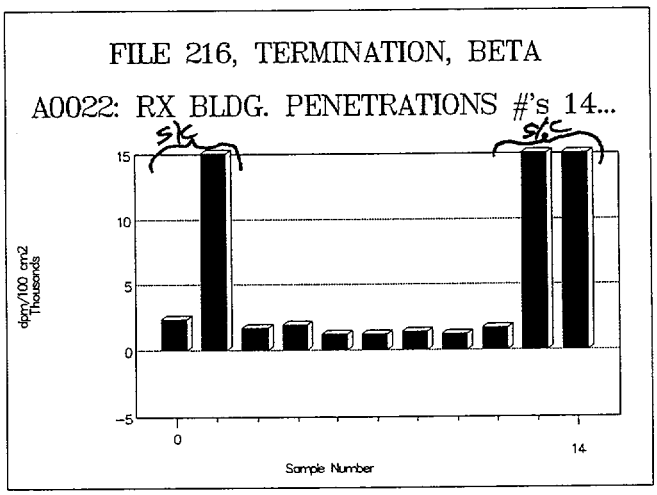
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/22/2001 Graph of File 216 Station: 2

Survey Date: 8/01/2001 Survey Start Time: 12:35:00

Description: A0022: RX BLDG. PENETRATIONS #'s 14,15,23, & 24.




Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #217

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

042

Download Technician: Print Name: PAUL JONES Signature: Paul Jones Station: 2 File: 217

Serial No. Verification: Model 2350: ☒ Detector: ☒ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ 5034 Signature: Paul Jones Date: 8/21/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: Survey Package 22, Penetrations 14, 18 & 27
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 126170

Instrument and Detector Calibration Due Dates: Survey Meter: 12/19/01 Detector: 11/24/01

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☐ Beta β | | 43-68B | | | | |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| Beta | 007A | PSL-3R | .055 | 1831/77 | 217 | 217 |

Local Area Background Measurements (LB) 14 & 27 (10 minutes) (LB) #18 MEAN Value in cpm

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 1 434 | 2 768 | 3 | 4 | 5 | 6 | 60.1 |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: LB survey locations 27 & 14 are of similar geometry and location. The 10 minute background taken at location #14 is for both penetrations. P. Jones

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 217 | Survey Description: A0022, Penetrations 14, 18, and 27. | | |
| Survey Reason: TERMINATION | User ID: PAJ5034 | Technician name: Paul Jones | |
| Instrument Model: 2350-1 | S/N: 126170 | Calibration Due: 12/19/01 | Group: 2 |
| Detector Model: PSL-3R | Detector S/N: 007A | Type: PIPE PROBE GAS PROPORTIONAL | |
| Background: 0 cpm | Beta Efficiency: .055 | | Survey Date: 8/20/01 |

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 1 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: PAUL JONES / Paul Jones Date: 8/21/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / Paul Jones Date: 8/21/01
Print name Signature

Survey Date: 8/20/01 Report Date: 8/21/01 Page: 1
File: 217 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 14 |
|---|---|---|---|---|---|
| | A0022 | 02P00 | TAT01 | 02500 | Det Cal Due: 11/24/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00014 | 2 | 600 | 434 | 1754 | |
| FLDBK | B9999 | ZZZZZ | 00018 | 6 | 600 | 768 | 3103 | * |
| | | | | | | Group Average: | 2428 | |
| FLDCT | B9999 | ZZZZZ | 00014 | 3 | 60 | 128 | 5172 | * |
| FLDCT | B9999 | ZZZZZ | 00027 | 4 | 60 | 134 | 5414 | * |
| FLDCT | B9999 | ZZZZZ | 00018 | 5 | 60 | 80 | 3232 | * |
| | | | | | | Group Average: | 4606 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 14 |
|---|---|---|---|---|---|
| | ZZZZZ | 12681 | TAT01 | 02500 | Det Cal Due: 11/24/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 1 | 60 | 1913 | 77293 | * |
| | | | | | | Group Average: | 77293 | |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 8 | 60 | 1908 | 77091 | * |
| | | | | | | Group Average: | 77091 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 14 |
|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02500 | Det Cal Due: 11/24/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 0 | 600 | 731 | 2954 | * |
| | | | | | | Group Average: | 2954 | |
| PTBBK | ZZZZZ | ZZZZZ | 00000 | 7 | 600 | 766 | 3095 | * |
| | | | | | | Group Average: | 3095 | |

Total Number of Measurements on this Report: 9

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)



* Hi flag set at 2400 dpm/100 cm2

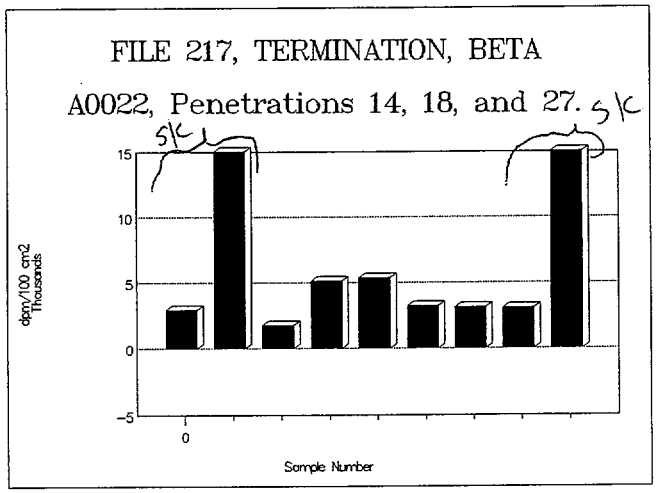
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/21/2001 Graph of File 217 Station: 2

Survey Date: 8/20/2001 Survey Start Time: 15:41:28

Description: A0022, Penetrations 14, 18, and 27.




Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #218

047

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: PAUL JONES Signature: [signature] Station: 2 File: 218
Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ 5034 Signature: [signature] Date: 8/21/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0022 02P00 Penetrations 8, 10, 12, 13 & 25
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒ 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 9/2/01

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☐ Beta β | | 43-68B | | | | |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| Beta | 12411 | 43-94 | 0.030 | 2038/101 | 218 | 218 |

Local Area Background Measurements — MEAN Value in cpm !

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 1 222 | 2 247 | 3 332 | 4 225 | 5 240 | 6 | Ø |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 218 | Survey Description: A0022, 02P00, Penetrations 8, 10, 12, 13, and 25. | | |
| Survey Reason: TERMINATION | User ID: PAJ5034 | Technician name: Paul Jones | |
| Instrument Model: 2350-1 | S/N: 129429 | Calibration Due: 12/06/01 | Group: 2 |
| Detector Model: 43-94 | Detector S/N: 124111 | Type: PIPE | |
| Background: 0 cpm | Beta Efficiency: .030 | | Survey Date: 8/21/01 |

Pre and Post source checks are included on this download: Yes ✓ No ____
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 1 pages of the report, Ø pages of comments, and 1 graph.

I performed this survey: PAUL JONES / Paul Jones Date: 8/21/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / Paul Jones Date: 8/21/01
Print name Signature

Survey Date: 8/21/01 Report Date: 8/21/01 Page: 1
File: 218 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 5 |
|---|---|---|---|---|---|
| | A0022 | 02P00 | TAT01 | 02302 | Det Cal Due: 9/02/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00025 | 4 | 120 | 226 | 3767 | * |
| FLDBK | B9999 | ZZZZZ | 00012 | 6 | 120 | 238 | 3967 | * |
| FLDBK | B9999 | ZZZZZ | 00013 | 7 | 120 | 235 | 3917 | * |
| FLDBK | B9999 | ZZZZZ | 00008 | 10 | 120 | 201 | 3350 | * |
| FLDBK | B9999 | ZZZZZ | 00010 | 11 | 120 | 187 | 3117 | * |
| | | | | | | Group Average: | 3623 | |
| FLDCT | B9999 | ZZZZZ | 00025 | 5 | 120 | 332 | 5533 | * |
| FLDCT | B9999 | ZZZZZ | 00012 | 8 | 120 | 222 | 3700 | * |
| FLDCT | B9999 | ZZZZZ | 00013 | 9 | 120 | 247 | 4117 | * |
| FLDCT | B9999 | ZZZZZ | 00008 | 12 | 120 | 225 | 3750 | * |
| FLDCT | B9999 | ZZZZZ | 00010 | 13 | 120 | 240 | 4000 | * |
| | | | | | | Group Average: | 4220 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 5 |
|---|---|---|---|---|---|
| | ZZZZZ | A3402 | TAT01 | 02302 | Det Cal Due: 9/02/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 1 | 60 | 2173 | 72433 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 3 | 60 | 2139 | 71300 | * |
| | | | | | | Group Average: | 71867 | |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 15 | 60 | 2207 | 73567 | * |
| | | | | | | Group Average: | 73567 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 5 |
|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02302 | Det Cal Due: 9/02/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 0 | 600 | 780 | 2600 | * |
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 2 | 600 | 1006 | 3353 | * |
| | | | | | | Group Average: | 2977 | |
| PTBBK | ZZZZZ | ZZZZZ | 00000 | 14 | 600 | 854 | 2847 | * |
| | | | | | | Group Average: | 2847 | |

