Advocate

A publication of the Oak Ridge Site Specific Advisory Board – a federally appointed citizens panel providing independent recommendations and advice to DOE's Environmental Management Program

Demolition Continues at Y-12's former Biology Complex

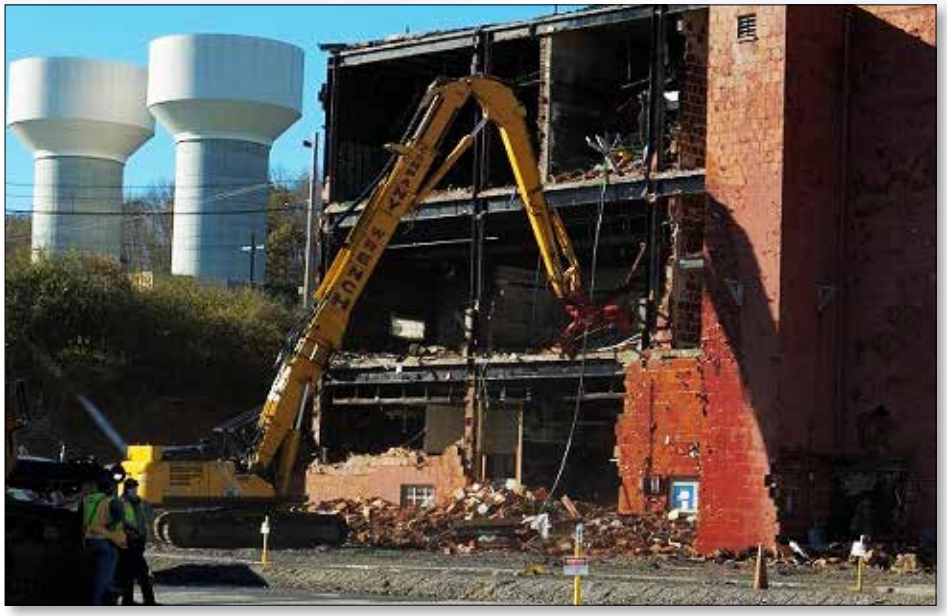
EM crews on Nov. 16 began taking down the remaining facilities located in the former Biology Complex at the Y-12 National Security Complex at Oak Ridge.

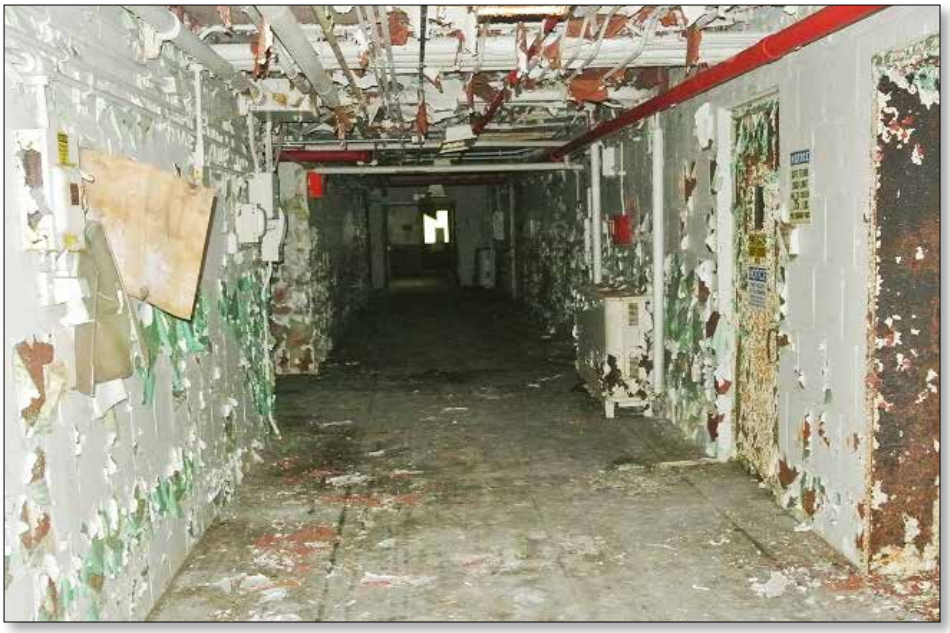
Those vacant, deteriorated buildings are categorized as high risk due to their structural condition, and their removal will provide land for national security missions at the site.

