

Paducah

Overview

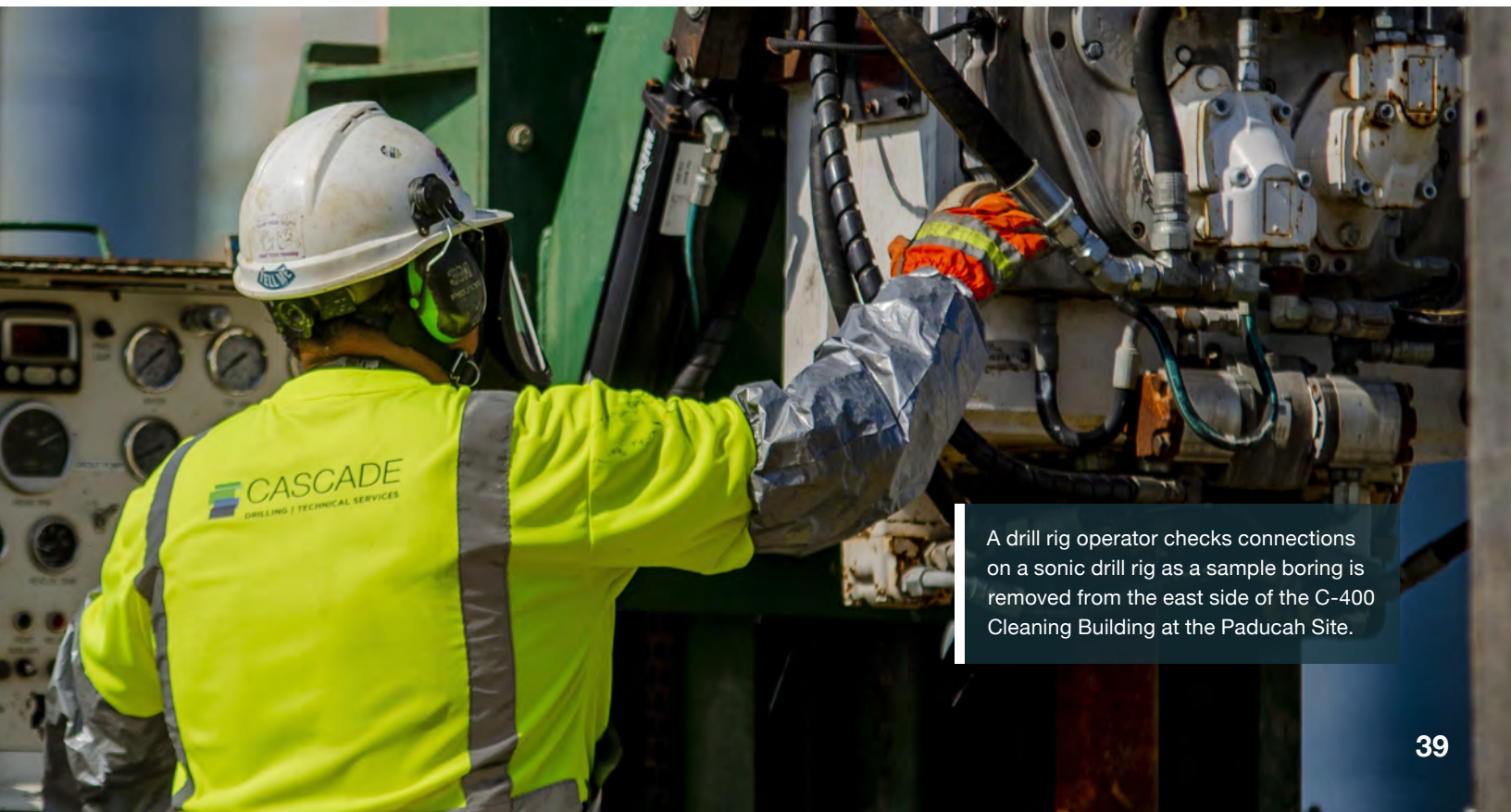
In 1950, the Atomic Energy Commission (AEC), a predecessor agency to DOE, selected a 3,556-acre tract of government-owned land near Paducah, Kentucky, in McCracken County, as the location to construct a second gaseous diffusion uranium enrichment plant (GDP) to support U.S. national security needs. The Paducah GDP enriched uranium from 1952 to 2013 and was the last government-owned uranium enrichment facility operating 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 two DOE DUF6 conversion plants. DUF6 was a byproduct from the uranium enrichment operations at the three enrichment plants in Oak Ridge, Tennessee; Portsmouth, Ohio; and Paducah, Kentucky. DOE has a total inventory of approximately 67,000 steel cylinders at the Portsmouth and Paducah sites. At Paducah, the DUF6 conversion facility began operation in 2011.

