FY 2018 Annual Report







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UCOR work scope on the DOE Oak Ridge Reservation

East Tennessee Conduct surveillance and maintenance

Bear Creek

Assist with stabilizing and preparing old, select unneeded facilities for demolition

Oak Ridge National

Laboratory

Oak Ridge Turnp



Y-12 National Security Complex

 Address mercury contamination; assist with building treatment facility
Characterize, stabilize, and

Oak Ridge

remove select unneeded buildings



UCOR's track record of bringing in projects ahead of schedule and under budget has allowed DOE to entrust us with more scope, moving our work into other areas of the Oak Ridge Reservation.

Technology Park

- Complete cleanup of former gaseous diffusion complex
- Assist DOE with transformation of site into private-sector industrial park



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Message from the President

Finishing strong

Fiscal Year (FY) 2018 was another successful and dynamic year of cleanup on the U.S. Department of Energy's (DOE) Oak Ridge Reservation thanks to the skilled and experienced workforce of UCOR, an AECOM-led partnership with Jacobs. UCOR workers sustained a remarkable safety record as the pace and scope of our work increased. In fact, FY 2018 was the safest operations year since our company's inception. Our safety commitment was recently recognized with the DOE Voluntary Protection Program Star of Excellence award, which we've now received for two consecutive years. We will continue operating with safety as a prerequisite for any work we do.

Vision 2020

We made impressive progress at East Tennessee Technology Park (ETTP) during FY 2018. We completed cleanup of the sprawling Central Neutralization Facility, which used to treat the site's industrial wastewater. We demolished the TSCA Incinerator, which, when operational, was the only one of its kind in the nation. Our Poplar Creek area cleanup continued with the demolition of the K-633 Test Loop Facility and demolition initiation for Building K-1232. We continued addressing ETTP soil and groundwater contamination and performing a myriad of other cleanup projects. Our work at ETTP is helping to reduce the federal footprint at the site and allowing DOE to further its goal of transforming ETTP into a private-sector industrial park, national park, and conservation area. As part of that footprint reduction and to align the workforce with the remaining work, we have moved most of our operations offices to a new offsite facility and continued transitioning other employees off the ETTP footprint.

Enabling Vision 2024

With less than two years left before we complete ETTP cleanup, our investment-worthy performance has resulted in an expansion of our scope to prepare other sites on the DOE Oak Ridge Reservation for cleanup, including excess contaminated facilities to make way for future DOE missions. UCOR also kicked off construction of the Outfall 200 Mercury Treatment Facility at the Y-12 National Security Complex, which will enable large-scale cleanup of legacy facilities by capturing mercury that could migrate from the site during cleanup operations.

Preparing for the future

When UCOR took over the ETTP cleanup project in 2011, we had a long list of projects, many very challenging and risky, to accomplish. Seven years later, we have successfully tackled some of the most difficult cleanup in the DOE complex, safely finishing most of our projects ahead of schedule and under budget. Our exceptional workforce is responsible for our success, and we are cultivating the next generation of workers through efforts such as apprenticeships and a rising senior leaders program. Also paramount to our success are the partnerships we've cultivated with DOE, our regulators, our subcontractor workforce, the City of Oak Ridge, the state of Tennessee, our labor unions, and surrounding communities. These partnerships are foundational to UCOR's culture of excellence.

Ken Rueter President and Chief Executive Officer





Safety & Health

Safety is a prerequisite for all that we do

UCOR's commitment to safety is unwavering, and our goal is to ensure all employees return home at the end of the day in the same condition they arrived for work. We will never cut corners, and we have empowered our employees to stop work if they perceive unsafe conditions. We promote a strong safety culture through employee engagement initiatives, campaigns, special employee safety recognition programs, exercises, and sponsorship of safety-related events and activities.

FY 2018 was our safest yet, with the lowest total recordable case and days away rates since our contract began.

UCOR: a culture of safety excellence

UCOR established the 2018 Voluntary Protection Program employee engagement initiative, called Culture of Excellence, to build and grow our quest for continuous improvement. Culture of Excellence emphasized the concepts of a robust, collaborative safety culture required to sustain and strengthen performance.

More than 1,000 employees demonstrated their individual commitment and safety culture by participating and performing activities in the Culture of Excellence safety initiative. This program focuses on sharing safety at home and in the community, and on improving individual health and wellness.

CULURE of EXCELLENCE

Campaign to prevent slips, trips, and falls



In support of the Occupational Safety and Health Administration's National Stand-Down to Prevent Falls in Construction, UCOR hosted a series of safety activities with special emphasis placed on ladder safety and slips, trips, and falls. UCOR's campaign "Walking is Working" brought focus on UCOR's most common injury.



UCOR teams with DOE and others for SafetyFest

SafetyFest Tennessee once again provided valuable safety information and free training for the community, and UCOR was again a key sponsor for the event.

The annual safety training event, held in September 2018 in Oak Ridge, offered numerous free classes on a variety of topics, such as fire safety, injury prevention, first aid, and ladder safety. It was presented by DOE and 55 local and regional business partners and sponsors. More than 1,200 attendees from 23 states gained valuable safety and health knowledge for work and home.

