5833

**Department of Energy**

**Ohio Field Office**
**Fernald Closure Project**
**175 Tri-County Parkway**
**Springdale, Ohio 45246**
**(513) 648-3155**

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V, SR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0141-05

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

**OPERABLE UNIT 1 COMPLEX RADIOLOGICAL SURVEY DATA**

Reference: Letter DOE-0423-04, W. J. Taylor to J. A. Saric and T. Schneider, "Operable Unit One (OU1) Complex Decontamination and Dismantlement (D&D) Phasing and Response to Comments for the OU1 Complex Implementation Plan for Above-Grade D&D" dated October 5, 2004

The referenced letter indicated within the Operable Unit 1 (OU1) Complex resolution to comments that upon completion, final survey results and the modeled predictions will be provided to the regulatory agencies. A copy of the radiological survey results and the modeled predictions for equipment removed under the first phase (Phase I) of the OU1 Complex D&D scope is enclosed. The radiological survey results and the modeled predictions for the second phase (Phase II) of the OU1 Complex D&D scope will be provided once the information is available.

If there are any questions concerning this information, please contact Ed Skintik at (513) 246-1369.

Sincerely,

William J. Taylor
Director

Enclosure: As Stated

cc w/enclosure:
J. Reising, OH/FCP
E. Skintik, OH/FCP
G. Jablonowski, USEPA-V, SR-6J
T. Schneider, OEPA-Dayton (three copies of enclosure)
F. Bell, ATSDR
M. Cullerton, Tetra Tech
M. Shupe, HIS Geo Trans
R. Vandergrift, ODH
AR Coordinator, Fluor Fernald, Inc./MS78

cc w/o enclosure:
J.D.Chiou, Fluor Fernald, Inc./MS64
D. Dalga, Fluor Fernald, Inc./MS52-1
B. Edmondson, Fluor Fernald, Inc./MS64
J. Fry, Fluor Fernald, Inc./MS64
D. Nixon, Fluor Fernald, Inc./MS01
M. Jewett, Fluor Fernald, Inc./MS52-5
F. Johnston, Fluor Fernald, Inc./MS52-5
C. Murphy, Fluor Fernald, Inc./MS01
D. Powell, Fluor Fernald, Inc./MS64
D. Sizemore, Fluor Fernald, Inc./MS02
ECDC Fluor Fernald, Inc./MS52-7 Project Number 15000.2.2
Administrative Record Fluor Fernald, Inc./MS78

| FEMP COVER SHEET | | SURVEY NUMBER 04-10-04-137 5833 | |
|---|---|---|---|
| DATE 10/22/04 | RCT PRINT [redacted] | | PAGE 1 of 3 |
| TIME 1115 | SIGNATURE [redacted] | | BADGE # 76203 |
| WP NUMBER | REVIEWER PRINT [redacted] | | DATE 10/22/04 |
| 02-0050 | SIGNATURE [redacted] | | BADGE # 7431 |

LOCATION: 91

| REASON FOR SURVEY | RSR WPP MATERIAL CHARACTERIZATION FOR OSDF PLACEMENT |
|---|---|

SUMMARY:

Info ONLY

These components surveyed are from the Gas Cleanup Building (91A) and the Dryer Pad Area Col

# EMP / RADIOLOGICAL SURVEY REPORT

URVEY NUMBER: 04-10-04-137 [redacted] PAGE 2 OF 2

| DATE: | [redacted] | BADGE #: |
|---|---|---|
| 10/22/04 | | 75203 |
| DATE REVIEWED: | [redacted] | BADGE #: |
| 10/22/04 | | 74311 |

| MODEL | NUMBER | (α, β, γ) | DUE DATE | (cpm) | | COUNT TIME (min) | MDA (dpm) | INSP./ PERFORMANCE TEST SAT? YES | NO |
|---|---|---|---|---|---|---|---|---|---|
| 2929 | 115562 | α/β | 11/04 | 1.3/71.7 | 0.325/0.290 | 0.5 | 8/69 | ✓ | |
| | | | | | | | | | |
| | | | | N/A | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