The Oak Ridge Office of Environmental Management (OREM) and its cleanup contractor, UCOR, are starting by demolishing the three-story 65,000-square-foot Building 9210. Once that work is completed early in 2021, crews will begin tearing down the six-story 255,000-square-foot Building 9207. Originally constructed for recovering uranium from process streams in the 1940s, the Biology Complex was later used for research that led to strides in understanding genetics and the effects of radiation.

"After completing the Department of Energy's largest environmental cleanup project to date at the East Tennessee Technology Park this year, we are shifting our focus to the next phase of cleanup in Oak Ridge," OREM Manager Jay Mullis said.

(See Biology Complex on page 6





(Above) EM crews begin knocking down the three-story 65,000-square-foot Building 9210 at Y-12 Nastional Security Complex on Nov. 16. (Below) A view of the conditions inside one of the remaining Biology Complex facilities, which date back to the 1940s. These buildings are part of Oak Ridge's inventory of excess contaminated facilities to be addressed by cleanup workers.

Issue 81 • January 2021

IN THIS ISSUE

Reservation Update

Team Conducts Vital Five-Year Review of Cleanup Measures

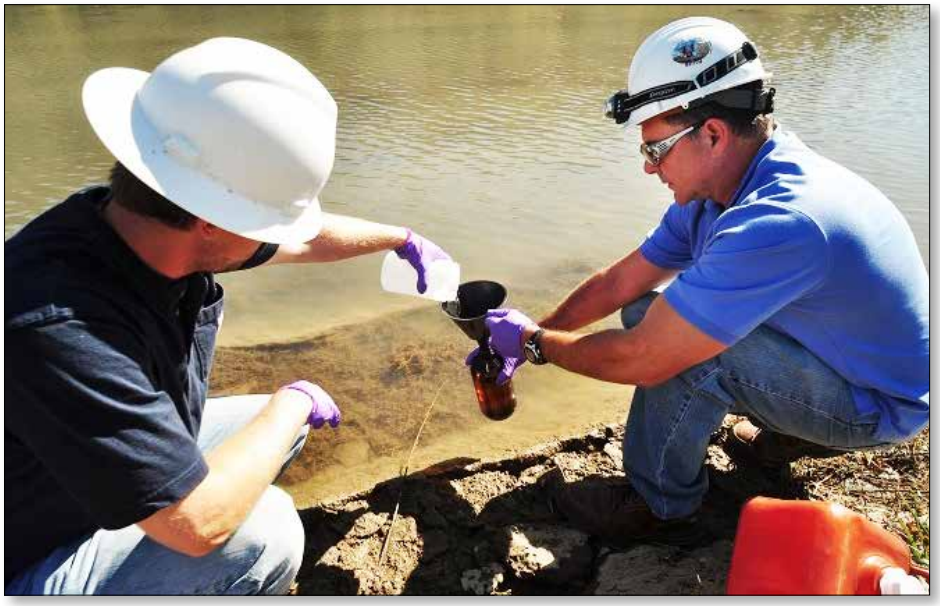
OREM and its cleanup contractor UCOR are conducting a critical review of remediation measures in place across the Oak Ridge Reservation virtually as they adapt to challenges from the COVID-19 pandemic.

The five-year, multi-agency review underway is designed to determine if remedies that have been implemented continue to protect human health and the environment. Required by CERCLA — the Comprehensive Environmental Response, Compensation and Liability Act — the review covers the three DOE sites in Oak Ridge — the East Tennessee Technology Park, Oak Ridge National Laboratory, and Y-12 National Security Complex. This is the fifth review since the start of remedial actions in Oak Ridge in the 1990s.

The review included more than 40 interviews held this summer followed by virtual site visits in August and September. Those interviewed included facility managers, engineers, system operators, project managers, subject-matter experts, and site personnel. Regulators, stakeholders, members of the Oak Ridge Site Specific Advisory Board, and others participated in the virtual site visits. Interviews and visits were conducted using online conference systems.

All three Oak Ridge sites will be evaluated on their performance of cleanup remedies. This evaluation will continue into the new year with results currently scheduled to be delivered by May 31, 2021.

Cleanup remedies address the legacies remaining from more than 50 years of energy research and weapons production. The measures includes environmental remediation, removing deteriorated and radioactively contaminated facilities, and disposing legacy low-level, mixed low-level, transuranic wastes, and hazardous and non-hazardous industrial wastes.