Calendar Year 2020 Accomplishments

- Completed pre-demolition scope and deactivation activities for the C-400 Building
- Removed approximately 750,000 pounds of hazardous refrigerant from the site
- Disposed of 22 cold traps that removed 42 percent of the enriched uranium stored at the site
- Processed 1,187 metric tons of inventory at the DUF6 conversion plant
- Completed the first shipment of DUF6 oxide for disposal



A drill rig operator checks connections on a sonic drill rig as a sample boring is removed from the east side of the C-400 Cleaning Building at the Paducah Site.



In 2020, the DUF6 Conversion Project completed the first of two pilot shipments of uranium oxide from the Paducah Site in Kentucky — six cylinders via specially modified railcar — off-site to a licensed disposal facility. In 2021, the project aims to complete the second pilot shipment, an alternate conveyance method with up to 12 cylinders per railcar. Routine shipments from the Portsmouth/Paducah Project Office sites in Kentucky and Ohio are part of EM's Strategic Vision.

Planned Cleanup Scope 2021–2031

At Paducah, work over the next decade will continue to focus on remediating a trichloroethylene (TCE) groundwater contamination plume, along with activities to prepare the site's former uranium enrichment process buildings for demolition.

In 2021, the Paducah Site will complete a major milestone in right-sizing utilities to meet future cleanup needs. DOE is expected to complete construction of a new Tennessee Valley Authority substation and tie-line connecting to the plant, allowing the site to significantly reduce electrical usage. Additionally, this action will kick off the deactivation of the C-531 switchyard for potential reuse. DOE will continue deactivation activities in the C-333 building by removing and dispositioning process gas equipment components and other activities to facilitate hazard removal; and in the C-710 technical services building by characterizing, removing, and dispositioning fissile material and equipment from the building. In addition, the site will continue to remove hazardous refrigerant stored in rail cars to improve the overall safety posture of the site.

For the upcoming years, DOE will perform fieldwork associated with the characterization and remediation of the C-400 Complex Operable Unit, the highest environmental priority at the site. The C-400 Complex includes the C-400 Cleaning Building, which utilized TCE for cleaning equipment. The complex is the primary

source of the TCE groundwater contamination that was discovered off the DOE property in 1988. DOE will work with federal and state environmental regulators to perform remedial investigation activities, developing and reaching consensus on final remedial actions, and preparing and implementing the remedial action work plans. In 2024, DOE anticipates a ROD to identify the final remedial action for the C-400 Complex. The demolition of the C-400 Cleaning Building in 2027 will facilitate this action.

