National Aeronautics and Space Administration.

Decommissioning News.

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

TWENTIETH EDITION. OCTOBER 2006.

Annual Decommissioning Community Information Session Comes Home to NASA Plum Brook Station Wednesday, October 18.

The public is invited to the Engineering Building at NASA Plum Brook Station (PBS) on Wednesday, October 18 from 7p.m. to 9 p.m. for NASA's eighth annual Decommissioning Community Information Session (CIS). This CIS will update the public on the progress of the Reactor Facility Decommissioning Project, as well as provide information on upcoming work at Plum Brook Station's active facilities.

This year marks the 50th anniversary of an aerospace facility at Plum Brook Station. In 1956, NASA's predecessor, the National Advisory Committee for Aeronautics, began operations at PBS, becoming NASA in 1958. This year's CIS is an excellent chance to look at the PBS past, present and future, during a year of significant achievement on decommissioning, and learn about plans for testing work at PBS on the Constellation Program for human space exploration.

The CIS will feature displays and presentations on decommissioning and the Constellation Program, including plans for testing the new Crew Launch Vehicle-Upper Stage (a component of the Space Shuttle replacement vehicle). Members of NASA's Decommissioning Team and Community Workgroup will be at the CIS and there will be light refreshments provided. While there will be no tours of any PBS facilities, visitors are invited to climb aboard the Aero Bus, a NASA Glenn traveling exhibit. The event will be preceded by a quarterly Workgroup meeting (starting at 5:30 p.m.), which is also open to the public.

According to Sally Harrington, NASA Glenn Public Affairs Specialist, "The CIS is very informative--and fun for kids and adults alike. Folks are welcome to drop by for a few minutes or stay for the whole program. We hope the community will join us for an exciting evening."

Please note that, for security reasons, all visitors to the CIS must be U.S. citizens and anyone age 18 or over must present NASA PBS security with a driver's license or other valid photo identification, in order to gain access to Plum Brook Station. Also, vehicles will be subject to random search.

NASA Closing Loop with Additional Plum Brook Off-site Sampling.

NASA has consistently gone the extra mile to ensure the safety of the community, workers and environment on the Decommissioning Project. The same approach holds true for our off-site sampling efforts. From November 2005 through May 2006, hundreds of sediment samples were collected and analyzed in an area along Plum Brook, extending from the Plum Brook Station fence line to Ohio Route 2. All samples were consistent with earlier tests, with most showing no contamination and only a few showing very low levels of cesium, well below any levels that would pose a health concern to the public. This summer, NASA took going the extra mile literally – announcing plans to conduct additional sampling, tracing the movement over time, of cesium that resulted from a pinhole leak in a reactor fuel rod. The leak was discovered in October 1968 and left tiny amounts of cesium both on-site and-off-site at the Pentolite Ditch, which runs into Plum Brook. The new sampling program extends a few miles north, to East Sandusky Bay.

In photo above, Hydrogeologist Bob Haag presented information on the new off-site sampling program to Community Workgroup members at their August meeting.

In the photo above, a Haag Environmental worker uses a probe as part of additional sampling near the mouth of Plum Brook.

NASA is working with Sandusky-based Haag Environmental, local experts in stream hydrogeology, to make sure every nook and cranny of the area where material may have been transported to over time has been sampled. NASA announced the plan at the Decommissioning Project's August 8th quarterly Community Workgroup meeting, which featured a presentation by Bob Haag – who also shared presentation information with the Sandusky City Commission on August 14. Sampling began in September, with an initial focus on three areas: silt from existing groundwater wells, three ponds along Plum Brook, and the area of East Sandusky Bay at the mouth of Plum Brook. The program is expected to take from four to six months.

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PROJECT UPDATE
Small Crews Help NASA Take Big Steps on Decommissioning.

The old Chinese proverb holds: "A journey of a thousand miles begins with a single step." With decommissioning now some 90% complete, NASA did not plan a long journey in 2006, but has made significant steps since changing its approach to decommissioning last year. Smaller work crews have successfully removed fixed equipment, along with contamination and project uncertainties, while NASA is now making plans for the safe completion of the project by the end of 2010. According to Keith Peecook, NASA Acting Decommissioning Project Manager, work over the past year has focused on four "risk reduction" areas: cleaning and surveying embedded piping; characterization of Reactor Facility radiation; Hot Cell decontamination and sampling relating to off-site contamination found in Plum Brook sediment (see related article).

As we reported in June, NASA has made significant progress on embedded piping – pipes encased in concrete as much as 46 feet below ground in Reactor Facility buildings. Peecook said this process "has gone very well," despite the fact that "there were pipes not in the original (engineering) drawings. We found 20% additional piping." This meant workers from subcontractor BSI cleaned and surveyed closer to 2.5 miles than the originally estimated 2.2. He added that this work should be complete this fall, terming it "a significant project milestone."

