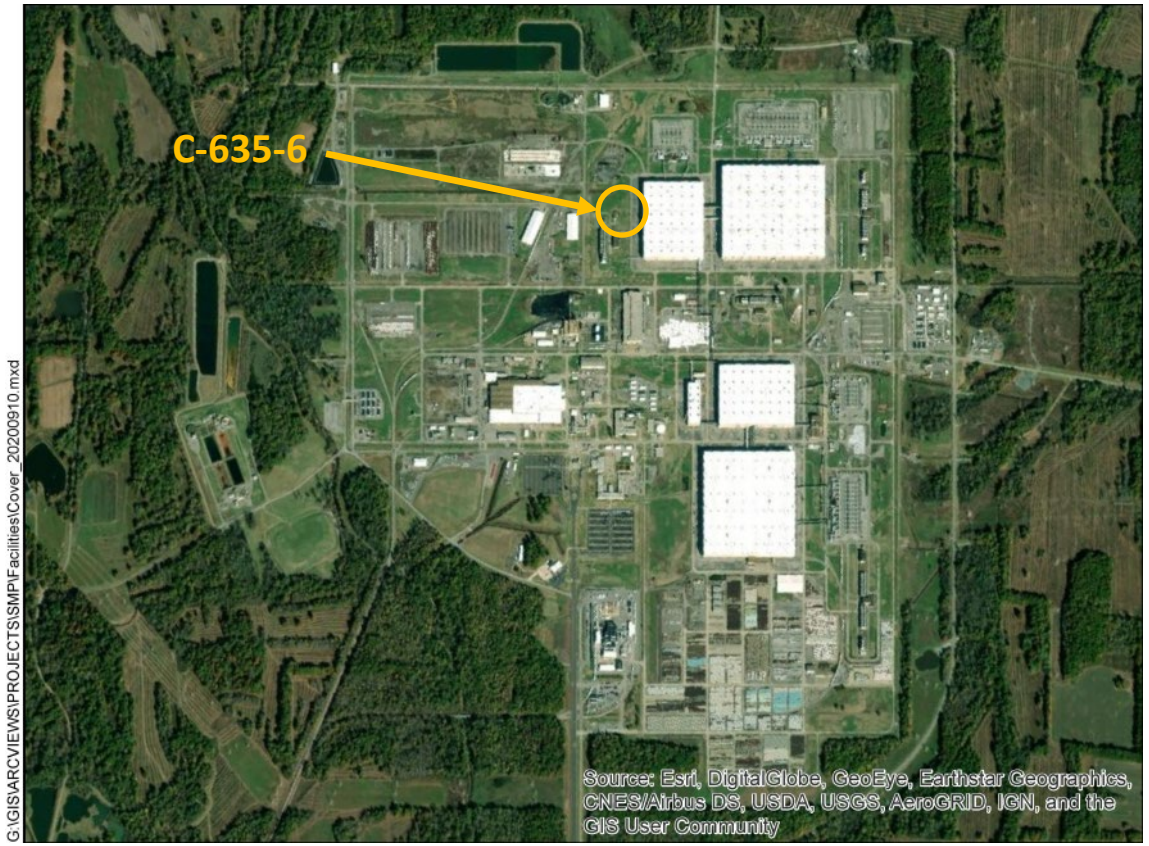
C-635-6 Recirculating Heat Utilization Pump House



Facility Overview Briefing

July 16, 2021

Reflects consultation with EPA and Kentucky in accordance with the Site Management Plan that occurred on July 12, 2021.

