

**PRELIMINARY ASSESSMENT/SITE INSPECTION REPORT
AND SWMU ASSESSMENT REPORT**

UNIT NUMBER: 495

UNIT NAME: C-410-I Ash Receiver Shed

DATE: 12/26/01

REGULATORY STATUS: Solid Waste Management Unit (SWMU)

LOCATION: Outside C-410 Complex, North of C-420

APPROXIMATE DIMENSION: 2,000 ft²

FUNCTION: Ash receivers were a component of the uranium hexafluoride (UF₆) production process, located in the northwest portion of the C-410 complex. A series of three receivers (primary, secondary, and filter) were situated at the bottom of each of the eight fluorination towers, capturing unreacted powders for subsequent processing and reuse. When removed from service (i.e., when full), the receivers were removed and staged in the ash receiver shed prior to transport to C-400 for processing. In addition, sintered metal filters (hydrogen and fluorine) removed for cleaning at C-400 were staged in this area.

BRIEF HISTORY: The C-410 complex was constructed to produce UF₆ from uranium trioxide by a series of reduction, hydrofluorination, and fluorination reactions. The complex began operation in 1953 and, with the exception of a four-year shutdown from 1964 to 1968, operated continuously until 1977. The ash removal systems were part of the fluorination process and involved both normal assay material as well as reactor tails material. Uranium in the collected ash subsequently was recovered at C-400 for refeeding at C-410.

OPERATIONAL STATUS: Inactive

DATES OPERATED: July 1953 to July 1964 and July 1968 to May 1977

SITE/PROCESS DESCRIPTION: Ash (primarily unreacted uranium tetrafluoride solids) was produced during the fluorination process carried out in the northwest portion of the C-410 Complex. Most of this material was separated from the UF₆ gas by diversion of the gas stream through a cyclone. The majority of the ash fell into the primary ash receiver at the bottom of the tower. The gas stream (containing smaller

quantities of ash) continued to the primary cyclone where additional (finer) particulate material dropped out into the secondary ash receiver. The carrier gas (containing the product) then went to the secondary cyclone where the last remaining fine particulate dropped out into a third ash receiver (sometimes referred to as the filter ash receiver). Each tower, therefore, had three ash receivers operating in series.

Although the uranium feed materials were exceptionally pure, metallic impurities (natural decay products or fission products) that were present in the feed material were concentrated in the receiver ash. These metallic impurities were less dense than uranium and, as a result, tended to concentrate more in the secondary ash receivers than in the primary units. The ash receivers were removed on a regular basis, capped, and staged in the C-410-I ash receiver shed, prior to being transported to C-400 for reprocessing and uranium recovery.

Filters used to remove fine electrolyte carryover from the hydrogen and fluorine gas streams generated in the cell rooms also were staged in this area as they were removed from service. Similar to the ash receivers, the filters were capped prior to placement.

The shed is a roofed extension of the C-420 facility, with a concrete floor and no walls on three sides. The presence of a floor drain system has not been determined at this time.

WASTE DESCRIPTION: Due to the nature of feed plant operations, the staging of ash receivers in C-410-I may have resulted in radiological contamination of the area, particularly with respect to uranium compounds. However, building manager interviews indicate that ash receivers and filters were capped and, if loose materials were evident, exterior surfaces vacuumed, prior to placing in the shed area. The potential for trace levels of transuranics exists, as well, due to the processing of reactor tails material.

WASTE QUANTITY: None

SUMMARY OF ENVIRONMENTAL SAMPLING DATA: Several radiological surveys have been completed since shutdown of the complex; the most recent occurred in May 2000. Data indicate that radiological contamination (primarily uranium) is prevalent throughout the complex. Detectable transuranic contamination is present in some locations as well. In addition, asbestos contamination is prevalent throughout the building, including the zones housing the ash receivers.

DESCRIPTION OF RELEASE AND MEDIA AFFECTED: No releases from this SWMU have been documented.

GROUNDWATER: This SWMU is a covered extension of the C-410 Building. There are no known groundwater impacts from this SWMU.

SURFACE WATER: This SWMU is a covered extension of the C-410 Building. There are no known surface water impacts from this SWMU.

SOIL: This SWMU is a covered extension of the C-410 Building. There is no known impact on surface soils from this SWMU.

