



## Department of Energy

Portsmouth/Paducah Project Office  
1017 Majestic Drive, Suite 200  
Lexington, Kentucky 40513  
(859) 219-4000

**JUN 09 2005**

Mr. John Meersman  
Manager of Projects  
Bechtel Jacobs Company LLC  
P.O. Box 900  
Piketon, Ohio 45661

PPPO-03-356-05

Dear Mr. Meersman:

### **TSCA APPROVAL FOR STORAGE FOR DISPOSAL OF PCB BULK PRODUCT (MIXED) WASTE**

The purpose of this letter is to provide to the Bechtel Jacobs Company, LLC (BJC) the United States Environmental Protection Agency (US EPA) letter dated June 1, 2005, that approves storage for disposal of the depleted uranium hexafluoride (DUF6) cylinders at Portsmouth with 50 ppm or greater PCB-contaminated paint. The US EPA has also approved other Department of Energy (DOE) facilities shipment of DUF6 cylinders with PCB paint from their facility to the DOE Portsmouth.

The BJC is requested to review the US EPA correspondence and provide a recommended implementation plan to DOE by June 26, 2005. In addition, please coordinate development of the implementation plan with the LATA/Parallax Portsmouth, LLC and the Uranium Disposition Services, LLC.

If you have any questions, please contact Melda Rafferty of my staff at (740) 897-5521.

Sincerely,

A handwritten signature in black ink that reads "Melda J. Rafferty". The signature is written in a cursive style and is positioned above the typed name of the sender.

William E. Murphie  
Manager  
Portsmouth/Paducah Project Office

Enclosure

cc w/enclosure:  
R. Blumenfeld, PPPO/LEX  
G. Mattson, LPP/PORTS  
B. Sheward, TPMC/PORTS  
J. McCoy, UDS/PORTS  
Administrative Records

cc w/o enclosure:  
R. Blumenfeld, PPPO/LEX



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

JUN 01 2005

REPLY TO THE ATTENTION OF:

D-8J

William Murphie, Manager  
Portsmouth/Paducah Project Office  
Department of Energy  
1017 Majestic Drive, Suite 200  
Lexington, Kentucky 40513

Re: TSCA Approval for Storage for Disposal of PCB Bulk Product (Mixed) Waste  
(paint with 50 ppm or greater PCBs on cylinders containing radioactive material)  
U.S. DOE Portsmouth Gaseous Diffusion Plant, Portsmouth, OH

Dear Mr. Murphie:

This letter is in regards to the storage for disposal of cylinders at the United States Department of Energy Portsmouth Gaseous Diffusion Plant (DOE Portsmouth) in Portsmouth, Ohio, which are coated with paint contaminated with PCBs at concentrations greater than or equal to 50 ppm (PCB paint). Applied dried paint with PCBs at concentrations greater than or equal to 50 ppm is defined as a PCB bulk product waste under the Federal PCB regulations at 40 Code of Federal Regulations (CFR) § 761.3 and is regulated for storage and disposal.

DOE Portsmouth has requested approval to store cylinders with PCB paint in its storage yards X-745C, X-745E, and X-745G. The storage yards do not have a roof, walls, or containment, as required by 40 CFR § 761.65(b)(1)(i) and (ii). However, under the authority 40 CFR § 761.62(c), a Regional Administrator may approve the storage of PCB bulk product waste in a manner which will not pose an unreasonable risk of injury to health or the environment. The authority to approve such methods in Region 5 has been delegated to Division Directors.

The United States Environmental Protection Agency (U.S. EPA) determined that the storage of the PCB cylinders in accordance with the enclosed Approval Conditions (Approval) will not pose an unreasonable risk of injury to health or the environment and are hereby granting an approval to store the PCB cylinders in accordance with the enclosed Approval. We will re-evaluate the applicable conditions of the Approval if DOE Portsmouth installs any device intended to contain or capture PCB paint from the storage yards, such as catch basins.

**We understand that DOE Portsmouth intends to process the cylinders in an autoclave to recover some of the contents of the cylinders and, after processing, dispose of the PCB**

paint that was either removed during the process or remains on the cylinders after the process. PCB paint that remains on the cylinders after the process will be disposed of by either disposing of the entire cylinder which still has PCB paint or by removing the PCB paint from cylinders and disposing of the PCB paint. Prior to processing any cylinders with PCB paint in any device, DOE Portsmouth must demonstrate to the U.S. EPA, Region 5, that processing a cylinder with PCB paint will not pose an unreasonable risk to health or the environment.

In addition, we understand that other DOE facilities intend to distribute in commerce cylinders with PCB paint from their facility to DOE Portsmouth, under 40 CFR § 761.20(c)(2), for storage for disposal in accordance with this Approval and will remove any loose paint prior to shipment.

This Approval does not relieve you from complying with all applicable Federal, state, and local regulations or permits. In addition, this Approval does not preclude the U.S. EPA from initiating an enforcement action for violation of the Toxic Substances Control Act and the Federal PCB regulations.