* Hi flag set at 2400 dpm/100 cm2

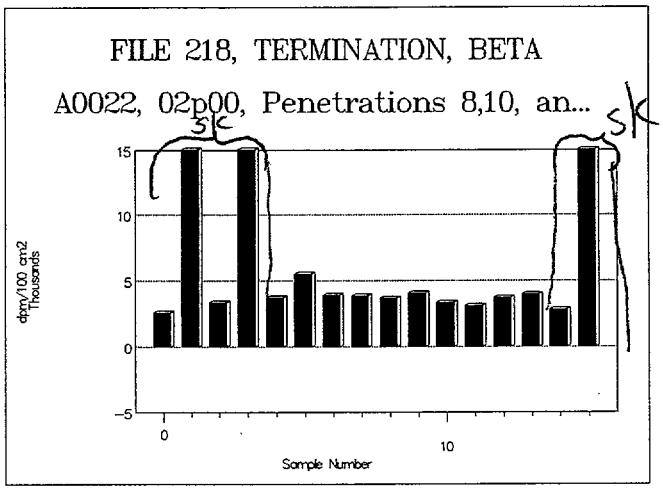
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/21/2001 Graph of File 218 Station: 2

Survey Date: 8/21/2001 Survey Start Time: 13:48:38

Description: A0022, 02p00, Penetrations 8,10, and 25.




Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 $cm^2$) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #219

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

052

Download Technician: Print Name: PAUL JONES Signature: Pal Jones Station: 2 File: 219
Serial No. Verification: Model 2350: ☒ Detector: ☒ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ5034 Signature: Pal Jones Date: 8/21/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0022, 02P00, Penetrations # 6, 21 & 22.
*(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)*

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒ 126170

Instrument and Detector Calibration Due Dates: Survey Meter: 12/19/01 Detector: 8/28/01

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

| Type of Measurement | Detector Serial Number | Detector Model Number | Detector Efficiency | Source Mean BKG Value | Pre & Post Use Info | |
|---|---|---|---|---|---|---|
| | | | | | Pre File No. | Post File No. |
| ☐ Beta β | | 43-106B | | | | |
| ☐ Beta β | | 43-68B | | | | |
| ☐ Alpha α | | 43-68A | | | | |
| ☐ Gamma γ | | 44-2 | N/A | | | |
| Beta | 096141 | 175-3M | 0.069 | 1764/181 | 219 | 219 |

Local Area Background Measurements — MEAN Value in cpm !

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| β Beta | 1 | 2 | 3 | 4 | 5 | 6 | |
| α Alpha | 1 | 2 | 3 | 4 | 5 | 6 | |

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

| | | | |
|---|---|---|---|
| File Number: 219 | Survey Description: A0022, 02P00, Penetrations 6, 21, & 22 | | |
| Survey Reason: TERMINATION | User ID: PAJ5034 | Technician name: Paul Jones | |
| Instrument Model: 2350-1 | S/N: 126170 | Calibration Due: 12/19/01 | Group: 2 |
| Detector Model: SP-175-3M | Detector S/N: 096141 | Type: Pipe Probe | |
| Background: 0 cpm | Beta Efficiency: .069 | | Survey Date: 8/21/01 |

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 1 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: PAUL JONES / [signature] Date: 8/21/01
Print name / Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name / Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 8/21/01
Print name / Signature

Survey Date: 8/21/01 Report Date: 8/21/01 Page: 1
File: 219 Station: 2

Comments

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 9 |
|---|---|---|---|---|---|
| | A0022 | 02P00 | TAT01 | 02101 | Det Cal Due: 8/28/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| FLDBK | B9999 | ZZZZZ | 00006 | 13 | 60 | 151 | 4706 | * |
| FLDBK | B9999 | ZZZZZ | 00021 | 15 | 60 | 158 | 4924 | * |
| FLDBK | B9999 | ZZZZZ | 00022 | 16 | 60 | 142 | 4426 | * |
| | | | | | | Group Average: | 4685 | |
| FLDCT | B9999 | ZZZZZ | 00006 | 14 | 60 | 153 | 4769 | * |
| FLDCT | B9999 | ZZZZZ | 00022 | 18 | 60 | 162 | 5049 | * |
| FLDCT | B9999 | ZZZZZ | 00021 | 19 | 60 | 159 | 4956 | * |
| | | | | | | Group Average: | 4924 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 9 |
|---|---|---|---|---|---|
| | ZZZZZ | EZ260 | TAT01 | 02101 | Det Cal Due: 8/28/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 10 | 60 | 1912 | 59592 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 11 | 60 | 1885 | 58750 | * |
| PRB00 | ZZZZZ | ZZZZZ | 00000 | 12 | 60 | 1957 | 60994 | * |
| | | | | | | Group Average: | 59779 | |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 21 | 60 | 1988 | 61960 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 22 | 60 | 1870 | 58283 | * |
| PTB00 | ZZZZZ | ZZZZZ | 00000 | 23 | 60 | 1979 | 61680 | * |
| | | | | | | Group Average: | 60641 | |

| Survey Code | L1 | L2 | L3 | L4 | Setup Number 9 |
|---|---|---|---|---|---|
| | ZZZZZ | ZZZZZ | TAT01 | 02101 | Det Cal Due: 8/28/01 |

| L5 CntTy | L6 BkgSu | L7 Grid | L8 LocNm | Sample Number | Count Time | Gross Counts | Net dpm/100cm2 | Hi |
|---|---|---|---|---|---|---|---|---|
| PRBBK | ZZZZZ | ZZZZZ | 00000 | 9 | 600 | 1893 | 5900 | * |
| | | | | | | Group Average: | 5900 | |
| PTBBK | ZZZZZ | ZZZZZ | 00000 | 20 | 600 | 1807 | 5632 | * |
| | | | | | | Group Average: | 5632 | |

* Hi flag set at 2400 dpm/100 cm2

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/21/01 Comments Report for File 219 Station: 2

| Comment Number | Comment |
|---|---|
| 1 | Deleted sample numbers from 0 to 8. Because these samples were from a previous download. Meter was not cleared prior to beginning survey. |
| 2 | Deleted sample number 17. Because the detector was moved by accident during field count. See resurvey sample # 19. |

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

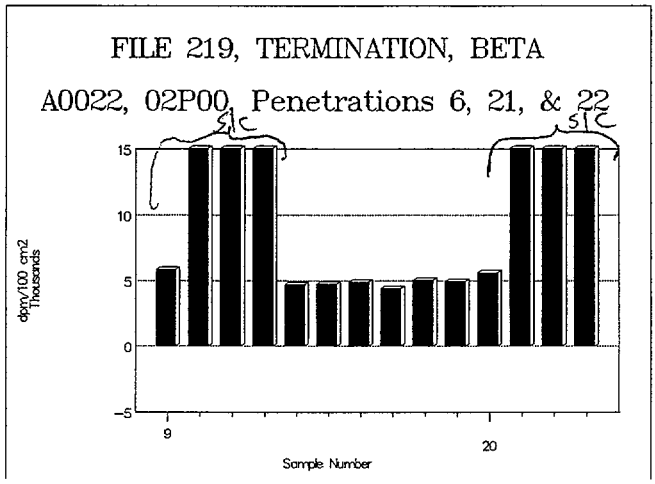
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/21/2001 Graph of File 219 Station: 2

