

PORTSMOUTH GASEOUS DIFFUSION PLANT, X-111A AND X
-111B SPECIAL NUCLEAR MATERIALS MONITORING PORTALS
3930 U.S. Route 23 South
Piketon vicinity
Pike County
Ohio

HAER OH-142-L
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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240

HISTORIC AMERICAN ENGINEERING RECORD

PORTSMOUTH GASEOUS DIFFUSION PLANT, X-111A AND X-111B SPECIAL NUCLEAR MATERIALS MONITORING PORTALS

HAER No. OH-142-L

- Location: Portsmouth Gaseous Diffusion Plant (PORTS), 3930 U.S. Route 23 South, Piketon vicinity, Scioto Township, Pike County, Ohio
- The X-111A and X-111B Special Nuclear Materials Monitoring Portals are located at Ohio State Plane South coordinates at easting 1826582.888882 ft, northing 367684.110978017 ft and easting 1826011.557923 ft, northing 369318.851632371 ft, respectively, and at Universal Transverse Mercator Zone 17N, easting 326879.2472 m, northing 4319615.354 m and easting 326713.3182 m, northing 4320116.426 m, respectively. The coordinates represent the approximate center of both the X-111A and X-111B Special Nuclear Materials Monitoring Portal. These coordinates were obtained on June 20, 2019 by plotting its location in EnviroInsite 10.0.0.37. The accuracy of the coordinates is +/- 12 meters. The coordinate datum is North American Datum 1983.
- Date of Construction: 1981
- Designer/Builder: United States Enrichment Corporation
- Previous Owner: N/A
- Present Owner: Atomic Energy Commission oversaw construction and operation of PORTS until 1974, when the Energy Research and Development Administration was established with responsibility for research and development duties from 1974-1977. In 1977, the U.S. Department of Energy was established, overseeing operations at PORTS.
- Present Use: The X-111A and X-111B Special Nuclear Materials Monitoring Portals are no longer in use and are awaiting demolition.
- Significance: The X-111A and X-111B Special Nuclear Materials Monitoring Portals served as secure entrances for employees and equipment entering and exiting the X-326 Process Building. These facilities had a critical role in PORTS' Cold War mission. These portals are part of PORTS, which was a part of the U.S. Cold War nuclear weapons complex. PORTS' primary Cold War era mission was the production of highly enriched uranium by the gaseous diffusion process for defense/military purposes.
- Project Information: Fluor-BWXT Portsmouth LLC photographed the site in August 2014. Gray & Pape, Inc., Cincinnati, Ohio, served as primary author of the historical narrative and resource descriptions drawing from numerous historical records and reports, drawings, photographs and plans. For additional contextual information, see Portsmouth Gaseous Diffusion Plant,

HAER no. OH-142. This X-111A and X-111B Special Nuclear Materials Monitoring Portals HAER was completed in 2021.

Part I. Historical Information

In support of this effort, there are two appendices: Appendix A and Appendix B, consisting of survey photographs and historical drawings, respectively.

Construction History of the X-111A and X-111B Special Nuclear Materials Monitoring Portals:

The X-111A and X-111B Special Nuclear Materials Monitoring Portals were built in 1981 as security portals for employees and equipment entering and leaving the X-326 Process Building. They are built of common construction materials and are utilitarian in form and style. A historical drawing of the building plans is provided in Appendix B (Figure 6).

Part II. Site Information

Description of the X-111A and X-111B Special Nuclear Materials Monitoring Portals:

The X-111A and X-111B Special Nuclear Materials Monitoring Portals are one-story, utilitarian structures adjacent to the X-326 Process Building in the center of PORTS. Special nuclear materials can include plutonium, uranium-233, or uranium enriched with uranium-233 or uranium-235 isotopes. The special nuclear material produced by the gaseous diffusion process at PORTS was enriched uranium-235. The X-111A Portal is located south of the midpoint of the east side of the X-326 Process Building. The X-111B Portal is located at the western end of the north side of the X-326 Process Building. The portals served as secure entrances for employees and equipment entering and exiting the X-326 Process Building. PORTS security forces monitored and provided direct operational control of materials and personnel that entered and exited the X-326 Process Building.

The X-111A Portal consists of three rectangular buildings, conjoined into a Z-shaped plan, encompassing approximately 900 square feet (Figures 2 and 3). The central building has a poured concrete slab foundation, concrete block bearing walls, a central window opening with plate glass, and a flat steel roof. The eastern building provided pedestrian access to the central building and consists of a concrete pier foundation, metal walls, window openings with aluminum sliding sash, and a flat metal roof. This building provided an entry vestibule to the central block. The southern building provided vehicular access to the X-326 Process Building. It has a poured concrete slab foundation, walls clad in corrugated metal, and a large rolling metal garage-type door on the east façade. Access to the central portal building was gained through a typical metal door on the interior of the vehicular access portal. A chain link fence topped with barbed wire surrounds the X-111A Portal. Barbed wire also runs along the roofline of the portal buildings. A small access drive to the rear of the portal leads to an opening on the X-326 Process Building.

The X-111B Portal is located on the north façade of the X-326 Process Building and is nearly identical to the X-111A Portal, with the exception of the vehicular access portal (Figures 4 and 5). The portal consists of two rectangular buildings in an L-shaped plan, comprising approximately 300 square feet. The main building is similar to the central building of the X-111A Portal with a poured concrete slab foundation, concrete block bearing walls, a window opening with plate glass, and a flat steel roof. The northern building provided a pedestrian access and vestibule for the X-111B Portal, and features concrete pier foundations, metal walls, window openings with sliding sash, and a flat metal roof. There was no vehicular access portal for the X-111B Portal; the portal is physically attached to the X-326 Process Building.