Purpose

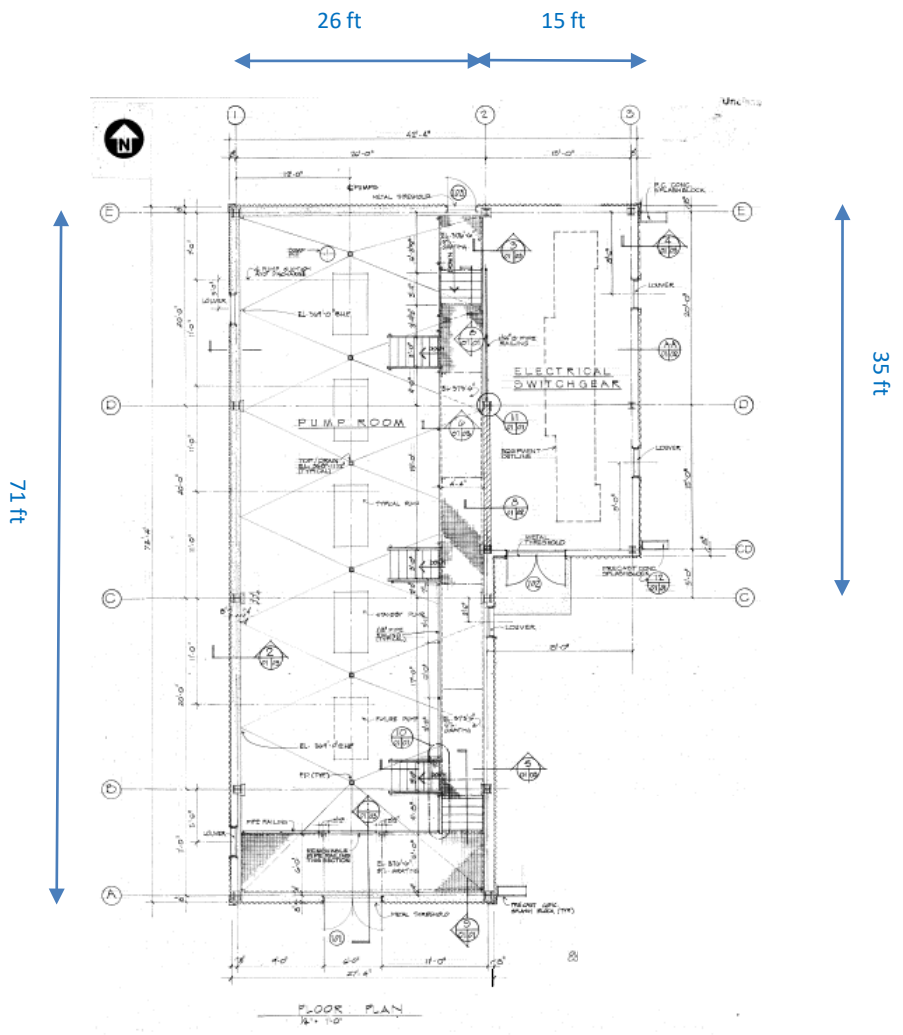
- The C-635-6 Recirculating Heat Utilization Pump House is a candidate for future demolition and disposal, contingent upon funding priorities.
- Listed in Appendix 6 of the Site Management Plan (SMP); requires consultation with EPA and Kentucky for CERCLA screening prior to demolition.

- This presentation is intended to serve as consultation, providing the basis for demolition and disposal of the aboveground structure outside of the FFA/CERCLA process.
- The remaining slab/soils will be subject to a future CERCLA evaluation under Geographical Area (GA) 17.

C-635-6 Facility Photo: 4/2021

Construction History

- C-635-6 is located within the Paducah Site security fence, west of the C-335 process building.
- The facility was constructed in 1983.
- The facility is a structural steel building with asbestos cement corrugated panels (transite).
  - The structure has two sections partially separated by a concrete wall, each with separate points of entry.
    - Pump house section
    - Transformer electrical switchgear section
- The entire facility is approximately 2,371 ft^2.
  - The pump house section of the facility is approximately 1,846 ft^2
    - Contains a subgrade area measuring ~26 ft x ~71 ft x ~7.5 ft.
    - Contains six floor drains that drain into a main sump.
    - Above ground portion measuring ~26 ft x ~71 ft.
  - The transformer with electrical switchgear section of the facility is approximately 525 ft^2
    - Above grade on a 6-inch slab.
    - Measuring ~15 ft x ~35 ft.



