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CH2MHILL

CH2M HILL Mound, Inc.

1075 Mound Road

P.O. Box 750

Miamisburg, OH 45343-0750

SMO-316/06
May 18, 2006

Mr. Don Pfister, Director
Miamisburg Closure Project
U. S. Department of Energy
175 Tri-County Parkway
Springdale, OH 45246

ATTENTION: Paul Lucas

SUBJECT: Contract No. DE-AC24-03OH20152: Deliverable #36 Building Data Package; Section C.2.1.2 Facility Transfer; Public Fact Sheet T Building – Use of Dose Modeling and Institutional Controls, Final

Dear Mr. Pfister:

Attached is the following Final document for your records:

- Public Fact Sheet T Building – Use of Dose Modeling and Institutional Controls, Final

If you or members of your staff have any questions regarding the document, or if additional support is needed, please contact Dave Rakel at 937-865-4203.

Sincerely,

Michael D. Ebben
Site Manager

ME/jg

Enclosures

cc: T. Fischer, USEPA, (1) w/attachments
B. Nickel, OEPA, (1) w/attachments
S. Helmer, ODH, (1) w/attachments
J. Crombie, ODH, (1) w/attachments
M. Wojciechowski, Tetra Tech, (1) w/attach
G. Gorsuch, DOE/MCP, (1) w/attachments
R. Tormey, DOE/OH, (1) w/attachments
G. Desai, DOE/HQ, (1) w/attachments
C. Kline, CH2M Hill, (1) w/attachments
F. Bullock, MMCIC (2) w/attachments
Public Reading Room (1) w/attachments

Admin Records, CH2M Hill, (2) w/attachs
ER Records, CH2M Hill, (1) w/attachs
DCC (1) w/attachments
M. Ebben, CH2M Hill, w/o attachments
K. Armstrong, CH2M Hill, w/o attachments
D. Rakel, CH2M Hill, w/o attachments
D. Kramer, CH2M Hill, w/o attachments
S. Barr, CH2M Hill, w/o attachments
M. McDougal, CH2M Hill, w/o attachments
file, CH2M Hill, w/o attachments

PUBLIC FACT SHEET

T Building - Use of Dose Modeling and Institutional Controls

This Fact Sheet supplements the Action Memorandum Engineering Evaluation / Cost Analysis for the T Building Removal Action¹ (Final, June 2003) and discusses the need to use RESRAD Build dose modeling for the verification sampling of portions of T Building as per the Work Plan for Environmental Restoration of the DOE Mound Site, Mound 2000 Approach² (Mound 2000). Based on the modeling, additional protective measures may be taken to assure the building is protective for reuse.

Background. T Building is a heavily reinforced subterranean concrete structure located adjacent to the Central Operations Support (COS) Building near the center of the Mound Site. Construction was completed in 1948 at which time the facility was used to process radioactive polonium and other radionuclides. From 1949 to 1973, polonium programs included a processing and separation program, fuels research and development (R&D) program, neutron source program, and a variety of other polonium R&D and production programs. In the early 1980s, T Building underwent modifications to accommodate tritium-processing operations. Other activities conducted in T Building were nondestructive and environmental testing, gamma and mass spectroscopy, calorimetry, neutron activation analysis, and safeguards R&D.

Since the early 1990's, T Building has undergone extensive sampling and remediation activities in an attempt to achieve radiological contamination levels below free release criteria specified in the T Building Action Memorandum¹ and Mound 2000².