EM regularly conducts sampling across the Oak Ridge Reservation. The five-year review uses groundwater, surface water, soil, sediment, and data from plant and animal life from fiscal 2016 to fiscal 2020 for its evaluations.

The review, which will be finalized and released next year, uses groundwater, surface water, soil, sediment, and data on plant and animal life from fiscal 2016 through fiscal 2020 as the basis for its evaluations. Sampling is conducted as part of the review.

OREM, UCOR, the U.S. Environmental Protection Agency, and the Tennessee Department of Environment and Conservation will evaluate that data to ensure that the cleanup and remediation that are conducted to fulfill regulatory commitments are protective of human health and the environment.

EM Preps Experimental Cold War Reactor for Deactivation

OREM is set to begin cleanup of a first-of-a-kind experimental reactor at ORNL.

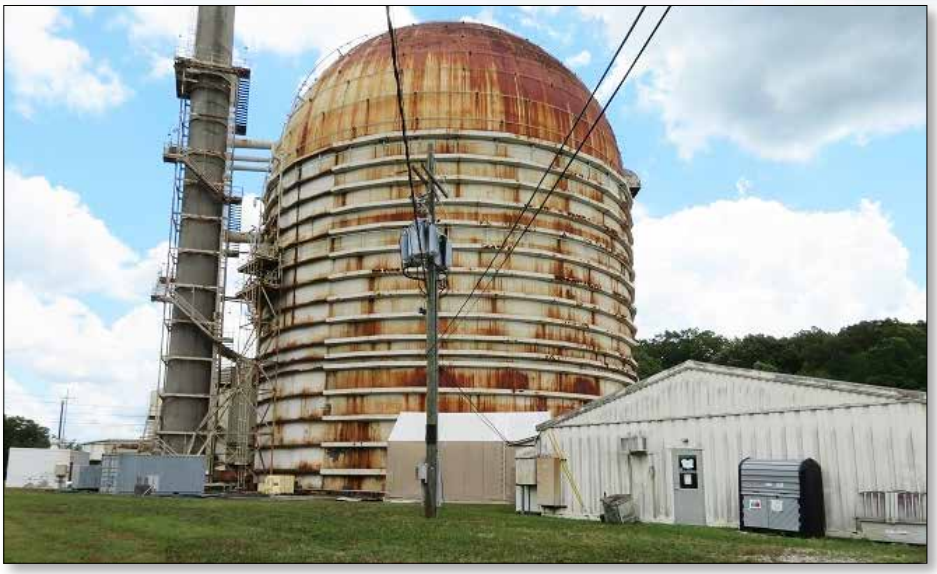
OREM and cleanup contractor UCOR are in the planning stages to fully deactivate the Experimental Gas-Cooled Reactor for eventual demolition.

UCOR Project Manager Susan Reid noted the benefits of transitioning the workforce from Oak Ridge's East Tennessee Technology Park (ETTP), where crews recently completed the first-ever removal of a former uranium enrichment complex, to the experimental reactor project.

In 1956, Congress directed the Atomic Energy Commission (AEC), which would later become DOE, to build a gas-cooled, graphite-moderated reactor — the first civilian reactor of its kind in the U.S.

Construction of the facility was a result of Congress pushing to keep pace with research advances in Great Britain. The British were working on dual purpose reactors that would produce plutonium for bombs and also generate nuclear power.

The eight-floor, 107,922-square-foot facility at ORNL was intended to be more than an experimental reactor. It was also to be a prototype for the Tennessee Valley Authority's nuclear power generation. However, in 1965, when the facility was 90-percent complete, the AEC decided to go in another direction and stopped construction.



A view of the Experimental Gas-Cooled Reactor at Oak Ridge National Laboratory. The Oak Ridge Office of Environmental Management and cleanup contractor UCOR are set to fully deactivate the facility for eventual demolition.

The reactor was never put into service, but the control, service, and turbine buildings were later used as development space for other research and programs. The facility would go on to house ORNL's Fuel Recycle Division.

The Experimental Gas-Cooled Reactor is one of 16 inactive research reactor and isotope facilities that OREM is addressing and cleaning up at ORNL. This massive cleanup effort is happening concurrently with other OREM cleanup projects underway at the Y-12 National Security Complex.

OREM's cleanup at these sites is eliminating risks, enabling modernization, protecting current research and science missions, and opening land for new research and national security facilities.