Survey Date: 8/21/2001 Survey Start Time: 16:23:02

Description: A0022, 02P00, Penetrations 6, 21, & 22



# Section 4

# Package 22
# Removable Beta Contamination for the Misc. Pipes and Penetrations (including lab reports)

| Desc. | Gross Counts | Count Time (sec) | Sample Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Activity (dpm/100$cm^2$) | Natural Background (dpm/100$cm^2$) | Net Activity (dpm/100$cm^2$) | MDA (dpm/100$cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00001 | 0.3425 | 1 | -1 | 0 | -1 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00002 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 5 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00003 | 0.3425 | 1 | 7 | 0 | 7 | 14 |
| | 2 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00004 | 0.3425 | 1 | 1 | 0 | 1 | 14 |
| | 0 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00005 | 0.3425 | 1 | -3 | 0 | -3 | 14 |
| | 1 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00006 | 0.3425 | 1 | -1 | 0 | -1 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00007 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 6 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00008 | 0.3425 | 2 | 6 | 0 | 6 | 17 |
| | 9 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00009 | 0.3425 | 1 | 15 | 0 | 15 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00010 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 1 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00011 | 0.3425 | 1 | -1 | 0 | -1 | 14 |
| | 1 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00012 | 0.3425 | 1 | -1 | 0 | -1 | 14 |
| | 0 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00013 | 0.3425 | 1 | -3 | 0 | -3 | 14 |
| | 2 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00014 | 0.3425 | 1 | 1 | 0 | 1 | 14 |
| | 1 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00015 | 0.3425 | 1 | -1 | 0 | -1 | 14 |
| | 2 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00016 | 0.3425 | 1 | 0 | 0 | 0 | 14 |
| | 2 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00017 | 0.3425 | 1 | 1 | 0 | 1 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00018 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00019 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 0 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00020 | 0.3425 | 1 | -3 | 0 | -3 | 14 |
| | 6 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00021 | 0.3425 | 1 | 9 | 0 | 9 | 14 |
| | 11 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00022 | 0.3425 | 1 | 18 | 0 | 18 | 14 |
| | 28 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00023 | 0.3425 | 1 | 50 | 0 | 50 | 14 |
| | 9 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00024 | 0.3425 | 1 | 14 | 0 | 14 | 14 |
| | 20 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00025 | 0.3425 | 1 | 35 | 0 | 35 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00026 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 0 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00027 | 0.3425 | 1 | -3 | 0 | -3 | 14 |
| | 1 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00028 | 0.3425 | 1 | -1 | 0 | -1 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00029 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00030 | 0.3425 | 1 | 4 | 0 | 4 | 14 |
| | 5 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00031 | 0.3425 | 1 | 7 | 0 | 7 | 14 |
| | 5 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00032 | 0.3425 | 1 | 7 | 0 | 7 | 14 |
| | 1 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00033 | 0.3425 | 1 | -2 | 0 | -2 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00034 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 13 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00035 | 0.3425 | 1 | 22 | 0 | 22 | 14 |
| | 7 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00036 | 0.3425 | 1 | 11 | 0 | 11 | 14 |
| | 21 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00037 | 0.3425 | 1 | 38 | 0 | 38 | 14 |
| | 13 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00038 | 0.3425 | 1 | 22 | 0 | 22 | 14 |
| | 17 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00039 | 0.3425 | 1 | 30 | 0 | 30 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00040 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 12 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00041 | 0.3425 | 1 | 20 | 0 | 20 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00042 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 2 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00043 | 0.3425 | 1 | 1 | 0 | 1 | 14 |
| | 5 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00044 | 0.3425 | 1 | 7 | 0 | 7 | 14 |



058

| Desc. | Gross Counts | Count Time (sec) | Sample Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Activity (dpm/100$cm^2$) | Natural Background (dpm/100$cm^2$) | Net Activity (dpm/100$cm^2$) | MDA (dpm/100$cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00045 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00046 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 23 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00047 | 0.3425 | 1 | 37 | 0 | 37 | 14 |
| | 8 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00048 | 0.3425 | 1 | 11 | 0 | 11 | 14 |
| | 14 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00049 | 0.3425 | 1 | 22 | 0 | 22 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00050 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 6 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00051 | 0.3425 | 1 | 9 | 0 | 9 | 14 |
| | 0 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00052 | 0.3425 | 1 | -3 | 0 | -3 | 14 |
| | 6 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00053 | 0.3425 | 1 | 9 | 0 | 9 | 14 |
| | 2 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00054 | 0.3425 | 1 | 0 | 0 | 0 | 14 |
| | 1 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00055 | 0.3425 | 1 | -2 | 0 | -2 | 14 |
| | 0 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00056 | 0.3425 | 1 | -3 | 0 | -3 | 14 |
| | 2 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00057 | 0.3425 | 1 | 1 | 0 | 1 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00058 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 1 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00059 | 0.3425 | 1 | -1 | 0 | -1 | 14 |
| | 10 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00060 | 0.3425 | 1 | 17 | 0 | 17 | 14 |
| | 17 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00061 | 0.3425 | 1 | 30 | 0 | 30 | 14 |
| | 54 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00062 | 0.3425 | 1 | 102 | 0 | 102 | 14 |
| | 25 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00063 | 0.3425 | 1 | 46 | 0 | 46 | 14 |
| | 2 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00064 | 0.3425 | 1 | 0 | 0 | 0 | 14 |
| | 1 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00065 | 0.3425 | 1 | -2 | 0 | -2 | 14 |
| | 6 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00066 | 0.3425 | 1 | 9 | 0 | 9 | 14 |
| | 24 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00067 | 0.3425 | 1 | 44 | 0 | 44 | 14 |
| | 2 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00068 | 0.3425 | 1 | 1 | 0 | 1 | 14 |
| | 9 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00069 | 0.3425 | 1 | 15 | 0 | 15 | 14 |
| | 20 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00070 | 0.3425 | 1 | 36 | 0 | 36 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00071 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 7 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00072 | 0.3425 | 1 | 10 | 0 | 10 | 14 |
| | 5 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00073 | 0.3425 | 1 | 7 | 0 | 7 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00074 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 9 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00075 | 0.3425 | 1 | 14 | 0 | 14 | 14 |
| | 21 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00076 | 0.3425 | 1 | 36 | 0 | 36 | 14 |
| | 16 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00077 | 0.3425 | 1 | 27 | 0 | 27 | 14 |
| | 8 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00078 | 0.3425 | 1 | 13 | 0 | 13 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00079 | 0.3425 | 1 | 2 | 0 | 2 | 14 |
| | 18 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00080 | 0.3425 | 1 | 32 | 0 | 32 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00081 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 2 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00082 | 0.3425 | 1 | 0 | 0 | 0 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00083 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 9 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00084 | 0.3425 | 1 | 15 | 0 | 15 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00085 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00086 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00087 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00089 | 0.3425 | 1 | 4 | 0 | 4 | 14 |

| Desc. | Gross Counts | Count Time (sec) | Sample Area ($cm^2$) | Surface | Count Type | Row | Location | Efficiency (dpm/cpm) | Background (cpm) | Activity (dpm/100$cm^2$) | Natural Background (dpm/100$cm^2$) | Net Activity (dpm/100$cm^2$) | MDA (dpm/100$cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00090 | 0.3425 | 1 | 4 | 0 | 4 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00091 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 3 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 00088 | 0.3425 | 1 | 3 | 0 | 3 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 92 | 0.3425 | 1 | 5 | 0 | 5 | 14 |
| | 4 | 90 | 100 | 01P00 | FLDCT | ZZZZZ | 93 | 0.3425 | 1 | 4 | 0 | 4 | 14 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 16 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00001 | 0.3425 | 2 | 26 | 0 | 26 | 17 |
| | 0 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00007 | 0.3425 | 2 | -5 | 0 | -5 | 17 |
| | 1 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00002 | 0.3425 | 2 | -3 | 0 | -3 | 22 |
| | 2 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00003 | 0.3425 | 2 | -1 | 0 | -1 | 22 |
| | 17 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00004 | 0.3425 | 2 | 28 | 0 | 28 | 22 |
| | 5 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00005 | 0.3425 | 2 | 4 | 0 | 4 | 22 |
| | 1 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00026 | 0.3425 | 2 | -3 | 0 | -3 | 22 |
| | 9 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00009 | 0.3425 | 2 | 12 | 0 | 12 | 22 |
| | 6 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00011 | 0.3425 | 2 | 6 | 0 | 6 | 22 |
| | 11 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00016 | 0.3425 | 2 | 16 | 0 | 16 | 22 |
| | 2 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00017 | 0.3425 | 2 | -1 | 0 | -1 | 22 |
| | 2 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00020 | 0.3425 | 2 | -1 | 0 | -1 | 22 |
| | 1 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00019 | 0.3425 | 2 | -4 | 0 | -4 | 22 |
| | 6 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00015 | 0.3425 | 2 | 6 | 0 | 6 | 19 |
| | 4 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00023 | 0.3425 | 2 | 3 | 0 | 3 | 19 |
| | 2 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00024 | 0.3425 | 2 | -1 | 0 | -1 | 19 |
| | 7 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00014 | 0.3425 | 2 | 8 | 0 | 8 | 22 |
| | 3 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00027 | 0.3425 | 2 | 1 | 0 | 1 | 22 |
| | 2 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00018 | 0.3425 | 2 | -1 | 0 | -1 | 22 |
| | 2 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00025 | 0.3425 | 2 | -1 | 0 | -1 | 19 |
| | 4 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00012 | 0.3425 | 2 | 2 | 0 | 2 | 19 |
| | 1 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00013 | 0.3425 | 2 | -3 | 0 | -3 | 19 |
| | 4 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00008 | 0.3425 | 2 | 3 | 0 | 3 | 19 |
| | 3 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00010 | 0.3425 | 2 | 1 | 0 | 1 | 19 |
| | 9 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00006 | 0.3425 | 2 | 12 | 0 | 12 | 22 |
| | 13 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00022 | 0.3425 | 2 | 20 | 0 | 20 | 22 |
| | 2 | 90 | 100 | 02P00 | FLDCT | ZZZZZ | 00021 | 0.3425 | 2 | -2 | 0 | -2 | 22 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | # Measurements | 120 | |
| | | | | | | | | | | | Average | 9 | |
| | | | | | | | | | | | Maximum | 102 | |
| | | | | | | | | | | | STD DEV | 15 | |
| | | | | | | | | | | | 95% CL on Mean | 12 | |