The interior of the portals are nearly identical, with the vestibules containing a simple keypad and intercom for access to the central building. The portals' central buildings contained a variety of equipment used for security and safety screening on any persons or equipment entering or leaving the X-326 Process Building.

Part III. Sources of Information

Department of Energy. *The Role of the Portsmouth Gaseous Diffusion Plant in Cold War History*. Piketon, OH: U.S. Department of Energy, 2017.

Department of Energy. *Remedial Investigation and Feasibility Report for the Process Buildings and Complex Facilities Decontamination and Decommissioning Evaluation Project at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-0245&D3. Piketon, OH: U.S. Department of Energy, 2014.

Department of Energy. *National Historic Preservation Act Section 110 Survey of Architectural Properties at the Portsmouth Gaseous Diffusion Plant in Scioto and Seal Townships, Piketon, Ohio*, DOE/PPPO/03-0147&D1. Piketon, OH: U.S. Department of Energy, January 2011.

Appendix A: Survey Photographs



Figure 1: Location and Orientation of Exterior Photographs (A-2 through A-5)



Figure 2: North Side of the X-111A Special Nuclear Materials Monitoring Portal,
August 2014, Facing Southwest



Figure 3: South Side of the X-111A Special Nuclear Materials Monitoring Portal,
August 2014, Facing Northeast



Figure 4: North Side of the X-111B Special Nuclear Materials Monitoring Portal, August 2014, Facing Southwest



Figure 5: North Side of the X-111B Special Nuclear Materials Monitoring Portal, August 2014, Facing Southeast

Appendix B: Historical Drawings

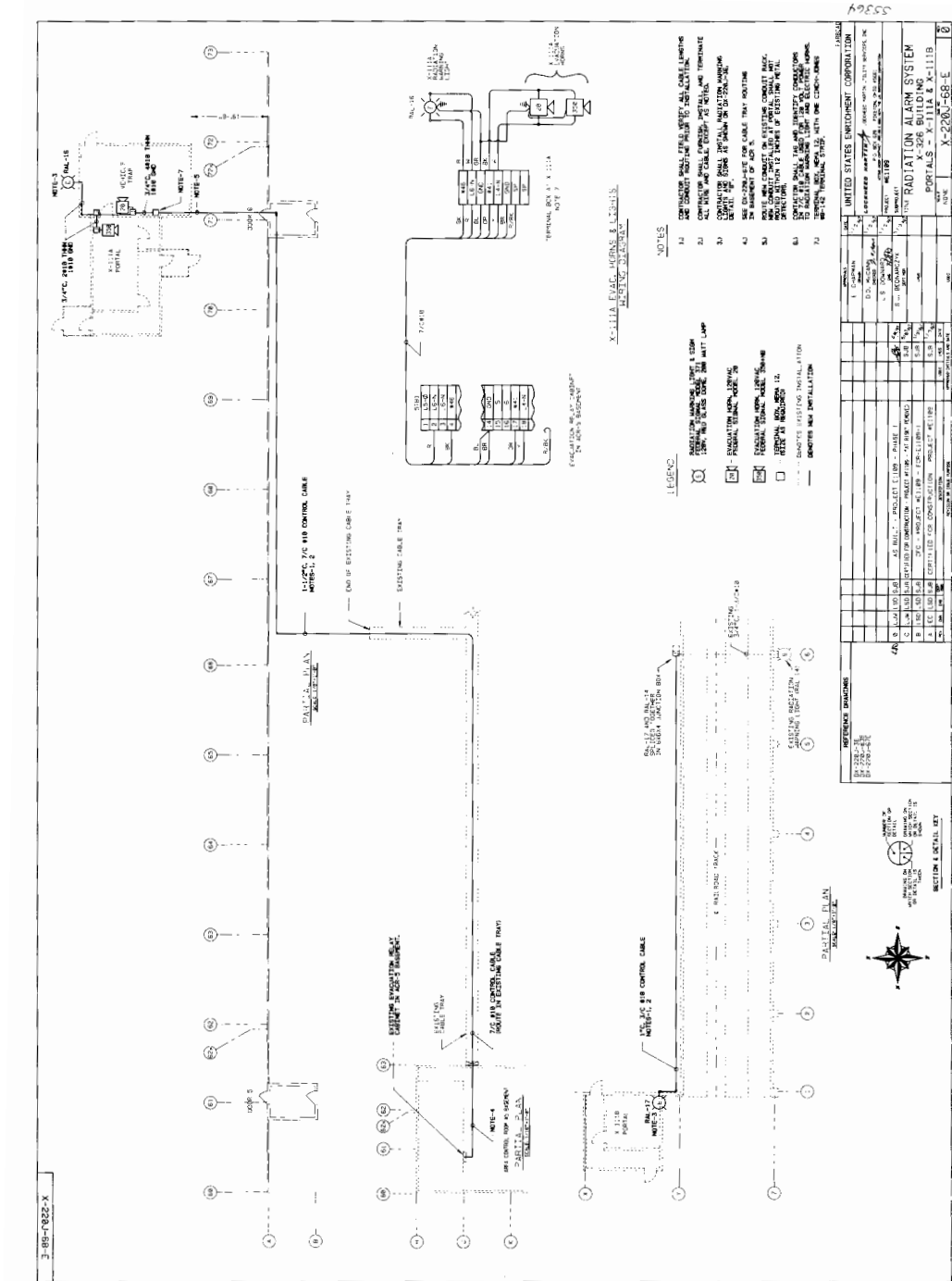


Figure 6: Radiation Alarm System