UCOR wellness efforts focus on opioid crisis

The nationwide opioid crisis has been a focus of UCOR wellness efforts in FY 2018.

UCOR partnered with the Allies for Substance Abuse Prevention of Anderson County, Inc., and the Oak Ridge Police Department to host Operation Medicine Cabinet, an event allowing a convenient and responsible way for people to dispose of unused or expired medications. The effort resulted in 100 pounds of medication being collected over a two-day span.

UCOR's Medical Director Burt Prater was named to the Knoxville Metro Drug Coalition, a subgroup of the state of Tennessee Opioid Abuse Task Force. In this role, Dr. Prater joined pain management professionals and other physicians to work with community leaders and businesses to fight opioid addiction.



ES&H emerging professionals with UCOR staff

UCOR promotes STSC certification

With more than 200 employees certified as Safety-Trained Supervisors-Construction with the Board of Certified Safety Professionals, UCOR continues to provide 8-hour examination preparation classes and board registration and exam fees to those seeking certification. UCOR remains the employer with the most STSCs in the state of Tennessee.



Operation Medicine Cabinet

UCOR hosts emerging ES&H professionals

UCOR hosted 30 AECOM Environment, Safety and Health (ES&H) emerging professionals at a Professional Development Conference, held in September at UCOR's 90 Union Valley office. The conference provided an opportunity for participants to share ideas and hear about the work going on at various AECOM sites. The attendees also participated in SafetyFest Tennessee.



Projects ETTP



Central Neutralization Facility demolished

UCOR has completed demolition of ETTP's Central Neutralization Facility (CNF), which once treated the site's industrial wastewater.

Most of the demolition debris was disposed of at on-site DOE Oak Ridge Reservation facilities. UCOR safely completed the project five weeks early and \$3.9 million under budget.

CNF was constructed in the mid-1980s to treat wastewater resulting from operations at the former uranium enrichment plant. All operations at CNF ceased in 2013, and a new wastewater treatment facility, called the Chromium Waste Treatment System, began operating on the CNF footprint that same year.





CNF before and after demolition



Projects ETTP

Workers bring down one-of-a-kind incinerator that treated unique wastes

Demolition has safely been completed on one of the most unique facilities at ETTP—a one-of-a-kind incinerator that once treated radioactive and hazardous wastes. The Toxic Substances Control Act Incinerator is named after a law passed in 1976 that addressed the production, use, and disposal of specific chemicals.

UCOR wrapped up the demolition project three months ahead of schedule and under budget. Most of the demolition debris was disposed of at a DOE Oak Ridge Reservation waste disposal facility.

The incinerator began operating in 1991, treating radioactive and hazardous wastes (mixed wastes) contaminated with polychlorinated biphenyls (PCBs).

As the only U.S. facility permitted to incinerate those types of wastes, it accepted material from the Oak Ridge Reservation and other facilities across the nationwide DOE complex.

The incinerator was shut down in December 2009 after treating 35.6 million pounds of waste. Workers then began to prepare the facility for demolition, which included cleaning, rinsing, and filling sumps; encapsulating PCB and radioactive contamination; disconnecting pipes; and removing and disposing of carbon vessels, which were part of the water management system.





Projects ETTP

K-633 Test Loop Facility demolished

UCOR completed demolition of ETTP's K-633 Test Loop Facility.

Building K-633, one of several radiologically contaminated facilities in ETTP's Poplar Creek area, consisted of four separate and independent testing loops that have common auxiliary systems and utilities.

The first three loops were built to test and evaluate gaseous diffusion plant stage equipment performance under production conditions. In 1981, a fourth test loop was installed, which evaluated prototype equipment designed for withdrawal of depleted uranium hexafluoride tails from the gas centrifuge enrichment plant. The 18,100-square-foot facility was shut down in 1984. The radiological contaminants in the building



were affixed inside piping and equipment using fixatives and foam, allowing for safe demolition of the structure.

Most of the demolition debris was disposed of at the Oak Ridge Reservation disposal cell. A few components were shipped to the Nevada National Security Site for disposition.



Major facilities being prepared for demolition

The two largest facilities left at ETTP—K-1037 and the K-1200 Centrifuge complex—are undergoing preparation for demolition. Demolition of both facilities will take place in the next couple of years. As with much of the work UCOR is tasked with performing, these projects present risks because of the contaminants contained within.

Building K-1037 is a 380,000-square-foot structure that produced barrier material for the gaseous diffusion process. Deactivation of the facility has been ongoing for more than a year, and demolition is expected in FY 2019. The deactivation process includes asbestos abatement, utility disconnection, equipment and waste removal, and other necessary steps to ensure demolition can be performed safely.

Deactivation has also begun in the Centrifuge Complex this fiscal year. The facility was used to test the reliability of test centrifuges. Work in the facility includes asbestos abatement, hazardous and universal waste removal, characterization/sampling, and utility isolations.