FINAL SURVEY 01P00 [Z] PIN ~~1~~ 22
PIC IPC9025 216712 7/26/01

| BN | RPT | ID | ALPHA COUNTS | ALPHA NET CPM | ALPHA DPM | ALPHA LIMITS | BETA COUNTS | BETA NET CPM | BETA DPM | BETA LIMITS | DATE | TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.00 cpm MDA: 16.36 dpm | | | | | |
| 001 | 00 | 1 | 0 | 0.00 | 0.00 | | 1 | -0.33 | -0.97 | | 07-26-2001 | 12:49:40 |
| 002 | 00 | 2 | 1 | 0.67 | 1.91 | | 4 | 1.47 | 4.29 | | 07-26-2001 | 12:51:39 |
| 003 | 00 | 3 | 0 | 0.00 | 0.00 | | 5 | 2.33 | 6.81 | | 07-26-2001 | 12:53:38 |
| 004 | 00 | 4 | 0 | 0.00 | 0.00 | | 2 | 0.33 | 0.97 | | 07-26-2001 | 12:55:37 |
| 005 | 00 | 5 | 0 | 0.00 | 0.00 | | 0 | -1.00 | -2.92 | | 07-26-2001 | 12:57:36 |
| 006 | 00 | 6 | 0 | 0.00 | 0.00 | | 1 | -0.33 | -0.97 | | 07-26-2001 | 12:59:35 |
| 007 | 00 | 7 | 0 | 0.00 | 0.00 | | 4 | 1.67 | 4.87 | | 07-26-2001 | 13:01:34 |
| 008 | 00 | 8 | 3 | 2.00 | 5.72 | | 3 | 0.40 | 1.18 | | 07-26-2001 | 13:03:33 |
| 009 | 00 | 9 | 0 | 0.00 | 0.00 | | 9 | 5.00 | 14.60 | | 07-26-2001 | 13:05:32 |
| 010 | 00 | 10 | 0 | 0.00 | 0.00 | | 3 | 1.00 | 2.92 | | 07-26-2001 | 13:07:31 |
| 011 | 00 | 11 | 0 | 0.00 | 0.00 | | 1 | -0.33 | -0.97 | | 07-26-2001 | 13:09:30 |
| 012 | 00 | 12 | 0 | 0.00 | 0.00 | | 1 | -0.33 | -0.97 | | 07-26-2001 | 13:11:29 |
| 013 | 00 | 13 | 0 | 0.00 | 0.00 | | 0 | -1.00 | -2.92 | | 07-26-2001 | 13:13:28 |
| 014 | 00 | 14 | 0 | 0.00 | 0.00 | | 2 | 0.33 | 0.97 | | 07-26-2001 | 13:15:27 |
| 015 | 00 | 15 | 0 | 0.00 | 0.00 | | 1 | -0.33 | -0.97 | | 07-26-2001 | 13:17:26 |
| 016 | 00 | 16 | 1 | 0.67 | 1.91 | | 2 | 0.13 | 0.39 | | 07-26-2001 | 13:19:25 |
| 017 | 00 | 17 | 0 | 0.00 | 0.00 | | 2 | 0.33 | 0.97 | | 07-26-2001 | 13:21:24 |
| 018 | 00 | 18 | 0 | 0.00 | 0.00 | | 3 | 1.00 | 2.92 | | 07-26-2001 | 13:23:23 |
| 019 | 00 | 19 | 0 | 0.00 | 0.00 | | 4 | 1.67 | 4.87 | | 07-26-2001 | 13:25:22 |
| 020 | 00 | 20 | 0 | 0.00 | 0.00 | | 0 | -1.00 | -2.92 | | 07-26-2001 | 13:27:21 |
| 021 | 00 | 21 | 0 | 0.00 | 0.00 | | 6 | 3.00 | 8.76 | | 07-26-2001 | 13:29:20 |
| 022 | 00 | 22 | 0 | 0.00 | 0.00 | | 11 | 6.33 | 18.49 | | 07-26-2001 | 13:31:19 |
| 023 | 00 | 23 | 2 | 1.33 | 3.81 | | 28 | 17.27 | 50.42 | | 07-26-2001 | 13:33:18 |
| 024 | 00 | 24 | 1 | 0.67 | 1.91 | | 9 | 4.80 | 14.02 | | 07-26-2001 | 13:35:17 |
| 025 | 00 | 25 | 1 | 0.67 | 1.91 | | 20 | 12.13 | 35.43 | | 07-26-2001 | 13:37:16 |
| 026 | 00 | 26 | 0 | 0.00 | 0.00 | | 3 | 1.00 | 2.92 | | 07-26-2001 | 13:39:15 |

FINAL SURVEY 01P00 [Z] PIN ~~1~~ 22
PIC IPC9025 216712 8/6/01

| BN | RPT | ID | ALPHA COUNTS | ALPHA NET CPM | ALPHA DPM | ALPHA LIMITS | BETA COUNTS | BETA NET CPM | BETA DPM | BETA LIMITS | DATE | TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.00 cpm MDA: 16.36 dpm | | | | | |
| 027 | 00 | 27 | 0 | 0.00 | 0.00 | | 0 | -1.00 | -2.92 | | 07-26-2001 | 13:43:21 |
| 028 | 00 | 28 | 0 | 0.00 | 0.00 | | 1 | -0.33 | -0.97 | | 07-26-2001 | 13:45:20 |
| 029 | 00 | 29 | 0 | 0.00 | 0.00 | | 4 | 1.67 | 4.87 | | 07-26-2001 | 13:47:19 |
| 030 | 00 | 30 | 1 | 0.67 | 1.91 | | 4 | 1.47 | 4.29 | | 07-26-2001 | 13:49:18 |
| 031 | 00 | 31 | 0 | 0.00 | 0.00 | | 5 | 2.33 | 6.81 | | 07-26-2001 | 13:51:17 |
| 032 | 00 | 32 | 0 | 0.00 | 0.00 | | 5 | 2.33 | 6.81 | | 07-26-2001 | 13:53:16 |

