

Paducah

Overview

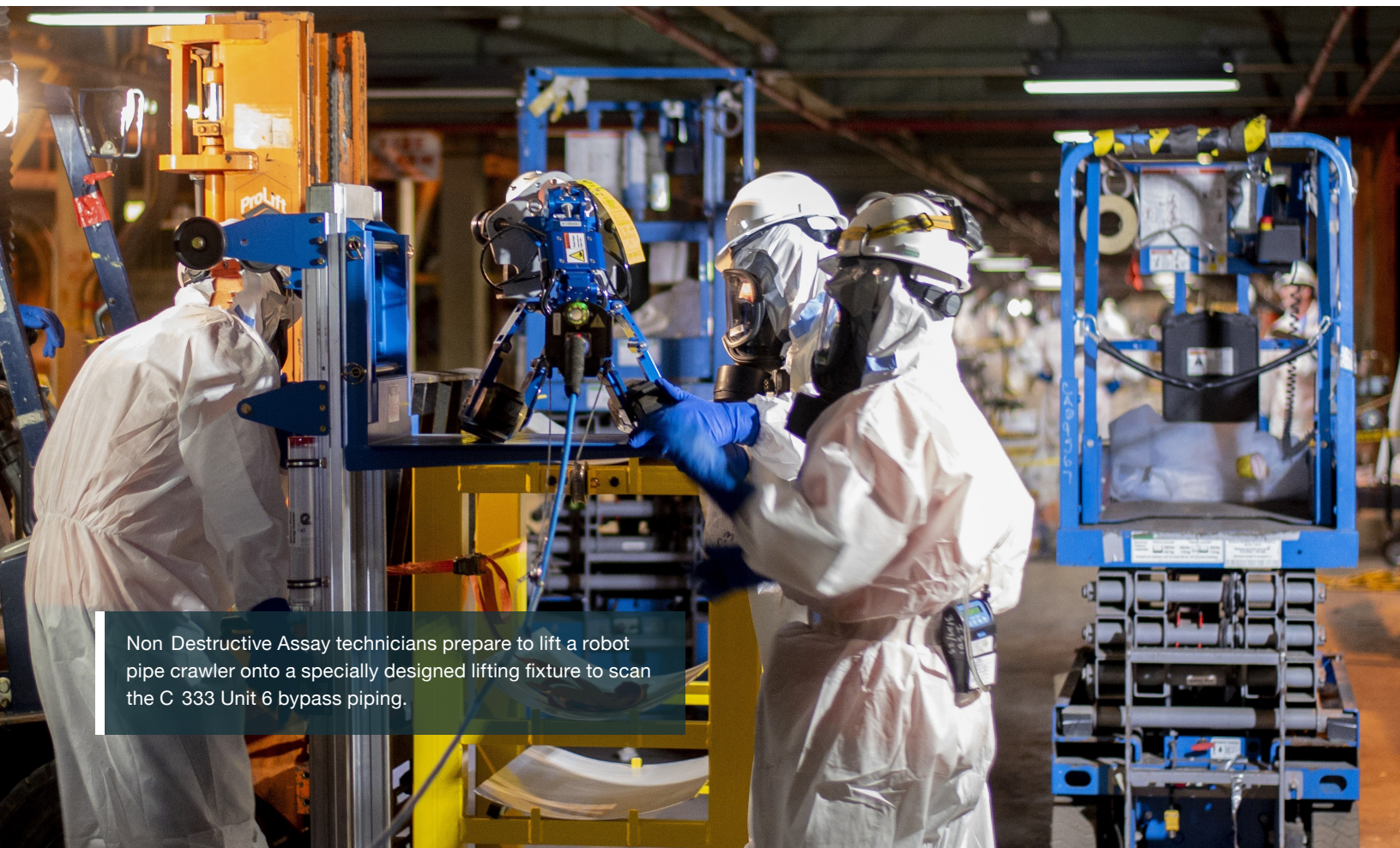
In 1950, the Atomic Energy Commission (AEC), a predecessor agency to DOE, selected a 3,556-acre tract of government-owned land near Paducah, Kentucky, in McCracken County, as the location to construct a second Gaseous Diffusion Uranium Enrichment Plant (GDP) to support U.S. national security needs. The Paducah GDP enriched uranium from 1952 to 2013 and was the last government-owned enrichment facility to operate in the United States. The Paducah GDP produced low-enriched uranium originally as feedstock for nuclear weapons materials and later for commercial nuclear power plants.

