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Pressure on Idaho Attorney General Wasden to Allow the Two Proposed Shipments

The pressure on Idaho Attorney General Lawrence Wasden to provide a waiver to the 1995 Settlement Agreement to allow two proposed shipments of spent nuclear fuel for research to come to the Idaho National Laboratory is intensifying from Idaho Commerce Director Jeff Sayer and Idaho Falls Mayor Rebecca Casper.

Outside Idaho Falls, many newspaper editors have expressed support for Wasden's tough stance on getting the troubled Integrated Waste Treatment Unit (IWTU) at INL up and running before he approves the waiver.

The Department of Energy has continually asserted the IWTU will soon be running. Yet it negotiated a $2 million maximum fine with the Idaho Department of Environmental Quality if it pulls the plug on the IWTU—with no other plans to treat the radioactive sodium-bearing waste resulting from nuclear fuel reprocessing and related activities.

Testing at the IWTU using simulant material rather than radioactive material has continued to find design problems. Apparently, the design process and the partial scale testing approved by the DOE was not sufficient to uncover the design problems. It is uncertain whether the IWTU will ever be considered safe enough to operate.

The DOE comment period for the Two Proposed Shipments has closed, but DOE's response to the comments has not yet been released. [1]

[1] Department of Energy, Draft Supplement Analysis: Two Proposed Shipments of Commercial Spent Nuclear Fuel to Idaho National Laboratory for Research and Development Purposes, DOE/EIS-0203-SA-07DOE/EA-1148-SA-01 DOE/EIS-0250F-S-1-SA-02, June 12, 2015. http://energy.gov/nepa/draft-supplement-analysis-two-proposed-shipments-commercial-spent-nuclear-fuel-idaho-national

At the Idaho LINE Commission, Nuclear Booster Spin Goes Unchallenged

The two proposed shipments of spent nuclear fuel (SNF) for research at the Idaho National Laboratory are small (0.1 metric tons) compared to 308 metric tons of SNF at INL. [2] And small in comparison to the tons of commercial SNF that the LINE Commission was lobbying Idaho to accept back in 2012. [3]

The research is needed despite the absence of any nuclear renaissance. But no matter what Idaho Attorney General Wasden decides, Idaho's nuclear waste problems aren't going away any time soon. And the Idaho Department of Environmental Quality's decision to let the Department of Energy off the RCRA hook with a $2 million fine should DOE pull the plug on IWTU before treating any of the liquid waste has not helped matters.

The LINE Commission accepts DOE lobbying via INL leaders and makes these spin masters voting members of the LINE Commission.

Masters of nuclear booster spin or "nuclear BS" know just what to leave out of their presentations and explanations.

They emphasize that the Idaho Settlement Agreement called for INL to be the "DOE Spent Fuel Lead Laboratory." But they leave out the fact that this was defunded in 2009.

They call for a transshipment facility to be built if loads of additional commercial SNF come to Idaho. But they leave out the fact that one needs to be built to make SNF already at INL road ready or be able to repackage it if it has no place to go. [4]

They give seismic hazard presentations, but leave out discussion of the important weak links in nuclear facility and aquifer protection.

They make Disneyland waste disposal assumptions to avoid discussing the usual waste burial. Most of the fuel from the two proposed shipments will be destructively examined creating air

[2] ibid.

[3] See Line.Idaho.gov for meetings and documents from the Idaho Leadership in Nuclear Energy (LINE) Commission.

[4] Department of Energy, Idaho Operations Office, Mission Need Statement: Idaho Spent Fuel Facility Project, DOE/ID-11344, September 2007. http://www5vip.inl.gov/technicalpublications/Documents/3867685.pdf The mission need for a new facility to inspect, package or repackage DOE's non-naval spent nuclear fuel at INL states: "this capability does not exist at INL and is needed in order to meet the Idaho Settlement Agreement."

missions or other waste above our aquifer. [5] [6] [7] They assume no impediments to Yucca Mountain being built or WIPP being reopened.

They tout INL cleanup. But they leave out discussion of what will remain buried at the Radioactive Waste Management Complex. [8] [9]

They tout the grout injected under some of the waste, but leave out the uncertainty about its effectiveness.

They give us bread box analogies when volume doesn't characterize the toxicity or longevity of the hazard.

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[5] Department of Energy, Idaho Operations Office, Low-Level Waste Disposal Alternatives Analysis Report, INL/EXT-06-11601, Rev. 1, Sept 2006. http://www5vip.inl.gov/technicalpublications/Documents/3661678.pdf "The Materials and Fuels Complex (MFC) will generate activated metals during waste segregation operations in the planned Remote Treatment Project (RTP). LLW stored at MFC consists primarily of irradiated reactor subassembly hardware that has been drained of sodium and fuel removed. The hardware is typically stainless steel. LLW is stored in a number of configurations including pre-1978 waste cans, and in the post 1978, HFEF 5-Cask waste cans. Some of the LLW is co-mingled with other waste types and will have to be retrieved and orted in RTP. The operations are expected to produce ~6 m 3/y (as packaged estimate) of activated metal . . The MFC activated metal would be classified under 10 CFR 61 typically as Class B and C with about 50% exceeding Class C.