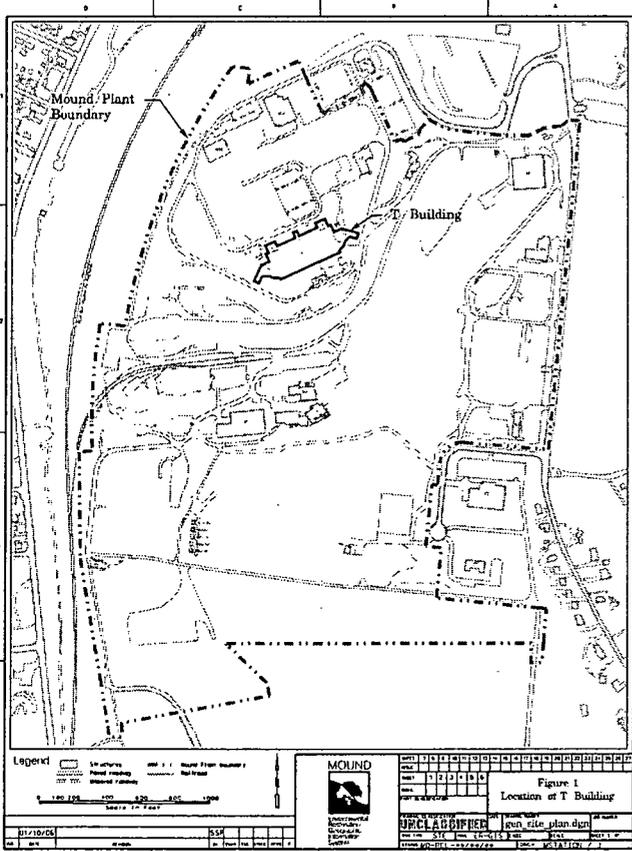
Characterization. Isotopes such as cobalt-60, bismuth-207/210m, cesium-137 and americium-241, have been found as expected in areas of the building associated with the early polonium and radioactive source work. After extensive remediation, the majority of these areas have been verified to be free of volumetric contamination and below the surface contamination guidelines given in Appendix A of Mound 2000. However, some isolated areas contain volumetric contamination even after extensive remediation. A professional structural evaluation of the second floor of the building has shown that further remediation in these areas could render the building unsafe for reuse.

The Core Team (see Recommendation Page on page 2) has determined that a dose based approach (RESRAD-Build Computer Code, Argonne National Laboratories) can be used to verify that these areas are protective of human health under the re-use restrictions placed on the site (Industrial use only). The use of this code is outlined by the Mound 2000 process and is accepted by the Nuclear Regulatory Commission³. In addition, other restrictions such as institutional controls may be used to ensure that future site workers are not exposed to greater than 15 mrem per year. A dose of 15 mrem per year is protective of human health according to USEPA guidance "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination" and "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Operating Licenses for Nuclear Reactors".

The **Verification Sampling and Analysis Plan** for T Building includes Survey Plan Forms detailing the approach to be taken for verification of the structure and utilities within the T Building. A new Survey Plan Form was generated using a dose based RESRAD-Build approach. This approach is a dose modeling method used by the DOE, NRC, and accepted by the Core Team. This method will be used to verify that future building occupants under conservative scenarios will not receive a dose greater than 15 mrem per year. Analysis of these areas may require, additional protective measures such as a layer of cap and/or institutional controls to ensure the building is protective of human health. Institutional controls, if required, will be proposed in the Proposed Plan for Parcels 6, 7, and 8. Consistent with previous proposed plans, there will be a 30-day public review period.

Schedule. This Fact Sheet will be in public review for 30 days, ending March 29, 2006. Verification sampling is ongoing at the present time. A summary of the verification data will be included in the On-Scene Coordinator Report and placed in the public reading room after the conclusion of the verification sampling and approval by the Core Team.

Additional information can be found in the public reading room, or by contacting Paul Lucas at 513-246-0071.



1: Action Memorandum Engineering Evaluation/ Cost Analysis for the T Building, June 2003, Final
 2: The Work Plan for Environmental Restoration of the DOE Mound Site, Mound 2000 Approach February 1999, Final
 3: NUREG/CR-5512, PNL-7994, Vol. 1, Residual Radioactive Contamination from Decommissioning, Technical Basis for Translating Contamination Levels to Annual Total Dose Equivalent, Final Report.

PUBLIC FACT SHEET

T Building - Use of Dose Modeling and Institutional Controls

Recommendation for T Building Fact Sheet

The Core Team originally recommended in the Action Memorandum Engineering Evaluation/ Cost Analysis for the T Building Removal Action¹ that remediation of T Building be accomplished and that the building be verified to be free of volumetric contamination and below the surface contamination guidelines given in Appendix A of Mound 2000. However, some isolated areas contain volumetric contamination even after extensive remediation. Further remediation in these areas could render the building unsafe for reuse.