Floor Plan View: Excerpt from Engineering Drawing A5E-14179-0001_0001_0001_U-018105, dated 1981

Operational History

- C-635-6 was originally built and operated as a waste heat utilization pump house from its construction in 1983 to 2014.
  - Recirculating cooling water (RCW) received from the C-335 process building was pumped to heaters in various buildings and to a heat exchanger that was used to further heat make up water for the C-600 Steam Plant.
  - RCW was then returned to the C-635-2 cooling tower, cycled through the C-335 process building for cooling of the components, and then sent back to C-635-6 where the process was repeated.
  - The buildings heated by the C-635-6 waste heat RCW system included: C-100, C-101, C-102, C-200, C-400, C-710, C-720, and C-750.
  - The C-635-6 waste heat RCW system originally contained chromate until RCW was switched over to a phosphate inhibitor in the early 1990s.
- USEC leased the facility in the early 1990s and continued to use C-635-6 as a waste heat utilization pump house until enrichment operations ceased at C-335.
- C-635-6 transitioned from USEC to DOE in 2014.

Pump House Section - Subgrade

Transformer Electrical Switchgear System Section – Above Grade

C-635-6 Facility Photos: 4/2021

Operational History

- In 2014, a steam heat exchanger was added west of the C-400 Cleaning Building and tied into the plant's steam distribution system, resulting in a modification to C-635-6.
  - The C-635-6 waste heat utilization pump house was "blanked" (e.g., blocked) from the C-335 process building RCW system and converted to a closed-loop system.
  - Heat was supplied off the C-600 steam system and recirculating heat system (RHS) water was pumped through C-635-6 to various buildings.
  - The buildings supported by the modified C-635-6 RHS system included: C-100, C-101, C-102, C-200, C-710, and C-720 (Note: C-400 and C-750 were removed from the system).

Pump Discharge Header

C-335 Supply Header

Instrument Panel

Pump Control Panel

Expansion Tank

C-635-6 Facility Photos: 4/2021

Current Status

- C-635-6 remains operational, supplying heat to various buildings.

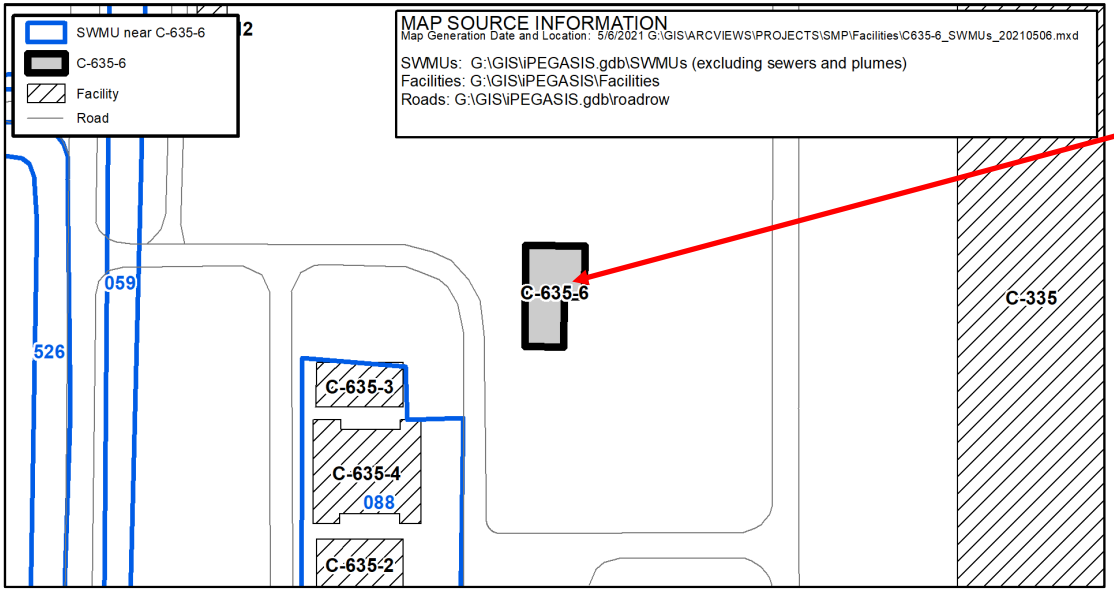
- Walkdown inspection conducted in April 2021 and employee interviews confirmed no unusual conditions.
  - Originally supplied heat to C-100, C-101, C-102, C-200, C-400, C-710, C-720, and C-750 (Note: C-400 and C-750 were later removed from the system).
  - Not used for radiological storage; facility does not contain any radiological postings.
  - No generator staging area (GSA) or satellite accumulation area (SAA).
  - Cement corrugated siding (transite).
  - Transformer with a 480-volt electrical switchgear.
    - Transformer is a dry-type transformer and does not contain any oil.
  - Six floor drains and a single sump are present.
  - Chromated water leaks have occurred within the facility; however, the water was returned to the RCW system via the floor drains which drained into the floor sump, where the chromated water was piped to a header return associated with the RCW system.
  - No known chemical spills except for the above noted chromated water leaks.