Oak Ridge Implements New Vehicle Safety Technologies

OREM and its cleanup contractor, UCOR, are implementing new technologies to ensure employees who operate machinery and vehicles or perform work around them remain safe.

UCOR is installing a new blind spot technology on all its commercial vehicles to prevent accidents and keep drivers, spotters, and people on foot safe by eliminating blind spots and providing a 360-degree survey of surroundings.

The technology involves the use of small radar sensor boxes attached to all four sides of a vehicle or trailer. The sensor box determines the location of any people or objects within a set distance of a vehicle. A signal is sent to the driver through a display with varying colored lights and sounds indicating the distance and location of the people or objects, and whether they are moving.

UCOR is also implementing the MyZone Technologies Worker Alert Systems. With this technology, a transmitter is affixed to a vehicle, and workers wear small receivers. When an employee gets close to a vehicle, the transmitter emits a signal causing the receiver to vibrate. The vibrations alert workers when they are within a preset range of the vehicle.

These technologies differ in who receives notifications. Drivers are notified through the blind spot technology, while My Zone notifies those near vehicles. For certain types of work, UCOR is able to use them together.

Oak Ridge Wins Government Team Project of the Year

OREM and its environmental cleanup contractor UCOR were honored Nov. 12 with the Government Team Project of the Year Award.

The recognition was part of the national 2020 Washington Exec Pinnacle Awards, which go to top businesses and organizations that are saving money and fostering innovation.

Oak Ridge received the award for the significant effort involved in completing major cleanup earlier this year at the East Tennessee Technology Park (ETTP), a former uranium enrichment complex. This accomplishment, two decades in the making, removed more than 500 dilapidated and contaminated structures and opened land for economic development for the community.

The award highlighted the effectiveness and efficiency of the work by OREM and UCOR. They ultimately finished the project $80 million under budget and four years ahead of schedule, avoiding $500 million in costs to taxpayers.

The award cited numerous innovative approaches taken to achieve the accomplishment that resulted in a historic first-ever removal of a uranium enrichment complex. Those innovations included reducing or eliminating the need for human entry into potentially hazardous environments, implementing a dispose-as-you-go waste approach, and creating a secure onsite disposal facility connected to ETTP by a private road exclusively used for waste shipments.

UCOR President and CEO Ken Rueter said that a strong partnership with the client and a workforce dedicated to safety were key to success.

Issue 81 • January 2021

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EMSSAB

(Continued from page 8)

The Chairs will use this information to identify commonalities and develop a complex-wide framework for SSAB expectations and guiding principles.

Snyder said these would be multi-step charges, with consideration stretching into the Fall 2021 Chairs meeting.

She added that while DOE is particularly interested in the feedback to these charges, Chairs will still be free to bring up other topics they'd like to discuss.

"These charges aren't supposed to be the only things to work on," she told Chairs, "If there's more that you have, we definitely want to have those discussions."

During the event, officers from each SSAB presented updates on their board's FY 2020 activities and plans for FY 2021. DOE speakers provided attendees with news from DOE headquarters and an overview of activities across the complex.

Todd Shrader, principal deputy assistant secretary, introduced new employees at headquarters of interest to SSAB. He then detailed cleanup progress at DOE sites across the country including East Tennessee Technology Park in Oak Ridge. Lastly he discussed EM's updated Strategic Vision Plan, which covers 2020-2030. More information on the strategic vision and a downloadable PDF of the document is available from DOE at www.energy.gov/em/articles/em-issues-strategic-vision-coming-decade. EM also encourages feedback on the included project priorities, end state vision, and opportunities for acceleration at StrategicVisionFeedback@em.doe.gov.

Steve Trischman from EM's office of budget and planning gave an overview of the budget process with a focus on how stakeholders are involved at key points. He also reviewed the use of the FY 2020 enacted budget, the current FY 2021 status, and progress on EM's FY 2022 budget request. All budget requests are for two years in the future to allow discussion and Congressional approval. Congress is expected to release a budget in February.Trischman noted there continues to be strong support for the EM program from Congress.

