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Public Comment Invited on Department of Energy NEPA Supplement Analysis of Two Proposed Commercial Nuclear Fuel Shipments to INL

The U.S. Department of Energy (DOE) invites the public to read and comment on a draft supplement analysis it has prepared for a proposal to make two shipments of commercial nuclear fuel rods totaling 80 to 100 kilograms heavy metal (40 to 50 kilograms heavy metal in each of the two shipments) to Idaho National Laboratory for research and development purposes.

The shipments would require the State of Idaho to waive portions of the 1995 Settlement Agreement because of the DOE's failure to meet performance milestones.[1] Failure to process liquid sodium-bearing waste as well as failure to meet waste shipping milestones to WIPP have the legal impact of closing INL doors to receiving DOE spent nuclear fuel or research quantities of commercial spent nuclear fuel allowed in a 2011 waiver.[2]

DOE prepared this draft supplement analysis in accordance with 10 CFR 1021.314(c) to determine whether an existing environmental impact statement should be supplemented, a new environmental impact statement should be prepared, or that no further NEPA documentation is required for this proposed action.

The draft supplement analysis and existing NEPA documents referenced in the draft supplement analysis are available at the following web link: http://www.id.energy.gov/insideNEID/PublicInvolvement.htm.

The 30-day public comment period on the draft supplement analysis will conclude on July 13, 2015. Comments can be submitted by mail to Jack Depperschmidt, NEPA Document Manager, U.S. Department of Energy, Idaho Operations Office, 1955 Fremont Avenue, Idaho Falls, Idaho 83415-1222; phone 208-526-5053; or by email to comnfsa@id.doe.gov. Paper copies of the document are available from Mr. Depperschmidt on request.

A determination concerning the need for any further NEPA analysis will follow the public comment period. No decision has been made at this time regarding the destination of the

[1] See the 1995 Settlement Agreement at http://www.deq.idaho.gov/media/550338-1995_Settlement_Agreement.pdf

[2] See the 2011 Memorandum of Agreement at http://www.deq.idaho.gov/media/550236-commercial_fuels_agreement_2011.pdf

proposed spent nuclear fuel shipments; that decision will be made following completion of this NEPA process.[3]

NuScale Small Modular Reactor in the NRC Licensing Process

Babcock and Wilcox shelved their mPower small modular reactor (SMR) project at Tennessee Valley Authority (TVA) in April 2014. Westinghouse, owned by Japan's Toshiba, announced they were suspending work on SMRs on January 2014. Both cited lack of investor interest in the SMR projects.

But NuScale, headquartered in Portland, Oregon, continues developing their design for a 45-MW modular reactor and has begun the NRC licensing process aided by DOE funding and supporting company Fluor Corp. In late 2013, the U.S. Department of Energy selected NuScale for a commercialization project. NuScale is also working on its first project, the Western Initiative for Nuclear, in partnership with the Utah Associated Municipal Supply System consortium and Energy Northwest. The project is scheduled to begin operations in 2023.

NuScale's design is derived from pressurized water reactor technology, uses natural circulation and can be shut down safely with no operator action, no AC or DC power, and no external water. Multiple modules can be combined to increase power generation.

NuScale expects to apply for US design certification late in 2016. The NRC review is expected to take 39 months, so the first unit could be under construction in 2020 and in operation about 2023.

In March 2012 the US DOE signed an agreement with NuScale regarding constructing a demonstration unit at its Savannah River site in South Carolina. In mid-2013 NuScale got backing from the Western Initiative for Nuclear (WIN) – a broad, multi-western state collaboration – to study the demonstration and deployment of a multi-module NuScale Small Modular Reactor (SMR) plant in the western USA. A NuScale SMR built as part of Project WIN is projected to be operational by 2024, at the Idaho National Laboratory. This is to be followed by a full-scale 12-module plant in Washington state owned and run by Energy Northwest. [4]

Another SMR, the fast reactor, small reactor by TerraPower (Traveling Wave Reactor) is progressing with new fuel research at the Idaho National Laboratory (INL). They have extruded metallic fuel and are irradiating fuel samples in the Advanced Test Reactor. [5]

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[3] U.S. Department of Energy, Idaho Operations Office news release from media contact Tim Jackson (208) 526-8484. June 11, 2015.