Floor Drain

Floor Sump

C-635-6 Facility Photos: 4/2021

Environmental Impacts
(Solid Waste Management Units)



The C-635-6 Recirculating Heat Utilization Pump House is not designated as a SWMU/AOC.

SWMU No.	Facility Name	Current Status
059	NSDD (Inside)	Final CSOU
088	C-635 Pumphouse and Cooling Tower (slab and underlying soils)	Soils and Slabs OU
526	Internal Plant Drainage Ditches (includes KPDES 016)	SWOU Remedial Action

Environmental Impacts

- No information to indicate a release or threatened release of a hazardous substance that would require an evaluation for a potential response action to protect future public health or welfare or the environment.

  - C-635-6 was built and operated as a waste heat utilization pump house that pumped recirculated water from the C-335 process building RCW system to buildings requiring heat from its construction in 1983 to 2014; C-635-6 was modified in 2014 to a closed-looped system and continues to supply heat to various buildings.

  - Building materials used for construction could contain lead-based paints and asbestos-containing materials, both of which can be effectively verified during a predemolition inspection and properly managed using standard demolition and waste management practices.
    - C-635-6 has cement corrugated siding (transite).

  - No history or records of chemical use or spills that would pose environmental release threat.
    - Chromated water leaks have occurred within the facility; however, the water was returned to the RCW system via the floor drains which drained into the floor sump, where the chromated water was piped to a header return associated with the RCW system.

Conclusion and Recommendations

- Walkdown inspection of the facility, employee interviews, and other reviewed historical information did not identify any unusual conditions that would pose a potential threat of environmental release during future demolition of the aboveground structure.
  - Deactivation will include removal of any accessible loose items being stored (to the extent practicable) prior to demolition.
  - Any floor drains will be delineated, documented, and isolated prior to demolition.
- Pending ceasing of operation, deactivation, and availability of funding, proceeding with demolition and disposal of the C-635-6 facility (aboveground structure) outside of the FFA/CERCLA process, contingent upon the fact that no additional changes have occurred that would affect the CERCLA determination of the facility prior to demolition, is recommended.
- All applicable laws, regulations, and DOE procedures/protocols will be followed to ensure the demolition and disposal of the aboveground structure occurs in a safe, compliant manner, including conducting any additional radiological characterization through confirmation radiological surveys (as necessary) to support demolition and waste disposition.

Conclusion and Recommendations

- As part of the demolition of the aboveground structure, the appropriate best management practices (BMPs) will be evaluated and implemented (as needed) to prevent/minimize the pooling and/or migration of storm water that may come into contact with any contamination that may exist on the pad/subsurface structure(s). For example, the following BMPs will be implemented as necessary:
  - Radiological surveying will occur following demolition.
  - Decontamination and/or application of fixatives and/or barriers to contaminated surfaces above regulatory posting limits.
  - Isolation measures and other types of barriers to minimize and/or control runoff/pooling of contaminated storm water (e.g., seal inlets to drains/sumps/subsurface structure(s)).