Demolition set to begin on K-1232 Building



Thanks to preparation in FY 2018, workers began demolition of the K-1232 facility in early FY 2019

At the end of FY 2018, workers were ready to begin demolition of Building K-1232, the Chemical Recovery Facility. The two-story, steel-framed structure, which measures 140 feet by 60 feet, is located in the Poplar Creek area of ETTP. It was constructed in the early 1970s to recover chemicals used in operations at the K-25 Site. Recovery operations were shut down at the site in January 1982.

In the 1980s and early 1990s, K-1232 was used to treat wastewater from the Y-12 National Security Complex.

Projects ETTP

ETTP contaminated soil and groundwater ubeing remediated for future use

UCOR excavated 35,839 yd³ of soil in FY 2018

Ongoing soil remediation efforts are helping to prepare ETTP for future commercial industrial use. The site is divided into two cleanup regions: Zone 1, a 1,400-acre area outside the main plant, and Zone 2, an 800-acre area that comprises the main plant area. The Zone 2 Record of Decision (ROD), a document detailing how cleanup will be conducted, divides the zone into seven geographic areas and 44 Exposure Units (EUs) ranging in size from 6 to 38 acres each.

To support reindustrialization in Zone 1, UCOR began final characterization work in the areas of the former Powerhouse and Duct Island. Soil remediation efforts were accelerated on Duct Island to support a pending land transfer.

UCOR continued work on multiple Zone 2 EUs. In EU-17, UCOR completed remediation of the large K-801/802 basins. In the EUs that make up the former K-25 footprint, workers completed five remedial action projects to address PCB and uranium hot spots, and completed delineation and mobilization for the largest soil excavation project at the site. UCOR also queued up remaining remedial work that is needed to allow the K-25 slab to be used as a National Historical Park.



Excavation in one of ETTP's exposure units

Groundwater at ETTP

UCOR accomplished two significant ETTP groundwater milestones in FY 2018. It submitted the Groundwater Treatability Study Design Characterization Completion Report to DOE, and DOE transmitted the document to Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC). This study fully characterized the largest trichloroethylene plume source at ETTP, a key step in obtaining a final groundwater decision at ETTP. UCOR also completed the investigation report for the former K-31/K-33 area, which will lead to a final remediation decision.

Moving offsite frees up ETTP for reindustrialization

Most of UCOR's management offices have moved off the ETTP site—a planned effort that relocated personnel to facilitate the transition of the site to a private-sector industrial park. Many of those moving are now located at UCOR's 90 Union Valley facility, with others relocating to other facilities in Oak Ridge. The move relocates personnel closer to cleanup work that is taking place at ORNL and the Y-12 Complex, which is becoming more of a focus as ETTP cleanup approaches completion.





ORNL cleanup project UCOR is responsible for the Molten Salt Reactor Experiment, operation of the Liquid and Gaseous Waste Operations, and surveillance and maintenance of nuclear and non-nuclear facilities. Maintaining and preparing these facilities for eventual demolition assists Oak Ridge National Laboratory (ORNL) in continuing its science mission.

Hot cells' contamination encapsulated

The ORNL Surveillance and Maintenance Team completed one of the final steps to ensuring the safety of the Building 3028 Alpha Powder Facility in FY 2018.

All materials were removed from the building's seven hot cells years ago, but the internal components are highly contaminated. To reduce the hazards, the team used a "fogging" process to apply a fixative to the internal components to encapsulate the radioactive contamination.



A worker fogs a hot cell in Building 3028

Located in the ORNL Isotopes Area adjacent to Stack 3039, the four-story building was constructed in 1950 as part of the Isotopes Program. It originally housed the Iodine-131 processing facility and a four-story ion exchange column separation facility for Promethium-147. The building contains former laboratories for various isotope and target fabrication production.

Key operating documents updated

The ORNL Operations & Cleanup Project reached two major milestones in 2018—implementing updated Documented Safety Analysis and Technical Safety Requirements for the Molten Salt Reactor Experiment and the Low-Level Liquid Waste System.

These documents essentially serve as the operating license for both of these nuclear facilities. Their implementation is the culmination of a multi-year effort to update the documents. Operators at both facilities had to be trained in the new requirements, which included some procedural changes that had to be learned while still maintaining the facility in operating mode. Lessons learned from initiatives across the DOE complex were included in the new analyses.

The Molten Salt Reactor Facility was an experimental reactor that operated in the 1960s. The Low-Level Liquid Waste system at ORNL collects and stores aqueous radioactive waste from various sources.

Projects ORNL

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Workers replaced the J-1050 pumps and associated header in Building 3608 as part of a maintenance activity to upgrade a major section of the LGWO system

Upgrade made to key LGWO equipment

Liquid and Gaseous Waste Operations (LGWO) is a centralized system designed to treat liquid and gaseous waste streams from ORNL research, groundwater, and operating facilities. LGWO treats contaminated process wastewater, provides volume reduction and storage of liquid low-level waste (LLLW), and treats gaseous effluent from building and laboratory exhausts through three waste treatment systems—the Process Waste System, the LLLW System, and the Gaseous Waste System.

