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ECA Update
March 15, 2016

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The Congressional Research Service has issued a pair of new reports outlining the upcoming decisions for Congress on the Navy's DDG-51 and DDG-1000 destroyer programs and a slew of nuclear weapons modernization efforts across the military.

Upcoming Events

March 2016

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House Committee on Appropriations, Subcommittee on Energy and Water Development, and Related Agencies, ***"Budget Hearing - Department of Energy, Environmental Management"***
10:30 AM
Visit website.
Download testimony.

March 2016

16

Senate Appropriations Committee, Subcommittee on Energy and Water Development
"Hearings to examine proposed budget estimates and justification for fiscal year 2017 for the National Nuclear Security Administration"
2:30 PM
Visit website.

March 2016

The nonpartisan research arm of Congress addresses key upcoming debates on the future of the destroyer fleet, including whether to provide the rest of the funding for next fiscal year to complete an additional DDG-51 that was partially funded in this year's budget and authorize a multiyear contract for additional vessels from fiscal 2018 to 2022.

The second report outlines a host of looming funding decisions related to upgrading the nation's nuclear delivery systems and other strategic weapons in coming years.

"Even though the United States plans to reduce the number of warheads deployed on its long range missiles and bombers, consistent with the terms of the New START Treaty," the report says, "it also plans to develop new delivery systems for deployment over the next 20-30 years."

The CRS reports, which are not made public, were obtained by the Federation of American Scientists.

Stop Wasting Time--Create a Long-Term Solution for Nuclear Waste
Scientific American
March 15, 2016
LINK

April marks the 30th anniversary of the world's worst nuclear power disaster, the explosion and fire at a reactor at the Chernobyl plant in Ukraine, in the former Soviet Union. It forced more than 300,000 people to flee and created a zone tens of kilometers wide where radiation levels remain hazardous to this day.

A severe reactor accident is unlikely in the U.S. and other countries with safer facilities. But we face another danger that is in many ways more threatening than a meltdown: the steady accumulation of radioactive waste. The U.S. has

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Nevada Site Specific Advisory Board (NSSAB) Meeting
5:00 PM PST

March 2016

30

New Mexico Site Specific Advisory Board (NMSSAB) Meeting
1:15 PM MST

August 2016

9-10

Third Annual Intermountain Energy Summit
Idaho Falls, ID
Visit website.

September 2016

14-15

DOE National Cleanup Workshop
Hilton Alexandria Mark Center
Alexandria, VA

dithered over this clear and present danger for decades, irresponsibly kicking the can down the road into the indefinite future.

The spent fuel produced by nuclear power plants will emit harmful radiation for hundreds of thousands—even millions—of years. Some 70,000 metric tons of it are now stored at 70 sites scattered across 39 states. One in three Americans lives within roughly 80 kilometers of a storage site. The waste, hot from radioactive decay, is held in deep pools of water or in “dry casks” of concrete and steel that sit on reinforced pads. Accidents or terrorist attacks could drain the pools or crack the casks, with the risk that the exposed waste could catch fire, spreading radioactive soot across the surrounding countryside and into food chains in a Chernobyl-like catastrophe. As the years go by and waste is packed into overcrowded pools and pads, that risk will only grow.

An acceptable solution to this unacceptable state of affairs has been in the works for more than 30 years. The Nuclear Waste Policy Act of 1982 established a framework for the permanent disposal of the nation's nuclear waste, leading to the 1987 selection of Yucca Mountain, a barren peak in the high desert of Nevada, as the site of a deep geologic repository that would be built and operated by the Department of Energy.

At Yucca, spent fuel housed in steel canisters would be sealed within tunnels above the water table, in a manner meant to minimize corrosion and possible leakage of radioactive material, even over geologically long periods. But because of strident political opposition from Nevadans, as well as vexing scientific uncertainties over the site's geologic suitability, President Barack Obama halted work on the repository in 2010. Today Yucca Mountain's fate remains in limbo. The danger aside, the lack of such a repository also stacks the deck against nuclear power as a viable, low-carbon tool for counteracting climate change.

In the aftermath of Yucca's mothballing, the doe has pursued a diverse strategy of nuclear waste management that includes tentative plans for consolidated interim storage facilities, tests of deep boreholes as another possible long-term storage technique, and the development of “consent-based” siting protocols to gain support from municipal and state governments. But these measures will take us only so far. Experts agree that a geologic repository remains the only viable long-term solution for disposing of the majority of commercial nuclear waste.

Creating the repository is both scientifically and politically possible. Last year Finland showed this when it approved construction of the Onkalo facility, which is expected to become the first geologic repository for spent fuel when it begins operations in the 2020s. And even in the U.S., the Waste Isolation Pilot Plant (WIPP) in New Mexico currently stores waste from the production of nuclear weapons. (WIPP is neither designed nor approved to store spent fuel.)