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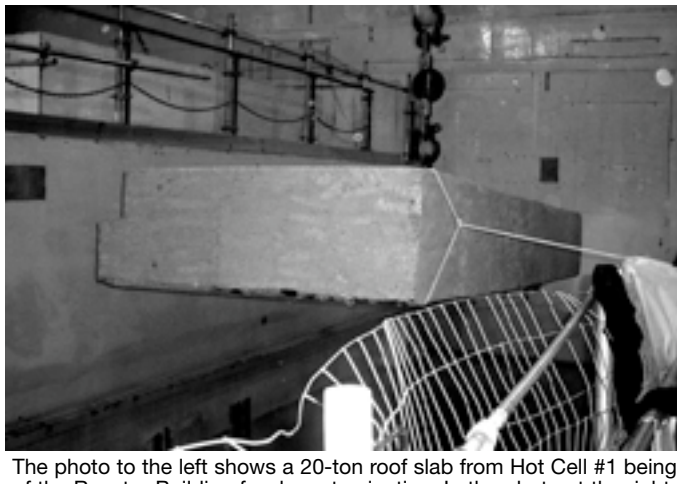
Take a Look at What We Have Accomplished.

Hot Cell Equipment Removal and Decontamination.

NASA has been removing fixed equipment from the Hot Cells, seven rooms in which the results of highly radioactive experiments were analyzed when the reactor was operational. The rooms were made of concrete and stainless steel and were heavily shielded (with walls four to five feet thick and leaded glass windows). The removal included four 20-ton concrete slabs that had comprised the Hot Cell roof, and a series of windows, each of which was four feet thick and weighed 400 pounds. Workers also successfully decontaminated Hot Cell #1, the largest of the rooms.

In the photo above is an external view of the Hot Cells from 2005, before extensive equipment removal and decontamination work was conducted.

In the photo above, workers in protective suits use a mallet to smash Hot Cell window glass, size-reducing it for eventual transportation to a disposal facility.



The photo to the left shows a 20-ton roof slab from Hot Cell #1 being lowered by the overhead crane (top of photo) into a quadrant of the Reactor Building for decontamination. In the photo at the right, a worker is holding a diamond tipped drill (connected to hose) in order to “scabble” the concrete, scraping it away a quarter-inch at a time until the concrete underneath is surveyed and found to be clean.

Plum Brook Sampling.

In November 2005, NASA began an extensive off-site sampling program for Plum Brook sediment, collecting and analyzing more than 1,200 samples from a 1.5-mile area. The analysis was completed in early April 2006 and showed that the very low levels of Cesium-137 found posed no threat to area residents, including children and workers. Additional sampling from U.S. 250 to Ohio Route 2 produced similar results, with some very low levels in isolated areas.
NASA is currently working with a local hydrogeologist to complete both sediment and groundwater sampling in additional areas, including East Sandusky Bay.

In the photo above, two workers take a sediment sample from the banks of Plum Brook. The worker to the right is using a shovel to take the sample.

In the photo above, a worker wearing plastic gloves takes a sediment sample and crumbles it into a stainless steel bowl at the center of the photo. Workers bagged and tagged each sample for laboratory analysis.

In the photo above, a laboratory worker uses a centrifuge, at the center of the photo to analyze a Plum Brook sediment sample.

Decontamination of Embedded Piping

NASA has nearly completed the decontamination and surveying of more than two miles of embedded piping – pipe systems surrounded by concrete, at least three feet and as much as 46 feet below grade – in Reactor Facility buildings. Most work was done with a mechanical cleaning device that moves through the pipe, scraping away rust contamination, which was then removed with a high-powered vacuum machine. In a few areas, piping was also cleaned using a hydrolaze, a powerful pressure washer. After cleaning the pipes, workers checked radiation levels and cleaning effectiveness, using a probe connected to a remote camera and a radiation detector. The cleaned and surveyed pipes were then filled with grout to immobilize them.

In the photo above (in the Reactor Building), decontamination workers in protective suits used a vacuum hose to decontaminate embedded piping – the large, round stumps in the lower left of the photo. To the upper left of the workers is a camera monitor, which enabled them to see into the piping.

In the photo above, a worker wearing a protective suit and construction helmet crouches as he surveys embedded piping, with a pipe shown to the upper right center of the photo. Below the pipe is a meter showing the data readout.

In the photo above, two workers are shown on the first floor of the Service Equipment Building. The worker to the left is holding a probe to which a radiation detector has been attached. The worker to the right is cleaning the pipes with a vacuum hose.

NASA employed several kinds of tools to clean embedded piping, ranging from a hand-held mechanical tool with a wire coil (in the photo to the left) to powerful hydrolaze and vacuum units (in the photo to the right).

Ongoing Characterization Work

NASA is continuing to characterize the remaining radiation content in the buildings and on the grounds of the 27-acre Reactor Facility, to determine how much decontamination (of soil and concrete) effort is needed. All areas must meet strict cleanup levels at the end of the decommissioning. In both indoor and outdoor areas, NASA has generally found low amounts of radiation.