| ITEM NUMBER | LOCATION AND/OR DESCRIPTION | | DPM/100cm² ALPHA REMOVABLE (1) | DPM/100cm² ALPHA FIXED PLUS REMOVABLE | DPM/100cm² BETA-GAMMA REMOVABLE (1) | DPM/100cm² BETA-GAMMA FIXED PLUS REMOVABLE | CORRECTED DOSE RATE (MREM/HR) γ CONTACT | β CONTACT | γ AT__ FT | β AT__ FT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | GCS TANK FX6503A | I/S MANWAY COVER | 925 | N/A | 4911 | N/A | | | | |
| 2 | | I/S DRAIN LINE | 8.3 | | 0 * | | | | | |
| 3 | | O/S TANK | 70 | | 222 | | | | | |
| 4 | | I/S | 218 | | 1084 | | | | | |
| 5 | TANK FX6503B | I/S MANWAY COVER | 556 | | 2325 | | | | | |
| 6 | | I/S DRAIN LINE | 21 | | 7.9 * | | | | | |
| 7 | | O/S TANK | 27 | | 111 | | | | | |
| 8 | | I/S | 150 | | 684 | | | | | |
| 9 | SUBCOOL QUENCH SUMP TANK | I/S MANWAY COVER | 211 | | 353 | | | | | |
| 10 | | I/S DRAIN LINE | 150 | | 263 | | | | | |
| 11 | | O/S TANK | 2.2 * | | 49 * | | | | | |
| 12 | | I/S | 168 | | 553 | | | | | |
| 13 | | I/S DISCHARGE LINE | 119 | | 360 | | | | | |
| 14 | SCRUBBER SUMP TANK | I/S MANWAY COVER | 833 | | 1946 | | | | | |
| 15 | | I/S DRAIN LINE | 21 | | 42 * | | | | | |
| 16 | | O/S | 14 | | 49 * | | | | | |
| 17 | E SIDE FLOOR | SPRAY NOZZLES | 205 | | 270 | | | | | |
| 18 | | | 310 | | 553 | | | | | |
| 19 | | SPRAY LINE ARMOR | 8.3 | | 91 | | | | | |

ote (1): Values identified by an asterisk (*) indicate results are less than the calculated MDA.

EMF / RADIOLOGICAL SURVEY REPORT

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SURVEY NUMBER: 04-10-04-137 [redacted] PAGE 3 OF 3

DATE: 10/22/04 [redacted] BADGE #: 75203

DATE REVIEWED: 10/22/04 [redacted] BADGE #: 74311

| ITEM NUMBER | LOCATION AND/OR DESCRIPTION | DPM/100cm² ALPHA REMOVABLE (1) | DPM/100cm² ALPHA FIXED PLUS REMOVABLE | DPM/100cm² BETA-GAMMA REMOVABLE (1) | DPM/100cm² BETA-GAMMA FIXED PLUS REMOVABLE | CORRECTED DOSE RATE (MREM/HR) γ CONTACT | β CONTACT | γ AT __FT. | β AT __FT. |
|---|---|---|---|---|---|---|---|---|---|
| 20 | GCS E SIDE FLOOR SPRAY LINE ARMOR | 8.3 | N/A | 0 * | N/A | | | | |
| 21 | COOLING H2O HX SKID I/S SPOOL | 156 | | 470 | | | | | |
| 22 | | 14 | | 104 | | | | | |
| 23 | O/S SPOOL | 33 | | 56 * | | | | | |
| 24 | | 70 | | 373 | | | | | |
| 25 | ROB 439 O/S POLY PIPE | 0 * | | 84 | | | | | |
| 26 | I/S | 27 | | 91 | | | | | |
| 27 | | 4.5 | | ~~980~~ 70 10/22/04 | | | | | |
| 28 | STRUCTURAL STEEL | 94 | | 980 | | | | | |
| 29 | | 70 | | 263 | | | | | |
| 30 | | 131 | | 318 | | | | | |
| 31 | RUBBER HOSE | 76 | | 194 | | | | | |
| 32 | STEEL ROLLER | 187 | | 725 | | | | | |
| 33 | RUBBER ROLLER | 199 | | 346 | | | | | |
| 34 | CONVEYOR FRAME | 82 | | 410 | | | | | |
| 35 | HAUL RD MISC. MECH. DEBRIS | 119 | | 201 | | | | | |
| 36 | STEEL ROLLER | 113 | | 918 | | | | | |
| 37 | WHEEL/FORK ASSBLY | 58 | | 332 | | | | | |
| 38 | DRYER PAD I/S FEED SCREW CHUTE | 125 | | 615 | | | | | |
| 39 | I/S COVER PLATE | 162 | | 863 | | | | | |
| 40 | MISC. PIPING/ DEBRIS | 51 | | 380 | | | | | |

N/A

Note (1): Values identified by an asterisk (*) indicate results are less than the calculated MDA.

S-F-1993-1-REV.3: 09/18/00 RP-0023

January 18, 2005

To: Jerry Fry

Fm: Phillip Spotts

Subj: Building 91A Demolition Impact Modeling using CAP88PC

Assumptions:

1. The average building and dryer contamination was 687.6 dpm/100 $cm^2$ using the Radiological Survey report 04-10-04-137 and calculating the arithmetic average of the survey results. It is assumed that **all** removable contamination, both Alpha and Beta-Gamma, were released during demolition.

2. Based on the size of the building and dryers it was estimated the total contaminated area was approximately 40, 848 $ft^2$.