[6] Prepared for the U.S. Department of Energy DOE Idaho Operations Office by INL Battelle Energy Alliance, Mission Need Statement for the Idaho National Laboratory Remote-Handled Low-Level Waste Disposal Project, DOE/ID-11364, June 2009. http://www5vip.inl.gov/technicalpublications/Documents/4282315.pdf "Remote-handled low-level waste also will be generated by new programs and from segregation and treatment (as necessary) of remote-handled scrap and waste currently stored in the Radioactive Scrap and Waste Facility at the Materials and Fuels Complex."

[7] US Department of Energy, "Environmental Assessment for the Replacement Capability for Disposal of Remote-Handled Low-Level Radioactive Waste Generated at the Department of Energy's Idaho Site," Final, DOE/EA-1793, December 2011. http://energy.gov/sites/prod/files/EA-1793-FEA-2011.pdf

[8] See the CERCLA administrative record at www.ar.icp.doe.gov (previously at ar.inel.gov) and see also Parsons, Alva M., James M. McCarthy, M. Kay Adler Flitton, Renee Y. Bowser, and Dale A. Cresap, Annual Performance Assessment and Composite Analysis Review for the Active Low-Level Waste Disposal Facility at the RWMC FY 2013, RPT-1267, 2014, Idaho CleanupProject. And see Prepared for Department of Energy Idaho Operations Office, Phase 1 Interim Remedial Action Report for Operable Unit 7-13/14 Targeted Waste Retrievals, DOE/ID-11396, Revision 3, October 2014 https://ar.inl.gov/images/pdf/201411/20141103009 60BRU.pdf

[9] An often repeated contrived excuse for limiting RWMC cleanup comes from the Record of Decision fuzzy artwork of "worker" risk per acre of waste dug up. It references administrative record report RPT-188 at ar.inel.gov. or ar.icp.doe.gov. It is used to defend digging around in only about 6 acres and not the entire 35 acres of buried waste at RWMC. Radiation worker risks are higher than DOE acknowledges, but they claim that radiation protections for DOE contractor radiation workers limit health risks. But the case was not actually based on a monitored radiation worker. It was based on an unmonitored state employee who receives an unmonitored 47 rem dose throughout his career if the cleanup extends from 6 years to 25 years. This argument, however, is immediately forgotten when discussing extending operations at the AMWTP to outside waste. There is no estimate of the number of people who will be dosed from the polluted aquifer. The gross conservatism of this unmonitored "worker" dose estimate was used to argue that cleaning up the entire mess would yield incrementally high worker doses for each additional acre cleaned up.

For example, americium-241 at the RWMC that they are not retrieving would require 6 Snake River Plain aquifers to dilute to drinking water standards. [10]

The courts decided that for Yucca Mountain, analysis to an arbitrary 10,000 years was unacceptable—if peak radiation ingestion doses were afterward. Yet, RWMC cleanup is based on models that minimize the release for the first 10,000 years. Then they failed to mention the rapidly escalating doses after 10,000 years.

The DOE kept its analysis of peak doses at RWMC out of public view: 100 mrem/yr for hundreds of thousands of years unless the soil cap is maintained perfectly. [11] That's assuming no floods and geologic stability over millennia: in other words, a scientifically indefensible analysis. [12]

They say other burial grounds at INL will have caps, but leave out that only RWMC **relies** on soil cap performance to slow the migration of radionuclides headed for Thousand Springs for millennia, that today's aquifer monitoring does not portray. [13]

Shipments to WIPP are also missing agreement milestones. DOE is already lobbying to delay making the calcine road ready.

Employees at IDEQ and at various DOE contractors know their job is at-risk if they give straight answers. It's not in the DNA of Idaho Commerce Director Jeff Sayer or Idaho Falls Mayor Rebecca Casper to question the nuclear spin—or to wait for public comment to DOE's supplement analysis for two shipments to be addressed and published.

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[10] See ar.icp.doe.gov (formerly ar.inel.gov) or DOE-ID Public Reading room 2013 "RPT-1267" which states 2.15E6 curies of Am-241 are buried at RWMC. Snake River Plain aquifer volume is estimated at 2.44E15 liters (see www.ieer.org). The maximum contaminant level assumed 15 picoCuries/liter for alpha emitters.