On day two of the event, Betsy Connell, associate principal deputy assistant secretary in the EM office of regulatory and policy affairs, gave board members an overview of current regulatory activities by DOE headquarters including major progress in site cleanup under the National Environmental Policy Act (NEPA), the first projects completed under the new risk-based High Level Waste Interpretation, shipments to the Waste Isolation Pilot Plant and updates to the $75 million project to add an air shaft to the facility. She also shared the activities and recommendations to DOE made by other advisory boards, including Environmental Management Advisory Board (EMAB), which is similar to the SSABs but filled by a group of professional experts in their fields.

Connell also revealed this would be her last presentation before the board as she is retiring after many years supporting DOE's communications with stakeholders. She will be replaced by Mark Gilbertson, who is also familiar to the EM SSAB as a frequent presenter at past chairs meetings.

Finally, board members received a detailed breakdown of DOE's regulatory framework surrounding waste management, which has been of interest for several past meetings, particularly as it relates to how waste is transported.

Justin Marble of the office of waste disposal and Sherri Ross with regulatory affairs reviewed the legislative history for regulation of nuclear materials, including how types of materials and wastes are defined. They noted that DOE has both internal regulation as well as partnerships with other agencies like EPA for oversight. In addition both those facilities shipping and receiving wastes have stringent controls in place.

The EMSSAB is currently considering dates and times in March or April for its next meeting.

SSABs from across the country meet regularly to share best practices and lessons learned, receive updates on cleanup progress, and offer feedback to the EM cleanup program. Representatives from DOE headquarters share news that affects all sites and may request feedback on specific issues.

Crews Implement Upgrades Before Resuming U-233 Processing

After a pause due to the COVID-19 pandemic, OREM and its contractor Isotek resumed uranium (U)-233 processing and downblending operations using gloveboxes.

During the recent pause in operations, OREM and Isotek worked collaboratively to install upgrades and identify and implement numerous prevention methods to ensure workers remain safe while they eliminate the inventory of U-233 from ORNL, which is EM's highest priority at that site.

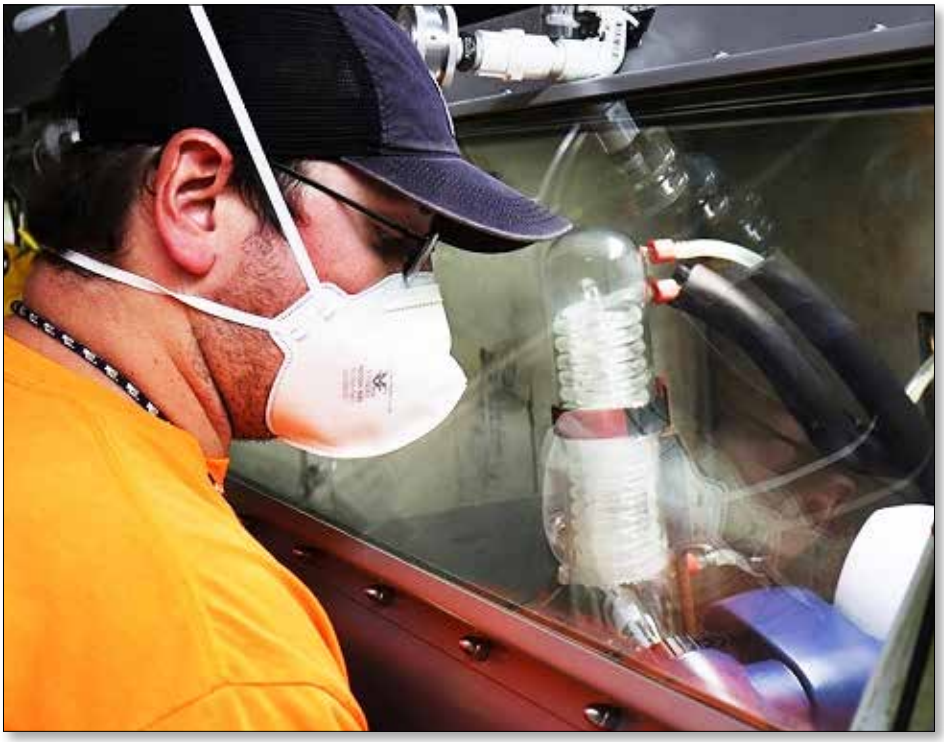
The project is removing a significant risk by eliminating the inventory of highly enriched fissile material stored in Building 3019, the world's oldest operating nuclear facility located in the heart of one of the nation's most important scientific research sites.