[4] See World Nuclear News at http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Power-Reactors/Small-Nuclear-Power-Reactors/

[5] INL Mission Accomplishments PEMP 2014 http://www5vip.inl.gov/technicalpublications/Documents/6293993.pdf

DOE Uranium Sales Have Hurt Uranium Industry

April 22, 2015, the House Oversight and Government Reform Subcommittee on the Interior held a hearing titled, "Examining the Department of Energy's Excess Uranium Management Plan." The U.S. Department of Energy (DOE) controls an inventory of excess uranium decommissioned from military use. The stockpile of decommissioned uranium represents a significant taxpayer asset. Most recently, DOE has bartered the excess uranium in exchange for the cleanup of retired uranium enrichment plants.

The U.S. Government Accountability Office (GAO) conducted a study of the Management Plan and DOE's uranium transfers undertaken pursuant to the plan and identified a number of legal issues with these transfers. Specifically, GAO found that DOE lacked the authority to conduct the uranium transfers under the USEC Privatization Act. GAO also found that DOE did not properly value the uranium that was being transferred, nor did DOE adequately assess the impact of the transfers on the commercial uranium market.[6] [7]

These unchecked sales disrupt the uranium market and cost uranium miners their jobs. The uranium sales are also highly inefficient and have generated returns far lower than their market potential, denying taxpayers the returns they should expect from such a valuable asset. "The DOE's uranium transfers have hurt Wyoming's uranium industry, deprived the American people of the best value for these assets, and bypassed Congress' control of the purse," said Chairman Lummis. Testifying for the Department of Energy was DOE's John Kotek.

The uranium industry negotiated protections with the Department of Energy prior to reinvesting in the uranium industry. The DOE, they say, did not limit its sales to avoid damaging the industry, as it had promised. The industry believed the DOE agreed to cap sales; DOE argued they had agreed to "guides" and of course, that meant DOE could do whatever they pleased.

[6] http://oversight.house.gov/hearing/examining-dept-energys-excess-uranium-management-plan/

[7] http://www.4-traders.com/URANIUM-ENERGY-CORP-62414/news/Uranium-Energy--Lummis-Examines-Energy-Department-Uranium-Transfers-20245072/

DOE Moves Forward with Planning a Defense-Only Repository, In Addition to One for Commercial Spent Fuel

Department of Energy Secretary Ernest Moniz gave remarks March 2015 at the Bipartisan Policy Center. [8] Selected excerpts are provided below:

"The fiscal year 2016 budget request includes $26 million for the department to continue to move forward with its plans for a field test on deep borehole disposal, which was another recommendation of the [Blue Ribbon Commission] BRC.

The basic idea is that a borehole would be drilled to a depth of approximately three miles with at least two miles penetrating crystalline rock. In our experiment, non-waste-bearing packages would be put in the bottom mile of the hole to demonstrate emplacement methods. . .

President Obama today authorized the Department of Energy to move forward with the planning for a consent-based, defense-only repository for some of the DOE-managed high-level wastes. A separate repository for defense waste could allow greater flexibility in the selection of a site, and greater flexibility can help keep costs down. . .

This proposal means that the timelines for disposal of defense waste and civilian nuclear fuel are no longer linked. Some defense waste is also less radioactive, cooler and easier to handle than commercial waste. This means that a defense repository for these wastes would have a simpler design and could present fewer licensing and transportation challenges. . .

Finally, defense high-level waste streams are heterogeneous, existing in many different waste forms, which could allow for different disposal pathways optimized to those waste forms. Nearly 80 percent of the inventory of defense high-level waste has been or will be vitrified – that is, put into glass – which means that it could be disposed of in a separate repository with a simpler design. . .

At the Idaho National Laboratory, 4,400 cubic meters of calcine high-level waste, which exists as granular and powdered solids, is currently planned for treatment, but may be more safely and efficiently packaged without treatment and disposed in a borehole or in a defense waste repository. The same is true for granular solids resulting from fluidized bed stream reforming of 900,000 gallons of sodium-bearing liquid wastes that will be treated at the Idaho site. . .

So to sum up, what we've put forward today are two steps as part of a comprehensive approach to spent fuel and high-level waste origin disposal: First, we will take affirmative steps with a consent-based process to identify one or more sites for both a pilot and full-scale facility for consolidated storage for commercial fuel. And second, the president today authorized the Department of Energy to move forward with planning for a consent-base, defense-only

[8] http://energy.gov/articles/secretary-monizs-remarks-look-back-blue-ribbon-commission-america-s-nuclear-future

repository and other geological options like borehole for some DOE-managed high-level wastes."

Waste Control Specialists in Andrews, Texas Propose Consolidated Spent Fuel Facility

In February 2015, Waste Control Specialists (WCS) filed a letter of intent with the U.S. Nuclear Regulatory Commission to seek a license for the Consolidated Interim Storage Facility (CISF) at their 14,000-acre facility in Andrews, Texas. Following that submission, WCS entered into an agreement for AREVA Inc. to serve as the exclusive subcontractor to license, construct and operate the CISF.

