The Reach editors' picks for the top stories of the year 2001.

LOOKING BACK ON THE YEAR 2001

2001: The year the pace accelerated for all of Hanford

This past year will be best remembered for the events of Sept. 11 — events so far removed from Hanford and yet so close.

Still, for the Hanford Site it was a year when good news outstripped the bad. In 2000, one of our top stories was about a devastating fire. This year, while searching for the top 10 *Hanford Reach* subjects of 2001, we had trouble finding anything to compare with that tragedy. Even the articles prompted by the Sept. 11 terrorism were uplifting stories of compassion and sacrifice on the part of Hanford employees.

The good news was mostly in the fact that we did our jobs better, faster and safer. In every Hanford project, the pace of progress accelerated — sometimes exponentially as years of preparation and planning paid off. And we maintained our good safety record while doing more with fewer resources.

Here are the editors' choices of the top *Hanford Reach* stories of 2001.

Sept. 11 changed our lives, brought out compassion

Who knew that one of the top stories of 2001 would begin so near the end of the year?

The events of Sept. 11, 2001, had an immediate impact at Hanford as they did everywhere else in the country. Stepped-up security, appeals to employees to donate blood and relief money, and a temporary halt on business travel were some of the first steps taken.

Hanford employees contributed to a Tri-Cities campaign to buy a new ladder truck for the New York Fire Department, similar to this one that was destroyed Sept. 11.

As the dust was settling for most of us, it was apparent that the dust and ash at "Ground Zero" still presented a problem for rescue workers. Hanford took the lead in rounding up 10,000 respirators from throughout the Department of Energy complex — about 2,000 from Hanford alone — and made special arrangements to ship them to New York at a time when almost no airplanes were flying.

A "Day's Pay" movement was begun in the Tri-Cities community, modeled after the World War II fund-raising effort that resulted in the purchase of a B-17 bomber. This time, the objective was to buy a new ladder truck for the New York Fire Department. Hanford contractors instituted various programs to make it easier for employees to donate to both the Day's Pay for the USA program and to the American Red Cross relief effort.

"All in all, Hanford contractors and their employees really showed their compassion," said Day's Pay organizer Kelly Watson of Richland. ■

Construction mobilized on Waste Treatment Plant

Limited construction began in October on the world's largest radioactive waste vitrification plant. Site preparation work, consisting of clearing and grading the 65-acre construction site, excavating for project facilities and building roads, represented a major step toward building the $4 billion Waste Treatment Plant in the 200 East Area. Full-scale construction will begin in 2002 with hot commissioning scheduled for 2007.

U.S. Senator Patty Murray and Congressman Doc Hastings review plans for construction of Hanford's vitrification plant with ORP Manager Harry Boston, right.

At the same time the Office of River Protection was celebrating the start of site preparation work, the Department of Energy was being fined $10,000 a week by the State of Washington for missing a July 31 deadline to begin construction of the major nuclear facilities associated with the project. The state Department of Ecology promised to roll the fines back into the Hanford cleanup budget if DOE showed a plan and the funding necessary to meet the 2007 Tri-Party Agreement milestone to begin vitrifying Hanford tank waste.

Three major facilities will be designed, built and commissioned by Bechtel National for pretreatment, high-level waste vitrification and low-activity waste vitrification. The plant will also have an analytical laboratory, a 60,000-square-foot office building and several smaller facilities.

There are 53 million gallons of radioactive and chemical waste in Hanford's 177 underground tanks. Turning the waste into a sturdy glass will keep it stable and impervious to the environment while the radioactivity dissipates over hundreds or even thousands of years. ■

Hanford workers earn VPP Gold Stars

Five contractors and projects at Hanford earned Department of Energy Voluntary Protection Program Gold Star status in 2001. The safety program excellence was recognized at Day & Zimmermann Protection Technology Hanford, DynCorp Tri-Cities Services, the Fast Flux Test Facility, Fluor Federal Services and Pacific Northwest National Laboratory.

DynCorp's contract with Fluor Hanford was not renewed in fiscal year 2001, but the company earned its VPP Gold Star while providing site services at Hanford. The majority of DynCorp's workers transitioned to Fluor Hanford.