Parts of LGWO were originally constructed in the 1950s and remain in service today – well beyond their design life. A critical portion of LGWO, the Process Waste Treatment Center, consists of two primary facilities – the radiological waste water treatment facility (Building 3544) and the non-radiological waste water treatment facility (Building 3608).

Plans are underway to combine the functions of the two buildings into a single consolidated facility (Building 3608). Modernization of Building 3608 will extend its operating life for decades, while consolidation of processes into one building will significantly reduce operating costs.

In planning the upgrades, UCOR

conducted a review and extended life study of LGWO systems to evaluate the infrastructure and develop recommendations for future operation of the three waste treatment systems, which have become outdated and portions are rapidly deteriorating. The evaluation included a description of the systems and users, review of the operating and maintenance history, and walk-down and testing results. The extended life study included a forecast of future users and capacity requirements, required maintenance upgrades, new technology evaluation, and life-cycle cost analysis. Near-term corrective actions included replacement of heat trace systems and cooling water header, installation



New LGWO header being put in place

of a bypass line for the process wastewater system for redundancy, and a dike repair/reseal in Building 7961. A motor control center power distribution upgrade project at Building 2531 was also completed in FY 2018. The project consisted of design, construction, startup, and turnover of important electrical power supply to the facility. The new motor control centers replaced the obsolete power center that was designed and installed in the 1960s.

Also completed in FY 2018 was the concrete dike repair and reseal at Building 7961. The old coating was cleaned, all cracks filled, and the dike was completely resealed.

Projects ORNL

Workers continue hazard management at MSRE

The Molten Salt Reactor Experiment (MSRE) facility, a liquid-fuel test reactor, was shut down in 1969 after four years of operation. DOE and its contractors have performed several studies and removal actions to stabilize the facility. This includes removing uranium deposits and defueling the reactor salts. In 2016, an MSRE Engineering Evaluation Team was chartered to assess current facility conditions and develop recommendations to maintain the facility in a safe state until deactivation and demolition commence.

Plans are now underway to "lay up" the MSRE facility until deactivation and demolition can occur. The lay up places the facility in a state that minimizes maintenance costs, reduces personnel risk of injury and exposure, provides reliable electric service to the facility, and requires zero personnel occupancy.

During FY 2018, UCOR workers continued characterizing and disposing of legacy defueling equipment, such as the fuel salt probes and fuel salt glove box. Routine surveillance and maintenance activities continue to manage the remaining hazards, including periodically removing reactive gas generated by the defueled salts.

The Reactive Gas Removal System (RGRS) at MSRE was installed to support removal of solid uranium deposits and fluorine from existing off-gas piping. In FY 2018, workers completed the successful pumpdown of fuel drain tanks and fuel flush tank. The RGRS pumpdown removed fluorine gas and backfilled the tanks with argon, an inert gas, to maintain a less corrosive environment in the tanks and to minimize pressure differential between atmosphere and the tank internals.



Workers examine RGRS configuration at MSRE



Asbestos abatement in Building 7500

7500 abatement completed

UCOR completed asbestos abatement in Building 7500, the Homogenous Reactor Experiment Facility. All combustibles were also removed.

The Homogeneous Reactor Experiment was a research reactor built in 1951 that operated until 1961. Since then, the insulation and building's interior has degraded significantly.



Y-12 cleanup project

Cleanup of unneeded facilities at Y-12 is critical to allow the site to continue its national defense mission. UCOR is assisting with construction of a mercury treatment facility to capture mercury from cleanup activities and removal of excess contaminated facilities.



U.S. Rep. Chuck Fleischmann and U.S. Senator Lamar Alexander join local officials for the Mercury Treatment Facility ground breaking

Prep work begins on Mercury Treatment Facility

UCOR and DOE held a ground breaking event for the Outfall 200 Mercury Treatment Facility in late 2017, launching the start of project construction. UCOR is responsible for preparing the site. The new facility will reduce mercury in the waters of Upper East Fork Poplar Creek and enable large-scale cleanup to begin at Y-12.

In FY 2018, UCOR completed:

- Early site preparation activities, including demolition of abandoned structures and rerouting of existing site mechanical and electrical utilities to a new construction footprint
- The north secant pile wall
- 49 of 65 secant piles on the south wall



Workers install the north secant pile wall construction, which serves as a retaining structure

Projects Y-12



Mercury removal, demolition near completion for Alpha-4's COLEX equipment

Part of Y-12's former uranium enrichment facility, Alpha-4, the Column Exchange (COLEX) equipment was used to separate lithium for defense missions for nearly a decade. COLEX used large quantities of mercury in the production process.

UCOR was tasked with mercury removal, system deactivation, and demolition of the West COLEX process. These tasks will reduce risks associated with this mercury-contaminated facility. Crews removed 1.75 tons of mercury in 2018, bringing the project total to 3.19 tons. The team also completed asbestos abatement; inspected, drained, and removed 10,000plus feet of mercury-contaminated piping; and removed tanks, condensers, heat exchangers, and the mezzanine structure with a total weight over 1.6 million pounds. Contaminated metal was transported, treated, and disposed in Clive, Utah, with the project completing more than 130 shipments.

