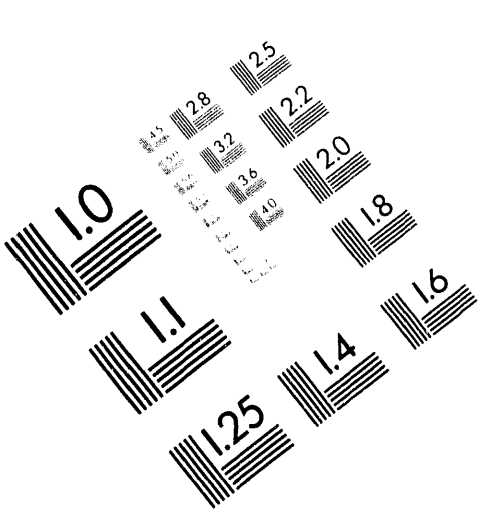

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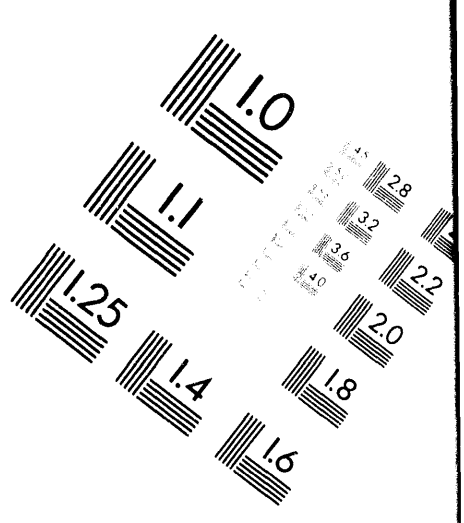

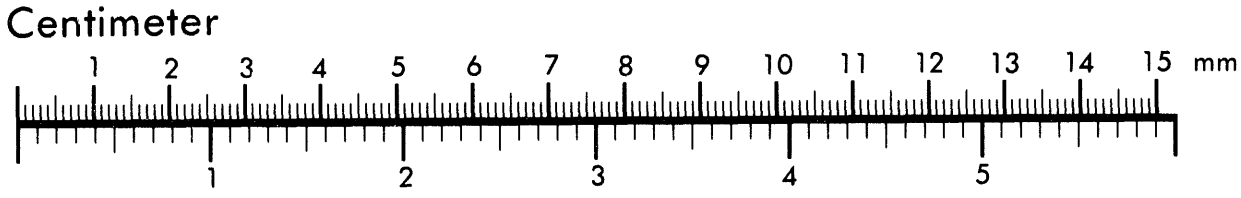

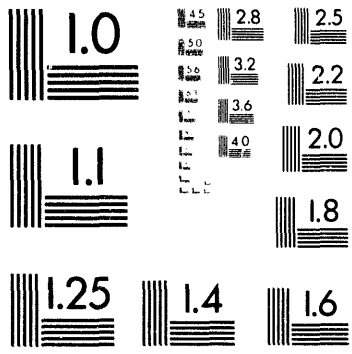

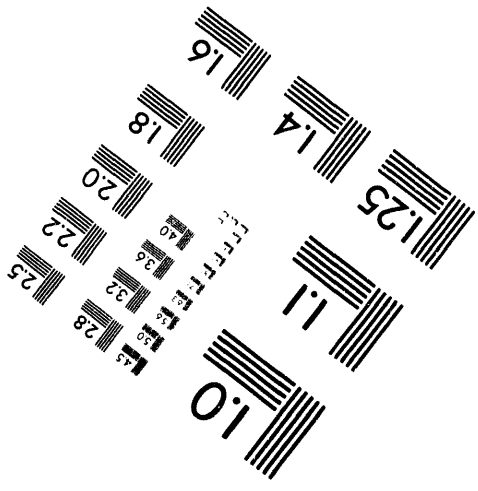

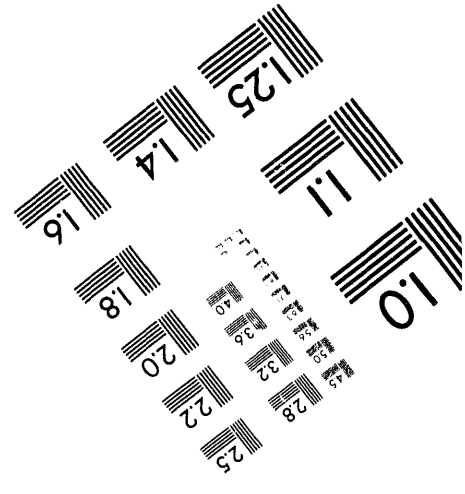

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DECONTAMINATION AND DECOMMISSIONING OF PLANT 7 AT THE FERNALD FACILITY