Photo by Gary Eder of FFTF Nuclear Training

A Voluntary Protection Program Gold Star flag flies outside the Fast Flux Test Facility. Recent flags awarded to FFTF, Pacific Northwest National Laboratory and Fluor Federal Services gave Hanford a total of five VPP Gold Stars.

Although the Occupational Safety and Health Administration Voluntary Protection Program affects 750,000 workers, the DOE Voluntary Protection Program is for the approximately 30,000 employees who work on federal projects.

Workplace injuries are reduced and safety performance is improved when company management and labor work hand-in-hand to recognize and prevent hazards and assist in a continuous improvement process. Once such a partnership is forged and the safety systems are reducing injuries, a company is ready to apply for star status to OSHA or DOE.

At Hanford, the quest for DOE-VPP Gold Stars continues with Fluor Hanford's River Corridor Project in the final stages of the award process. ■

PNNL researchers awarded for innovations

The *Discover Magazine* Innovation Award in the health category was presented to Pacific Northwest National Laboratory for its combined optical and magnetic resonance microscope. For his development of the Timed Neutron Detector, a device that offers improved approaches for locating metal and plastic landmines, researcher Dick Craig was awarded a $100,000 Christopher Columbus Foundation Fellowship, also part of the *Discover* awards program.

R&D Magazine recognized researchers at PNNL and their collaborators for developing four of the 100 most technologically significant innovations of 2001. Awards are based on a product's technical significance, uniqueness and usefulness. PNNL's award-winning innovations are:

- A plasma-catalysis technology that significantly reduces oxides of nitrogen from the exhaust of next-generation energy-efficient vehicles.
- A suite of analysis procedures, software and hardware that can reduce life-cycle operations and maintenance costs by as much as 25 to 50 percent.
- A long-range semi-passive radio frequency system that can identify, locate and even determine the condition of any item to which a tagging device is attached, a capability useful for assorted inventory applications.
- A high-temperature viscosity measurement technology for process monitoring of hot molten materials such as those in glass manufacturing and metals refining.

Since the laboratory began submitting entries in 1969, PNNL has received 58 R&D awards, including 51 awards since 1988. ■

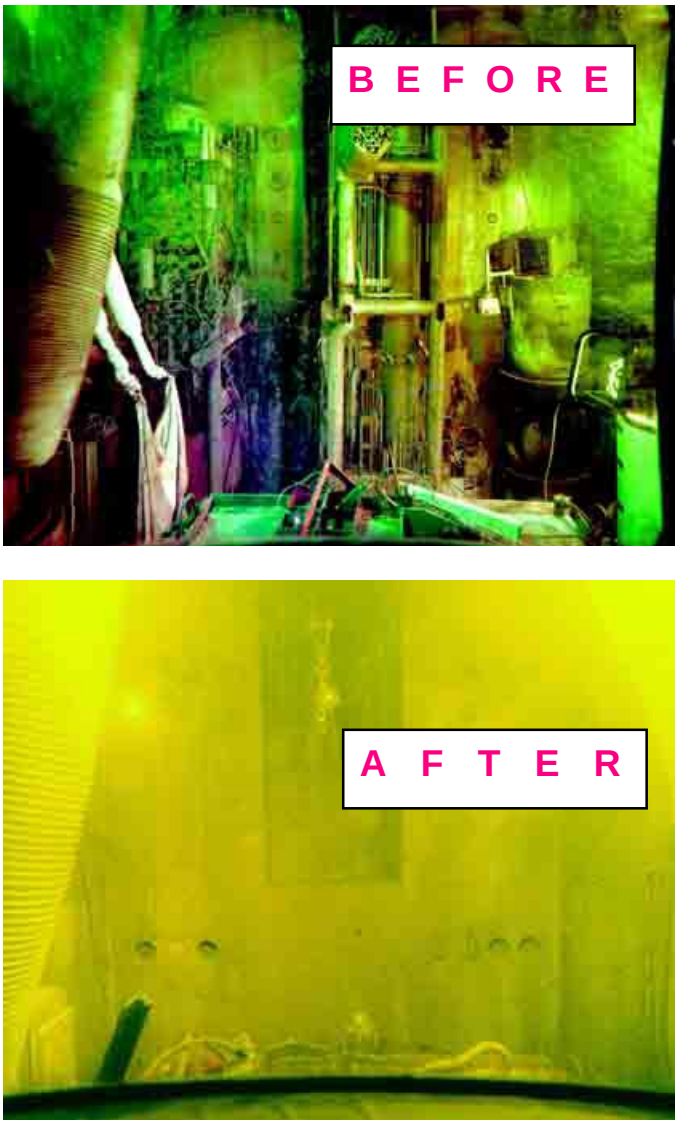
Facilities cleaned out, others demolished in 300 Area