Performed By: [signature] Date: 7/26/01

Reviewed By: [signature] Date: 8/6/01

FINAL SURVEY 01P00 [Z] PIN ~~1~~ 22
PIC IPC9025 216712 9M 7/26/01

062

Performed By: [signature] Date: 7/26/01
Reviewed By: [signature] Date: 8/6/01

| SN | RPT | ID | ALPHA COUNTS | ALPHA NET CPM | ALPHA DPM | ALPHA LIMITS | BETA COUNTS | BETA NET CPM | BETA DPM | BETA LIMITS | DATE | TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.00 cpm MDA: 16.36 dpm | | | | | |
| 033 | 00 | 33 | 1 | 0.67 | 1.91 | | 1 | -0.53 | -1.55 | | 07-26-2001 | 13:56:58 |
| 034 | 00 | 34 | 0 | 0.00 | 0.00 | | 4 | 1.67 | 4.87 | | 07-26-2001 | 13:58:57 |
| 035 | 00 | 35 | 0 | 0.00 | 0.00 | | 13 | 7.67 | 22.38 | | 07-26-2001 | 14:00:56 |
| 036 | 00 | 36 | 0 | 0.00 | 0.00 | | 7 | 3.67 | 10.71 | | 07-26-2001 | 14:02:55 |
| 037 | 00 | 37 | 0 | 0.00 | 0.00 | | 21 | 13.00 | 37.96 | | 07-26-2001 | 14:04:54 |
| 038 | 00 | 38 | 1 | 0.67 | 1.91 | | 13 | 7.47 | 21.80 | | 07-26-2001 | 14:06:53 |
| 039 | 00 | 39 | 1 | 0.67 | 1.91 | | 17 | 10.13 | 29.39 | | 07-26-2001 | 14:08:52 |
| 040 | 00 | 40 | 0 | 0.00 | 0.00 | | 3 | 1.00 | 2.92 | | 07-26-2001 | 14:10:51 |
| 041 | 00 | 41 | 0 | 0.00 | 0.00 | | 12 | 7.00 | 20.44 | | 07-26-2001 | 14:12:50 |
| 042 | 00 | 42 | 0 | 0.00 | 0.00 | | 4 | 1.67 | 4.87 | | 07-26-2001 | 14:14:49 |
| 043 | 00 | 43 | 0 | 0.00 | 0.00 | | 2 | 0.33 | 0.97 | | 07-26-2001 | 14:16:48 |
| 044 | 00 | 44 | 0 | 0.00 | 0.00 | | 5 | 2.33 | 6.81 | | 07-26-2001 | 14:18:47 |
| 045 | 00 | 45 | 0 | 0.00 | 0.00 | | 3 | 1.00 | 2.92 | | 07-26-2001 | 14:20:46 |
| 046 | 00 | 46 | 0 | 0.00 | 0.00 | | 4 | 1.67 | 4.87 | | 07-26-2001 | 14:22:45 |
| 047 | 00 | 47 | 9 | 6.00 | 17.16 | | 23 | 12.54 | 36.62 | | 07-26-2001 | 14:24:44 |
| 048 | 00 | 48 | 3 | 2.00 | 5.72 | | 8 | 3.74 | 10.91 | | 07-26-2001 | 14:26:43 |
| 049 | 00 | 49 | 4 | 2.67 | 7.63 | | 14 | 7.54 | 22.01 | | 07-26-2001 | 14:28:42 |
| 050 | 00 | 50 | 0 | 0.00 | 0.00 | | 3 | 1.00 | 2.92 | | 07-26-2001 | 14:30:41 |
| 051 | 00 | 51 | 0 | 0.00 | 0.00 | | 6 | 3.00 | 8.76 | | 07-26-2001 | 14:32:40 |
| 052 | 00 | 52 | 0 | 0.00 | 0.00 | | 0 | -1.00 | -2.92 | | 07-26-2001 | 14:34:39 |
| 053 | 00 | 53 | 0 | 0.00 | 0.00 | | 6 | 3.00 | 8.76 | | 07-26-2001 | 14:36:38 |
| 054 | 00 | 54 | 1 | 0.67 | 1.91 | | 2 | 0.13 | 0.39 | | 07-26-2001 | 14:38:37 |
| 055 | 00 | 55 | 1 | 0.67 | 1.91 | | 1 | -0.53 | -1.55 | | 07-26-2001 | 14:40:36 |
| 056 | 00 | 56 | 0 | 0.00 | 0.00 | | 0 | -1.00 | -2.92 | | 07-26-2001 | 14:42:35 |
| 057 | 00 | 57 | 0 | 0.00 | 0.00 | | 2 | 0.33 | 0.97 | | 07-26-2001 | 14:44:34 |
| 058 | 00 | 58 | 0 | 0.00 | 0.00 | | 3 | 1.00 | 2.92 | | 07-26-2001 | 14:46:33 |
| 059 | 00 | 59 | 0 | 0.00 | 0.00 | | 1 | -0.33 | -0.97 | | 07-26-2001 | 14:48:32 |
| ~~060~~ | ~~00~~ | ~~60~~ | ~~0~~ | ~~0.00~~ | ~~0.00~~ | | ~~175~~ | ~~117.67~~ | ~~343.55~~ | ~~*WARNING*~~ | ~~07-26-2001~~ | ~~14:50:31~~ |

FINAL SURVEY 01P00 [Z] PIN ~~1~~ 22
PIC IPC9025 216712 PG 8/3/01

| SN | RPT | ID | ALPHA COUNTS | ALPHA NET CPM | ALPHA DPM | ALPHA LIMITS | BETA COUNTS | BETA NET CPM | BETA DPM | BETA LIMITS | DATE | TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm | | | | Eff: 34.25% Bkg: 1.00 cpm MDA: 16.36 dpm | | | | | |
| 061 | 00 | 61 | 1 | 0.67 | 1.91 | | 17 | 10.13 | 29.59 | | 07-26-2001 | 14:55:10 |
| 062 | 00 | 62 | 0 | 0.00 | 0.00 | | 54 | 35.00 | 102.19 | | 07-26-2001 | 14:57:09 |
| 063 | 00 | 63 | 1 | 0.67 | 1.91 | | 25 | 15.47 | 45.16 | | 07-26-2001 | 14:59:08 |
| 064 | 00 | 64 | 2 | 1.33 | 3.81 | | 2 | -0.06 | -0.19 | | 07-26-2001 | 15:01:07 |
| 065 | 00 | 65 | 1 | 0.67 | 1.91 | | 1 | -0.53 | -1.55 | | 07-26-2001 | 15:03:06 |
| 066 | 00 | 66 | 0 | 0.00 | 0.00 | | 6 | 3.00 | 8.76 | | 07-26-2001 | 15:05:06 |
| 067 | 00 | 67 | 0 | 0.00 | 0.00 | | 24 | 15.00 | 43.80 | | 07-26-2001 | 15:07:06 |
| 068 | 00 | 68 | 0 | 0.00 | 0.00 | | 2 | 0.33 | 0.97 | | 07-26-2001 | 15:09:05 |
| 069 | 00 | 69 | 0 | 0.00 | 0.00 | | 9 | 5.00 | 14.60 | | 07-26-2001 | 15:11:04 |
| 070 | 00 | 70 | 0 | 0.00 | 0.00 | | 20 | 12.33 | 36.01 | | 07-26-2001 | 15:13:03 |
| 071 | 00 | 71 | 0 | 0.00 | 0.00 | | 4 | 1.67 | 4.87 | | 07-26-2001 | 15:15:02 |
| 072 | 00 | 72 | 1 | 0.67 | 1.91 | | 7 | 3.47 | 10.12 | | 07-26-2001 | 15:17:01 |
| 073 | 00 | 73 | 0 | 0.00 | 0.00 | | 5 | 2.33 | 6.81 | | 07-26-2001 | 15:19:00 |
| 074 | 00 | 74 | 0 | 0.00 | 0.00 | | 4 | 1.67 | 4.87 | | 07-26-2001 | 15:20:59 |
| 075 | 00 | 75 | 1 | 0.67 | 1.91 | | 9 | 4.80 | 14.02 | | 07-26-2001 | 15:22:58 |
| 076 | 00 | 76 | 3 | 2.00 | 5.72 | | 21 | 12.40 | 36.21 | | 07-26-2001 | 15:24:57 |
| 077 | 00 | 77 | 2 | 1.33 | 3.81 | | 16 | 9.27 | 27.06 | | 07-26-2001 | 15:26:56 |
| 078 | 00 | 78 | 0 | 0.00 | 0.00 | | 8 | 4.33 | 12.65 | | 07-26-2001 | 15:28:55 |
| 079 | 00 | 79 | 2 | 1.33 | 3.81 | | 3 | 0.60 | 1.76 | | 07-26-2001 | 15:30:54 |
| 080 | 00 | 80 | 0 | 0.00 | 0.00 | | 18 | 11.00 | 32.12 | | 07-26-2001 | 15:32:53 |
| 081 | 00 | 81 | 0 | 0.00 | 0.00 | | 3 | 1.00 | 2.92 | | 07-26-2001 | 15:34:52 |
| 082 | 00 | 82 | 1 | 0.67 | 1.91 | | 2 | 0.13 | 0.39 | | 07-26-2001 | 15:36:51 |
| 083 | 00 | 83 | 0 | 0.00 | 0.00 | | 3 | 1.00 | 2.92 | | 07-26-2001 | 15:38:50 |
| 084 | 00 | 84 | 0 | 0.00 | 0.00 | | 9 | 5.00 | 14.60 | | 07-26-2001 | 15:40:49 |
| 085 | 00 | 85 | 0 | 0.00 | 0.00 | | 3 | 1.00 | 2.92 | | 07-26-2001 | 15:42:48 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 087 | 00 | 87 | 0 | 0.00 | 0.00 | 3 | 1.00 | 2.92 | | 07-26-2001 15:46:46 |
| 088 | 00 | 88 | 0 | 0.00 | 0.00 | 3 | 1.00 | 2.92 | | 07-26-2001 15:48:45 |
| 089 | 00 | 89 | 1 | 0.67 | 1.91 | 4 | 1.47 | 4.29 | 063 | 07-26-2001 15:50:44 |
| 090 | 00 | 90 | 1 | 0.67 | 1.91 | 4 | 1.47 | 4.29 | | 07-26-2001 15:52:43 |
| 091 | 00 | 91 | 0 | 0.00 | 0.00 | 4 | 1.67 | 4.87 | | 07-26-2001 15:54:42 |
| 092 | 00 | 92 | 0 | 0.00 | 0.00 | 4 | 1.67 | 4.87 | | 07-26-2001 15:56:41 |
| 093 | 00 | 93 | 1 | 0.67 | 1.91 | 4 | 1.47 | 4.29 | | 07-26-2001 15:58:40 |