If you have any questions, please contact Tony Martig, of my staff, at (312) 353-2291.

Sincerely,



Margaret M. Guerriero, Director  
Waste, Pesticides and Toxics Division

Enclosure

cc: Ken Dewey, OEPA

**Approval Conditions for the  
Storage for Disposal of PCB Bulk Product (Mixed) Waste  
(paint with 50 ppm or greater PCBs on cylinders used to store radioactive materials,  
depleted uranium hexafluoride (DUF<sub>6</sub>)) at the  
U.S. Department of Energy Portsmouth Gaseous Diffusion Plant (DOE) in  
Portsmouth, OH**

**Definitions**

For the purposes of this approval, the following definitions shall apply:

“PCB paint” - “PCB paint” is defined as paint having PCBs at concentrations of 50 ppm or greater.

“PCB cylinder” - A “PCB cylinder” is defined as any DUF<sub>6</sub> cylinder which has any portion of it coated with a PCB paint.

“Cylinder Management Plan” - The “Cylinder Management Plan” is defined as Attachment A to the Director’s Findings and Orders, Depleted Uranium Hexafluoride Management Plan dated August 20, 2004 (Attached to this approval).

“EPA Region 5” - U.S. Environmental Protection Agency, Region 5’s, Toxics Substances Control Act (PCB) program.

**Approval**

DOE may store PCB cylinders in the storage yards identified as X-745C, X-745E, and X-745G at its facility in Portsmouth, Ohio, in accordance with the approval conditions below.

DOE is responsible for complying with the approval conditions below. Departure from the approval conditions, approved modification(s) to this approval, or the Federal PCB regulations that are conditions of this approval without a prior written approval by U.S. EPA may result in the immediate suspension of this approval and/or the commencement of proceedings to revoke this approval and/or appropriate enforcement action under any or all applicable statutes and regulations.

The provisions of this approval shall apply to and be binding upon DOE. The acts or emissions of DOE’s contractors, agents and employees shall not excuse the failure to meet any provision of this approval. DOE shall be responsible for ensuring that all contractors, employees, agents and other persons or entities acting on behalf of DOE with respect to this approval will comply with the conditions of this approval.

## Approval Conditions

### 1. Marking and PCB cylinder identification

- a. Mark the entrances to storage yards X-745C, X-745E and X-745G which will be used to store PCB cylinders, with the PCB mark described at 40 CFR § 761.45(a).
- b. Maintain a written or electronic record of the unique identification numbers for every PCB cylinder.
- c. The record required in b, above, must be used by inspectors for the inspections and for the disposal of the PCB paint on PCB cylinders, under conditions 2 and 5 below.

### 2. Inspection of PCB cylinders and maintenance of storage yards

- a. Inspect the PCB cylinders every 4 years and maintain the cylinders in accordance with the underlined portions of the Cylinder Management Plan (See Attachment, sections I.A; I.A.1.a, b, c, and d; I.A.2.a, b, e, e.3, and g; II.A; and III.C).
- b. During inspections of the storage yards under a, above, if any visible signs of paint are observed on the ground, in the main aisle, and within 15 feet on either side of a cylinder known to have PCB paint, clean, collect, and dispose of the visible or observed paint in the main aisle within 15 feet of either side of the cylinder.

### 3. Monitoring and maintenance of storm water drainage system

#### a. Monitoring the storm water management system

- i. Establish a baseline of the sediment in the storm water drainage system from the storage areas by:

1. Identifying two or more sample collection points within the storm water drainage system. One sample collection point must be within the storm water drainage system but prior the outfall to the North Holding Pond (X-230L). One sample collection point must be within the storm water drainage system but prior to the outfall to the Northwest Holding Pond (X-230J5).

2. Collecting samples of sediment and water quarterly at the sample collection points identified in 1, above. Sufficient water must be collected at each sample collection point to conduct two analyses of the water at each point, one analysis of unfiltered water and one analysis of filtered water.

3. Analyzing the sediment and the water samples for PCBs using sampling extraction and analysis method SW-846 EPA Methods 3540C and 8082, respectively, and reporting the PCB levels as total PCBs calculated by comparison to the Aroclor standards for 1242, 1248, 1254, 1260, 1262, and 1268.

4. Using the results of the samples collected above to statistically establish a baseline, with concurrence from EPA Region 5.

ii. Continue quarterly monitoring and analysis. Once a baseline is established, if subsequent monitoring results exceed the baseline or a site specific risk-based concentration established by DOE with concurrence by EPA Region 5, develop and implement a plan, with concurrence by EPA Region 5, which may include enhanced monitoring, to ascertain if any on-going releases of PCB paint from the PCB cylinders are the source of the PCB contamination.

iii. If the additional monitoring data from ii, above, affirmatively establishes, with concurrence by EPA Region 5, that the source of the detected PCB contamination is such releases, with concurrence by EPA Region 5, either develop and implement a graduated source control plan to reduce the PCB contamination migrating from the storage yards or initiate an investigation and implement additional cleanup/source control measures in accordance with 40 CFR § 761.61 or under the August 1989 Ohio Consent Decree and/or the U.S. EPA Administrative Consent Order, In the Matter of U.S. DOE Portsmouth Gaseous Diffusion Plant, dated August 1994, and as amended, Docket Number V-W-90-R-03.