The Core Team has determined that a dose based approach (RESRAD-Build) as outlined in the Mound 2000² process can be used to verify that these areas are protective of human health under the re-use restrictions placed on the site (Industrial use only). In addition, other restrictions such as institutional controls may be used to ensure that future site workers are not exposed to greater than 15 mrem per year. A dose of 15 mrem per year is protective of human health according to USEPA guidance "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination" and "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Operating Licenses for Nuclear Reactors".

A public Fact Sheet along with this recommendation, signed by the Core Team, will be placed in the Public Reading Room for a 30-day review period. Upon closure of the public review comments, if any, the Fact Sheet will be issued as a final document and made available in the Public Reading Room.

CONCURRENCE:

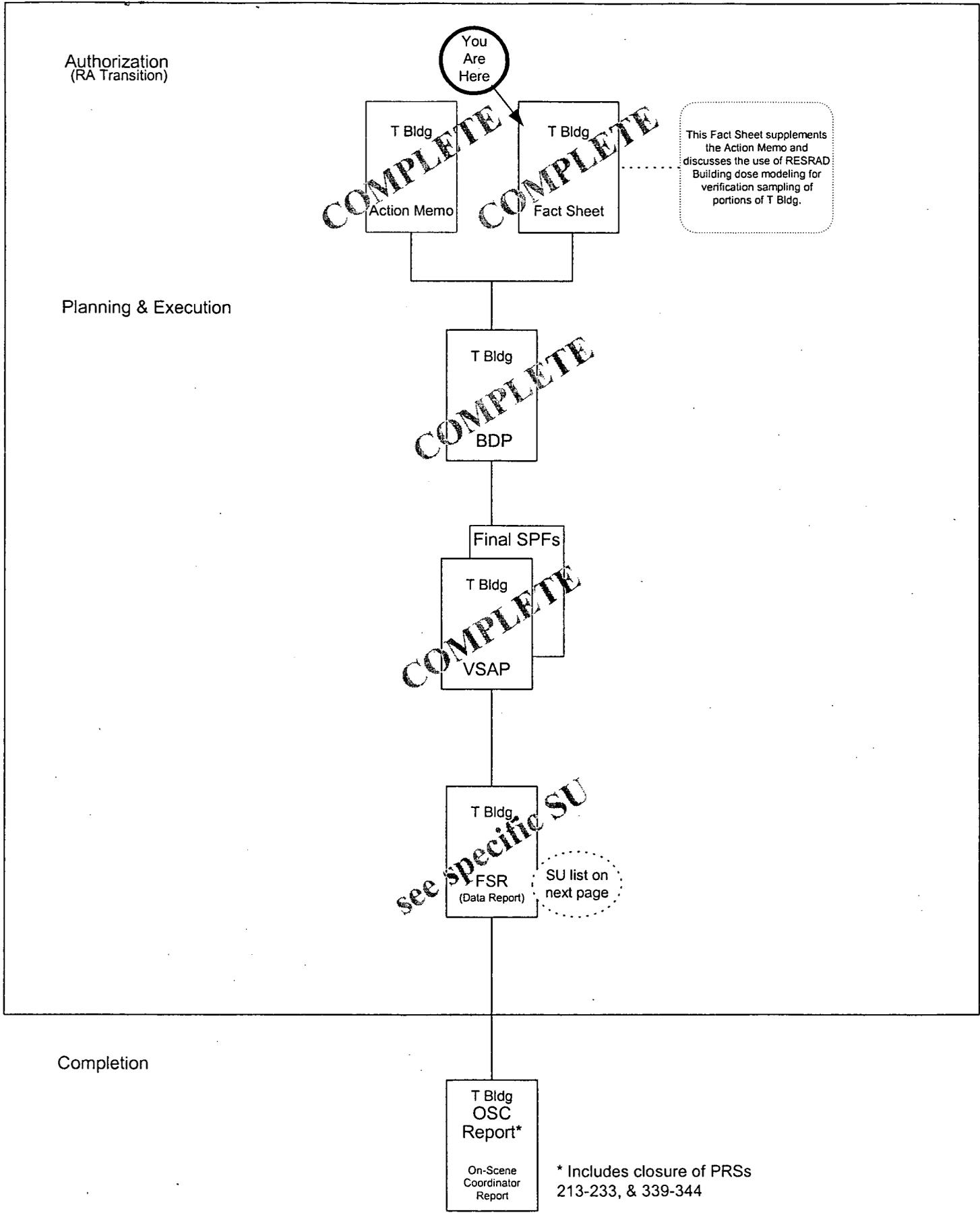
DOE/MCP:	<u>Paul Lucas</u>	2/22/06
	Paul Lucas, Remedial Project Manager	(Date)
USEPA:	<u>Tim Fischer</u>	2/21/06
	Tim Fischer, Remediation Project Manager	(Date)
OEPA:	<u>Brian Nickel</u>	2/21/06
	Brian Nickel, Project Manager	(Date)