The 300 Area, the site of Hanford's radiological research and fuel fabrication facilities for nearly 50 years, is now the focus of cleanup work being done by the River Corridor Project, which is managed by Fluor Hanford.

In 2001 the cleanout of B Cell in the 324 Building and the shipment of the mixed waste and equipment to the 200 Area burial grounds met a key Tri-Party Agreement milestone for 300 Area cleanup. B Cell is a shielded concrete room where highly radioactive material was remotely handled. While it was operating, B Cell contained nearly 3 million curies of radioactive material, and was considered to be the largest operating hot cell west of the Mississippi River. All equipment removal had to be conducted with remotely handled devices and a robotic crawler known as the Dispersible Removal System, which helped collect and vacuum up debris from the floor.

Key radiological inventory reductions were also achieved in the 300 Area. Waste from the 327 Building deactivation was loaded into drums for shipment or consolidated into A Cell for later packaging. About 380 metric tons of uranium were moved away from the 300 Area Fuel Supply Shutdown facilities including 240 metric tons of fuel that were sent to other Department of Energy sites and 140 metric tons of scrap that were buried in Hanford's Low-Level Burial Grounds.

wo 300 Area water towers were demolished in the "skyline reduction" initiative. The 303-K Building, a former radioactive and mixed waste storage facility, was also demolished in 2001. ■



Removal of contaminated equipment and debris from the 324 Building's B Cell was accomplished this year, completing the B Cell cleanout project.

ERC team continues cleanup progress in the Columbia River corridor

The Bechtel Hanford-led Environmental Restoration Contractor team continued to clean up Hanford's Columbia River corridor in 2001.

At N Reactor, one of four major cleanup sites in the river corridor, the ERC team removed nearly 121,000 tons of highly contaminated material from the N-3 and N-1 cribs and trenches. At this site, the most radiologically contaminated waste site yet, liquids were discharged from the reactor cooling system into the soil. Conditions at this cleanup site prompted improvements to techniques that are protecting the environment and reducing workers' exposure to potential radiological hazards.

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Rubble and contaminated material from D Reactor exhaust and storage rooms were removed by the Environmental Restoration Contractor team. The material and rubble were safely deposited in the Environmental Restoration Disposal Facility.

The ERC team also continued the Interim Safe Storage project to "cocoon" Hanford's retired reactors by: demolishing all parts of the reactor building except for the 5-foot concrete shield walls surrounding the core, sealing all exterior openings and placing a 75-year roof on the structures. C Reactor is already cocooned.

Interim safe storage on H Reactor is 19 percent complete. D Reactor is 49 percent complete, DR Reactor is at 90 percent completion and progress on F Reactor is 77 percent complete.

At the highly contaminated 233-S Plutonium Concentration Facility, the ERC team removed nine process vessels, six more than planned, during the 2001 fiscal year.

Meanwhile, at B Reactor, the building was made safe for nearly 12,000 people to visit the historic landmark and the world's first full-scale nuclear reactor.

n 2001, ERC and non-ERC cleanup activities removed nearly 710,000 tons of contaminants away from waste sites and safely disposed of the material in the Environmental Restoration Disposal Facility on Hanford's central plateau. ■

SNF Project accelerated spent fuel movement

A little more than a year after the Spent Nuclear Fuel Project moved its first Multi-Canister Overpack of spent nuclear fuel out of the K Basins, the project closed out the year by moving its 40th MCO to the Cold Vacuum Drying facility and then to interim storage in the Canister Storage Building. Last summer, operation of two new processing tables was begun, and the rate of production accelerated. Times for readying and processing MCO shipments fell below planning cases in all major project operating facilities.