b. Monitoring the storm water discharge

i. Collect samples of sediment and water quarterly at both: 1) the existing sample location RM-8 (in the stream from the North Holding Pond), and 2) the existing sample location RM-10 (in the stream from the Northwest Holding Pond). Sufficient water must be collected at each sample collection point to conduct two analyses of the water at each point, one analysis of unfiltered water and one analysis of filtered water.

ii. Analyze the sediment and the water samples for PCBs using sampling extraction and analysis method SW-846 EPA Methods 3540C and 8082, respectively, and report the PCB levels as total PCBs calculated by comparison to the Aroclor standards for 1242, 1248, 1254, 1260, 1262, and 1268.

iii. Continue quarterly monitoring and analysis.

iv. Sediment

1. If any of the sediment is above 1 ppm PCBs, develop and implement a plan, with concurrence by EPA Region 5, which may include enhanced monitoring, to ascertain if any on-going releases of PCB paint from the PCB cylinders are the source of the PCB contamination.

2. If the additional monitoring data from 1, above, affirmatively establishes, with concurrence by EPA Region 5, that the source of the detected PCB contamination is such releases, with concurrence by EPA Region 5, develop and implement a graduated source control plan to reduce the PCB contamination migrating from the storage yards, and remediate the sediment in accordance with *a* or *b*, below:

*a.* remediate the sediment to 1 ppm or a level established under a 40 CFR § 761.61(c) risk based approval, or

*b.* with concurrence from EPA Region 5, implement additional cleanup measures under the August 1989 Ohio Consent Decree and/or the U.S. EPA Administrative Consent Order, In the Matter of U.S. DOE Portsmouth Gaseous Diffusion Plant, dated August 1994, and as amended, Docket Number V-W-90-R-03.

v. Water

If any of the filtered water samples are above 0.5 ppb, with concurrence by EPA Region 5, develop and implement a graduated source control plan to reduce the PCB contamination to 0.5 ppb or less and implement additional cleanup measures under the August 1989 Ohio Consent Decree and/or the U.S. EPA Administrative Consent Order, In the Matter of U.S. DOE Portsmouth Gaseous Diffusion Plant, dated August 1994, and as amended, Docket Number V-W-90-R-03.

**4. Recordkeeping and reporting**

a. Submit a report to EPA Region 5, annually, which includes the following information:

- i. The results of any sampling of cylinders received during the year by DOE or of cylinders already at DOE that have PCB paint but have not previously been identified as having PCB paint.
- ii. The results of all sediment and suspended solid sampling under condition 3, above.
- iii. The progress and status on processing cylinders and disposing of PCB paint under condition 5, below.

b. Maintain a written or electronic record of the results of the quadrennial inspections conducted in accordance with the Cylinder Management Plan and any observation and remediation of any visible paint on the ground near a PCB cylinder under condition 2, above.

c. If at any time DOE has or receives information that DOE or any other person has failed, or may have failed, to comply with any provision of this approval, it must report the information to EPA Region 5, orally within 24 hours of having or receiving the information followed by a written notification within 5 business days.

d. Any reports or notifications required under this approval must be submitted to the following address:

Chief, Toxics Program Section  
U.S. EPA, Region 5  
77 W. Jackson Blvd. (DT-8J)  
Chicago, Illinois 60604  
312-886-6003

#### **5. PCB paint disposal**

a. Any paint, soil, concrete, debris, sediment, or other remediation waste in the storage yards or the storm water drainage system associated with the storage yards that is cleaned up under conditions 2 or 3 must be disposed of in accordance with 40 CFR Part 761.

b. Any PCB paint removed from the cylinders, plus the cylinders themselves if any PCB paint remains on them, must be disposed of as a bulk product waste in accordance with 40 CFR Part 761.

#### **6. Closure of Storage Yards of PCBs after PCB cylinders are removed**

a. After all the cylinders have been removed from the storage yards, DOE must investigate the storage yards X-745C, X-745E and X-745G and the associated storm water drainage systems, particularly sediment collection points and ponds. Prior to the investigation, DOE must submit detailed plans for the investigation to EPA Region 5 for concurrence by EPA Region 5. With concurrence from EPA Region 5, such investigations may be undertaken in accordance with the terms, conditions and schedules under the August 1989 Ohio Consent Decree and/or the U.S. EPA Administrative Consent Order in the Matter of U.S. DOE Portsmouth Gaseous Diffusion Plant, dated August 1994, and as amended, Docket Number V-W-90-R-03.

b. Any paint, soil, concrete, debris, sediment, or other remediation waste found in the storage yards or the storm water drainage system associated with the storage yards found during the investigation required by a, above, must be considered PCB remediation waste if it contains PCBs at concentrations greater than 1 ppm.