1: Action Memorandum Engineering Evaluation/ Cost Analysis for the T Building, June 2003, Final

2: The Work Plan for Environmental Restoration of the DOE Mound Site, Mound 2000 Approach February 1999, Final

3: NUREG/CR-5512, PNL-7994, Vol. 1, Residual Radioactive Contamination from Decommissioning, Technical Basis for Translating Contamination Levels to Annual Total Dose Equivalent, Final Report.

T Building & PRSs 213-233, & 339-344



* Includes closure of PRSs 213-233, & 339-344



The Mound Core Team
500 Capstone Circle
Miamisburg, OH 45342

Mr. Frank Bullock, PE
Director of Operations
Miamisburg Mound Community Improvement Corporation
720 Mound Road
COS Bldg. 4221
Miamisburg, Ohio 45342-6714

Dear Mr. Bullock:

The Core Team, consisting of the U.S. Department of Energy Miamisburg Closure Project (DOE-MCP), U.S. Environmental Protection Agency (USEPA), and the Ohio Environmental Protection Agency (OEPA), appreciates your review of the T Building Fact Sheet, Public Review Draft, February 2006. Enclosed is our response.

Should you require additional detail, please contact Paul Lucas at (513) 246-0071 and we will gladly arrange a meeting or telephone conference.

Sincerely,

DOE/MCP:	<u>Paul Lucas</u>	<u>4/25/06</u>
	Paul Lucas, Remedial Project Manager	date
USEPA:	<u>Timothy J. Fischer</u>	<u>4/25/06</u>
	Timothy J. Fischer, Remedial Project Manager	date
OEPA:	<u>Brian K. Nickel</u>	<u>4/25/06</u>
	Brian K. Nickel, Project Manager	date

Response to Comments

on T Building Fact Sheet

MMCIC COMMENTS (dated 3/29/06)

Comment 1. EHS is concern about the structural integrity of the building. Are new limitations put on reuse due to any structural constraints? Will certain areas of the building to be sealed and off-limits for reuse?

Response 1. No areas of T Building will be sealed off and or limited for re-use beyond the proposed institutional controls discussed below. Structural integrity of the building as a whole has not been compromised nor has any remediation on the first floor impacted floor loading or structural integrity. A small percentage of the second floor has had surface contamination removed by either removal of or reduction in the thickness of the concrete floor. The floor loading in these limited areas should be evaluated for future use but the location and limited size of these areas should not hinder the re-use of the building.

Comment 2. MMCIC is to acquire T Building pursuant to the Sales Contract between the United States Department of Energy and MMCIC dated January 23, 1998 ("Sales Contract"). Article XVI - Warranties and Representations - Section G. of the Sales Contract provides that "Seller has cleaned or will clean the Premises to an "industrial use" standard consistent with the exposure assumptions provided in the Mound 2000 Residual Risk Evaluation Methodology," dated January 6, 1997 and endorsed by the USEPA and the OEPA, and attached hereto as Exhibit D and the Mound Building Disposition Process, as approved by USEPA and OEPA." The Building T Fact Sheet now proposes to substitute the "1997 Plan" referenced above and use the "Work Plan for Environmental Restoration of the DOE Mound Site, Mound 2000 Approach February 1999, Final" ("1999 Plan"). This 1999 Plan is not the 1997 Plan that DOE contracted to honor under the Sales Contract.