As the fiscal year came to an end, the COLEX team approached one of its final challenges—size reduction and removal of four Evaporator Feed tanks. The tanks—32 feet high and 28 feet in diameter—were used for storage of mercury prior to introduction into the process. UCOR demolished all evaporator feed tanks in FY 2018.



Demolition of evaporator feed tanks at COLEX West

Projects Y-12



UCOR is preparing one of DOE's excess contaminated facilities for demolition—the Biology Complex. Built in the 1940s, the Complex has served multiple purposes—from uranium recovery for defense missions to research on genetic effects of radiation.

The 350,000-square-foot area poses asbestos hazards as well as structural deterioration risks. Demolition of this facility is part of a nationwide effort to eliminate nonoperational facilities throughout the DOE Complex.

Demolition will reduce risks posed by potential contaminants and will enable critical Y-12 mission goals by freeing up land for construction of a National Nuclear Security Administration facility.

UCOR crews wrapped up facility characterization in 2018. The project began mobilizing the deactivation workforce and installed 11 work trailers and four construction elevators. The team has initiated temporary power and is verifying utility system isolation.

To ensure the safety of more than 50 new hires, UCOR is performing asbestos abatement mock-up training. The project created a simulated asbestos environment to allow crews to practice before entering actual work areas.

Partnering success



UCOR, working with labor organizations, cosponsored an apprenticeship readiness program that provided workers to the Biology Complex project, as well as other UCOR cleanup projects. For more information, see Partnering section on page 22.



UCOR wraps up transuranic drum disposition

During FY 2018, UCOR's Waste Disposition project prepared the final batch of legacy transuranic waste drums to be removed from ORNL, concluding an effort that began almost 14 years ago.

Past ORNL operations generated a great deal of Transuranic (TRU) waste, which was stored in containers in underground vaults awaiting eventual disposition. New wastes being generated are stored in containers that already have vent and sampling ports, but the older containers do not and must be vented and purged.

A total of 4,000 containers have previously been through the vent-and-purge process and shipped off-site in a campaign that started under a previous contractor in 2004. Sixty-seven containers remained to be processed. UCOR retrieved these containers from an underground storage vault. The containers have a potential for a buildup of hydrogen, which is why they must be vented. To perform this task, workers must place each drum in a closed HEPA ventilated unit and install the vent and sample ports remotely. Workers use a specially designed gun that placed both ports into the lid of each drum. The drum is then sampled and returned to the storage area. The sampling port allows workers to determine if hydrogen exist and is at a safe level. Drums found to have high levels of hydrogen may have an additional vent installed and are monitored until levels are safe.

Without being purged, the containers have the possibility of deflagrating (combusting). The unit where they are purged is reinforced and capable of withstanding a deflagration.

The containers were shipped to the Transuranic Waste Processing Center for processing. From there, they were shipped to the Waste Isolation Pilot Plant in New Mexico for final disposal.



Final EMWMF cell begins operation



EMWMF Cell 6

EMDF proposed for cleanup waste

To prepare for the next phase of Oak Ridge Reservation cleanup, UCOR is designing a new onsite disposal facility, the Environmental Management Disposal Facility (EMDF), to accommodate future Y-12 and ORNL cleanup. UCOR's EMDF team achieved the following milestones in 2018:

- Completed first phase of site characterization and issued results to client and regulators
- Received approval on key project milestone, Critical Decision-1, which presents preferred site location, technical approach, and cost range for the project
- Developed and supported release of the EMDF Proposed Plan
- Provided subject matter experts for EMDF informational meeting, introducing the proposed plan to the public

UCOR provided personnel to answer questions during public information sessions for EMDF

Cell 6, the final cell at Environmental Management Waste Management Facility (EMWMF), began accepting waste in FY 2018. It is the last of the six disposal cells at the 28-acre engineered landfill, which began operations in May 2002. The facility accepts lowlevel radioactive and hazardous waste—primarily remediation soils and building demolition debris.

EMWMF is at more than three-fourths of its total disposal capacity and will be full before DOE completes its cleanup of Y-12 and Oak Ridge National Laboratory. A second disposal facility is being planned nearby.



UCOR works hand-inhand with its regulators— EPA and TDEC—on waste management issues, including development of a new waste disposal facility. For more information, see Partnering section on page 22.



Performance

UCOR has delivered

\$2.187 billion worth of work for \$2.066 billion

since contract inception (August 2011)



More than 24 million cubic feet of waste safely disposed



5.5 million square feet of facilities demolished



81 percent of subcontracted work awarded to small businesses (\$888 million)



5.2 million safe miles traveled



The cost performance index (CPI) is the measure of the efficiency of expenses spent. CPI is equal to budgeted cost divided by actual cost. A value higher than one indicates a favorable condition, while a value less than one would be considered unfavorable.