[11] U.S. Department of Energy, 2008. Composite Analysis for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site. DOE/NE-ID-11244. Idaho National Laboratory, Idaho Falls, ID and U.S. Department of Energy, 2007. Performance Assessment for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site. DOE/NE-ID-11243. Idaho National Laboratory, Idaho Falls, ID. Available at INL's DOE-ID Public Reading room electronic collection. (Newly released because of Environmental Defense Institute's Freedom of Information Act request.) See https://www.inl.gov/about-inl/general-information/doe-public-reading-room/

[12] Idaho National Laboratory, "Explanation of Significant Differences Between Models Used to Assess Groundwater Impacts for the Disposal of Greater-Than-Class C Low-Level Radioactive Waste and Greater-Than-Class-C-Like Waste Environmental Impact Statement (DOE/EIS-0375D) and the Environmental Assessment for the INL Remote-Handled Low-Level Waste Disposal Project (INL/EXT-10-19168)," INL/EXT-11-23102, August 2011. http://www.inl.gov/technicalpublications/documents/5144355.pdf and a report prepared for the US Department of Energy, DOE Idaho Operations Office, "Preliminary Review of Models, Assumptions, and Key Data Used in Performance Assessments and Composite Analysis at the Idaho National Laboratory," INL/EXT-09-16417, July 2009. See p. 11, Tables 3 and 4 for sorption coefficients.

[13] See recently asked questions for April 8, 2015 Idaho National Laboratory Environmental Management Citizens Advisory Board, http://inlcab.energy.gov/pages/recently-asked-questions.php

But it should concern all Idahoans who care about the aquifer that questioning the spin masters is basically left up to two former governors.

Status of Cleanup at the Radioactive Waste Management Complex

In 2008 the Department of Energy, Idaho Department of Environmental Quality, and Environmental Protection Agency signed on to a plan to exhume a limited amount of buried waste at the Radioactive Waste Management Complex. Despite the "all means all" ruling regarding the 1995 Idaho Settlement Agreement to remove all transuranic waste at the Idaho National Laboratory, the tri-agency agreement specifies retrieval of at least 5.69 acres "determined to contain the highest density of "targeted waste" and shipment of at least 7,485 cubic meters of retrieved and packaged targeted waste out of the state of Idaho.

Radioactive waste buried at RWMC has included examined spent nuclear fuel, activated metals, and as well as transuranic waste that should have no place in a shallow land burial. The "targeted waste" in the subsurface disposal area focused on the most chemically contaminated waste from the Rocky Flats nuclear weapons plant in Colorado because of already extensive contamination of the Snake River Plain aquifer due to the chemical contamination, mainly carbon tetrachloride. Even for areas exhumed, much of the radioactive material will remain buried.

The targeted waste includes:

- 741 Sludge: Fairly homogeneous solid of salt precipitate containing plutonium and americium oxides and organic constituents
- 742 Sludge: Fairly homogeneous solid of salt precipitate containing plutonium and americium oxides, metal oxides, and organic constituents
- 743 Sludge: Past or grease-like solified organic liquid containing hazardous solvents and calcium silicate
- Graphite Waste: Broken graphite mold chunks and poly bottles of fine particles (e.g., graphite scarfings) containing residual plutonium
- Filters and pre-filters: Discarded high-efficiency particulate air (HEPA) filters contaminated with transuranic and uranium radionuclides
- Uranium Roaster oxide: Depleted uranium historically roasted at high temperatures, primarily in the form of uranium oxide, with some uranium metal possible
- Other waste streams mutually agreed by the three agencies to routinely be recognizable as Transuranic Waste.

Series 741 and 742 Sludge are generally the same in appearance and packaging. The identification of materials is visual.

There are nine Accelerated Retrieval Project buildings over the portions of the burial ground where waste is being retrieved. ARP I, II, III, IV, V, VI and VII are completed. ARP VIII is in progress in 2015. ARP IX is being constructed. In ARP VIII, there were 1,373 expected drums but they retrieved 1,415 drums. They are retrieving more barrels of waste than records say were disposed of.

The milestone date for complete buried waste exhumation of at least 5.69 acres is December 2023. As of May 31, 2015, 3.8 acres of the 5.69 acres had undergone the exhumation process of identifying targeted waste and leaving the rest there.

Figure 1 shows in yellow the trenches and pits containing transuranic waste. Figure 2 shows the limited area of the Accelerated Retrieval Projects.

