National Aeronautics and Space Administration.
Glenn Research Center.
Plum Brook Station.

Decommissioning news.

A quarterly newsletter to inform the public about NASA's Decommissioning Activities.

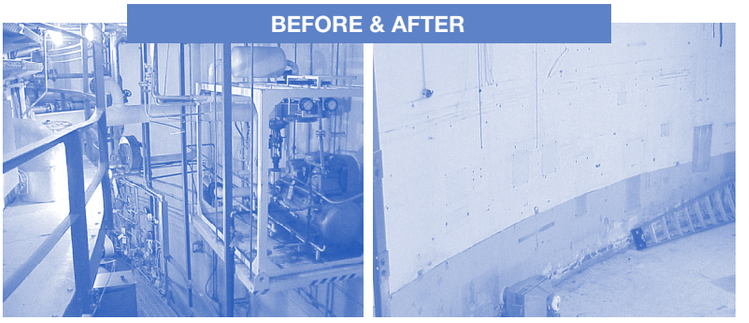
SIXTEENTH EDITION. **JULY 2005.**

NASA CLOSING IN ON FIXED EQUIPMENT REMOVAL COMPLETION.

In recent months, the Decommissioning Project might be compared to an archeological dig, as NASA removed tons of fixed equipment from below ground level. In May, workers finished fixed equipment removal (FER) in the Containment Vessel, the large concrete structure formerly home to NASA's reactor, and to quadrants and canals once filled with water (and drained when the Reactor Facility was shut down in 1973). They also removed electrical and plumbing systems, using high powered saws and an overhead crane in another Containment Vessel area, the annulus. This area is located outside the quadrants and canals and extends from ground level to 25 feet below grade. NASA Senior Project Engineer Keith Peecook said the annulus contained "many of the control systems once used in the reactor experiments." FER was also completed in the sub-pile room, a chamber located below where the reactor tank had been.

In June, workers also completed FER in the Hot Retention Area (HRA), which consisted of an earthen berm atop a concrete vault (located 90% underg round to a depth of 25 feet). The vault had contained eight steel tanks, each holding up to 60,000 gallons (also drained when the Reactor Facility was shut down in 1973). When the reactor was operational, the tanks held contaminated water until radiation levels had been sufficiently reduced, and it could be pumped into the Cold Retention Area (CRA). There, radiation would further decay until the water could be reused or eventually released. Workers removed the berm, then cut a large hole in the vault's 18-inch thick roof to use as an access point. They cut the tanks and piping, using mechanical saws and the powerful plasma arc torch employed during reactor segmentation, then packaged the pieces for shipment to the Envirocare licensed disposal facility in Utah.

BEFORE & AFTER



Later this summer, NASA will begin work in the CRA, whose two concrete basins had a total capacity of one million gallons and were each covered with a steel roof. Peecook noted that there is groundwater in the CRA, which NASA sampled to assure it was clean (see related article on page two). NASA will pump the groundwater into a clean area of the Pentolite Ditch in accordance with discharge limits set by the Ohio Environmental Protection Agency. Once the groundwater is removed, NASA will analyze the concrete to determine what can remain in place. Where needed, workers will remove the remaining concrete with jackhammers and a hydraulic shear, then package and ship the waste. To date, NASA has sent eight million pounds of low-level radioactive waste (mostly FER) to Envirocare. The remaining removal work should be completed this summer. Peecook observed that finishing this task is "a major step forward in completing the Decommissioning Project." ■

■ In the photo in the upper left corner of this article, two workers wearing protective gear operate a torch to cut a cylindrical hatch (in the center of this photo) in the Containment Vessel annulus. When the Reactor Facility was operational, this hatch was used to move equipment into and out of the annulus.

■ In the side-by-side photos to the lower right in this article are pictures of FER in the annulus. The photo to the left shows a variety of fixed equipment, including piping, racks and a railing, all adjacent to the building wall. The photo to the right shows the bare wall, once all equipment was removed.

Other ways to receive Decommissioning Information.

Fact Sheets.