In the photo above, several hand-held instruments are being used to monitor and record radiation. Clockwise, from the left, they include a sweeper monitor, which looks like a vacuum cleaner head. Workers brush this sweeper over walls, floors and other surfaces. Attached to the sweeper in the middle of the photo is a meter, which measures radiation levels from the sweeps. To the right is a small, hand-held computer terminal, for recording data.

In the photo above, a radiation technology worker kneels on the “Lily Pad” level in the Reactor Building. Having “swept the floor” for radiation content, she is recording the data into her white, hand-held computer.

In the photo above, a worker in white protective gear monitors a wall in the Reactor Building from which asbestos has been removed. The asbestos was taken from two circle-shaped areas of the wall covered in light and dark plastic, in the center of the photo.

In the photo above, a worker characterizes an outdoor area just inside the NASA Plum Brook Station fence line.

Decommissioning by the Numbers.

76,000 pounds of low level radioactive waste (in the form of fixed equipment from the Hot Cells and scabbling dust from decontaminating concrete)

71,000 pounds of mixed waste (a combination of radioactive waste and lead, mostly from glass in Hot Cell windows) removed and packaged in 2006

11,500 feet of embedded piping cleaned and surveyed as of October 6, 2006

146,000 pounds of free-released material (in the form of decontaminated concrete roof slabs from the Hot Cells)

830 Project Work Days without a worker lost time accident (as of October 6, 2006)

1,223 samples of Plum Brook sediment taken and analyzed between November 2005 and March 2006

23 samples with Cesium levels above 12-14.7 picocuries per gram, the proposed cleanup level for the Decommissioning Project

3 picocuries per gram, the average level for 1,223 samples

0 the number of samples with levels that would pose any public health risk

Off-site Sampling (Continued from page 1).

The plan for additional sampling was based on a review of all available hydrogeological information, and the period of Reactor Facility operation (1962-73). Haag said NASA had studied how much water had been discharged from the reactor during its operations, which "gives us a total amount of cesium to look for." He noted that cesium "sticks to clay (sediment), so wherever the clay goes, we follow it." He also pointed out that, since 1968, a number of floods carried the cesium "a long way" and that it was very diluted, consistent with what has been said by area public health professionals, who agree that the levels found do not pose a health concern.

Haag said testing includes using a probe that can reach down into bedrock, and a "gamma logger" – a steel tube device that can be inserted into shale. Haag is also conducting "layer sampling" to determine where in the sediment cesium might be. Plans for additional sampling also include another check of sediment in two existing groundwater wells at the Reactor Facility. NASA Acting Decommissioning Project Manager Keith Peecook pointed out that cesium has been found only in Plum Brook sediment and not in surface water or groundwater. He observed, "From the start of our off-site sampling last year, we've seen only slightly elevated readings in a few isolated areas. We expect the same results here." Haag noted that "Groundwater does not carry a lot of clay (sediment) so we do not expect to find any" cesium in groundwater.

Peecook also said the additional sampling "is as an extra check to ensure there is no contamination," above levels found previously. He added that the protocol Haag employs is the same as was used for previous sampling, and includes obtaining written permission from all property owners. NASA will provide an update on the sampling program at the upcoming Workgroup meeting and Community Information Session. ■

Project Update (Continued from page 1).

Peecook is also pleased with characterization, which he described as "going out and seeing what (existing radiation) you have" and "knowing what isotopes are there." Workers from subcontractor MOTA Corp. have nearly completed work in the largest structure, the Reactor Building and Containment Vessel, which once housed the reactor. Other buildings being characterized include the Hot Lab, where experiments were conducted and analyzed when the reactor operated, and the Fan House and the Waste Handling Building. Workers also surveyed outdoor pavement areas – some within the Reactor Facility and others within the Plum Brook Station fence line – with Peecook saying all such samples "came back clean."

The Acting Project Manager pointed to the significance of characterization, observing that NASA submitted a revised Final Status Survey (FSS) Plan to the US Nuclear Regulatory Commission (NRC) in May. He described the FSS as a test which demonstrates that NASA has achieved its project cleanup goals, successfully removing all residual radioactivity – on an isotope by isotope basis – across the 27-acre Reactor Facility site. He added that the Plan says "These are our cleanup levels (Derived Concentration Guideline Levels) and how we're going to reach them," referencing estimates of what each individual isotope's level needs to be (so when added together at the project's end the total will not exceed the project cleanup goal of 25 millirem per year). Based on what he has seen, Peecook is optimistic, remarking "All our data shows that cleaning toward decontamination as being effective."

Looking ahead, Peecook said decontamination would continue in the Hot Cells, seven rooms once used to analyze reactor experiments. He added that NASA would also undertake, in fall 2007, the cleanup of Pentolite Ditch. Importantly, NASA will – also in 2007 – issue a contract for completing the remaining, major decommissioning work. "We're taking the steps we need," Peecook summarized. "We're on our way there." ■