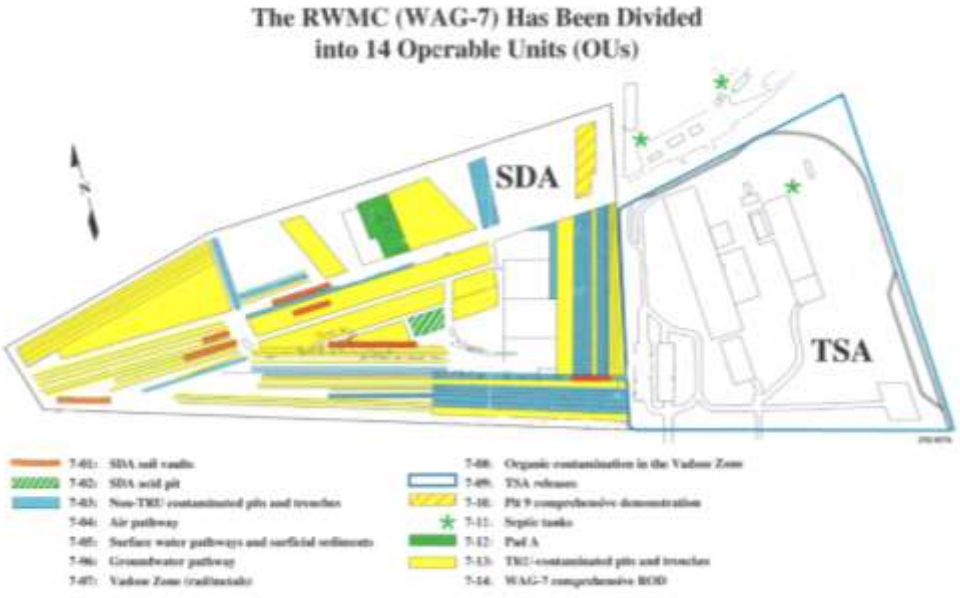


Figure 1. RWMC transuranic waste buried in yellow areas depicted.

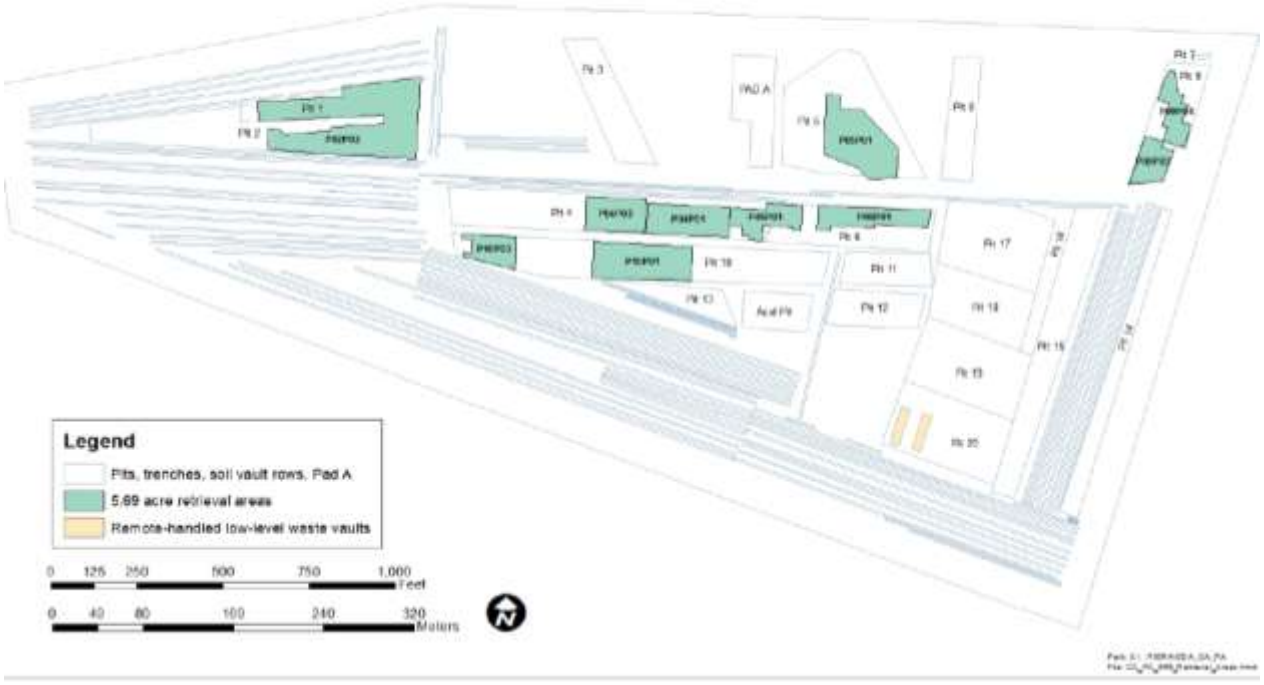
The CERCLA cleanup documents for RWMC are stating only that the assumptions for the current performance analysis remain valid. The radionuclide quantities contributing to radiation ingestion dose are not being significantly reduced by the cleanup. [14] [15]

[14] See the CERCLA administrative record at www.ar.icp.doe.gov (previously at ar.inel.gov)