Response 2. The application of the RESRAD-Build model is consistent with the intended "industrial use" standard set forth in the Sales Contract between the United States Department of Energy and MMCIC dated January 23, 1998. The Mound 2000 Residual Risk Evaluation Methodology establishes a potential risk for both a construction and industrial worker scenario. The RESRAD Build model establishes a potential dose for both a construction and industrial worker scenario in a building. This dose could be converted to risk if necessary but both

accomplish the same objective. Both use similar pathway analysis and both are intended to establish the potential risk to the specific intended end use of the site.

Comment 3. To date, every building at the Mound has been either removed or remediated fully to allow interior use without further institutional controls. Under this plan, Building T would be subject to certain undisclosed "re-use restrictions placed on the site (industrial use only). In addition, other restrictions such as institutional controls may be used to ensure that future site workers are not exposed to greater than 15 mrem per year." No discussion of the nature of these institutional controls is included. The nature of these controls may well render some or all of this very large structure un-rentable.

Response 3. Since the remediation of T Building is ongoing, documentation and Core Team approval of T Building specific institutional controls is not complete. The nature of the proposed institutional controls has been discussed with members of the MMCIC on 3/8/06 and with the MRC on 3/10/06. It is anticipated that institutional controls will be limited to only areas where volumetric residual contamination is present and that these institutional controls will not impede the re-use of T Building. Similar to the institutional controls applied to soil on site, these controls will require contacting regulatory agencies, as well as DOE, prior to the removal of the concrete floor in a small area of the Building.

Comment 4. The intent of the Sales Contract was to transfer land and structures to MMCIC to allow for reuse, and allow the DOE to divest itself of any long-term liabilities associated with continued ownership. The net result of the proposed plan may encumber the building to a point where it is no longer viable for reuse, rendering it useless and a long-term liability. The controls limit the buildings usefulness and demand in the market place, and consequently the financial investment to support it.

Response 4. DOE agrees that minimizing all long-term liabilities is in the best interest of both the MMCIC and the Department of Energy, however the cleanup of T Building has reached the point of diminishing returns. DOE has therefore chosen to verify that the building is protective of human health for the intended use of the building and apply institutional controls necessary to assure the safety of future workers. The DOE has chosen institutional controls that should not encumber future use of the building.

Comment 5. The plan appears to be contrary to the Sales Contract and may prove to destroy any utility the facility may have for reuse. MMCIC requires that DOE provide information on its intent to transfer T building; its end state/condition at the completion of the remediation activities, and the undisclosed restrictions, in order to determine if the plan has merit. Without this information there is insufficient information to fully comment on the plan other than to conclude it is unacceptable.

Response 5. Since the remediation of T Building is ongoing, documentation and Core Team approval of the T Building end state and specific institutional controls is not complete. It is DOE's intention to transfer T Building with the majority of the building remediated to free release levels. A small percentage of the building will be remediated to levels that result in a potential exposure of less than 15 mrem per year under an industrial use scenario and demonstrated using the RESRAD-Build model. The same areas of the building would be under some restrictions against removing and disposing of the floor without approval from the DOE, USEPA and Ohio EPA.

Technical Review of the Mound Site
Prepared for the Experi-Center
by **EHS TECHNOLOGY GROUP, LLC**

Reference Document: T Building - Use of Dose Modeling and Institutional Controls Public Fact Sheet, Public Review Draft dated February 2006

Purpose: The purpose of this document is to notify the public of this Fact Sheet that supplements the Action Memorandum Engineering Evaluation / Cost Analysis for the T Building Removal Action. The fact sheet also discusses the need to use RESRAD Building dose modeling for the verification sampling of portions of T building.