3. The only radionuclide of concern was TH-230 and that it was responsible for the contamination of the effected area.

Results:

Given the above assumptions the CAP88PC model estimates the maximum off-site (critical receptor) impact to be **$1.0(10)^{-2}$ EDE**. This would occur at AMS-24.

Enclosed:

CAP88PC run results (annotated)
Receptor Locator results

-833

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E  A N D  R I S K  E Q U I V A L E N T  S U M M A R I E S

Non-Radon Individual Assessment
Jan 18, 2005 1:03 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 2005

Comments: BUILDING 91A DEMOLITION - -Th230 Run

Dataset Name: BUILD 91A DEMO
Dataset Date: Jan 18, 2005 1:02 pm
Wind File: WNDFILES\5YRCAP88.WND

**Results on this page represent an onsite location and not a Critical Receptor.**

ORGAN DOSE EQUIVALENT SUMMARY

| Organ | Selected Individual (mrem/y) |
|---|---|
| GONADS | 2.68E-04 |
| BREAST | 2.84E-04 |
| R MAR | 9.97E-02 |
| LUNGS | 4.25E-01 |
| THYROID | 2.66E-04 |
| ENDOST | 1.24E+00 |
| RMNDR | 8.06E-04 |
| EFFEC | 1.01E-01 |

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

| Pathway | Selected Individual (mrem/y) |
|---|---|
| INGESTION | 1.47E-03 |
| INHALATION | 9.90E-02 |
| AIR IMMERSION | 9.29E-11 |
| GROUND SURFACE | 6.51E-06 |
| INTERNAL | 1.01E-01 |
| EXTERNAL | 6.51E-06 |
| TOTAL | 1.01E-01 |

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NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

| Nuclide | Highest Critical Receptor (mrem/y) |
|---|---|
| TH-230 | 1.0E-02 |
| TOTAL | 1.0E-02 |

CANCER RISK SUMMARY

| Cancer | Selected Individual Total Lifetime Fatal Cancer Risk |
|---|---|
| LEUKEMIA | 8.40E-08 |
| BONE | 5.53E-08 |
| THYROID | 4.28E-11 |
| BREAST | 4.14E-10 |
| LUNG | 6.80E-07 |
| STOMACH | 2.93E-10 |
| BOWEL | 3.34E-10 |
| LIVER | 2.48E-09 |
| PANCREAS | 2.09E-10 |
| URINARY | 1.08E-10 |
| OTHER | 2.55E-10 |
| TOTAL | 8.24E-07 |

PATHWAY RISK SUMMARY

| Pathway | Selected Individual Total Lifetime Fatal Cancer Risk |
|---|---|
| INGESTION | 4.63E-09 |
| INHALATION | 8.19E-07 |
| AIR IMMERSION | 2.05E-15 |
| GROUND SURFACE | 1.42E-10 |
| INTERNAL | 8.24E-07 |
| EXTERNAL | 1.42E-10 |
| TOTAL | 8.24E-07 |

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NUCLIDE RISK SUMMARY

| Nuclide | Selected Individual Total Lifetime Fatal Cancer Risk |
|---|---|
| TH-230 | 8.24E-07 |
| TOTAL | 8.24E-07 |

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

| | Distance (m) | | | | | | |
|---|---|---|---|---|---|---|---|
| Direction | 1209 | 623 | 1054 | 1389 | 1292 | 1029 | 1650 |
| N | 1.3E-02 | 3.6E-02 | 1.7E-02 | 1.1E-02 | 1.2E-02 | 1.7E-02 | 8.3E-03 |
| NNW | 9.8E-03 | 2.6E-02 | 1.2E-02 | 7.9E-03 | 8.8E-03 | 1.2E-02 | 6.0E-03 |
| NW | 9.1E-03 | 2.4E-02 | **1.1E-02** | 7.4E-03 | 8.3E-03 | 1.2E-02 | 5.6E-03 |
| WNW | 1.2E-02 | 3.0E-02 | 1.4E-02 | 9.4E-03 | 1.1E-02 | 1.5E-02 | 7.2E-03 |
| W | 1.9E-02 | 4.8E-02 | 2.3E-02 | 1.5E-02 | 1.7E-02 | 2.4E-02 | 1.1E-02 |
| WSW | 2.0E-02 | 5.4E-02 | 2.4E-02 | 1.6E-02 | 1.8E-02 | 2.5E-02 | 1.2E-02 |
| SW | 1.1E-02 | **2.9E-02** | 1.3E-02 | 8.5E-03 | 9.5E-03 | 1.4E-02 | 6.4E-03 |
| SSW | 9.4E-03 | 2.5E-02 | 1.2E-02 | 7.6E-03 | 8.5E-03 | 1.2E-02 | 5.8E-03 |
| S | **9.4E-03** | 2.5E-02 | 1.2E-02 | 7.6E-03 | 8.5E-03 | 1.2E-02 | 5.8E-03 |
| SSE | 1.6E-02 | 4.2E-02 | 2.0E-02 | 1.3E-02 | 1.5E-02 | 2.1E-02 | 1.0E-02 |
| SE | 2.7E-02 | 6.7E-02 | 3.3E-02 | 2.2E-02 | 2.4E-02 | 3.4E-02 | 1.7E-02 |
| ESE | 3.4E-02 | 8.5E-02 | 4.2E-02 | 2.8E-02 | 3.1E-02 | 4.3E-02 | 2.1E-02 |
| E | 3.8E-02 | 9.6E-02 | 4.6E-02 | 3.0E-02 | **3.4E-02** | 4.8E-02 | 2.3E-02 |
| ENE | 3.9E-02 | 1.0E-01 | 4.8E-02 | **3.1E-02** | 3.5E-02 | 4.9E-02 | 2.4E-02 |
| NE | 3.6E-02 | 9.5E-02 | 4.4E-02 | 2.9E-02 | 3.2E-02 | **4.5E-02** | 2.2E-02 |
| NNE | 2.4E-02 | 6.5E-02 | 3.0E-02 | 1.9E-02 | 2.2E-02 | 3.1E-02 | 1.5E-02 |