[15] U.S. Department of Energy, 2008. Composite Analysis for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site. DOE/NE-ID-11244. Idaho National Laboratory, Idaho Falls, ID and U.S. Department of Energy, 2007. Performance Assessment for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site. DOE/NE-ID-11243. Idaho National Laboratory, Idaho Falls, ID. Available at INL's DOE-ID Public Reading room electronic collection. (Newly released because of Environmental Defense Institute's Freedom of Information Act request.) See https://www.inl.gov/about-inl/general-information/doe-public-reading-room/

Estimates of waste from the Rocky Flats weapons plant shipped to Idaho and buried at RWMC were revised in 1995 from 1108 kg to 1877 kg of plutonium. [16] [17]

Of the 65,000 cubic meters of above-ground stored transuranic waste at INL and 62,000 cubic meters of buried transuranic waste at INL's Radioactive Waste Management Complex, WIPP's environmental impact statement evaluated only a total of 88,360 cubic meters of transuranic waste from INL. Of the 65,000 cubic meters of above-ground stored transuranic waste, less than 2,800 cubic meters remain to be retrieved, as part of the Advanced Mixed Waste Treatment Project, but it is some of the most challenging waste to retrieve, according to the DOE-ID Operations Summary for the period through June 30, 2015. [18]



[16] Idaho Historical Data Task, INEL-95/0310, Appendix C, Table C-2, August 1995.
[17] Department of Energy and National Nuclear Security Administration, *The United States Plutonium Balance, 1944-2990 – An Update of Plutonium: The First 50 years, DOE/DP-0137, February 1996*, June 2012.
[18] See Department of Energy, Idaho Operations Office Operations Summaries at http://www.id.doe.gov/NEWS/OperationsSummarys.htm

Figure 2. Targeted waste removal areas at the Radioactive Waste Management Complex from RPT-1356, p. 426, Figure 4-6.

EPA Issues Clean Power Plan

The EPA Clean Power Plan announced August 3 is bound to be a subject of discussion around the country. Nuclear energy is not promoted in the plan because of its high cost and slow deployment. Cost overruns at the new US plants being built in Georgia and South Carolina are being called a debacle.

The EPA plan excluded new nuclear from "Best System of Emission Reduction" (BSER) but included new renewable energy: "*Investments in new nuclear capacity are very large capital-intensive investments that require substantial lead times. By comparison, investments in new RE generating capacity are individually smaller and require shorter lead times. Also, important recent trends evidenced in RE development, such as rapidly growing investment and rapidly decreasing costs, are not as clearly evidenced in nuclear generation. We view these factors as distinguishing the under-construction nuclear units from RE generating capacity, indicating that the new nuclear capacity is likely of higher cost and therefore less appropriate for inclusion in the BSER.*

The EPA also "seeks to drive the widespread development and deployment of wind and solar, as these broad categories of renewable technology are essential to longer term climate strategies" (p. 874).

Some experts see the new rule as favorable to new nuclear plants and capacity uprates at existing plants because they can generate credits that states can use to reduce their CO2 emissions levels and comply with the rule. [19]

Highlights of Public Comment on the Recapitalization of Infrastructure Supporting Naval Spent Nuclear Fuel Handling at the INL, Draft DOE/EIS-0453D

EDI supports the Navy's proposal to replace the leaking unlined original Expended Core Facility built in 1957. [20] The Naval Reactors Program, a joint US Navy and Department of Energy organization is to be commended for their progress in transferring spent fuel to dry storage and

[19] http://nuclear-news.net/2015/08/24/escalating-costs-expanding-timelines-cast-doubt-on-the-future-of-modular-nuclear-construction/

[20] See DOE/EIS-0453D at http://www.ecfrecapitalization.us/

making it road ready for shipment to a repository. Unfortunately, neither the Department of Energy nor the commercial nuclear industry have made similar progress.

Employees at the Naval Reactors Program (NRF) at the Idaho National Laboratory have been excluded from the Energy Employees Occupational Illness Compensation Program Act (EEOICAP) based on a faulty rationale that "because of the effectiveness of Naval Reactors' worker protection, worker training, and workplace monitoring programs. . ." Yet, monitoring programs at INL at facilities other than NRF were often managed by former naval officers and problems continue to be found in historical and current worker protection programs at INL. Inadequate radiological protection has been found from 1963 to 1975 at the Chemical Processing Plant (now the Idaho Nuclear Technology and Engineering Center) at INL.

The complexity and diversity of operations at NRF do not support the assertion that workers at NRF have always been adequately protected. Neither do the numbers of brain tumors and cancers in NRF workers.

NRF has a long history at INL and a long history of burying large amounts of radioactive waste including spent fuel, activated metals, filters and resins over the Snake River Plain aquifer and this must stop. The waste can be shipped out of state to currently operating radioactive waste facilities, including a DOE-operated facility in Nevada.