## **7. Approval effective date, expiration, renewal, and modification**

a. This approval is effective June 1, 2005. The first quadrennial inspection of storage yard X-745G and any quarterly monitoring and maintenance of the storm water drainage system that is specific to and solely for storage yard X-745G, under conditions 2 and 3.a, above, shall start no later than June 1, 2006.

b. This approval shall expire five years from the effective date of this approval. This approval and its conditions herein will remain in effect beyond the approval expiration date if DOE has submitted a notice of intent to continue the approval at least 180 days, but not more than 270 days prior to the expiration of this approval and, through no fault of DOE, the Regional Administrator or his or her designee has not issued an approval renewal. This approval will remain in effect beyond the approval expiration date until EPA Region 5 makes a determination on the approval renewal.

c. DOE may request a modification to this approval at any time by submitting a written request to EPA Region 5, describing the proposed modification and the reason for it. Minor modifications to this approval, considered changes to conform with agency guidance or regulations, changes which do not affect overall performance or environmental impact of this approval, or lesser changes, shall be modified upon the written concurrence of the Chief of the Pesticides and Toxics Branch of EPA Region 5. Any other modifications to this approval shall be modified upon the written concurrence of the Director of the Waste, Pesticides and Toxics Division of EPA Region 5.

d. EPA Region 5 may modify this approval unilaterally if it finds an unreasonable risk of injury to health or the environment during the storage for disposal of any PCB cylinders at the DOE site.

## **8. Dispute Resolution**

In the event that DOE disagrees with EPA regarding the meaning, application, implementation, amendment or modification of the Approval, DOE must first raise the dispute with the EPA Region 5 project coordinator. If informal negotiations with the EPA Region 5 project coordinator do not resolve the dispute, the EPA Region 5 project coordinator will raise the dispute to the Chief, Toxics Program Section for further deliberation.

ATTACHMENT: Attachment A to the Director's Findings and Orders, Depleted Uranium Hexafluoride Management Plan dated August 20, 2004

## Attachment A to Director's Final Findings and Orders

August 20, 2004

### DEPLETED URANIUM HEXAFLUORIDE (DUF<sub>6</sub>) MANAGEMENT PLAN

This DUF<sub>6</sub> Management Plan addresses the management of Portsmouth DOE-managed DUF<sub>6</sub> cylinders and both the ANSI-compliant and non-compliant DUF<sub>6</sub> cylinders shipped from ORO.

I. **DUF<sub>6</sub> Cylinder Surveillance Program.** The cylinder surveillance program consists of inspections, ultrasonic thickness testing and radiological surveys.

A. **Inspections.** The inspections shall be documented on a checklist which shall include the size, type, cylinder identification number, location, and physical description of all DUF<sub>6</sub> cylinder defect criteria. All accessible areas of all cylinders shall be visually inspected, using the following criteria:

1. **DUF<sub>6</sub> Cylinder Defect Criteria**

a. **General Cylinder Criteria**

Hole in cylinder  
Visible leakage/contamination on cylinder or ground  
Bulge - protruding one-half inch or more  
Gouge - greater than one-sixteenth inch of metal moved  
Dent - greater than one-sixteenth inch deep  
Bent stiffening ring - cracked weld or separation of ring from body  
Severe corrosion - local or extensive pitting and/or scaling that is evident on one third or more of the bottom shell and scaling consisting of layered flakes over one-eighth inch thick and over two inches in diameter

b. **Cylinder Body Contact Point**

Dent caused by lifting lug contact - greater than one-sixteenth inch deep  
Concrete saddle - cracking, chipping, corrosion or sinking  
Wood saddle/resting block - cracking, splitting, rotting, or sinking

c. **Valve End of Cylinder**

Evidence of contamination on valve  
Bent valve body  
Bent/separated skirt

Scale in skirt

Weep hole in skirt plugged  
Packing nut missing/cracked  
Port cap missing/cracked  
Bent or sheared valve stems  
Cracked bent valve protector  
Identification (I.D.) plate missing  
I.D. plate loose/cracked welds  
New nameplate attached to skirt/valve/plug (as applicable)

d. **Plug End of Cylinder**

Evidence of contamination on plug  
Bent or damaged plug  
Bent/separated skirt  
Scale in skirt  
Weep hole in skirt plugged

2. **Inspection Frequency (See Table 1)**

a. All DUF<sub>6</sub> cylinders in storage shall be visually inspected at least every four (4) years using the DUF<sub>6</sub> cylinder defect criteria in I.A.1.

b. DUF<sub>6</sub> cylinders determined to have at least one of the following conditions shall be visually inspected annually using the DUF<sub>6</sub> cylinder defect criteria in I.A.1:

Severe corrosion of cylinder surfaces

Severe corrosion of skirt areas

Heavy rust scale on cylinder body

Note: heavy means over one eighth inch thick and over 2 inches in diameter

Rust/scale in skirt

Weep hole in skirt is plugged in the valve end of the cylinder

Weep hole is plugged in the plug end of the cylinder

c. Valves with evidence of leakage (i.e., buildup of DUF<sub>6</sub> reaction products, discoloration around valve/plug) shall be inspected monthly for three months in order to verify if this is a leaking valve. Appropriate actions to mitigate a leak will be taken. This inspection consists of the following:

- 1) Ensuring the plastic bag is still in place;
- 2) Checking the bag for clarity or new buildup of DUF<sub>6</sub> reaction products on valve; and
- 3) Taking a radiological swipe sample in accordance with 10 CFR 835 from the valve to determine if uranium contamination levels exist greater than 1000 dpm/100 cm<sup>2</sup> as

specified in Appendix D of 10 CFR 835 (10 CFR 835.1101 and 1102 to Appendix D limits).