The time span of the entire project was also shortened. In late March, an "alternate fuel transfer strategy" was approved. Along with resulting changes to the Tri-Party Agreement, the strategy calls for moving all K East Basin fuel to K West Basin for processing, avoiding the installation of duplicate equipment.

The canister decapper, part of the K West Basin Fuel Retrieval System, operates as part of the unique fuel handling equipment in Hanford's Spent Nuclear Fuel Project.

In June, the *Reach* reported that the SNF Project had worked 3 million hours without a lost-workday injury, and that long stretch of safe work increased to 3.5 million hours before the end of 2001, in spite of the inherent hazards at various stages of the project. "Removing this fuel is important work," said Fluor Hanford Vice President Bob Heck to project employees. "I'm proud of each one of you." ■

Hanford set the pace for DOE complex in nuclear material stabilization

Last year, the Department of Energy Richland Operations Office challenged the Nuclear Material Stabilization Project to quadruple the amount of plutonium stabilized the year before. The challenge was met. In 2001, according to Fluor Hanford Vice President George Jackson, the project more than quadrupled the year 2000 output.

The volume and variety of plutonium forms makes Hanford's Plutonium Finishing Plant one of the site's more technically challenging projects. To prepare the plant for deactivation, nearly 18 metric tons of plutonium-bearing metals, oxides, solutions, residues and polystyrene "polycubes" are being prepared for safe storage and off-site disposition over the next three years. The processes required to convert them into stable forms have all been installed, and in 2001, the accelerating pace of production became one of Hanford's top *Reach* stories.

Last April, we reported that Hanford had become the first site in the Department of Energy complex to be ready to comply with a stringent new DOE packaging standard. The first outer container of a new package for long-term plutonium storage was welded with the stainless steel "convenience" can inside. PFP continues to set the pace for DOE in both the variety of materials packaged and the speed at which they're being produced. ■

Tank SY-101 returned to waste service

Following rigorous safety reviews, Hanford's infamous "burping" waste tank was returned to service this fall, marking the end of a costly, decade-long effort to resolve some serious safety issues. "Returning the tank to service closes the book on what was once Hanford's and the Department of Energy's top safety concern," the *Reach* reported in November. Tank SY-101 will now play a key role as a staging point for waste destined for the planned vitrification plant.

SY-101 received national media attention in the early 1990s because of its occasional "burping" of flammable hydrogen gas — a problem that was solved by a large mixer pump that prevented buildup of the gas. A rising waste crust was another issue, and that problem was resolved last year by diluting and removing more than 520,000 gallons of waste from the million-gallon tank.

For those efforts to solve the problem of the rising surface level, the Office of River Protection and contractor CH2M HILL Hanford Group earned the recognition of the Project Management Institute. The Tank SY-101 project was honored as the local "project of the year" and was a runner-up in PMI's international project-of-the-year competition. ■

Congressional tank watch list closed

Nearly a decade of diligent work in the tank farms came to fruition in 2001 when the DOE Office of River Protection announced the closure of the Wyden tank safety watch list that had been created by Congress in the early 1990s. Resolution of the safety issues resulted in the removal of the final 24 high-level waste tanks from the list in August of this year, completing a Tri-Party Agreement milestone more than a month early.

The watch list, named for Oregon Senator Ron Wyden, required the Department of Energy to watchdog the most dangerous tanks at Hanford. As many as 56 tanks were on the list at one time because of concerns over generation of flammable gases, high heat levels and the presence of flammable organic chemicals and ferrocyanide in some of the waste.

DOE and the tank-farm contractor resolved the ferrocyanide issue in 1996, the organic chemical issue in 1999 and the high-heat issue in 2000. Last January, the flammable gas issue involving Tank SY-101 was resolved after waste had been diluted and transferred by CH2M HILL Hanford Group.

Close monitoring of Hanford's waste tanks will continue until all the waste is pumped out and vitrified for long-term storage. "We owe a special thanks to the Office of River Protection," said Wyden, "because they've made it clear that they're going to continue this effort of monitoring." ■