ECOLOGY AFFECTED (i.e., threatened/endangered species): No known impacts. No federal or state listed T&E plant or animal species have been identified. The federally endangered Indiana bat (*Myotis sodalis*) potentially occurs in the vicinity, but the C-410 complex does not provide a suitable habitat.

DOCUMENTATION OF NO RELEASE: There is no documentation.

IMPACT ON OR BY OTHER SWMU/AOC:

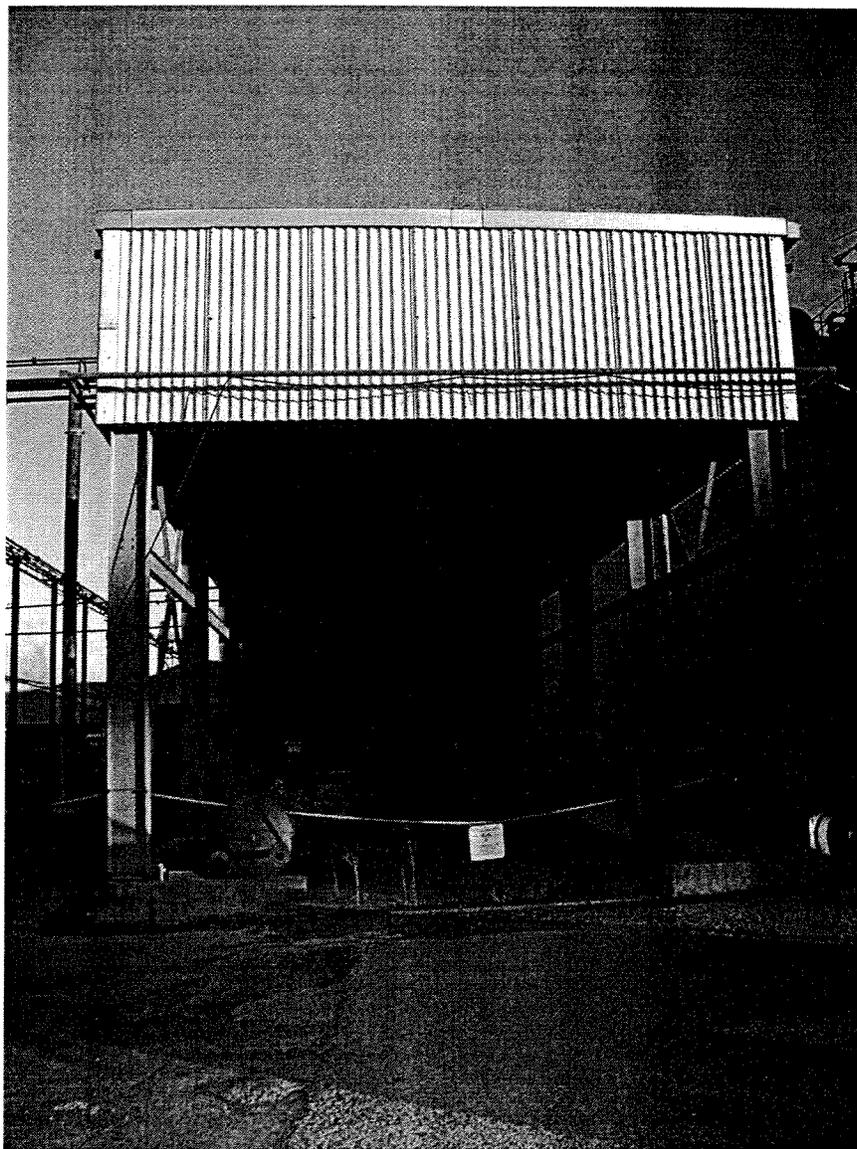
The following SWMUs are in the vicinity of the C-410/420 complex:

SWMU 11	SWMU 19	SWMU 20	SWMU 26
SWMU 40	SWMU 41	SWMU 47	SWMU 78
SWMU 169	SWMU 198	SWMU 203	

PRG COMPARISON: NA

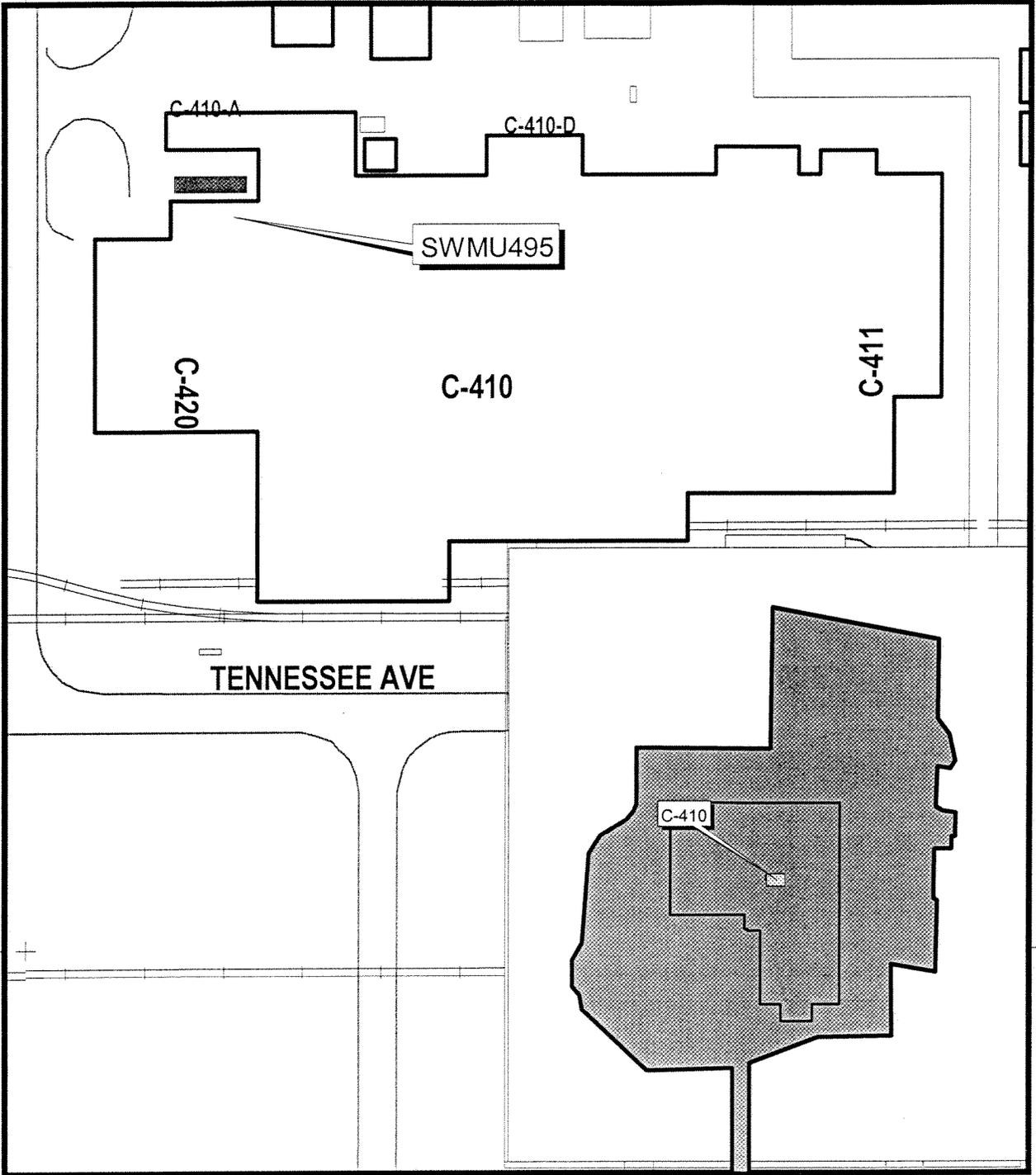
RFI NECESSARY: This area is associated with an inactive facility that is included in the decontamination and decommissioning (D&D) program. Site evaluation work is underway at this time, along with planning associated with the infrastructure D&D phase. The need for a Remedial Investigation/Feasibility Study will be evaluated as part of the facility structure D&D phase.

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above referenced document.



SWMU 495

4000



-2000

2000

-4000

90 0 90 180 Feet



U.S. DEPARTMENT OF ENERGY
DOE OAK RIDGE OPERATIONS
PADUCAH GASEOUS DIFFUSION PLANT



BECHTEL JACOBS COMPANY LLC
MANAGED FOR THE US DEPARTMENT OF ENERGY UNDER
US GOVERNMENT CONTRACT DE-AC-05-98OR22700
Oak Ridge, Tennessee • Paducah, Kentucky • Portsmouth, Ohio



Science Applications
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SWMU 495 at C410.

FIGURE No. c5ac90001sk221.apr
DATE 12-28-01