Note: For swipe samples exceeding 1000dpm/100cm<sup>2</sup>, the area will be bounded and posted and decontamination activities will be completed in accordance with written procedures. The valve or plug will be evaluated for repair or replacement.

- d. Breached DUF<sub>6</sub> cylinders shall be inspected daily until the situation is mitigated. Inspections shall consist of the following:

Note: A breached cylinder means a cylinder whose wall has been compromised so that it no longer performs the design function of containment.

- 1) Ensuring that tarps are in place to prevent precipitation from coming in contact with the cylinder and a catch pan placed beneath the cylinder to prevent material from dropping to the pavement.
- 2) Ensuring that contamination boundaries are in place.

Note: A contamination boundary is an area established using a yellow and magenta rope or tape at the perimeter of an area determined by survey to be where no contamination has spread.

- 3) Determining Hydrogen Fluoride (HF) content in air.

Note: HF content in the air is determined by hand-held HF detectors using a HF detection tube (such as Draeger Model 21/31, or equivalent) which are calibrated instruments to read out in concentration of HF.

- 4) Collecting DUF<sub>6</sub> reaction products for weighing (accountability);
- 5) Determining loose surface radiological contamination levels per 10 CFR 835 of pad areas adjacent to the breach. Levels of loose uranium contamination shall not exceed 1000 dpm/100 cm<sup>2</sup> as specified in 10 CFR 835 Appendix D (10 CFR 835.1101 and 1102 to Appendix D limits), or the area shall be controlled; and

- 6) Determining radiation levels at the breach.

Note: Determining radiation levels at the breach shall be accomplished by utilizing calibrated radiation instruments to

determine contact readings and general area radiation dose levels in mrem/hr.

- 7) Upon identification of a cylinder breach, interim steps will be taken to minimize impacts to worker/public safety and the environment, pending evaluation and determination of appropriate action to affect repair. These appropriate actions may include epoxy, weld, transfer, etc.

- e. All DUF<sub>6</sub> cylinders shall be visually inspected before movement. The pre-move inspection shall consist of the following:

Note: For ETPP cylinders arriving at PORTS – The cylinder will be relocated to the appropriate storage location in the PORTS cylinder storage yards or indoor storage locations, where it will receive a post-move inspection within five calendar days of relocation. If the cylinder is not moved to the long term storage location within 20 calendar days, another pre-move inspection will be conducted prior to movement and a post-move inspection will be conducted within five calendar days following relocation.

- 1) Lifting lug weld (if lug is to be used for lifting the cylinder) - examining for cracked weld, bent lug, elongated lug lifting hole
- 2) The cylinder in general - examining for deep cracks, gouges, and cuts in shell (See Section I.A.1.)
- 3) Areas immediately next to saddle contact points - examining for evidence of DUF<sub>6</sub> reaction products or severe corrosion
- 4) Areas of previous lifting lug-to-cylinder contact points - examining for evidence of DUF<sub>6</sub> reaction products

- f. All DUF<sub>6</sub> cylinders shall be visually inspected once they are lifted. This visual inspection of the contact points and all previously inaccessible areas shall be conducted to determine and assess whether there is evidence of DUF<sub>6</sub> reaction products, cracks, gouges, cuts, and/or severe corrosion.

- g. All DUF<sub>6</sub> cylinders shall be visually inspected using the DUF<sub>6</sub> cylinder defect criteria (See Section I.A.1) immediately after movement of the cylinder.

- h. If any of the following defect conditions are noted during any inspections required by this DUF<sub>6</sub> Management Plan, recognized national industrial standards and practices shall be used to determine the nature and extent of the defect condition and the method of repair or dispositioning of the DUF<sub>6</sub> cylinder. The National Boiler Inspection Code (NBIC) provides guidelines and interpretations including

methodology, acceptable degradation, repairable defects and acceptable repair techniques to the inspectors to assist in evaluating the "code" status or code-ability of the vessel. These guidelines are referenced in ANSI N14.1. The NBIC commissions inspectors (generally through state administered programs) to determine the ASME "Code" status of pressure vessels. The commissioned inspectors are responsible for evaluating the vessel's condition to ensure its fitness for service. The NBIC-commissioned inspectors meet the "qualified code" inspector definition. ASME Code inspectors shall be used to evaluate the nature and extent of the defect condition if not previously evaluated (See Section IX for training qualifications). Depending on the condition of the DUF<sub>6</sub> cylinder, the code inspectors and appropriate personnel (See Section VI.B) shall recommend repairing cracks in welds, patching thinned cylinder wall areas or cold transfer of the contents to a new cylinder prior to movement.