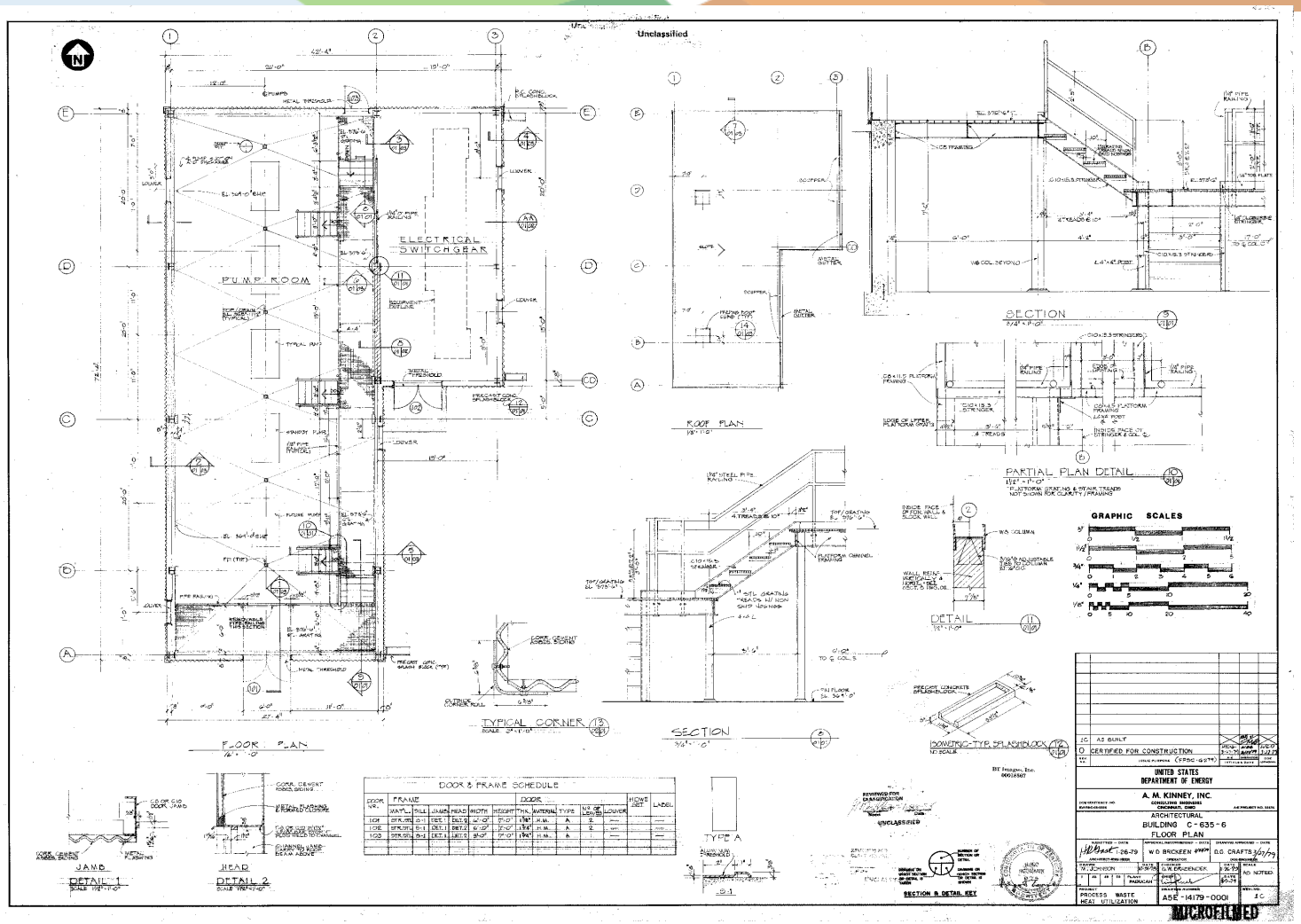
- Removal of the C-635-6 facility will be documented in the appropriate annual SMP revision.

- The future evaluation conducted for GA 17 will further evaluate the potential threat of release associated with the slab/soils from the C-635-6 facility.