See all of our comments regarding the Naval Spent Fuel Draft DOE/EIS-0453d in two reports on the www.Environmental-Defense-Institute.org website.

What the WIPP Does the Department of Energy Have in Mind for a Defense-Only Repository?

DOE has been authorized to move forward with planning for a consent-based, defense-only repository and other geological options like 2-3 mile deep borehole for some DOE-managed high-level wastes" in addition to a geologic repository for commercial spent fuel.

Sec. Moniz: "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." [21]

For this defense-only repository, sometimes the DOE mentions only high-level waste and sometimes they also mention including spent fuel that is cooler than commercial spent fuel. The

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

DOE has not stated where this second repository will be. However, based on the ongoing investigations at WIPP for storage of high level waste, I believe that DOE is planning to use WIPP as this second repository. It is against the existing state requirements and licensing for WIPP, and this is only speculation on my part. My speculation was somewhat confirmed by an informal discussion at the NRF public comment session about naval spent fuel and the Navy's belief that their cooler and corrosive resistant naval spent nuclear fuel would be a good waste form for salt mine disposal.

Federal laws governing radioactive waste disposal for NRC-licensed facilities will not apply to DOE's "defense-only" repository.

The original target date of March 2016 for reopening WIPP is "no longer viable due to a variety of unanticipated issues" and a new schedule is to be issued this fall. [22]

Another waste stream is now being recommended for WIPP disposal: 34 tons of weapons-grade plutonium that has become too expensive to convert into Mixed-Oxide Fuel at under-construction facility at the Savannah River Site near Aiken, S.C. The upward cost spiral from $1.6 billion to more than $30 billion in life cycle costs for making the Mixed-Oxide Fuel to burn in commercial nuclear reactors has resulted in the recommendation to shelve the plant and bury the plutonium. [23] In addition to cost issues, utilities in the US have been unwilling to burn the Mixed-Oxide fuel.

Nuclear Regulatory Commission Extends Public Comment Period for Proposed Rule Changes for Low-Level Waste Disposal

The US Nuclear Regulatory Commission (NRC) is extending the public comment period to September 21, 2015. The NRC is proposing to amend regulations that govern low-level radioactive waste disposal facilities.[24] These are shallow land burial facilities that bury radioactive materials. These facilities will be allowed to bury large amounts of long-lived radionuclides — radionuclides that do not substantially decay away within 500 years. Long half life or the increase of radioactivity due to ingrowth of decay progeny will cause these disposal sites to eventually leach radioactive contaminants into our groundwater for more than hundreds of thousands of years. Public safety and the environment are not served by the loosening of regulations to help the nuclear industry dispose of its waste.

The NRC is recognizing the inadequacy of attempts to model the performance of these waste sites for anything past a few hundred years. They know that these performance assessments depicting unrealistically slow and constant trickle out of contaminants are indefensible and

[22] http://www.wipp.energy.gov/Special/WIPP%20Update%2007_31_15.pdf
[23] Union of Concerned Scientists, "DOE Study Concludes MOX Facility More Expensive, Much Riskier than Disposing of Surplus Plutonium at New Mexico Repository," August 20, 2015 www.ucsusa.org
[24] 10 CFR Part 61; Docket NRC-2011-0012. See http://www.regulations.gov/#!documentDetail;D=NRC-2011-0012-0165 and http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/uw-streams.html

unsupportable. The NRC is requiring that a performance analysis be conducted — yet accepting unlimited contamination and radiation dose levels as long as there was the pretense to minimize the contamination.

The NRC must not be allowed for make the proposed rule into law. In this regulation the NRC claims to be addressing public health and safety and the requirements for meeting health and safety standards. But instead the NRC throws existing and future health standards out the window after the initial compliance period. The NRC wants to allow any level of contamination by the disposal of long-lived waste as long as the dumper "tried" to minimize the inevitable migration of contamination. Throwing all health standards out the window is not responsible and is not protective of human health or the environment. [25]

Review of Recent ATR Occurrence Reports: Reason for Concern

When operators at the Advanced Test Reactor (ATR) don't know that the valve they are opening can drain the reactor core — or don't know if they are opening or closing a valve, training is deficient regarding reactor safety priorities. They've chalked it up to a communication problem. This and other events should concern anyone who cares about preventing a catastrophic reactor accident at the Advanced Test Reactor that would decimate the economy and contaminate southeast Idaho for decades to come.