NASA has produced fact sheets dealing with various aspects of Decommissioning. Copies are available at public libraries throughout Erie County, at the Community Information Bank at the BGSU Firelands Library, on our Decommissioning Website at www.grc.nasa.gov/WWW/pbrf and by calling our Information Line at 1-800-260-3838.

Community Information Bank.

NASA has established a Community Information Bank (CIB) at the BGSU Firelands Library. The CIB serves as a permanent repository of information on the Decommissioning Project which NASA continually updates. All information at the CIB is available to the public upon request.

Decommissioning Website.

Decommissioning information is available on-line. Visit us at www.grc.nasa.gov/WWW/pbrf.

Speakers.

NASA will provide speakers upon request to civic, community and school organizations throughout Decommissioning. A video or slide presentation may be presented. For further information, contact Sally Harrington through our Information Line at 1-800-260-3838, her direct line at 216-433-2037, or at s.harrington@grc.nasa.gov.

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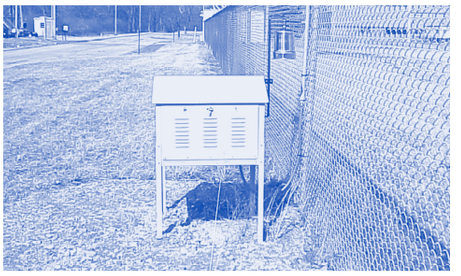
Environmental Monitoring Results Show Decommissioning Is being Done Safely.



NASA's stated goal for decommissioning is the safety of the public, the workers and the environment. An important part of meeting this goal is the comprehensive environmental monitoring program begun when the Reactor Facility was operational, and stepped up in May 2001. Through 2004, monitoring results show the project being conducted safely. According to NASA Project Environmental Manager Peter Kolb, "Our sampling shows that decommissioning has had no impact on the environment." He referred to two reports analyzing environmental samples from November 2002 through April 2004 – a period when workers removed 97% of the radioactive inventory that existed before decommissioning began, including the reactor's core box and nearly all internal components.

NASA's program consists of sampling air, surface water, groundwater and sediment in the vicinity of the Reactor Facility. Air is continuously monitored at six locations, both upwind (a half-mile from the facility's fence line) and downwind (a mile away) with samples collected weekly and analyzed on site. Monitoring of surface water and sediment is also conducted at six locations, both upstream and downstream of the facility, with samples taken monthly and sent to a private, off-site laboratory for analysis. NASA also samples groundwater monthly at five shallow wells (10-30 feet deep), five deep wells (40-90 feet deep) and one building sump (15-25 feet deep). In addition, groundwater samples are taken quarterly at an additional sump and annually at five more shallow wells and two other deep wells.

All samples of air, surface water and groundwater and sediment are measured against Project Specific Action Limits (PSAL's). These are statistical "safety cushions," which NASA set for this project prior to its start, several orders of magnitude below any federal regulatory limits for air, surface water and groundwater. Because there are no regulatory limits for sediment, NASA established PSAL's using results from sediment sampling stations not impacted by decommissioning operations.

Kolb said any environmental samples above PSAL's result in NASA examining trends in the data, and conducting further analysis and sampling. Over an 18-month period, there was not a single air sample above PSAL's. According to NASA Senior Project Engineer Keith Peecook, this was "testimony to the systems we put in place, especially during segmentation," when NASA employed a high efficiency ventilation system operating under negative pressure, to draw air into (rather than out of) the enclosed work area. Results were similar for surface water and sediment during this period, with one instance each of radiation exceeding PSALs. NASA conducted additional tests, determining that these measurements were not attributable to decommissioning operations; instead, they were likely due to either naturally occurring radiation or other sources.

During the same period, there were some instances of groundwater samples exceeding PSAL's (but well below regulatory levels), which also resulted in further analysis. Testing, using sophisticated lab instruments, showed that only one groundwater sample above PSAL's had occurred because of decommissioning operations. This happened in a Reactor Building sump 25 feet below grade. Kolb said in this instance, further analysis revealed the source as a single particle from fixed equipment removal activity in the vicinity of the sump. Workers were subsequently briefed on taking precautions near the sumps - including, but not limited to, covering the sumps with plastic and working within negative pressure enclosures. In the following months, the results never reoccurred.