Schedule Performance Index



The schedule performance index (SPI) is the measure of schedule efficiency. It is predictive of whether a project will finish ahead of schedule, on time, or behind schedule. A value higher than one indicates ahead of schedule, while a value less than one would be behind schedule.

Partnering

Productive partnerships essential to our ability to complete cleanup mission

Productive partnerships lie at the heart of UCOR's ability to perform its environmental cleanup mission in Oak Ridge. These partnerships increase the company's knowledge and experience, strengthen resources, and boost the opportunity for creative thinking and innovative problem solving.

Apprenticeship Training Highlights Labor Partnership

participants have a chance to try out union crafts and the construction industry before selecting a specific career trade.

The Next Generation of Workers

UCOR welcomed 15 students from nine universities in five states to an 11-week summer internship program where they were immersed in topics and activities related to their chosen field of study. The program aims

UCOR, in conjunction with the Knoxville Building and Construction Trades Council and the National Association of Building Trade Unions (NABTU), sponsored a new East Tennessee Apprenticeship Readiness Program in FY 2018.

The program led to immediate employment opportunities for construction craft on the Oak Ridge Reservation and elsewhere.

NABTU sponsors similar training nationwide.

The close partnership between Oak Ridge employers and the labor unions creates a favorable environment for those completing the training to transition to the workforce. With many current workers approaching retirement age, the demand for new workers is increasing. In addition to learning about DOE's Oak Ridge complex,



The UCOR-sponsored apprenticeship readiness classes held in 2018 resulted in jobs for the 48 participants, including 39 who joined the UCOR team



to promote growth and education and provide valuable on-the-job experience to each student.

UCOR also partnered with the University of Tennessee's Department of Nuclear Engineering and Oak Ridge Associated Universities to offer the nation's first minor in Nuclear Decommissioning and Environmental Management, with the first class graduating in 2018.

Cleanup Advisory Council

Pressing issues and challenges facing the Oak Ridge environmental cleanup program are addressed by the Cleanup Advisory Council. This partnership of senior business and community leaders met quarterly during the year to discuss federal funding, regulatory interactions, and future plans, including expansion of onsite landfill capacity and construction of a new Mercury Treatment Facility.

Regulators

UCOR continues to build on positive and productive relationships with regulators to ensure facility operations and cleanup work are done in full compliance with state and federal laws. Major partners in this area include DOE, the EPA, and TDEC. During FY 2018, UCOR worked with regulators to successfully clean close a hazardous waste storage unit at ORNL, obtained approval to transition post-closure care requirements from former disposal sites at Y-12 from RCRA to CERCLA, and obtained regulatory approval to cost-effectively dispose of contaminated soils and groundwater in accordance with a EPA's riskbased "contained-in" determination process. UCOR worked with regulators to obtain approval on a revised cover design for the Environmental Management Waste Management Facility. The new, thinner design maximizes landfill space while still being protective of the environment. Numerous regulatory visits and inspections during FY 2018 at UCOR facilities did not identify any environmental violations.

Small Businesses

UCOR partners with dozens of small businesses to achieve its environmental cleanup goals in Oak Ridge. In fact, since the UCOR contract was awarded in 2011, the company has subcontracted more than \$1 billion of its work, and an impressive \$888 million of that total went to small businesses.



Christy Jackiewicz, Deputy Director, DOE Office of Small and Disadvantaged Business Utilization in Washington, D.C., was the guest speaker at the 2018 UCOR Small Business Awards ceremony

UCOR improves the lives of local residents through its community programs

UCOR's FY 2018 community support came through a variety of avenues, including corporate donations, volunteer work, and fundraising campaigns.

UCOR donated more than \$270,000 to local charitable agencies and educational institutions while raising more than \$100,000 for the United Way. UCOR's community support focus is on children's advocacy, literacy and education, and health and wellness. Following are some FY 2018 highlights.

Mini-Grant Program

UCOR continued its popular minigrant program in 2018, awarding 38 grants to local schools to assist teachers in developing specific projects or curricula focused on science, technology, engineering, and math. UCOR has awarded these grants each year since 2012.



UCOR funded a Second Harvest mobile pantry, which provided food to more than 200 local families in need

United Way

UCOR conducted an annual campaign to raise funds for the United Way. Workers raised more than \$100,000 in 2017 and continued its campaign in 2018. Funds were raised through a variety of methods, including pledges, an auction, and various other fund-raisers. The funds are distributed among the local county United Way agencies so that the money raised stays in the communities in which employees live.

Roane County Career Day

UCOR demonstrated to several Roane County high school students what a potential career in cleaning up radioactive sites would be like at a Career Exploration Day. The event was hosted by Roane County high schools at the Roane State Community College Harriman campus.



UCOR held several fund-rasing events for United Way, including this crafting event in which a percentage of registration fees went to the campaign.

UCOR employees assisted students as they used the glove box to manipulate items within. They also provided information about UCOR to the students. Approximately 500 students attended the event to learn about a variety of career choices from numerous local companies.