★ Instrument ERROR caused a miscount. Smear 60 will be recounted. Results of recount on following page

Performed By: [signature] Date: 7/26/01

Reviewed By: [signature] Date: 8/6/01

FINAL SURVEY 01P00 [Z] PIN ~~1~~ 22
I-ID 1PC9025 216712 PM 8/6/01

064

| | ALPHA | | | | | BETA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Eff: 34.97% | Bkg: 0.00 cpm | MDA: 5.17 dpm | | | Eff: 34.25% | Bkg: 1.00 cpm | MDA: 16.36 dpm | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 60 | 0 | 0.00 | 0.00 | | 10 | 5.67 | 16.55 | | 07-26-2001 | 16:13:43 |

Performed By: [signature] Date: 7/26/01

Reviewed By: [signature] Date: 8/6/01

FINAL SURVEY 02P00 [I] PIN 22

PIC IPC9025 216712



| | | | ALPHA | | | | BETA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.10 cpm MDA: 8.60 dpm | | | | Eff: 34.25% Bkg: 1.80 cpm MDA: 20.15 dpm | | | | | |
| SN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | 1 | 0 | -0.10 | -0.29 | | 16 | 8.87 | 25.89 | | 08-22-2001 | 07:29:38 |
| 002 | 00 | 2 | 0 | -0.10 | -0.29 | | 1 | -1.13 | -3.31 | | 08-22-2001 | 07:31:38 |
| 003 | 00 | 3 | 0 | -0.10 | -0.29 | | 2 | -0.47 | -1.36 | | 08-22-2001 | 07:33:37 |
| 004 | 00 | 4 | 0 | -0.10 | -0.29 | | 17 | 9.53 | 27.83 | | 08-22-2001 | 07:35:36 |
| 005 | 00 | 5 | 0 | -0.10 | -0.29 | | 5 | 1.53 | 4.48 | | 08-22-2001 | 07:37:35 |
| 006 | 00 | 6 | 1 | 0.57 | 1.62 | | 9 | 4.03 | 11.77 | | 08-22-2001 | 07:39:34 |
| 007 | 00 | 7 | 0 | -0.10 | -0.29 | | 0 | -1.80 | -5.26 | | 08-22-2001 | 07:41:33 |
| 008 | 00 | 8 | 0 | -0.10 | -0.29 | | 4 | 0.87 | 2.53 | | 08-22-2001 | 07:43:32 |
| 009 | 00 | 9 | 0 | -0.10 | -0.29 | | 9 | 4.20 | 12.26 | | 08-22-2001 | 07:45:31 |
| 010 | 00 | 10 | 0 | -0.10 | -0.29 | | 3 | 0.20 | 0.58 | | 08-22-2001 | 07:47:30 |
| 011 | 00 | 11 | 1 | 0.57 | 1.62 | | 6 | 2.03 | 5.93 | | 08-22-2001 | 07:49:29 |
| 012 | 00 | 12 | 1 | 0.57 | 1.62 | | 4 | 0.70 | 2.04 | | 08-22-2001 | 07:51:28 |
| 013 | 00 | 13 | 0 | -0.10 | -0.29 | | 1 | -1.13 | -3.31 | | 08-22-2001 | 07:53:27 |
| 014 | 00 | 14 | 0 | -0.10 | -0.29 | | 7 | 2.87 | 8.37 | | 08-22-2001 | 07:55:26 |
| 015 | 00 | 15 | 0 | -0.10 | -0.29 | | 6 | 2.20 | 6.42 | | 08-22-2001 | 07:57:25 |
| 016 | 00 | 16 | 0 | -0.10 | -0.29 | | 11 | 5.53 | 16.16 | | 08-22-2001 | 07:59:24 |
| 017 | 00 | 17 | 0 | -0.10 | -0.29 | | 2 | -0.47 | -1.36 | | 08-22-2001 | 08:01:23 |
| 018 | 00 | 18 | 0 | -0.10 | -0.29 | | 2 | -0.47 | -1.36 | | 08-22-2001 | 08:03:22 |
| 019 | 00 | 19 | 1 | 0.57 | 1.62 | | 1 | -1.30 | -3.80 | | 08-22-2001 | 08:05:21 |
| 020 | 00 | 20 | 0 | -0.10 | -0.29 | | 2 | -0.47 | -1.36 | | 08-22-2001 | 08:07:20 |
| 021 | 00 | 21 | 1 | 0.57 | 1.62 | | 2 | -0.64 | -1.86 | | 08-22-2001 | 08:09:19 |
| 022 | 00 | 22 | 0 | -0.10 | -0.29 | | 13 | 6.87 | 20.05 | | 08-22-2001 | 08:11:18 |
| 023 | 00 | 23 | 0 | -0.10 | -0.29 | | 4 | 0.87 | 2.53 | | 08-22-2001 | 08:13:17 |
| 024 | 00 | 24 | 0 | -0.10 | -0.29 | | 2 | -0.47 | -1.36 | | 08-22-2001 | 08:15:16 |
| 025 | 00 | 25 | 0 | -0.10 | -0.29 | | 2 | -0.47 | -1.36 | | 08-22-2001 | 08:17:15 |
| 026 | 00 | 26 | 0 | -0.10 | -0.29 | | 1 | -1.13 | -3.31 | | 08-22-2001 | 08:19:14 |
| 027 | 00 | 27 | 0 | -0.10 | -0.29 | | 3 | 0.20 | 0.58 | | 08-22-2001 | 08:21:13 |

Performed By: _____ Date: 8/22/01

Reviewed By: _____ Date: 8/22/01

FINAL SURVEY 01P00 [Z] PIN 2Z
PIC IPC9025 216712

| | | | ALPHA | | | | | BETA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Eff: 34.97% Bkg: 0.10 cpm MDA: 8.60 dpm | | | | | Eff: 34.25% Bkg: 1.80 cpm MDA: 20.15 dpm | | | | | |
| BN | RPT | ID | COUNTS | NET CPM | DPM | LIMITS | | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME |
| 001 | 00 | B | 0 | -0.10 | -0.29 | | | 6 | 2.20 | 6.42 | | 08-23-2001 | 08:04:50 |

This smear recounted to verify alpha result <MDA.