Background: T Building is a heavily reinforced underground building which was used to process radioactive polonium and other radioactive nuclides. The T building was also used for tritium processing operations. Since the early 1990's, T Building has undergone extensive sampling and remediation activities in an attempt to achieve radiological contamination levels below free release criteria specified in the T Building Action Memorandum and Mound 2000. After remediation, most areas have been remediated below the surface contamination guidelines. However, certain areas with isotopes associated with polonium source work (cobalt-60, bismuth-207/210, cesium-137 and americium-241) remain in isolated areas above volumetric contamination levels. A professional structural evaluation of the second floor of the building has shown that further remediation in these areas could render the building unsafe for reuse.

The Core Team has determined that a dose based approach (RESRAD) can be used to verify that these areas are protective of human health under the restrictions for industrial reuse. Other institutional controls maybe used to ensure that future site workers are not exposed to greater than 15 mrem per year. A dose of 15 mrem per year is protective of human health according to USEPA guidance "Established of Cleanup Levels for CERCLA Sties with Radioactive Contamination" and "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Operating Licenses for Nuclear Reactors."

Technical Assessment: EHS has had the opportunity to review and comment on this Fact Sheet. EHS has several concerns about the reuse of the T Building.

EHS is concern about the structural integrity of the building. Are new limitations put on reuse due to any structural constraints? Will certain areas of the building to be sealed and off-limits for reuse?

MMCIC is to acquire T Building pursuant to the Sales Contract between the United States Department of Energy and MMCIC dated January 23, 1998 ("Sales Contract"). Article XVI - Warranties and Representations - Section G. of the Sales Contract provides that "Seller has cleaned or will clean the Premises to an "industrial use" standard consistent with the exposure assumptions provided in the Mound 2000 Residual Risk Evaluation Methodology," dated January 6, 1997 and endorsed by the USEPA and the OEPA, and attached hereto as Exhibit D and the Mound Building Disposition Process, as approved by USEPA and OEPA." The Building T Fact Sheet now proposes to substitute the "1997 Plan" referenced above and use the "Work Plan for Environmental Restoration of the DOE Mound

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The intent of the Sales Contract was to transfer land and structures to MMCIC to allow for reuse, and allow the DOE to divest itself of many long-term liabilities associated with continued ownership. The net result of the proposed plan may encumber the building to a point where it is no longer viable for reuse, rendering it useless and a long-term liability. The controls limit the buildings usefulness and demand in the market place, and consequently the financial investment to support it.

The plan appears to be contrary to the Sales Contract and may prove to destroy any utility the facility may have for reuse. MMCIC requires that DOE provide information on its intent to transfer T building; it's end state/ condition at the completion of the remediation activities, and the undisclosed restrictions, in order to determine if the plan has merit. Without this information there is insufficient information to fully comment on the plan other than to conclude it is unacceptable.

As always, Miamisburg Mound Community Improvement Corp and EHS appreciate the opportunity to review and comment on this fact sheet. We await your answers to our concerns.

From: "Frank Bullock" <FBullock@mound.com>
To: "Paul Lucas (E-mail)" <Paul.Lucas@ohio.doe.gov>, "Tim Fischer (E-mail 2)" <fischer.timothy@epamail.epa.gov>, "Brian. Nickel (E-mail)" <brian.nickel@epa.state.oh.us>, "David Rakel (E-mail)" <RAKEDA@doe-md.gov>
Date: 3/29/06 6:51PM
Subject: T - Building Fact Sheet Comments

MMCIC thanks for the opportunity to comment on the fact sheet. We concur with the attached comments.

Frank Bullock, PE
MMCIC
Director of Operations
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(937) 865-4052
www.Mound.com

<<Expericenter- T Building Fact sheet - March 2006.pdf>>

MIAMISBURG CLOSURE PROJECT

The following document is available (February 27, 2006)
for public information in the CERCLA Public Reading
Room, 955 Mound Rd., Miamisburg, Ohio.

**PUBLIC FACT SHEET
(T Building – Use of Dose Modeling and
Institutional Controls)**

Questions can be referred to Paul Lucas at
(513) 246-0071

U.S. Department of Energy
U.S. Environmental Protection Agency
Ohio Environmental Protection Agency