- 1) Cracks in welds
- 2) Dents and gouges (See Section I.A)
- 3) Presence of DUF<sub>6</sub> reaction products on the cylinder shell.

Caution: The presence of reaction products represents a potentially unsafe condition and the area must be evacuated immediately and the emergency procedures for a breached cylinder must be followed. (See Section VI)

#### B. Ultrasonic Thickness Testing

1. The following locations on the 10- and 14- ton DUF<sub>6</sub> storage cylinders shall be evaluated with ultrasonic thickness (UT) probe measurements:
  - a. Two measurements at the 12 o'clock position (top of cylinder)
  - b. Two measurements at the 3 o'clock position (side of cylinder)
  - c. One measurement near the center of the head, valve end
  - d. One measurement directly beneath the valve,
  - e. One measurement near the center of the head, plug end
  - f. One measurement directly beneath the plug
  - g. Five measurements at the area exhibiting the most severe corrosion (typically expected to be at the 6 o'clock position)
  - h. Five measurements as close as possible to skirt/head interface.
2. 150 cylinders shall be inspected (on an annual basis) using UT measurement techniques. Selection of cylinders for measurement will be conducted per Attachment A to this Plan, as agreed upon by Ohio EPA and DOE.

These data will be analyzed and the number of cylinders whose wall thickness is measured by UT shall be adjusted (e.g. increased, decreased, or the selections of candidate cylinders for measurement otherwise changed) based on the results of the analysis.

C. **Radiological Surveys.** Dose rate surveys of all DUF<sub>6</sub> cylinder storage yards shall be conducted. In addition, all DUF<sub>6</sub> cylinders shall be radiologically surveyed. The scope and frequency of the surveys are noted below:

1. A dose rate survey of the cylinder yards shall be performed annually using a dose-rate instrument per 10 CFR 835 (10 CFR 835.101 (c), and 402) to ensure the established dose rate boundary has not changed from the previous year. Boundaries will be established in accordance with 10 CFR 835 (10 CFR 835.603). The boundaries shall delineate the areas that exceed 5 mR/hr or more conservatively as directed by management.
2. A radiological swipe survey of the valve and plug areas for cylinders shall be done annually to determine levels of removable surface uranium contamination. The levels for loose uranium contamination (1000 dpm/100 cm<sup>2</sup>) found in 10 CFR 835 Appendix D (10 CFR 835.1101 and 1102 to Appendix D limits) shall be employed in making the determination of whether additional actions or controls are necessary. Decontamination, reposting, boundary control, or whatever other actions are necessary will be taken to ensure compliance with the requirements specified by 10 CFR 835 (10 CFR 835. Subpart F and G) for the applicable area classification.

ii. **The DUF<sub>6</sub> Cylinder Maintenance Program shall consist of the following:**

A. Renewing the protective coating of cylinders as necessary to avoid excessive corrosion; skirt cleaning; and replacing valve port cap and packing nuts on an as-needed basis. Any discrepancies discovered during this activity requiring maintenance action and during routine inspection of the yards shall be entered into the Cylinder Information Database (CID) within ten (10) working days.

Note: The CID database is a computerized tracking system for the documentation of cylinder activities at PORTS and other DOE sites. Data is submitted by the respective facility managers resulting from the work performed at their cylinder yards.

B. On-going inventory control shall consist of identification tag replacement and accountability of nuclear materials by cylinder and location. Inventory of nuclear materials is managed through an established computerized database. Any discrepancies discovered during the course of this activity and during routine inspection shall be entered in the CID system within ten (10) working days.

C. Cylinder maintenance shall be done in the cylinder storage yards. If breached cylinder contents must be transferred, it shall be done in the cylinder storage yards, the X-344 transfer facility, or a process building, depending on the type of transfer required and condition of the cylinder. Using the information collected in Section 1.A.1 above, DUF<sub>6</sub> cylinder defect criteria, cylinders shall be analyzed to determine

method of repair or dispositioning. All transfers shall be done using established procedures for the appropriate method of transfer (autoclave or cold transfer).