Last year, OREM, Isotek, and TerraPower announced an innovative public-private partnership that makes use of the U-233 inventory before it is disposed. Isotek employees extract thorium before the material is processed into a disposal-ready form. Nuclear innovation company TerraPower is using the extracted thorium to support next generation cancer treatment research.

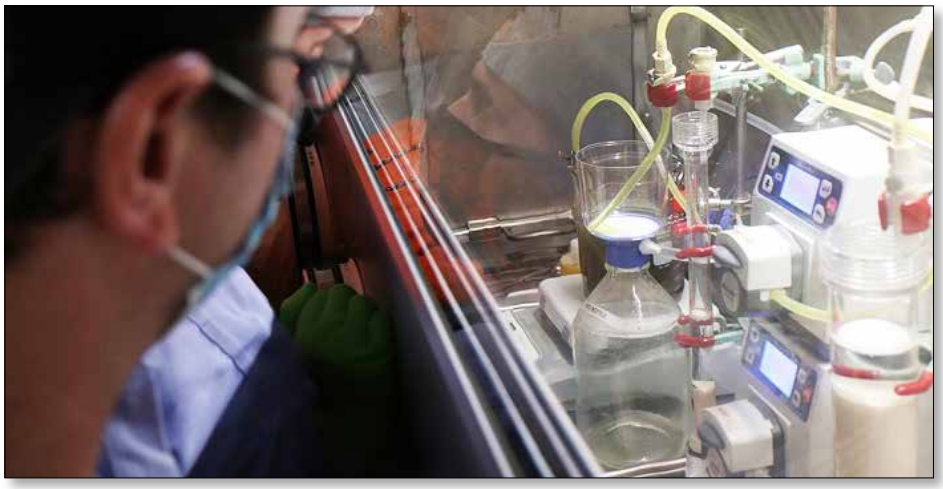
At the restart of U-233 processing, employees went through training again to ensure they were prepared and mindful to handle the radioactive material. They also trained on new procedures that incorporated COVID-19 related safety precautions.

During the suspension of work, a new filter was implemented for the dissolved U-233 that would catch undissolved particles. This filter will prevent undissolved particles from plugging up transfer lines, decreasing the time employees use the gloveboxes.

Another new implementation is an extended waste transfer line. This new line extends from the glovebox all the way to a negative pressure area so waste can be transferred directly to a safe zone. Before this, employees transferred waste to a drum and then moved the drum to the safe zone.



Employees, known as fissile material handlers, use shielded gloveboxes to dissolve U-233 into a low-level form so it can be mixed with grout for safe transportation and disposal. Removing the remaining inventory of U-233 at ORNL is EM's highest priority.



In conjunction with glovebox processing restarting, construction continues on getting Building 2026 ready for hot cell processing. Hot cells are needed to handle high-dose U-233 canisters, while gloveboxes are used for the low-dose portion of the inventory. Entry tubes are being fitted for remote manipulators that will handle material inside the hot cells. An entire floor has been reconstructed for an air pallet that will be able to move 30 tons of waste after it has been processed for disposal.

Hot cell processing is expected to begin next year. Until then, Isotek will continue addressing the low-dose inventory using gloveboxes.

EM workers begin tearing down Building 9210 at Oak Ridge on November 16.

Biology Complex

(Continued from page 1)

That next phase of cleanup involves addressing hundreds of excess, contaminated, and deteriorating facilities scattered throughout Y-12 and Oak Ridge National Laboratory that present hazards and occupy land that can be used for future research and national security missions. Removal of the Biology Complex will be the most significant skyline change at Y-12 to date, and it will be the first of many projects to clear away former Manhattan Project and Cold War buildings.

"Our program brings an incredible impact by eliminating hazards, enabling modernization, and creating opportunities by clearing away old facilities for the Department of Energy to construct new infrastructure to meet the needs of this nation," Mullis said.

Preparing the Biology Complex buildings for demolition was a major undertaking and required workers in full protective suits to remove asbestos material found in areas such as pipe insulation and wall panels.

Ken Rueter, president and CEO of UCOR, noted that the company implemented special workforce development programs, such as its East Tennessee Apprenticeship Readiness Program and asbestos removal training geared to apprentices using a mock-up of a worksite.

"Those programs ensured our workforce had the skills necessary to achieve this next major cleanup milestone even as we continue to manage the impacts of the pandemic," Rueter said. "It's also important to note that this focus as well as our strong partnerships with Consolidated Nuclear Security (CNS) and the National Nuclear Security Administration allowed us to start the Biology Complex demolition within a month of celebrating Vision 2020."