Environmental cleanup of the Paducah GDP began in 1988 when groundwater contamination resulting from plant operations was discovered outside of the DOE property. Environmental cleanup includes remediation of groundwater, surface water, soil, lagoons, and burial grounds. All of the more than 500 facilities and buildings will be evaluated for removal and/or remediation, including four process buildings measuring more than 74 acres under roof.

The Paducah Site is also home to one of DOE's two depleted uranium hexafluoride (DUF6) conversion plants. DUF6 was a byproduct from uranium enrichment operations at Oak Ridge, Tennessee; Portsmouth, Ohio; and Paducah, Kentucky. DOE is safely converting the DUF6 material from approximately 67,000 steel cylinders at the Portsmouth and Paducah sites to more stable and usable compounds.

Calendar Year 2023 Accomplishments

- **Removed an additional 1 million pounds of hazardous R-114 refrigerant — an EM 2023 priority**
- **Completed demolition on 16 excess facilities**
- **Completed the C-209 Protective Forces facility and the C-105 Emergency Operations Center**
- **Deployed the Large Item Neutron Assay System, advancing C-333 Process Building deactivation**
- **Began the first off-site shipping of depleted uranium oxide from Paducah's DUF6 conversion plants via multi-car rail shipments for disposal at a licensed facility**



Non Destructive Assay technicians prepare to lift a robot pipe crawler onto a specially designed lifting fixture to scan the C 333 Unit 6 bypass piping.

Planned Cleanup Scope 2024–2034

In 2024, the Paducah site will dispose of another 1 million pounds of R-114 refrigerant, complete construction of the C-211 Training Facility, finalize disposition of 11 associated trailers/sheds/tanks and other structures/equipment, and complete LED street lighting upgrades — a DOE sustainability initiative.

In 2024, through an agreement with Region 4 and the Commonwealth of Kentucky to implement a strategy which will accelerate cleanup and integrate the project portfolio to make land available for future economic development — DOE will address groundwater contamination in the Northwest Plume followed by Records of Decisions for Environmental Media, deactivation and demolition, and waste disposal options in the coming years.

Over the next decade, DOE plans to complete deactivation work at the C-333 Process Building, one of the four large process buildings on the site. These activities include hazard removal (including refrigerant, chemicals, fire hazards, etc.), characterization of the components within the facility, and other actions to prepare the C-333 Process Building for demolition.

Within the next two years, the primary focus of the deactivation activity is the segmentation of large components in the facility. The Paducah Site expects the segmentation/downsizing of all converters from

C-333, as well as characterization and deactivation of the process gas equipment contained in the unit bypass.

At the DUF6 facility in Paducah, DOE plans to continue steady state conversion operations, complete plant improvement modifications and process infrastructure upgrades supporting uranium oxide disposal.

In 2024, the Paducah DUF6 conversion facility expects to convert more than 7,000 metric tons of DUF6. By the end of 2034, approximately 110,000 metric tons of DUF6 material will be converted and approximately 16 million gallons of hydrogen fluoride will be recycled into commerce.

Key Regulatory Milestones 2024–2034

Cleanup activities at Paducah are covered by the Federal Facilities Agreement between DOE, the Commonwealth of Kentucky, and the EPA. Upcoming regulatory deliverables include:

- **Northwest Plume Technical Memorandum or Explanation of Significant Differences — 2024**
- **C-400 Complex Operable Unit Work Plan Addendum — 2024**
- **C-400 Complex Remedial Investigation Addendum — 2025**

Post-2034 Cleanup Scope

Beyond 2034, site activities will include implementation of the selected remedy for waste disposal and continued demolition of the more than 500 site facilities. The remaining environmental cleanup activities related to groundwater, surface water, soils, lagoons, and burial grounds are expected to also be completed. DOE expects to complete disposition of the entire inventory of DUF6 located at Paducah by 2057. DOE currently projects completing cleanup activities at Paducah in 2065 - 2070.

As future cleanup progresses, the planned Paducah end state is intended to allow the site to be used for light/heavy industrial purposes. This end state was developed in 2011 through a process conducted by the University of Kentucky that captured stakeholder input through a series of community meetings and integration of input from public, stakeholder, regulatory, and local community leaders. In 2023, DOE awarded a grant to the Paducah Area Chamber of Commerce to explore options for future development of the site. DOE continues to solicit and obtain stakeholder input through monthly meetings with the Paducah Citizens Advisory Board and community leaders.