### III. DUF<sub>6</sub> Cylinder Storage Yard Surveillance and Maintenance Program

- A. All DUF<sub>6</sub> storage yards shall be monitored for DUF<sub>6</sub> releases using (1) annual radiological surveys of all cylinders and yards, (2) monthly radiological surveys on valves/plugs suspected to be leaking, (3) existing environmental monitoring programs (i.e., soil sampling, surface water monitoring, and sediment sampling), and (4) annual and quadrennial visual inspections. Monthly surface water run-off samples for total uranium analysis shall be collected at the established collection basin for X-745E Yard and a depression on the south side of the X-745C Yard and at appropriate locations in X-745G Yard and for any new or additional storage yards. The analytical methods are in-house procedures for alpha, beta and total uranium. The alpha/beta procedure is the same as SW-846, method 9310 except for the calibration standards. The total uranium is an inductively Coupled Plasma/Mass Spectrometry (ICP/MS) procedure capable of detecting down to 1 ppb Uranium.
- B. In the event that a breached cylinder is discovered, soil located in the surface water runoff areas of the pad shall be sampled for radiological constituents. USEPA approved analytical methods for radiological analysis will be used. Soil sample results and any corrective actions shall be documented. Rate and extent of any contamination found shall be defined and remediated in a manner that controls, minimizes, or eliminates contamination to the extent necessary to protect human health and the environment. These procedures shall include the following:
1. Soil showing visible contamination shall be excavated immediately.
  2. A statistically valid sampling plan that considers the soil type, properties of the spilled material, area affected, volume of the spill and other factor shall be developed.
  3. This sampling plan shall guide the confirmatory sampling and any additional excavation and remediation.
  4. Background for soils shall be determined by samples taken adjacent to the cylinder yard in locations approved by Ohio EPA and outside the spill area.
  5. Excavation of any soil contamination is required as expeditiously as possible and shall continue until the sampling analyses show results less than the mean plus two sigma of the background.
  6. Any soil excavated as required by this plan shall be containerized and evaluated according to OAC rule 3745-52-11.
  7. Remediation of any ground or surface water contamination resulting from the spill shall be in accordance with the provisions of Section VII of the Ohio Consent Decree and applicable portions of the U.S. EPA Administrative Consent Order.

8. If a  $\text{DUF}_6$  cylinder breaches during the pendency of the Order, the provisions of this Section shall apply until all work required by this Section is completed.

C. Routine maintenance activities for the storage yards shall consist of: (1) identifying and controlling vegetation, (2) identifying and repairing water retention areas, (3) identifying and replacing or repairing signage (i.e., radiological postings), (4) identifying and replacing damaged barricades, and (5) identifying and repairing defective lighting. Any discrepancies found shall be entered into the work order system within ten (10) working days.

#### IV. Design and Construction of New Storage Yards

- A. The new storage yards, at a minimum, shall be constructed in accordance with "Facility Safety," DOE Order 420.1A. Concrete saddles shall be utilized for cylinder storage. Prior to utilizing any new yard for storage of  $\text{DUF}_6$ , U.S.DOE shall provide notice to Ohio EPA, and allow the inspection of the yard by Ohio EPA.
- B.  $\text{DUF}_6$  cylinders shall be stored by cylinder type (i.e., fourteen and ten ton). Fourteen and ten ton cylinders shall be stored with aisle spacing of about four feet. Cylinder center-to-center shall measure about sixty inches. Full  $\text{DUF}_6$  cylinders exceeding 12-inches in diameter shall be stacked no more than two high. See attached drawing.

#### V. Inside Storage of Small Diameter $\text{DUF}_6$ Cylinders.

The Small Diameter  $\text{DUF}_6$  Cylinders surveillance program consists of inspections and radiological surveys.

- A. **Storage.** The storage of small-diameter (less than 30-inch) cylinders containing  $\text{DUF}_6$  will be stored indoors within the limited area. Cylinder location is available through the Cylinder Information Database (CID).
  1. Some of the small diameter cylinders may be placed in various containers such as drums or boxes for the convenience of storage.
  2. There are no stacking limits on small diameter  $\text{DUF}_6$  cylinders. The cylinders will be stored in a manner that will make them easily accessible for inspection.
  3. The storage areas shall be maintained free of standing water.
- B. **Surveillance.** The surveillance of small-diameter (less than 30-inch) cylinders containing  $\text{DUF}_6$  will be inspected in the following manner.
  1. The small-diameter cylinders shall be inspected on the same inspection frequency criteria applicable to the large diameter cylinders (large diameter means 30-inch and 48-inch diameter). See Table 1.
  2. The small-diameter cylinders defect codes are applicable and are the same as for the large-diameter cylinders.

**Table 1. PORTS DUF<sub>6</sub> Cylinder Inspection Frequency**

Criteria	Daily	Monthly	Annually	Quad
Radiological Survey			X	
Ultrasonic Testing / Inspection (150 cylinders)			X	
Nominal DUF <sub>6</sub> Cylinders.				X
DUF <sub>6</sub> Cylinders with the following defects -severe pitting corrosion -heavy rust/scale on cylinder -rust/scale in skirt of valve end -rust/scale in scale of plug end			X	
DUF <sub>6</sub> Cylinders with evidence of valve leakage		X		
Breached Cylinder * Daily until mitigated and annually thereafter.	*X		*X	

**Attachment A to the DUF<sub>6</sub> Management Plan**

**Portsmouth Depleted Uranium Hexafluoride (DUF<sub>6</sub>)  
Cylinder Ultrasonic Testing Program**

The Depleted Uranium Hexafluoride (DUF<sub>6</sub>) Management Plan, Attachment A to the Ohio EPA Director's Final Findings and Orders, requires in Section I.B.2 annual inspection of 150 DUF<sub>6</sub> cylinders using ultrasonic measurement techniques, as defined in Section I.B.1. Ohio EPA and the Department of Energy agree that the sample populations and sampling program for these required inspections will be as follows:

Portsmouth cylinders receiving ongoing annual tests – The following DUF<sub>6</sub> cylinders both generated and stored at Portsmouth having received repeated annual tests in 1999-2003 (41, see Table) will continue to be tested on a biennial basis (i.e., approximately 20 per year), such that the total population will be re-tested at least every two years:

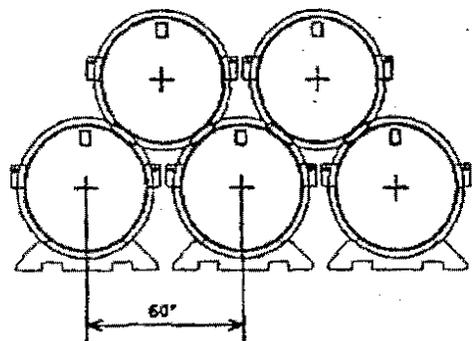
000186	002252	006559	007650	008444	008851	100321	114310
000277	005444	006811	007691	008539	008895	111339	114541
000390	005749	006975	007725	008542	009064	111400	114555
000673	006350	007001	008027	008770	018414	111894	115218
001255	006503	007415	008434	008828	018715	113079	115219
							120555

ETTP ANSI non-compliant cylinders – The population of ETTP ANSI non-compliant DUF<sub>6</sub> cylinders, estimated to be approximately 3000 model "T" and older model "O" and "OM" cylinders, will receive 50 tests on randomly selected full DUF<sub>6</sub> cylinders annually. Of those 50 randomly tested at Portsmouth initially, 25 will be selected to receive repeat testing in succeeding years, with 25 of the balance of the population to continue to receive random sampling annually. In addition to these tests, the following cylinders will be re-tested annually: (a) the six ETTP breached cylinders, (b) the seven ETTP cylinders previously receiving repeat tests, and (c) any cylinders determined to have wall thickness less than 0.0625 thousandths (62.5 mil) along the bottom third of the cylinder.

Breached	006780	007953	101244	114798	111951	116797	
Repeats	006943	006948	009131	012027	018762	100861	101256

Balance of Portsmouth DUF<sub>6</sub> cylinders - The balance of the Portsmouth DUF<sub>6</sub> cylinder population, to include the approximately 16,000 DUF<sub>6</sub> cylinders historically stored at Portsmouth (other than those included in #1, above) plus the ANSI-compliant DUF<sub>6</sub> cylinders shipped from ETTP, will receive 67 tests per year on randomly selected full DUF<sub>6</sub> cylinders. This total may be adjusted as necessary to meet the requirements of Sections 1 and 2 above, within the total of 150 tests required to be performed annually.

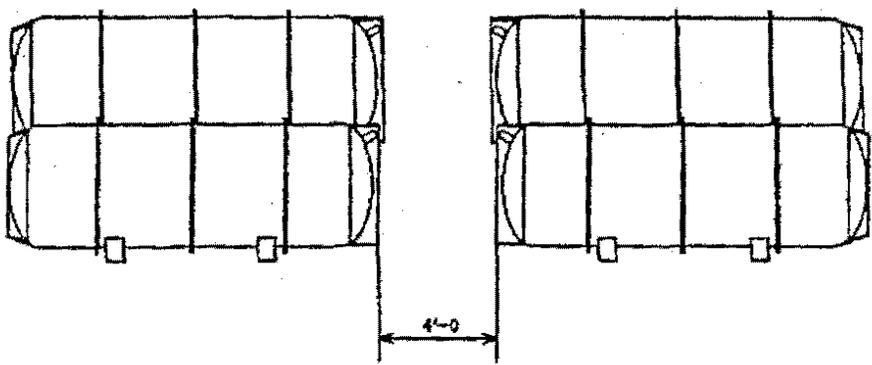
This sampling arrangement may be modified periodically as deemed necessary and as agreed upon by Ohio EPA and the Paducah/Portsmouth Project Office, as outlined in Section X of the DUF<sub>6</sub> Management Plan.



END VIEW

NOTES:

1. 14 AND 10 TON CYLINDERS WILL BE STACKED NO MORE THAN TWO HIGH AND WILL BE SPACED ON CONCRETE SADDLES TO PROVIDE APPROXIMATELY 60 INCHES FROM THE CENTER OF ONE CYLINDER HEAD TO THE CENTER OF THE ADJACENT CYLINDER HEAD.
2. WHEN STACKED IN ROWS, THERE WILL BE APPROXIMATELY 4 FEET OF AISLE SPACE BETWEEN THE ENDS OF CYLINDERS (SKIRTED CYLINDERS SHOWN). NON SKIRTED CYLINDERS WILL ALSO HAVE APPROXIMATELY 4 FEET OF AISLE SPACE AS MEASURED BETWEEN THE ELLIPTICAL HEADS.



SIDE VIEW

PORTSMOUTH RESTACKING  
CONFIGURATION