On May 21, 2015 it was announced that AREVA Inc. and NAC International (NAC), two global leaders in used nuclear fuel storage, have signed an agreement to jointly support the licensing, design, construction and operation of the CISF project in Andrews County, Texas, led by Waste Control Specialists, LLC.

The new agreement ensures that the WCS facility can handle the majority of commercial used nuclear fuel and reactor-related greater-than-class-C (GTCC) waste already in dry storage at shutdown and operating sites in the U.S., while also leveraging the companies' expertise in used nuclear fuel transportation. Additional systems can be added through future license amendments. [9]

According the DOE Secretary Moniz, "the proposal would be built in stages of 5,000 metric tons [of commercial spent nuclear fuel], with a total eventual capacity of 40,000 metric tons. As for scale, I'll remind you that Yucca Mountain was put forward with a cap of 70,000 metric tons." [10]

Could Decades of Contaminated Drinking Water Explain Elevated Cancer Mortality Risks at INL and SRS Department of Energy Sites?

Decades before states began enforcing drinking water monitoring at Department of Energy federal sites, the drinking water was contaminated with multiple radionuclide and chemical contaminants. Prior to about 1987, the DOE did not routinely monitor for important chemical contaminants. But since 1987, chemical contaminants are monitored and reported to state environmental quality offices.

[9] http://us.areva.com/EN/home-3279/areva-inc-areva-and-wcs-sign-agreement-for-independent-interim-used-nuclear-fuel-storage-site.html

[10] http://energy.gov/articles/secretary-monizs-remarks-look-back-blue-ribbon-commission-america-s-nuclear-future

Radionuclide contaminants in DOE nuclear sites were monitored since about 1961. However, the monitoring did not include a comprehensive set of contaminants. The monitoring of tritium and strontium took place; the monitoring of other long-lived radionuclides such as Iodine-129 usually did not.

The levels of tritium in INL drinking water exceeded what are now maximum contaminant levels (MCLs) for drinking water, historically by as much as 5 times. Iodine-129 exceeded the MCL by over five times in 1981 at INTEC (CPP-1 well) and was 70 percent of the MCL at Central Facilities (CFA wells 1 and 2) in 1977.[11] Workers were not told what contaminant levels were in their drinking water and this obscuration of historical contaminant levels continues. Historical records and current contaminant levels are difficult, if not impossible to come by. Except for a handful of years between the late 1980s and 1995, contaminant monitoring results for radionuclides are not publically available for the INL site. BEA employees have been provided with recent INL drinking water information according to INL Public Affairs. [12]

In 1995, a little-known fact is that the Idaho Department of Environmental Quality (IDEQ) granted the DOE and its contractor at the time, Lockheed, permission to use a loophole that allowed noncommunity wells to not monitor and report radionuclide contaminant levels to the IDEQ, despite continuing chronically elevated levels of radionuclide contaminants in drinking water. A similar situation exists at the DOE's Savannah River Site (SRS).

Epidemiology studies conducted under the Center for Disease Control (CDC) National Institute of Occupational Safety and Health for INL (under a former name INEEL) and SRS found workers at these sites were generally healthier but they also found markedly higher mortality from certain cancers. External radiation dosimetry did not explain why non-radiation workers at these sites had elevated cancer risks compared to surrounding populations. Neither study examined the drinking water contaminants. [13] [14] Existing INL well monitoring data would not be adequate to characterize the historical contamination. An analysis would be needed to identify all the contaminants and estimate the levels of the contamination that were not monitored or were inadequately monitored.

Articles by Tami Thatcher, June 2015.

[11] U.S. Geological Survey, L. J. Mann and others, *Iodine in the Snake River Plain Aquifer at the Idaho National Engineering Laboratory, Idaho*, Report 88-4165, September 1988.
[12] Conversation with INL Public Affairs at 526-8163 on June 16, 2015.
[13] "An Epidemiology Study of Mortality and Radiation-Related Risk of Cancer Among Workers at the Idaho National Engineering and Environmental Laboratory, a U.S. Department of Energy Facility, January 2005. http://www.cdc.gov/niosh/docs/2005-131/pdfs/2005-131.pdf and http://www.cdc.gov/niosh/oerp/ineel.htm
[14] Savannah River Site Mortality Study, 2007. http://www.cdc.gov/niosh/oerp/savannah-mortality/