Soon a new president will occupy the White House, and there will be a renewed opportunity to address the urgent issue of the U.S.'s nuclear waste. The decision to close Yucca Mountain must be revisited, and the selection and characterization of alternative sites should be aggressively accelerated. In the interim, more spent fuel should be moved from cooling pools to dry casks, which offer better protection against hazards.

Ultimately, if consent-based siting efforts fail, in favor of the common good the federal government must exercise its power of eminent domain to overcome local opposition, creating a deep geologic repository for nuclear waste. Regardless of whether the next president is for or against nuclear power, he or she must act decisively to avoid poisoning our shared future.

Science and solutions for environmental remediation at PNNL

Tri-City Herald

March 13, 2016

LINK

As a Department of Energy national laboratory, Pacific Northwest National Laboratory takes pride in advancing scientific frontiers and developing solutions to vexing problems. In particular, we apply our technical expertise to address national needs in security, energy and the environment.

Our support of DOE's environmental management mission is a great example. By combining scientific understanding with applied engineering, we are helping to remediate the environmental legacy resulting from seven decades of nuclear energy research and weapons development.

PNNL has supported the Hanford site mission for more than 50 years. Through our efforts, we have developed a deeper and broader knowledge of Hanford than any other research institution. Moreover, since we live here, we have a keen interest in ensuring that Hanford is cleaned up quickly, completely and safely — and that we protect the environment, especially our beautiful Columbia River, in the process.

Of course, Hanford is only one of 16 contaminated sites in 11 states that DOE is responsible for cleaning up. Our understanding of DOE's environmental management challenges has positioned us to assist cleanup efforts across the DOE complex. PNNL has been a leader in developing subsurface and chemical engineering processes that are the basis for cleanup at Hanford, Savannah River, West Valley and many others.

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We partner with other national laboratories and contractors to develop innovative, science-based solutions. We focus on those complex challenges that have impeded progress in waste processing and environmental remediation and increased life-cycle costs for long-term stewardship. Our scientists strive to understand and predict how systems will perform, whether they are systems for managing and monitoring residual tank waste; waste processing, immobilization and disposal; or environmental remediation, restoration and stewardship. Our scientific analyses and technical assessments also inform decision-makers' evaluations of options and risk.

In the late 1970s, PNNL developed vitrification technologies to encapsulate high-level nuclear waste in a stable glass form for safe and long-term disposal. Today, we work in our state-of-the-art glass laboratory to advance that research and provide new glass formulations and alternative processing approaches. The goal is to significantly improve the amount of waste that can be stored in each canister while meeting various performance constraints. Developing glasses that are more tolerant to key waste components not only provides a technical basis for increasing how much waste they can hold — which ultimately reduces the number of canisters needed, but also provides opportunities to minimize or eliminate certain pretreatment options. This integrated program is reducing the time the Waste Treatment Plant will need to operate, thus decreasing the cost.

PNNL also provides expertise to help monitor the site. We partnered with Hanford more than 50 years ago to establish the environmental monitoring programs that protect our critical water resources. And our capabilities have come a long way since then. Today, we are developing and applying technologies that allow us to "see" contamination in the subsurface. By comparing images over time, our scientists are constructing three-dimensional, time-lapse movies of contaminant transport in the environment. We can also see, in near real-time, how remediation processes are working and whether they are successfully keeping subsurface contaminants from reaching water resources.

Taking a step toward remediating these contaminants, PNNL researchers recently completed a draft technology evaluation plan for iodine-129 in the Hanford Site soil and groundwater. Iodine-129 is a contaminant of concern because of its long half-life, high mobility in groundwater and long-term risk to human health and the environment. The plan outlines an approach to evaluate technologies for remediating iodine-129 contamination in the subsurface. It is being implemented in collaboration with the site contractor, CH2M.

Similarly, PNNL researchers and collaborators from the University of Cincinnati and Florida State University are drawing on the computational and experimental resources at the Environmental Molecular Sciences Laboratory (a DOE user facility at PNNL) to demonstrate a new field-deployable sensor that can be used to monitor groundwater, river water and watersheds for pertechnetate, another contaminant of concern.

The team's novel approach overcomes limitations of existing technologies. By using highly selective and sensitive platinum salt that changes in color and brightness when exposed to pertechnetate, it is much easier to detect and quantify pertechnetate in groundwater — even at levels well below the drinking water standard established by the Environmental Protection Agency.

These are just a few of the ways in which PNNL is helping DOE to meet its commitment to clean up Hanford and other sites. By resolving critical technical issues, maturing new technologies, and conducting basic research, PNNL is developing solutions, reducing costs and lowering risks associated with the environmental remediation of former nuclear production sites. Although this effort may take decades, you can count on PNNL to be there for our community and the nation.