Highest Fenceline CR point.

| | Distance (m) | | | |
|---|---|---|---|---|
| Direction | 903 | 765 | 792 | 1533 |
| N | 2.1E-02 | 2.7E-02 | **2.6E-02** | 9.3E-03 |
| NNW | 1.5E-02 | 2.0E-02 | 1.9E-02 | 6.7E-03 |
| NW | 1.4E-02 | 1.8E-02 | 1.7E-02 | 6.3E-03 |
| WNW | 1.8E-02 | **2.3E-02** | 2.2E-02 | 8.1E-03 |
| W | 2.9E-02 | 3.7E-02 | 3.5E-02 | 1.3E-02 |
| WSW | 3.1E-02 | 4.0E-02 | 3.8E-02 | 1.4E-02 |
| SW | 1.7E-02 | 2.2E-02 | 2.0E-02 | 7.2E-03 |
| SSW | **1.5E-02** | 1.9E-02 | 1.8E-02 | 6.5E-03 |
| S | 1.5E-02 | 1.9E-02 | 1.8E-02 | 6.5E-03 |
| SSE | 2.5E-02 | 3.2E-02 | 3.1E-02 | 1.1E-02 |
| SE | 4.2E-02 | 5.3E-02 | 5.0E-02 | **1.9E-02** |
| ESE | 5.3E-02 | 6.7E-02 | 6.4E-02 | 2.4E-02 |
| E | 5.9E-02 | 7.4E-02 | 7.1E-02 | 2.6E-02 |
| ENE | 6.1E-02 | 7.7E-02 | 7.3E-02 | 2.7E-02 |
| NE | 5.6E-02 | 7.2E-02 | 6.8E-02 | 2.4E-02 |
| NNE | 3.8E-02 | 4.9E-02 | 4.6E-02 | 1.6E-02 |

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# FEMP RECEPTOR LOCATOR PROGRAM

Distances to FENCELINE CRITICAL RECEPTORS

| SOURCE: 91A GCS BUILD DEMO | | | | |
|---|---|---|---|---|
| | E-W | N-S | | |
| | 1379100 | 481350 | | |
| NAD27 Coordinates | | | | |
| AMS MONITOR | E-W (ft) | N-S (ft) | DISTANCE (meters) | DIRECTION |
| 1C-EPA | 1380837 | 482156 | 584 | ENE |
| 2 | 1383547 | 484300 | 1627 | ENE |
| 3 | 1383294 | 480536 | 1302 | E |
| 4 | 1382745 | 476728 | 1794 | SE |
| 5 | 1378424 | 477443 | 1209 | S |
| 6 | 1377432 | 480170 | 623 | SW |
| 7 | 1376637 | 483779 | 1054 | NW |
| 8A | 1383460 | 482676 | 1389 | ENE |
| 9C | 1383323 | 481714 | 1292 | E |
| 17C-EPA | 1378995 | 482615 | 387 | N |
| 11-EPA | 1383538 | 483404 | 1491 | ENE |
| 22 | 1381011 | 484134 | 1029 | NE |
| 23 | 1383024 | 484344 | 1504 | NE |
| 24 | 1381226 | 476370 | 1650 | SSE |
| 25 | 1379969 | 476033 | 1642 | S |
| 26 | 1377543 | 478829 | 903 | SSW |
| 27 | 1376857 | 482478 | 765 | WNW |
| 28 | 1379536 | 483910 | 792 | N |
| 29 | 1383276 | 478549 | 1533 | SE |

FILE: DO DISTANCE.xls