Butterfly Dash and Bash

A team from UCOR helped raise more than \$2,000 for East Tennessee Children's Hospital at the 2nd Annual Butterfly Dash and Bash. A total of 50 employees and their families participated in the 10K/5K/Fun Walk and burger cook-off. Team UCOR won the "Most Creative" burger with their creation The Elvis, a burger comprised of Elvis's favorite foods with the perfect combination of salty and sweet.

Robotics grants

UCOR supported area middle school and high school robotics teams with robotics grants totalling \$5,000. A standout of the teams supported, Oak Ridge High School Secret City Wildbots, competed at the FIRST (For Inspiration and Recognition of Science and Technology) World Championships in Houston, Texas.

UCOR also partnered with the Roane State Foundation to sponsor a Robotics Lab-in-a-Box program, which placed nine Lab-in-a-Box kits in the hands of middle school teachers in rural East Tennessee.

Millennial Nuclear Cleanup Caucus

UCOR assisted with planning of the Millennial Nuclear Cleanup Caucus in Oak Ridge, which brought together young visionaries interested in the future of nuclear energy. These events have been held at various locations nationwide.

Legacy Parks Foundation

UCOR continued its support in FY 2018 for the Legacy Parks Foundation which UCOR's President and Chief Executive Officer serves as a board member. The Foundation works to ensure that our community enjoys exceptional recreational opportunities, natural beauty and open spaces, and that those assets exist for generations to come.



UCOR team members provide hands-on work demonstration at the Roane County Career Day

A total of 50 UCOR team members helped raise more than \$2,000 in the Butterfly Dash and Bash.





Recognition



UCOR's support for America Recycles Day was recognized with a Federal Green Challenge Award

UCOR receives EPEAT award

ETTP was presented an Electronic Product Environmental Assessment Tool (EPEAT) Purchase Award by the Green Electronics Council in 2018. The awards program honors organizations that show leadership in the procurement of sustainable IT products. Over their lifetime, compared to products that do not meet EPEAT criteria, the 1,182 EPEATregistered IT products ETTP purchased in 2017 will result in environmental impact reductions including:

- Reducing use of primary materials by 182 metric tons, equivalent to the weight of five semi-trucks
- Avoiding the disposal of 1.3 metric tons of hazardous waste, equal to the weight of 11 refrigerators
- Eliminating the equivalent of three U.S. households' solid waste for a year—6.4 metric tons
- Avoiding 1 metric ton of water pollutant emissions



EPA recognizes UCOR's green efforts

ETTP received recognition for the EPA Federal Green Challenge Award for 2018, becoming the sole recipient in EPA Region 4.

The Federal Green Challenge is a voluntary program designed to encourage federal facilities to achieve goals in the key sustainable areas of electronics stewardship, energy (gas, electric, fuel), purchasing, transportation, waste, and water.

ETTP was awarded two of the Federal Green Challenge Awards. The first award was a national-level award in the Energy Category associated with renewable energy purchased or installed onsite at ETTP. The second award was an EPA Region 4 award in the Education and Outreach category associated with UCOR's employee and community involvement and outreach associated with America Recycles Day activities. ETTP will continue the efforts to decrease the federal government's environmental impact throughout the site.

UCOR gets second Star of Excellence

For the second consecutive year, UCOR has received the DOE Voluntary Protection Program Star of Excellence.

The award recognized that UCOR has "achieved an outstanding level of performance in meeting established safety and health

goals, actively conducting outreach to others, and in achieving an injury and illness rate significantly below the average of similar businesses and operations."





Keever, fourth from left, receives award

Keever recognized for STSC support

Michelle Keever, UCOR's Safety Trained Supervisor Construction (STSC) Certification Program Lead, was awarded the STSC Award of Excellence in 2018. The award was presented by the Board of Certified Safety Professionals in San Antonio, Texas.

In the seven years the award has existed, Michelle is the first person to ever receive it. No one else had ever qualified. At UCOR, Michelle has provided STSC training to hundreds of employees, making UCOR the leading employer of STSC-certified employees in Tennessee.

Rueter receives Muddy Boot Award

UCOR President Ken Rueter received East Tennessee Economic Council's 2018 Muddy Boot Award, given for distinguished service to Oak Ridge.

In 1973, the founders of the East Tennessee Economic Council (then the Roane Anderson Economic Council) created this award to reflect the efforts of the Manhattan

Project founders of Oak Ridge, who worked through adverse conditions sometimes actual rivers of mud—to build this community. Each year thereafter, ETEC has honored those who have continued to help build and bolster the community's economic base.

The award is given to those who go above the call of duty—like those who served the nation during the Manhattan Project—to make the community, the state of Tennessee, and the nation a better place to live and work.



Rueter receives award from Danni Varlan, the Major Gifts and Annual Giving Officer at East Tennessee Children's Hospital

UCOR managers named Rising Stars

The National Safety Council has recognized two safety managers from UCOR with their 2018 Rising Stars of Safety award.