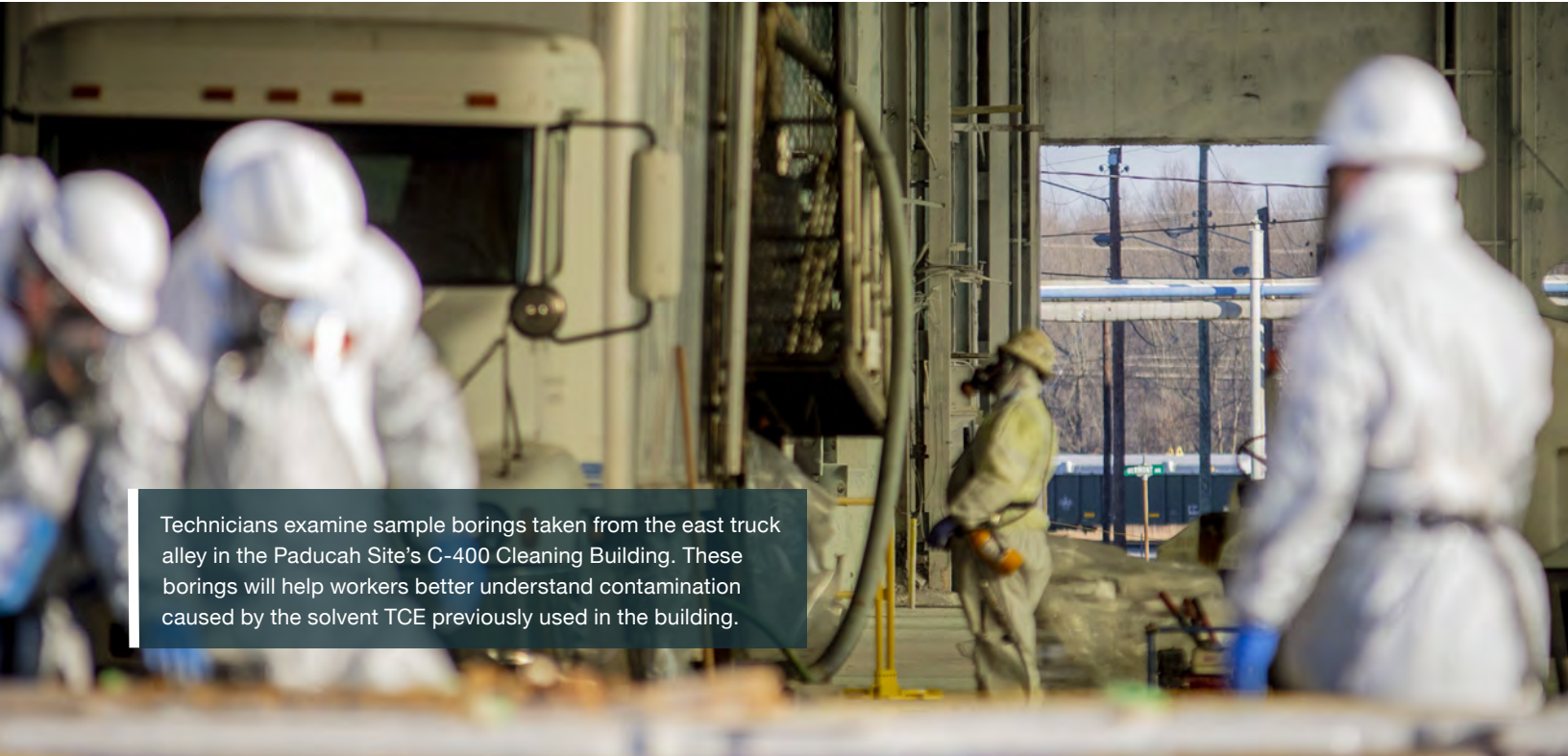
Over the coming decade, DOE plans to complete deactivation work at the C-333 Process Building, one of the four large process buildings at the site. These activities include hazard removal (including refrigerant, chemicals, fire hazards, etc.), characterization of the components within the facility, and other actions to prepare the C-333 Process Building for demolition. Paducah is also expected to begin the regulatory documentation process to determine the waste disposal options associated with demolition of the process buildings and balance of plant cleanup activities.

In 2021, 2,500 metric tons of inventory at the DUF6 conversion plant will be processed. Over the next 10 years, the plant expects approximately 73,500 metric tons of DUF6 material will be converted, and approximately 21 million gallons of hydrogen fluoride will be shipped off-site for commercial use.

Key Regulatory Milestones 2021–2031

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

- Complete RI/FS for C-400 final remedial action — October 2022
- Complete proposed plan for C-400 final remedial action — April 2023



Technicians examine sample borings taken from the east truck alley in the Paducah Site's C-400 Cleaning Building. These borings will help workers better understand contamination caused by the solvent TCE previously used in the building.

Post-2031 Cleanup Scope

Beyond 2031, 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.

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. DOE continues to solicit and obtain stakeholder input through monthly meetings with the Paducah Citizens Advisory Board. In 2020, DOE completed a land transfer process model to raise awareness of DOE's plans for future land transfer. In addition, ongoing meetings with community leaders will continue to support future development of the site.