In summarizing the results of monitoring to date, Decommissioning Project Manager Tim Polich said "NASA is pleased, but not surprised. We carefully planned decommissioning so we could remove the bulk of the radiation safely and as early as possible. Our comprehensive monitoring results show we've achieved this goal." ■

The photo in the upper right corner of this article shows a box-like air monitor, located at the fence line of the Reactor Facility, where it continually samples the air.

Decommissioning the Reactor Facility on Television and Video

Our thanks to Channel 81 of Buckeye CableSystem. The local access channel videotaped NASA's quarterly Community Workgroup meeting in April, and aired it on four evenings during the month. Throughout decommissioning, we've used many vehicles for providing information to the community, including this newsletter, our Project Website and our toll-free Information Line. Channel 81 gave us one more means of bringing the project to the public.

The documentary video on the Reactor Facility, "Of Ashes and Atoms" was honored at NASA Headquarters, where producer-director Jim Polaczynski, of NASA Glenn contractor InDyne, Inc., accepted a Group Achievement Award. The documentary had its premiere before a large audience at the Sandusky State Theatre last July and NASA has subsequently distributed more than 600 free DVD copies to area schools, libraries and community organizations.

Soil Cleanup Begins.

Digging in the dirt may be a small child's fantasy job, but its grownup counterpart – soil excavation – is an essential part of the Decommissioning Project. Over the next several months, NASA is cleaning up soil contaminated by reactor operations before its shutdown in 1973. While all reactor operations had been conducted safely, NASA recognized that certain areas in and around the 27-acre, fenced facility would have to be cleaned as part of decommissioning.

According to Senior Project Engineer Keith Peecook, radionuclides, including Cesium-137, Strontium-90 and Cobalt 60, got into the soil through contact with water contaminated from reactor operations. NASA is removing these radionuclides to meet the project's cleanup levels. He said in recent months, NASA conducted horizontal and vertical soil sampling, using a Geoprobe - a truck-mounted, two-pronged monitoring device reaching down 25 feet into the soil, or to bedrock if shallower - to determine how deep the cleanup would need to be. He noted that "all but four Geoprobe samples – out of 500 – were clean," adding that surface sampling and direct scans determined the "horizontal extent" of the cleanup. NASA is excavating the soils, then conducting additional monitoring to ensure that what remains is clean.

In May, NASA began excavation in the Emergency Retention Basin of the Reactor Facility, a one-acre, earthen-diked area. On a few rare occasions when the reactor was operational, water normally held in the Cold Retention Area (CRA – see article on page one), but exceeding its capacity, would be pumped through the Waste Effluent Monitoring System prior to discharge. If activity levels in the water were above one tenth of the normal discharge limit, the water flow was diverted into the Emergency Retention Basin where the water remained until radiation levels were low enough to allow for safe discharge.

As a result of these normal operations, some activity was transferred to the soil in the bottom of the Emergency Retention Basin. Now, where needed, soil is being excavated three to six inches at a time, by workers using small front-end loaders. It is placed in water-permeable fabric bags, which Peecook pointed out, are rated as able to hold up to 15,000 pounds. But because "NASA has an excellent record of safe waste packaging," he said "we will not have bags exceed 5,000 pounds." Workers place.

.....ARTICLE CONTINUED ON PAGE FOUR.

■ The three photos in the top left corner of this article show soil removal operations. In the top photo, workers operate a back hoe and a smaller "Bobcat" front-end loader to excavate soil from the Emergency Retention Basin.

■ In the middle photo, workers using a front-end loader move soil from the Emergency Retention Basin into fabric bags, which are mounted on a steel frame for filling. Each bag has a number on its side for tracking.

■ In the bottom photo, two workers, with the aid of truck-mounted lifting equipment, prepare to move a "Super Sack" (containing four bags of soil) onto a rectangular scale at the left of the photo. All bags containing soil are weighed to ensure that they comply with NASA shipping requirements.

Community Workgroup Member Profile.

Anne Hinton.