Clint Wolfley, Environment, Safety, Health and Quality Assurance manager, and Stephanie Miller, Project Industrial Hygiene lead, were spotlighted for being in the next generation of safety leaders younger than 40 who show a dedication to safety leadership at work.



Clint Wolfley and Stephanie Miller

Innovation

UCOR continues seeking innovative approaches

UCOR has an exceptional track record for performing work efficiently and safely, but we continue implementing innovative approaches in our quest for excellence. Following are some examples.

Virtual reality used to enhance performance

UCOR has implemented an aerial lift virtual reality training program to supplement classroom training. The virtual reality equipment allows operators to practice motor skills and improve their performance in a riskfree environment.



An employee uses a virtual reality training device

and debris from ORNL's Liquid and Gaseous Waste Operations tanks, sumps, and valve boxes. Without the trailer, personnel would have to enter these areas fully dressed out in personal protective equipment and manually remove the sludge using shovels and buckets. The new vacuum keeps operators safe by avoiding having them climb in and out of slippery areas while dressed out and strain by manually removing contaminated materials. One unique aspect of the trailer is its ability to dump the sludge/debris directly into a dewatering box. After a period of time, the dewatered waste can be placed into a waste container and shipped for disposal.

iPad-based Monitor Helps Control Heat Stress

In the summer months, heat stress is one of the biggest challenges facing many UCOR workers. Safety professionals are continually looking for improved solutions to reduce the threat of overheating on the job.

UCOR piloted a telemetric heart rate monitoring system—the OSHA-NIOSH Heat Safety Tool—to complement existing heat stress controls for workers. While full coverage personal protective equipment safeguards workers from other serious hazards, it also adds to worker heat stress and inhibits common forms of physiological monitoring. The telemetric chest monitoring system includes a wearable chest strap heart rate sensor that works in conjunction with an iPad tablet.

The telemetric heart rate monitoring system helps identify heat stress issues before they become a problem.



Proximity alerts

UCOR began testing the MyZoneTM proximity alert system on machinery. The MyZone Worker Alert System uses transmitters and receivers to alert workers to static or mobile hazards in his or her immediate area. For instance, the device, which is usually affixed to a hard hat, would vibrate when a large piece of machinery with a transmitter is nearby.

Innovative vacuum trailer cleans LGWO equipment

A powerful, trailer-mounted vacuum started operation in FY 2018 to remove decades of contaminated sludge

The Next Chapter

Completing ETTP cleanup and beyond

As cleanup progresses, the landscape of the former uranium enrichment plant continues to transform. As buildings come down, contaminated soil is removed, and waste is shipped offsite, DOE's plan to complete ETTP cleanup by 2020 and begin focusing on ORNL and Y-12 cleanup comes into clearer focus. The site that helped end war and fuel nations will again thrive ... as a multi-use industrial park, historic landmark (part of the Manhattan Project National Historic Park), and conservation area. To facilitate ETTP reuse, UCOR has begun moving personnel offsite and has transitioned the DOE-owned auto fleet to General Services Administration, allowing for closure of the ETTP garage.



Redevelopment

To date, UCOR's reindustrialization program has facilitated the transfer of more than 1,000 acres. In FY 2018, the program realized the following accomplishments:

- Completed all regulatory and congressional approvals for the transfer of the 207-acre Duct Island parcel
- Enabled final transfer of the 220-acre K-31/K-33 parcel, as well as Building K-1065 (Warehouses A, D, and E) and associated acreage
- Supported the Metropolitan Knoxville Airport Authority in its pursuit of the area's newest general aviation airport to be located on the ETTP footprint
- Facilitated refurbishment of a neglected barge area on the Clinch River by a private-sector tenant, which enabled transport of large equipment from Michigan to Oak Ridge via river systems
- Initiated river reconnaissance effort to document/ assess shoreline conditions for future cleanup



Refurbished barge



Preservation

Historic Preservation efforts at ETTP will honor the men and women who designed, built, and operated the world's first gaseous diffusion plant, K-25, and the hundreds of facilities and structures that followed. Commemoration will include construction of a history center, equipment building and viewing tower. In FY 2018, UCOR's National Historic Preservation team:

• Awarded three subcontracts for creation of the new K-25 History Center, including construction, site improvements, and exhibit fabrication and installation



Artist's rendering of K-25 History Center

- Began renovation on the future home of the history center, the second floor of an existing ETTP building, Fire • Station #4, owned by the City of Oak Ridge
- Began reviewing subcontractor shop drawings and storyboards to enable exhibit fabrication and audiovisual production
- Preparing artifacts for display



Conservation

In areas where redevelopment is less desirable due to terrain or topography challenges, UCOR is facilitating opportunities to enrich the community through potential conservation initiatives. Some 2018 activities included:

- Facilitated discussions with Legacy Parks Foundation, Oak Ridge Parks and Recreation, and the Foothills Land • Conservancy to explore how to optimize conservation areas
- Supported refinement of end-use strategy by parcel



A flock of sandhill cranes at the ETTP P1 Pond