BY
GERALD P. MOTL
TERRY BORGMAN

January 20, 1994

FERMCO*
Fernald Environmental Management Project
P.O. Box 398704, MS 50
Cincinnati, OH 45239-8704

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DISCLAIMER

DECONTAMINATION AND DECOMMISSIONING OF PLANT 7 AT THE FERNALD FACILITY

GERALD P. MOTL
FERMCO
(513) 738-6363

TERRY D. BORGMAN
FERMCO
(513) 738-9434

INTRODUCTION

The Fernald Environmental Management Project (FEMP), formerly the Feed Materials Production Center (FMPC), is a Department of Energy (DOE) site which produced high-quality uranium for military defense beginning in 1951. Production at the FEMP was halted in July 1989. Later that year, the facility was placed on the National Priorities List (NPL). The DOE is currently conducting a Remedial Investigation/Feasibility Study (RI/FS) and other response actions under the Amended Consent Agreement between the United States Environmental Protection Agency (USEPA) and the DOE.

PLANT 7 REMOVAL ACTION

In 1992, the DOE conducted a Removal Site Evaluation (RSE) for Plant 7 to determine whether the conditions present at and within Plant 7 warranted a removal action under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). The RSE concluded that this removal action is appropriate and that the building should be removed. The following factors were considered in recommending the removal of this building: (1) the presence of Asbestos Containing Material (ACM) (e.g., transite panels, TSI, fire brick, and floor tile); (2) the presence of biological hazards in the form of bird droppings; and (3) the presence of chemical hazards, such as UF_6, UF_4, UO_2, UO_2F_2, HF (aqueous and anhydrous), ammonia, and nickel.

The objective of the removal action is to eliminate the potential for release of contaminants from Plant 7 and to dismantle the structure and an adjacent Bridge Crane to grade level. The Removal Action Work Plan details the proposed activities associated with this removal action and was submitted for review/approval to the USEPA and Ohio EPA (OEPA) on April 20, 1993.

PLANT 7 DESCRIPTION

Plant 7 was constructed in May 1953 to house the processes involved in the reduction of uranium hexafluoride (UF_6) to uranium tetrafluoride (UF_4). Plant 7's

production life was short and the plant has been idle since 1955. Radiological surveys were conducted within Plant 7 in May 1992 identifying removable alpha and beta-gamma contamination. The highest reading for alpha and beta contamination respectively were 33,253 dpm/100cm^2 on the fifth floor and 73,296 dpm/100cm^2 on the seventh floor.

Plant 7 is the tallest, most visible structure at the FEMP measuring 80 feet x 110 feet x 110 feet high (seven stories). Plant 7 is made up of a structural steel frame enclosed by transite wall and roof panels. Transite is an Asbestos Containing Material (ACM). The second and the ground floor are concrete slabs with the remaining floors made up of steel decking. The first floor slab-on-grade will be left in-place after the dismantlement of Plant 7. There is limited available space surrounding Plant 7.

In 1967, with the reduction process declared obsolete, the majority of the equipment and process piping were dismantled and removed. The ammonia separation process, two 75,000 cfm blower units and associated ducting, and several motor control centers were abandoned-in-place. In 1975, all utilities were disconnected and capped. Plant 7 was most recently used to store drums of intermediate product (UF_4), empty 5-gallon containers, and miscellaneous debris.

DECONTAMINATION AND DECOMMISSIONING (D&D)

The D&D of Plant 7 was initiated in June 1993, following EPA approval of the removal action work plan. The project is expected to be completed by November 1994. Major D&D milestones are as follows:

June 1993	Bidders pre-qualification (completed)
July 1993	Invitation for Bid (IFB) issued to pre- qualified subcontractors (completed)
September 1993	Pipe asbestos removal (completed)
October 1993	Plant washdown (completed)
November 1993	Contamination lockdown (completed)
November 1993	Dismantlement subcontract award (completed)
February 1994	Removal of HVAC ductwork, piping, electrical, and remaining equipment
March 1994	Interior transite siding removal

June 1994	Exterior transite siding removal
August 1994	Structural steel removal
February - October 1994	Waste recycling/disposition
December 1994	Demobilization

The status of completed D&D milestones are as follows:

Bidder Pre-qualification

Pre-qualification packages were issued to prospective bidders in June, 1993 since bids would be accepted only from pre-qualified organizations.

The criteria established for pre-qualification were the following:

1. Rigging experience
2. Government/DOE work experience
3. Radiation safety experience
4. Safety record
5. Demolition experience
6. Prime contractor commitment (40% minimum by prime)

A total of 14 perspective bidders were pre-qualified.

Invitation for Bid (IFB) Issued to Potential Dismantlement Subcontractors

The IFB was issued to potential dismantlement subcontractors on July 28, 1993. A total of 49 individuals representing 24 organizations attended a pre-bid meeting on August 9, 1993.