The event was not deemed a reportable as a Department of Energy Occurrence Report [26] [27] because the reactor was defueled when it occurred. But to their credit, management decided that an operations stand-down to review the recent event was in order. [28]

The good news is that control room operators responded quickly to identify and correct the unintentional reactor vessel draining. The bad news is that the reactor could have been fueled. Not only that —freshly used and meltable fuel in the canal is vulnerable to canal draining that could be initiated by the incorrectly opened valve. Much of the fuel stored in the ATR canal is freshly used and has not cooled long enough to withstand a canal draining accident. There is no

[25] See EDI's comments regarding low level waste disposal rule changes at http://www.regulations.gov/#!documentDetail;D=NRC-2011-0012-0161 and additional NRC rule changes proposed at http://www.nrc.gov/public-involve/doc-comment.html

[26] DOE-Idaho Operations Summaries at http://www.id.doe.gov/news/OperationsSummarys.htm

[27] Department of Energy "Public Final Occurrence Reports" at http://energy.gov/ehss/policy-guidance-reports/dashboards. Choose the link at the top and center of the page. Select the DOE site (it will highlight it in blue). This will change the bar-graph display on the top right. Hover the mouse to see various facilities on the bar chart, and this will display lists of occurrence reports on the bottom left. Highlighting a report will show more detail on the bottom right, and you can click on the bottom right "Subject" title in blue, bringing up a more detailed report.

[28] Email communication from Post Register report Luke Ramseth (9/3/2015) who was notified of the stand-down late August or early September 2015.

containment, confinement, or filtering to slow the release of airborne fission products. The hazard analysis evacuation distance for canal draining for the ATR is 65 miles. [29]

In another unplanned reactor vessel draining event during shutdown, the control room operator silenced a low reactor vessel level alarm and ignored the draining for a considerable time. [30] In that case, it was argued that the event would not have siphoned the core. But in this latest event, the open valve could have drained the core allowing fuel to melt, releasing airborne fission products to the winds over SE Idaho.

An emergency pump is especially important if commercial power is lost. A seismic event, even a rather small one, can be expected to fail the site's commercial power feeds. Two other recent DOE Occurrence reports document serious problems with ATR safety equipment needed to assure circulation through the core following reactor scram. [31] [32] One involved serious inboard seal leakage of the M-10 emergency pump — causing serious primary coolant leakage while disabling or degrading the emergency pump. The other involved failure of the alternate emergency pump, M-11. Is it due to equipment aging or inadequate maintenance? Had those failures been more ill-timed, they could have led to melting reactor fuel.

With a leak on the primary coolant system, injection of makeup water would be needed in addition to continued emergency pump flow. Some Occurrence reports related to degraded makeup water have occurred. [33] [34] [35]

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[29] INL, Emergency Management Hazards Assessment for Reactor Technology Complex, HAD-3, Revision 7, 2003. INL hazard assessment documents which describe potential radiological releases and EPA "protective action distances" are not available to the public and are not consistently available by Freedom of Information Act request.

[30] NE-ID—BEA-ATR-2011-0010,"Low Level in Advanced Test Reactor (ATR) Vessel" An unplanned reactor draining in 2011 when the low level alarm sounded and was silenced and ignored (inexplicably) in the control room. The reactor was fueled.

[31] NE-ID—BEA-ATR-2015-0029 "Advanced Test Reactor M-10 Emergency Coolant Pump (ECP) Inboard Seal Leak" and NE-ID—BEA-ATR-2015-0030, "Advanced Test Reactor M-11 Emergency Coolant Pump (ECP) Trip."

[32] NE-ID—BEA-ATR-2015-0020 "M-9 Primary Coolant Pump (PCP) Check Valve Failure to Shut" and NE-ID--BEA-ATR-2013-0031 "ATR M-8 Primary coolant Pump (PCP) Discharge Check Valve (CK-A-1-8)" A discharge check valve on a Primary Coolant Pump (PCP) at the Advanced Test Reactor did not close completely after the pump was shut down. The check valve was declared out of service pending repair or replacement. The ATR was shut down in support of the scheduled outage during the time of the valve failure.

[33] NE-ID—BEA-ATR-2013-0037 "Inadvertent Entry into TSR LCO Due to Isolating Firewater Path With Irradiated Fuel in Reactor Core" "The upper and lower emergency firewater injection systems were inadvertently isolated during a primary coolant system (PCS) startup evolution at the Advanced Test Reactor. According to the applicable safety documents, the valves should have remained open. The ATR was shut down in support of the scheduled outage, a valve lineup was issued, which restored the EFIS upper and lower flow paths back in to service." Reactor and canal emergency makeup is provided by the underground firewater supply system. Automatic systems or manual actuation would be ineffective if unintended valve isolation had occurred.