C-635-6 Recirculating Heat Utilization Pump House

BACKUP INFORMATION

C-635-6 Engineering Drawings



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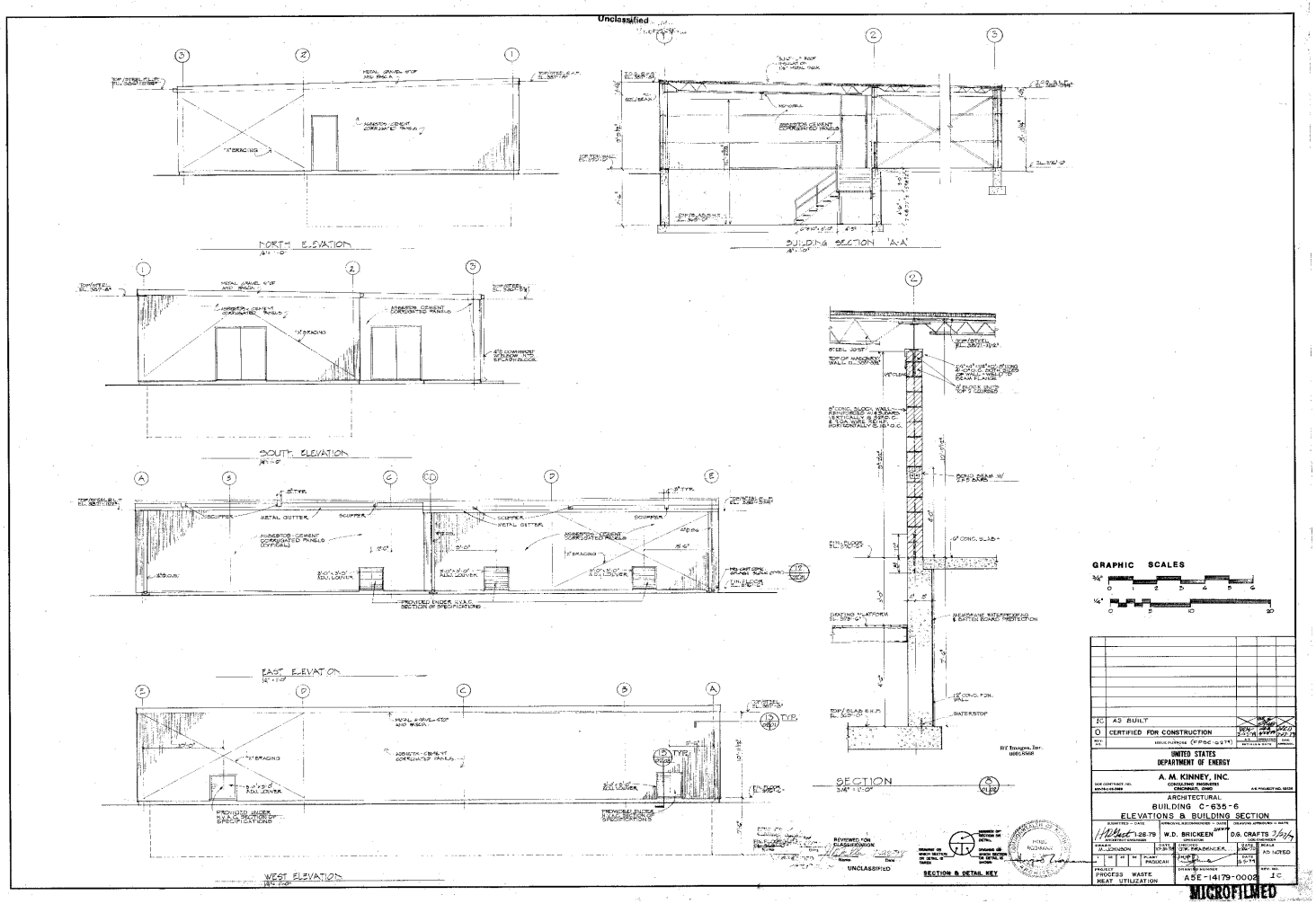
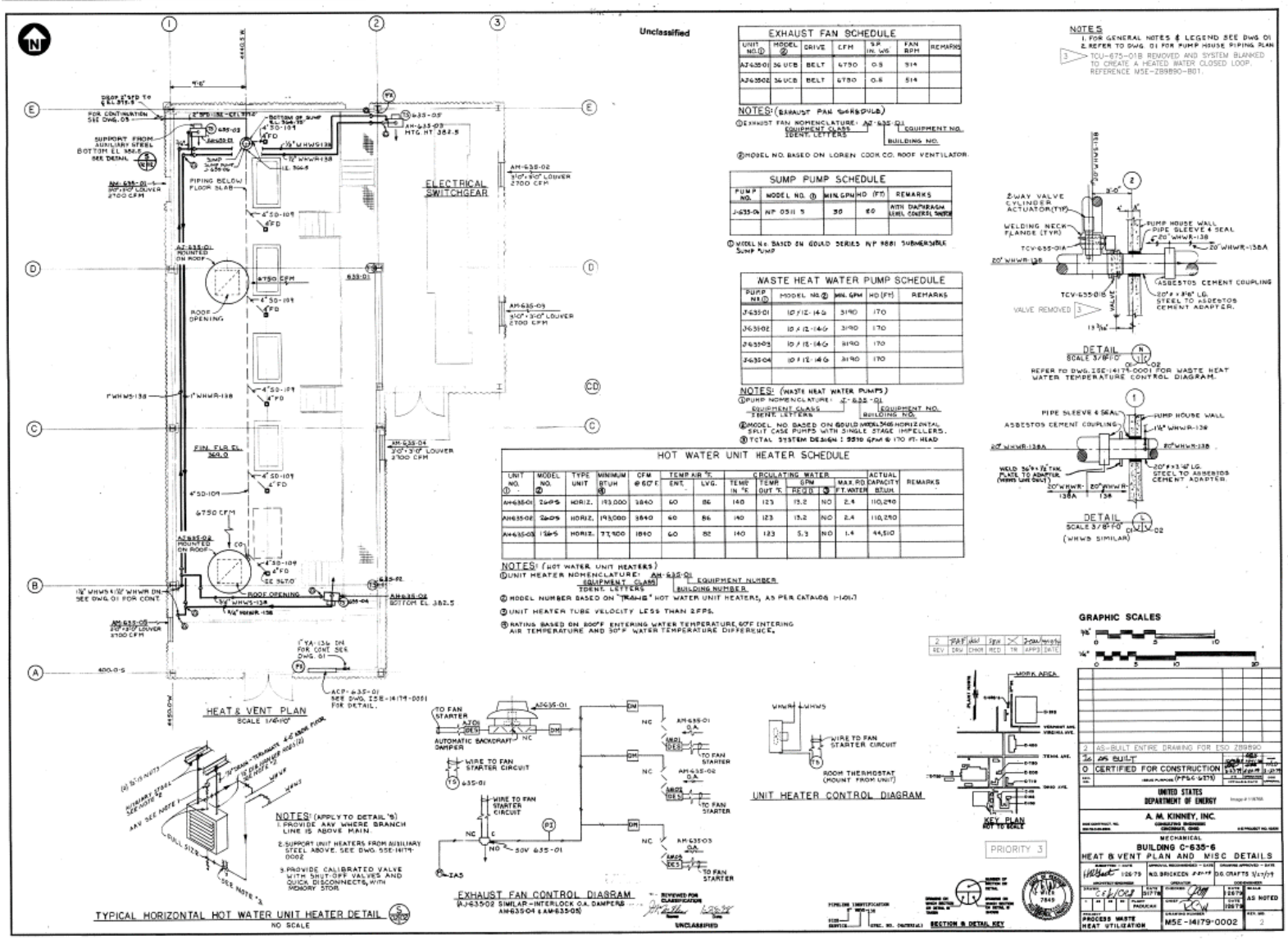
C-635-6 Engineering Drawings



C-635-6 Engineering Drawings



M5E-14179-0002, Rev 2

C-635-6 Sources

- Engineering Drawings:
  - Provided in presentation
- Databases:
  - USEC's BPS
  - Issues Management System
  - Regulatory Compliance Archive Spill Log (pre-2018)
  - PCB Database (1989 – 2021)
  - Active GSAs and SAAs Master List
  - Asbestos Walkdown (October 2020)
- Employee Interviews:
  - Facility Manager (42 years plant expertise)
  - Utility Operations Subject Matter Expert (45 years plant expertise; operator/manager/supervisor)
  - Compliance Subject Matter Expert (45 years plant expertise; trained on system)
- Documents:
  - Paducah Gaseous Diffusion Plant Sitewide Strategy Facility Background Information, FPDP-RPT-0021, May 2016
  - Report for Environmental Audit Supporting Transition of the Gaseous Diffusion Plants to the United States Enrichment Corporation, DOE/OR/1087&V5 (June 1993)
  - Paducah Asbestos Survey Executive Summary (Lee Wan Report), October 1990