CNS is the Y-12 management and operations contractor.

The Biology Complex previously consisted of 11 buildings. OREM demolished four of the structures in 2010 and removed another two structures in 2018.

Upcoming Meetings

Due to recommendations to avoid large gatherings and practice social distancing, ORSSAB has not yet scheduled its next meeting. The board is working with DOE on possible solutions for spring.

We will continue to monitor the situation and provide updates as circumstances change.

Check our website at **www.energy.gov/orssab** for the latest information.

For questions or to subscribe to our news updates or The Advocate, email orssab@orem.doe.gov or call 865-241-4584.

UCOR Celebrates 2020 Successes, Releases Plans for Future Efforts

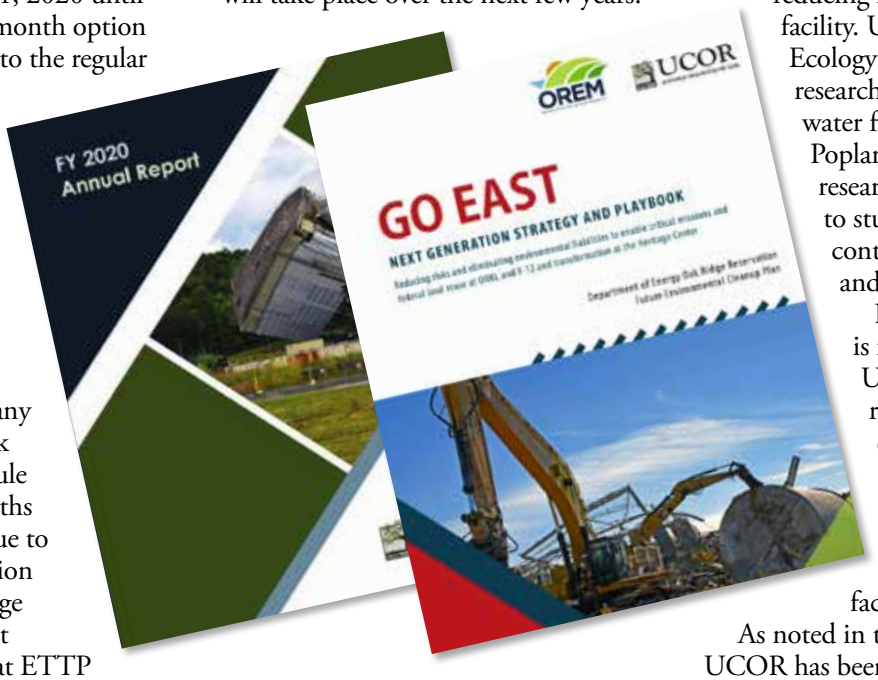
Oak Ridge prime cleanup contractor UCOR came into 2020 expecting a long-planned milestone in cleanup at East Tennessee Technology Park and that is, indeed, the centerpiece of its messaging in the company's annual report. But it's not sitting on that achievement for long.

What wasn't known until this summer was that DOE would choose to extend UCOR's cleanup contract for another two years—an initial one-year term from August 1, 2020 until July 2021 and two six-month option periods. So in addition to the regular report, the company has published "Go East: Next Generation Strategy and Playbook," which lays out its plans for future cleanup on the Oak Ridge Reservation.

In its annual report, UCOR president Ken Reuter notes the company was able to stay on track with the cleanup schedule despite nearly two months of limited operations due to COVID-19 risk reduction measures. The Centrifuge Complex was the largest structure still standing at ETTP that was removed this year, along with several other structures. The company also completed major remedial actions including removal of a cooling water basin in the Poplar Creek area of the site and excavation of contaminated soil from the K-25 building's footprint, which will be part of the National Park.

The company continues to support the future of the property as a business park, historic preservation site and nature preserve. UCOR's National Historic Preservation team was part of the construction and opening in February of the K-25 History Center and will continue working to fulfill the other commitments listed in the historic preservation memorandum of agreement. The company is also working with surrounding counties, the Tennessee Wildlife Resources Agency, and the Legacy Parks Foundation on ways to use greenspaces at the site.

While its next plan may be "Go East" a few hundred workers will remain at ETTP to finish closure activities, including a final groundwater remedy, historic preservation, and turning over the property to DOE's Office of Legacy Management, which UCOR estimates will take place over the next few years.