The old saying – "If you want something done, give it to a busy person" – certainly applies to Anne Hinton. A Huron resident and Director of its Public Library, she grew up in Connecticut before moving to Huron with her family at age 15. She graduated from Huron High School and Ohio University before earning a Master's in Library Science from the University of Rhode Island and starting her library career.

Hinton returned to Ohio, working at the Sandusky Library before taking the Huron position in 1988. She has overseen the library's expansion (in 2002) and its steady growth, both in its scope and number of patrons. "We have research capabilities that you'll find in a major city," she remarked, noting the influence of the Internet. With its new facilities, the library is a sought-after location for a variety of community activities, from issuing passports to providing meeting space for local groups and elected officials.

Married and the mother of two grown daughters (and a grandmother), Hinton is active in many organizations and joined NASA's Community Workgroup in 2003. She first visited Plum Brook Station as a high school student, touring the Space Power Facility. "Plum Brook seemed very mysterious," she recalls. "I had the opportunity to see work done there. It was amazing to have that exposure." She first heard about the Decommissioning Project via newsletters and fact sheets NASA sends to area libraries. The first woman president of the Huron Rotary Club, she heard NASA Senior Project Engineer Keith Peecook give a Rotary presentation and also learned more from Library Board members Jack Ross and Jo Homyak (Ross and Homyak's husband, Len, are NASA retirees).

Hinton says she sees the Workgroup's role as "understanding the big picture" and being able to communicate information "understandable to the layman." She adds that NASA presentations are "excellent," in describing "the massiveness of the project....all the safety measures in place." Although she's received few questions from the public, she observes, "I always thought NASA was approaching (the project) in a thoughtful, systematic fashion," and believes the community "has a high level of confidence." She adds that questions come informally, including recently, when a Rotarian said he'd seen the videotaped April Workgroup meeting on Channel 81 of Buckeye CableSystem.

Looking ahead, Hinton believes NASA would benefit from a student tour of Plum Brook Station, commenting, "We read about kids not going into the sciences. A tour would catch their interest early." In the meantime, she'll continue participating in Workgroup meetings and will host the next one, at the library, on Tuesday, July 19 (7 p.m.) in Meeting Room A.

Anne Hinton is pictured in the upper left corner of this article.

SOIL CLEANUP BEGINS CONTINUED FROM PAGE THREE.

four bags at a time inside a "Super Sack", a larger fabric bag rated as "a Class I strong type container," for safe packaging and transportation. He added that additional monitoring is conducted as soil is excavated. In June, NASA began transporting Super Sacks on flatbed trucks to a nearby rail facility for shipment to Envirocare.

Last month, NASA also began excavation in the area south of the Pentolite Ditch, adjacent to the Reactor Facility. Peecook said that when the facility was operational, the ditch was part of "the normal discharge path for all clean process water, surface runoff and sump pump discharges," and flowed "for almost a mile" before joining Plum Brook. NASA dredged the ditch in the 1960's, then twice in subsequent decades. According to Peecook, these dredging operations resulted in material from plants and soils in the ditch being spread on its southern bank, resulting in some soil having "trace elements" of radionuclides, but at "very low levels and not to any great depth." He added that NASA is carefully conducting characterization of the banks to "sufficiently define the location of the contamination and allow for a thorough cleanup."

Decommissioning Project Manager Tim Polich observed, "When this excavation is done, the remaining soil will be clean enough for a farmer to safely grow crops. It's a high standard, but one NASA is committed to meeting before decommissioning is done." ■

In the photo in the upper right corner of this article, a mechanical shear mounted on a piece of construction equipment, demolishes a weir, a small dam that once controlled water flow from the Pentolite Ditch (at top of photo) into Plum Brook (at bottom of photo). Pentolite Ditch was drained as part of soil characterization and removal operations.

NASA: Explore. Discover. Understand.

NASA Glenn Research Center
Plum Brook Station

6100 Columbus Avenue
Sandusky, Ohio 44870

Next Community Workgroup Meeting
TUESDAY, JULY 19, 7 p.m. through 9 p.m.

Huron Public Library
Meeting Room A
333 Williams Street
Huron

The meeting is open to the public