Pipe Asbestos Removal

In September 1993, the Fernald workforce completed the removal of asbestos insulation from approximately 3400 linear feet of pipe and two (2) large HVAC units. In addition, 400 square feet of asbestos containing floor tiles were removed. A total of 3600 cubic feet of contaminated asbestos containing material was removed.

Plant Washdown

Plant 7 was "washed-down" to reduce overall building contamination levels to prevent the spread of contamination and to potentially reduce the required level of personal protection equipment (PPE). A high-pressure power washer was used to wash all building interior surfaces. Washdown liquid was allowed to

move by gravity to a sump in the ground floor. Approximately 10,000 gallons of washdown water was collected in three 5,000 gallon storage tanks prior to treatment in Fernald's Plant 8 water treatment system.

Contamination Lockdown

Following washdown, a .5 mil layer of acrylic latex paint was applied to all interior building surfaces to "lockdown" any remaining loose surface contamination. Approximately 700 gallons of paint was used to cover 1.4. million square feet of interior building surface area. Average alpha and beta contamination levels were reduced to 36 and 179 dpm/100cm^2, respectively.

Dismantlement Subcontract Award

The Plant 7 dismantlement contract was awarded to the Project Development Group (PDG) in November 1993, based on receipt of the lowest qualified bid. A total of 9 responsive bids were submitted by 14 pre-qualified bidders.

Project Development Group, the prime contractor, is the 2nd rated asbestos removal contractor in the U.S. according to the 1993 Engineering News Record (ENR). The Best Group Inc., PDG's dismantlement subcontractor, is ENR's 9th rated dismantlement contractor.

Plans for several future D&D Milestones are as follows:

Waste Recycling/Disposition. A total of three subcontracts will issued for the recycle of Plant 7 material. The Plant 7 structural steel (700 tons) is the largest category. This material will either be decontaminated for free-release or, alternatively, used to fabricate waste containers that Fernald will be purchasing as part of the same procurement. 150 tons of light gauge metal, including ventilation ducting covered with lead-based paint will also be recycled. The third category of material to be recycled is eight tons of lead flashing used on Plant 7 windows and doors.

The majority of the remaining material streams, including concrete and transite, will be packaged for transportation to the Nevada Test Site.

Treatability Studies. A portion of the transite and concrete generated during dismantlement will be set aside for use in the Treatability Studies supporting Dismantlement and Decommissioning of the entire Fernald Production area. These treatability studies will analyze alternate treatment, recycling, and disposal options. This testing will be coordinated with several existing DOE recycle PRDA's and the D&D integrated demonstration being funded by EM-50.

LESSONS LEARNED

Although the D&D of Plant 7 is not yet completed, a number of valuable lessons/insights have already been gathered:

The Dismantlement Market is Competitive. The strong, sound bid response from 9 pre-qualified bidders indicates that the infrastructure is in place to handle an expanding D&D market. In fact, a range of competitive bids were received that were only half of the pre-IFB cost estimate completed by Fernald.

Initial Fernald Plant 7 D&D Cost Estimates Were Inflated. The FY'93 Fernald budget baseline projected a total of Plant 7 D&D cost of $33M. Following completion of an Engineering Evaluation/Cost Analysis (EE/CA) in December 1992, the FY'94 budget was revised downward to $14M. The estimate included $5.5 M for the dismantlement subcontractor. Since PDG's winning bid was $1.8M, the final cost for Plant 7 D&D could be as low as $11M. The lesson is that estimating the cost of D&D projects within DOE still requires refinement.

Contractors Often Have a Better Idea. The Fernald IFB envisioned building dismantlement utilizing a large-lift method - essentially cutting and removing one floor at a time. The winning bid proposed a technique different and substantially less costly from that suggested by Fernald.

Washdown/Lockdown is Very Effective. The washdown/lockdown procedure was extremely effective in reducing removable contamination levels - by a factor of 15. It is anticipated that employee and subcontractor safety goals will be achievable at a much reduced project cost and with an acceleration of project schedule.

The DOE Work Environment is a New Experience for Many Demolition Subcontractors. In general, it appears that subcontractors, even with excellent work experience, are surprised by the stringent documentation and oversight requirements that are present on DOE projects. The contractor was required to obtain approval of a total of 27 "deliverable" documents prior to site mobilization.

Dismantlement Bid Specifications should "Spec" Standard Industry Construction Equipment. Following bid receipt, it becomes obvious that, in many cases, standard construction equipment was readily available that exceeded the "customized" requirements contained in the bid specification.

By being aware of industry capabilities, bid spec preparation should be cheaper and faster with a better technical result.

SUMMARY

The Dismantlement and Decommissioning of Fernald Plant 7 is proceeding on schedule. Many lessons are being learned that will be applied to the D&D of the remaining 165 buildings in the Fernald Production area.

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