UCOR already has shifted some of its cleanup workers to ORNL and Y-12 and continues to operate several waste management facilities on the reservation. At both sites, work will be undertaken alongside critical science and national defense missions, which presents additional complexities in the demolition and removal process. However, eliminating hazardous, outdated structures will directly enable the advancement of modern activities at the sites.

At ORNL, Building 3005 was the first project to receive crews transferring from ETTP. They conducted deactivation operations, removing asbestos and universal waste, from it and Building 3010. Additional workers prepared to remove two hot cells from Building 3026, the Radioisotope Development Lab, among other many other projects.

UCOR is also making improvements to some facilities. It performed a mock installation of a continuous purge system that will be installed in the Molten Salt Reactor Experiment as part of a plan by DOE to extend the facility's life by about 40 years while also reducing risk at the 1960s-era facility. Upgrades at the Aquatics Ecology Laboratory is enabling researchers' direct access to water from Lower East Fork Poplar Creek. This will give researchers a unique way to study and treat mercury contamination in the water and local organisms.

By the time its contract is finished in two years, UCOR hopes to have removed several excess contaminated facilities from campus and completed upgrades to the Liquid-Gaseous Waste Operations facility at ORNL.

As noted in this issue's cover story, UCOR has been steadily deactivating buildings at the Biology Complex at Y-12. During the year workers abated and shipped more than 1.75 million pounds of asbestos waste for disposal. UCOR estimates the Biology Complex footprint will be shovel-ready for a new project by the time it completes its contract in 2022. Three new projects are in the works: Buildings Alpha-2, Beta-1, which were used in the Manhattan Project, and Building 9401-1, a former steam plant, were transferred for cleanup in the spring. About 70 workers from ETTP were transferred to these projects and received special training related to specific hazards related to the Y-12 buildings compared to their previous duties at ETTP.

Advocate
Oak Ridge Site Specific Advisory Board
January 2021

DOE Looks to SSAB Chairs, Boards for Mission Completion Framework

"What does EM's 'Mission Complete' look like for the Oak Ridge Reservation?" This is one question ORSSAB members will be asked to consider in the coming year.

The question is part of two key "charges" detailed during the fall Environmental Management Site-Specific Advisory Board (EM SSAB) Fall Chairs Meeting October 19-20. The meeting was held virtually this year due to travel and social distancing restrictions.

The event was livestreamed and a recording is available for each day's events at the YouTube channel for the Savannah River Site advisory board, which hosted the event: www.youtube.com/SRSCAB. Copies of materials are available at www.energy.gov/emssab and meeting minutes will be posted soon.

Each spring and fall, officers from SSABs across the country join to meet with DOE officials to discuss the latest happenings around the EM complex. Often, the Chairs will discuss and vote on recommendations. This year DOE officials and chairs discussed two charges they would like local boards to consider in the coming months.

For the first charge, the boards are asked to identify existing outreach practices being performed at their respective sites and determine whether there are any gaps or need for additional outreach. This outreach can include any activities done by either the board itself, DOE and its contractors or both. Each board will be asked to present their results during the Spring 2021 meeting.

The purpose of this, said Kelly Snyder, designated federal officer for EM SSAB and EMAB, is to develop a best practices white paper that can be used as a guide to expand on existing outreach activities.

For the second charge, each board is asked to consider what EM's "Mission Complete" looks like at their respective sites and the board's expectations for how DOE will interact with their local stakeholders and communities to reach that vision. As with the first charge, each board will be asked to present results during the Spring 2021 Chairs meeting.

(See EMSSAB on page 4

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UPCOMING MEETINGS

As the United States responds to COVID-19 DOE is postponing all SSAB meetings until further notice.

ORSSAB will continue to monitor the situation and provide updates. Check the website for the latest information.

ABBREVIATIONS

CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act, also known as Superfund
DOE – Department of Energy
EM – Environmental Management
EMWMF – Environmental Management Waste Management Facility
ETTP – East Tennessee Technology Park
OREM – Oak Ridge Environmental Management
ORNL – Oak Ridge National Laboratory
ORR – Oak Ridge Reservation
ORSSAB – Oak Ridge Site Specific Advisory Board
TDEC – Tennessee Department of Environment & Conservation
UCOR – URS | CH2M Oak Ridge
Y-12 – Y-12 National Security Complex