P. Jones 8/23/01

# Section 5

# Package 22
# H-3 Removable Beta Contamination Summary Data Table (including lab reports)

H-3 Removable Beta Contamination Summary Data Table PKG 22

| Carrier No. | CPM | Count Time (sec) | Sample Area ($cm^2$) | Surface | Row | Location | Beta Efficiency | Beta Background (cpm) | Activity ($dpm/100cm^2$) | Net Activity ($dpm/100cm^2$) | MDA ($dpm/100cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 28 | 60 | 100 | 01P00 | ZZZZZ | 00002 | 0.236 | 0.00 | 119 | 119 | 11 |
| 2 | 46 | 60 | 100 | 01P00 | ZZZZZ | 00012 | 0.272 | 0.00 | 169 | 169 | 10 |
| 3 | 32 | 60 | 100 | 01P00 | ZZZZZ | 00018 | 0.280 | 0.00 | 114 | 114 | 10 |
| 4 | 41 | 60 | 100 | 01P00 | ZZZZZ | 00023 | 0.251 | 0.00 | 163 | 163 | 11 |
| 5 | 26 | 60 | 100 | 01P00 | ZZZZZ | 00034 | 0.262 | 0.00 | 99 | 99 | 10 |
| 6 | 38 | 60 | 100 | 01P00 | ZZZZZ | 00043 | 0.259 | 0.00 | 147 | 147 | 10 |
| 7 | 37 | 60 | 100 | 01P00 | ZZZZZ | 00049 | 0.234 | 0.00 | 158 | 158 | 12 |
| 8 | 28 | 60 | 100 | 01P00 | ZZZZZ | 00059 | 0.241 | 0.00 | 116 | 116 | 11 |
| 9 | 39 | 60 | 100 | 01P00 | ZZZZZ | 00069 | 0.251 | 0.00 | 155 | 155 | 11 |
| 10 | 32 | 60 | 100 | 01P00 | ZZZZZ | 00073 | 0.173 | 0.00 | 185 | 185 | 16 |
| 11 | 42 | 60 | 100 | 01P00 | ZZZZZ | 00076 | 0.272 | 0.00 | 154 | 154 | 10 |
| 12 | 45 | 60 | 100 | 01P00 | ZZZZZ | 00082 | 0.291 | 0.00 | 155 | 155 | 9 |
| 1 | 37 | 60 | 100 | 01P00 | ZZZZZ | 00086 | 0.264 | 0.00 | 140 | 140 | 10 |
| 2 | 35 | 60 | 100 | 01P00 | ZZZZZ | 00090 | 0.145 | 0.00 | 242 | 242 | 19 |
| 3 | 26 | 60 | 100 | 01P00 | ZZZZZ | 00091 | 0.192 | 0.00 | 135 | 135 | 14 |
| 4 | 54 | 60 | 100 | 02P00 | ZZZZZ | 00001 | 0.177 | 0.00 | 305 | 305 | 15 |
| 5 | 57 | 60 | 100 | 02P00 | ZZZZZ | 00002 | 0.347 | 0.00 | 165 | 165 | 8 |
| 6 | 44 | 60 | 100 | 02P00 | ZZZZZ | 00003 | 0.344 | 0.00 | 128 | 128 | 8 |
| 7 | 14 | 60 | 100 | 02P00 | ZZZZZ | 00004 | 0.025 | 0.00 | 571 | 571 | 110 |
| 8 | 30 | 60 | 100 | 02P00 | ZZZZZ | 00005 | 0.210 | 0.00 | 143 | 143 | 13 |
| 9 | 45 | 60 | 100 | 02P00 | ZZZZZ | 00006 | 0.241 | 0.00 | 187 | 187 | 11 |
| 10 | 49 | 60 | 100 | 02P00 | ZZZZZ | 00007 | 0.300 | 0.00 | 164 | 164 | 9 |
| 11 | 58 | 60 | 100 | 02P00 | ZZZZZ | 00008 | 0.294 | 0.00 | 197 | 197 | 9 |
| 12 | 65 | 60 | 100 | 02P00 | ZZZZZ | 00010 | 0.205 | 0.00 | 316 | 316 | 13 |
| 1 | 47 | 60 | 100 | 02P00 | ZZZZZ | 00015 | 0.288 | 0.00 | 163 | 163 | 9 |
| 2 | 34 | 60 | 100 | 02P00 | ZZZZZ | 00017 | 0.052 | 0.00 | 650 | 650 | 52 |
| 3 | 57 | 60 | 100 | 02P00 | ZZZZZ | 00018 | 0.332 | 0.00 | 172 | 172 | 8 |
| 4 | 29 | 60 | 100 | 02P00 | ZZZZZ | 00021 | 0.066 | 0.00 | 437 | 437 | 41 |
| 5 | 40 | 60 | 100 | 02P00 | ZZZZZ | 00024 | 0.127 | 0.00 | 314 | 314 | 21 |
| 6 | 52 | 60 | 100 | 02P00 | ZZZZZ | 00026 | 0.368 | 0.00 | 141 | 141 | 7 |
| | | | | | | | | | # Measurements | 30 | |
| | | | | | | | | | Average | 210 | |
| | | | | | | | | | Maximum | 650 | |
| | | | | | | | | | STD DEV | 129 | |
| | | | | | | | | | 95% CL on Mean | 264 | |



068

R: 1 ID:SMEARS PRESET TIME: 1.00 WED 22 AUG 2001 10:16
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AQC:N QCF:N RCM:N 2 PHASE MONITOR:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 2-LL: 0 UL: 670 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 3-LL: 0 UL:1000 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON SUN 24 JUN 2001 16:19
UNKNOWN ID:SMEARS UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS):N
QUENCH COEFF A: 4.328559 B:-0.0051270 C:-0.0000122 D:-0.0000000212
STANDARD ID:
QUENCH LIMITS LOW:90.00 HIGH:390.0

| SAM | POS | CH | CPM | 2SIG% | TIME | EL TIME | AVG H# | ERR |
|---|---|---|---|---|---|---|---|---|
| 1 | 8- 1 | 1 | 28.00 | 37.80 | 1.00 | 1.31 | 155.0 | |
| | | 2 | 56.00 | 26.73 | | | | |
| | | 3 | 81.00 | 22.22 | | | | |
| | | | | | %EFF:23.61 | ISO1 DPM | :118.5764 | |
| 2 | 8- 2 | 1 | 46.00 | 29.49 | 1.00 | 3.03 | 141.0 | |
| | | 2 | 73.00 | 23.41 | | | | |
| | | 3 | 90.00 | 21.08 | | | | |
| | | | | | %EFF:27.21 | ISO1 DPM | :169.0410 | |
| 3 | 8- 3 | 1 | 32.00 | 35.36 | 1.00 | 4.52 | 138.0 | |
| | | 2 | 67.00 | 24.43 | | | | |
| | | 3 | 98.00 | 20.20 | | | | |
| | | | | | %EFF:28.02 | ISO1 DPM | :114.1973 | |
| 4 | 8- 4 | 1 | 41.00 | 31.23 | 1.00 | 6.01 | 149.0 | |
| | | 2 | 76.00 | 22.94 | | | | |
| | | 3 | 102.00 | 19.80 | | | | |
| | | | | | %EFF:25.12 | ISO1 DPM | :163.2175 | |
| 5 | 8- 5 | 1 | 26.00 | 39.22 | 1.00 | 7.49 | 145.0 | |
| | | 2 | 65.00 | 24.81 | | | | |
| | | 3 | 89.00 | 21.20 | | | | |
| | | | | | %EFF:26.15 | ISO1 DPM | :99.41057 | |
| 6 | 8- 6 | 1 | 38.00 | 32.44 | 1.00 | 8.97 | 146.0 | |
| | | 2 | 66.00 | 24.62 | | | | |
| | | 3 | 93.00 | 20.74 | | | | |
| | | | | | %EFF:25.89 | ISO1 DPM | :146.7565 | |
| 7 | 8- 7 | 1 | 37.00 | 32.88 | 1.00 | 10.44 | 156.0 | |
| | | 2 | 69.00 | 24.08 | | | | |
| | | 3 | 98.00 | 20.20 | | | | |
| | | | | | %EFF:23.37 | ISO1 DPM | :158.3362 | |
| 8 | 8- 8 | 1 | 28.00 | 37.80 | 1.00 | 11.92 | 153.0 | |
| | | 2 | 65.00 | 24.81 | | | | |
| | | 3 | 90.00 | 21.08 | | | | |
| | | | | | %EFF:24.11 | ISO1 DPM | :116.1362 | |
| 9 | 8- 9 | 1 | 39.00 | 32.03 | 1.00 | 13.38 | 149.0 | |
| | | 2 | 74.00 | 23.25 | | | | |
| | | 3 | 99.00 | 20.10 | | | | |
| | | | | | %EFF:25.12 | ISO1 DPM | :155.2557 | |