[34] NE-ID--BEA-ATR-2014-0006 "TRA-786-M-1 Diesel Fuel Transfer Pump Failed to Start at the Advanced Test Reactor (ATR). While performing a test for a technical safety requirement at the Advanced Test Reactor, a diesel automatic fuel transfer pump failed to start and transfer fuel to maintain the onboard fuel storage tank level. The diesel generator provides power to a deep well pump for a long term loss of makeup water inventory

Equipment problems continue to occur in each of these areas needed to prevent a catastrophic reactor melt down at the ATR. Following a seismic event, it is vital to limit the power level increase by assuring experiment loops integrity, [36] shutdown the reactor by rapid insertion of safety rods, [37] assure reactor and canal makeup water, assure that an emergency pump runs following shutdown and protect the canal. [38] [39]

The 2014 event reporting experiment loop leakage led to the subsequent discovery that the loop piping and equipment supports did not meet modern seismic standards. Because back in 2005 I had documented that seismic evaluation of the experiment loops was needed. And it had not been conducted despite my later Freedom of Information Act request asking specifically if this had been done. [40] [41] [42]

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event. The test was terminated and the diesel generator was shut down. The cause of the failure was identified as a loose electrical connection for the transfer pump. The connection was repaired and the test was performed satisfactorily prior to the reactor restart. A serious seismic event would be accompanied by the loss of commercial power, so diesel generators are important for post-seismic event safety, especially if the seismic event damages reactor piping systems or other equipment.

[35] NE-ID—BEA-ATR-2013-0029 "ATR Firewater Flow Capability Inadequate Surveillance Testing" A method used to test fire water flow testing paths at the Advanced Test Reactor was determined to be inadequate. The ATR was shut down, defueled and depressurized, at the time of discovery, and the detailed operating procedure used to perform the firewater flow testing was re-written to resolve the issue.

[36] DOE Occurrence Report, Idaho National Laboratory, Advanced Test Reactor, NE-ID—BEA-ATR-2014-0036, "Declaration of Positive Unreviewed Safety Question (USQ) Concerning ATR Experiment Loop Pressurizer Seismic Vulnerability," Notification date 12/16/2014, Final 03/17/2015.

[37] NE-ID—BEA-ATR-2015-0008, "Advanced Test Reactor (ATR) South Safety Rod Failed to Fully Insert During Shutdown."

[38] NE-ID--BEA-ATR-2014-0013, "Advanced Test Reactor (ATR) Bulkhead Seal Leakage" "...an ATR supervisor observed air bubbles coming from a canal bulkhead seal. Further investigation revealed that the seal pressure indicated that the seal was leaking." Inflatable canal seals are intended to isolate the hot fuel from cask lifting over the canal. ATR spent fuel in the canal that can melt if the canal water drained would release millions of curies of air borne radionuclides to the environment.

[39] NE-ID—BEA-ATR-2015-0010 "Advanced Test Reactor (ATR) Canal East Short Bulkhead Seal Leak" and NE-ID—BEA-ATR-2015-0028 ""Advanced Test Reactor (ATR) West Canal Bulkhead Seal Failure."

[40] Idaho National Laboratory, *TRA NPH Assessment Plan*, PLN-588, Revision 1, 2005. p. 16 recommends seismic performance assessment of experiment loops.

[41] Idaho National Laboratory, *TRA NPH Assessment Plan*, PLN-588, Revision 2, 2005. p. 3 changes made to Revision 2 of the document allow indefinite delay of reporting seismic deficiencies: "no SSC will be presumed deficient before all reasonable qualification approaches have been exhausted. . . .the USG process does not apply to the process of upgrading DSAs to new requirements or to the use of new of different analytical tools. . ..therefore, deficiencies with respect to new seismic criteria and standards of analysis. . ..will not be cause for entry into the USQ process."

[42] Post Register Freedom of Information Act Request, July 2013 (ID-2013-00814-F)(OM-PA-13-032) This FOIA requested, among other things, experiment loop seismic performance assessment documentation. DOE provided a seismic risk assessment for ATR stating that the risk was low. No specific documentation concerning the status of seismic performance assessment was provided. Therefore, the risk assessment basis was not adequately supported and it likely underestimated the core damage risk.

human error resulting in inadequate analysis of safety criteria have also occurred. [43] [44] Continuing problems with shortcutting the analysis and reviews to ensure experiment configurations are safe create less visible errors that are just as important as the more visible errors of operators who manipulate valves and other equipment.

Articles by Tami Thatcher, September 2015.

[43] NE-ID—BEA-ATR-2014-004 "ATR Manual Shutdown Due to Incomplete Loop 2A Experiment Safety Analysis" Less than adequate human performance in preparing safety analysis documentation resulted in safety criteria not being supported by analysis. Ongoing problems lack of expertise in preparing and reviewing experiment loop safety analysis often result in reactor safety criteria not being properly analyzed and achieved.

[44] NE-ID—BEA-ATR-2014-0017 "Identification of Overstressed Bellows in ATR Loop 1C-W Results in Potential Inadequacy in the Safety Analysis (PISA)" and NE-ID—BEA-ATR-2014-0008, "In-Pile Tube (IPT) Inlet Pressure Used to Calculate Maximum Allowable Temperature Results in Positive Unreviewed Safety Question (USQ)."