Performed By: [signature] Date: 8-22-01

Reviewed By: [signature] Date: 8-22-01

.R: 1 ID:SMEARS PRESET TIME: 1.00 WED 22 AUG 2001 10:42
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AQC:N QCF:N RCM:N 2 PHASE MONITOR:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 2-LL: 0 UL: 670 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 3-LL: 0 UL:1000 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON SUN 24 JUN 2001 16:19
UNKNOWN ID:SMEARS UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS):N
QUENCH COEFF A: 4.328559 B:-0.0051270 C:-0.0000122 D:-0.0000000212
STANDARD ID:
QUENCH LIMITS LOW:90.00 HIGH:390.0

| SAM | POS | CH | CPM | 2SIG% | TIME | EL TIME | AVG H# | | ERR |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 8- 9 | 1 | 29.00 | 37.14 | 1.00 | 1.32 | 149.0 | | |
| | | 2 | 53.00 | 25.20 | | | | | |
| | | 3 | 86.00 | 21.57 | | | | | |
| | | | | | %EFF:25.12 | ISO1 | DPM | :115.4465 | |
| 2 | 8-10 | 1 | 32.00 | 35.36 | 1.00 | 2.80 | 183.0 | | |
| | | 2 | 66.00 | 24.62 | | | | | |
| | | 3 | 81.00 | 22.22 | | | | | |
| | | | | | %EFF:17.32 | ISO1 | DPM | :184.7638 | |
| 3 | 8-11 | 1 | 42.00 | 30.86 | 1.00 | 4.28 | 141.0 | | |
| | | 2 | 74.00 | 23.25 | | | | | |
| | | 3 | 102.00 | 19.80 | | | | | |
| | | | | | %EFF:27.21 | ISO1 | DPM | :154.3418 | |
| 4 | 8-12 | 1 | 45.00 | 29.81 | 1.00 | 6.18 | 134.0 | | |
| | | 2 | 87.00 | 21.44 | | | | | |
| | | 3 | 115.00 | 18.65 | | | | | |
| | | | | | %EFF:29.12 | ISO1 | DPM | :154.5266 | |
| 5 | 3- 1 | 1 | 37.00 | 32.88 | 1.00 | 7.73 | 144.0 | | |
| | | 2 | 67.00 | 24.43 | | | | | |
| | | 3 | 90.00 | 21.08 | | | | | |
| | | | | | %EFF:26.42 | ISO1 | DPM | :140.0634 | |
| 6 | 3- 2 | 1 | 35.00 | 33.81 | 1.00 | 9.18 | 198.0 | | |
| | | 2 | 71.00 | 23.74 | | | | | |
| | | 3 | 89.00 | 21.20 | | | | | |
| | | | | | %EFF:14.45 | ISO1 | DPM | :242.2481 | |
| 7 | 3- 3 | 1 | 26.00 | 39.22 | 1.00 | 10.67 | 174.0 | | |
| | | 2 | 67.00 | 24.43 | | | | | |
| | | 3 | 89.00 | 21.20 | | | | | |
| | | | | | %EFF:19.21 | ISO1 | DPM | :135.3483 | |
| 8 | 3- 4 | 1 | 54.00 | 27.22 | 1.00 | 12.14 | 181.0 | | |
| | | 2 | 85.00 | 21.69 | | | | | |
| | | 3 | 105.00 | 19.52 | | | | | |
| | | | | | %EFF:17.73 | ISO1 | DPM | :304.5920 | |
| 9 | 3- 5 | 1 | 57.00 | 26.49 | 1.00 | 13.64 | 115.0 | | |
| | | 2 | 97.00 | 20.31 | | | | | |
| | | 3 | 123.00 | 18.03 | | | | | |
| | | | | | %EFF:34.65 | ISO1 | DPM | :164.4908 | |

Recount. See result at bottom of previous page. P. Jones 8/22/01

Performed By: [signature] Date: 8-22-01

Reviewed By: [signature] Date: 8-22-01

| POS | CH | | CPM | 2SIG% | TIME | EL TIME | AVG H# | ERR |
|---|---|---|---|---|---|---|---|---|
| 10 | 3- 6 | 1 | 44.00 | 30.15 | 1.00 | 15.13 | 116.0 | |
| | | 2 | 73.00 | 23.41 | | | | |
| | | 3 | 107.00 | 19.33 | | | | |
| | | | | | %EFF: | 34.35 | ISO1 DPM | :128.0963 |
| 11 | 3- 7 | 1 | 14.00 | 53.45 | 1.00 | 16.92 | 312.0 | |
| | | 2 | 28.00 | 37.80 | | | | |
| | | 3 | 28.00 | 37.80 | | | | |
| | | | | | %EFF: | 2.453 | ISO1 DPM | :570.6443 |
| 12 | 3- 8 | 1 | 30.00 | 36.51 | 1.00 | 18.74 | 166.0 | |
| | | 2 | 59.00 | 26.04 | | | | |
| | | 3 | 87.00 | 21.44 | | | | |
| | | | | | %EFF: | 21.00 | ISO1 DPM | :142.8858 |
| 13 | 3- 9 | 1 | 45.00 | 29.81 | 1.00 | 20.22 | 153.0 | |
| | | 2 | 74.00 | 23.25 | | | | |
| | | 3 | 92.00 | 20.85 | | | | |
| | | | | | %EFF: | 24.11 | ISO1 DPM | :186.6475 |
| 14 | 3-10 | 1 | 49.00 | 28.57 | 1.00 | 21.72 | 131.0 | |
| | | 2 | 83.00 | 21.95 | | | | |
| | | 3 | 113.00 | 18.81 | | | | |
| | | | | | %EFF: | 29.96 | ISO1 DPM | :163.5460 |
| 15 | 3-11 | 1 | 58.00 | 26.26 | 1.00 | 23.21 | 133.0 | |
| | | 2 | 87.00 | 21.44 | | | | |
| | | 3 | 108.00 | 19.25 | | | | |
| | | | | | %EFF: | 29.40 | ISO1 DPM | :197.2807 |
| | 3-12 | 1 | 65.00 | 24.81 | 1.00 | 24.70 | 168.0 | |
| | | 2 | 96.00 | 20.41 | | | | |
| | | 3 | 118.00 | 18.41 | | | | |
| | | | | | %EFF: | 20.54 | ISO1 DPM | :316.4586 |
| 17 | 6- 1 | 1 | 47.00 | 29.17 | 1.00 | 26.24 | 135.0 | |
| | | 2 | 86.00 | 21.57 | | | | |
| | | 3 | 111.00 | 18.98 | | | | |
| | | | | | %EFF: | 28.84 | ISO1 DPM | :162.9450 |
| 18 | 6- 2 | 1 | 34.00 | 34.30 | 1.00 | 27.73 | 269.0 | |
| | | 2 | 61.00 | 25.61 | | | | |
| | | 3 | 78.00 | 22.65 | | | | |
| | | | | | %EFF: | 5.227 | ISO1 DPM | :650.4066 |
| 19 | 6- 3 | 1 | 57.00 | 26.49 | 1.00 | 29.22 | 120.0 | |
| | | 2 | 78.00 | 22.65 | | | | |
| | | 3 | 105.00 | 19.52 | | | | |
| | | | | | %EFF: | 33.15 | ISO1 DPM | :171.9516 |
| 20 | 6- 4 | 1 | 29.00 | 37.14 | 1.00 | 30.70 | 254.0 | |
| | | 2 | 59.00 | 26.04 | | | | |
| | | 3 | 70.00 | 23.90 | | | | |
| | | | | | %EFF: | 6.631 | ISO1 DPM | :437.3200 |
| 21 | 6- 5 | 1 | 40.00 | 31.62 | 1.00 | 32.18 | 208.0 | |
| | | 2 | 75.00 | 23.09 | | | | |
| | | 3 | 97.00 | 20.31 | | | | |
| | | | | | %EFF: | 12.72 | ISO1 DPM | :314.3504 |
| 22 | 6- 6 | 1 | 52.00 | 27.74 | 1.00 | 33.66 | 108.0 | |
| | | 2 | 81.00 | 22.22 | | | | |
| | | 3 | 111.00 | 18.98 | | | | |
| | | | | | %EFF: | 36.81 | ISO1 DPM | :141.2570 |

Performed By: [signature] Date: 8-22-01

Reviewed By: [signature] Date: 8-22-01