



U.S. DEPARTMENT OF
ENERGY

Nuclear Energy

How We Got to This Point

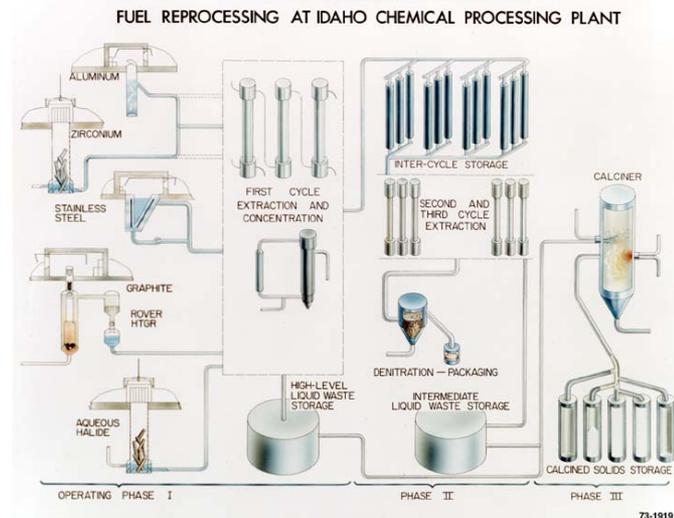
History of Spent Fuel, High-Level Waste in Idaho



Rick Provencher, Manager, DOE-Idaho
June 29, 2010

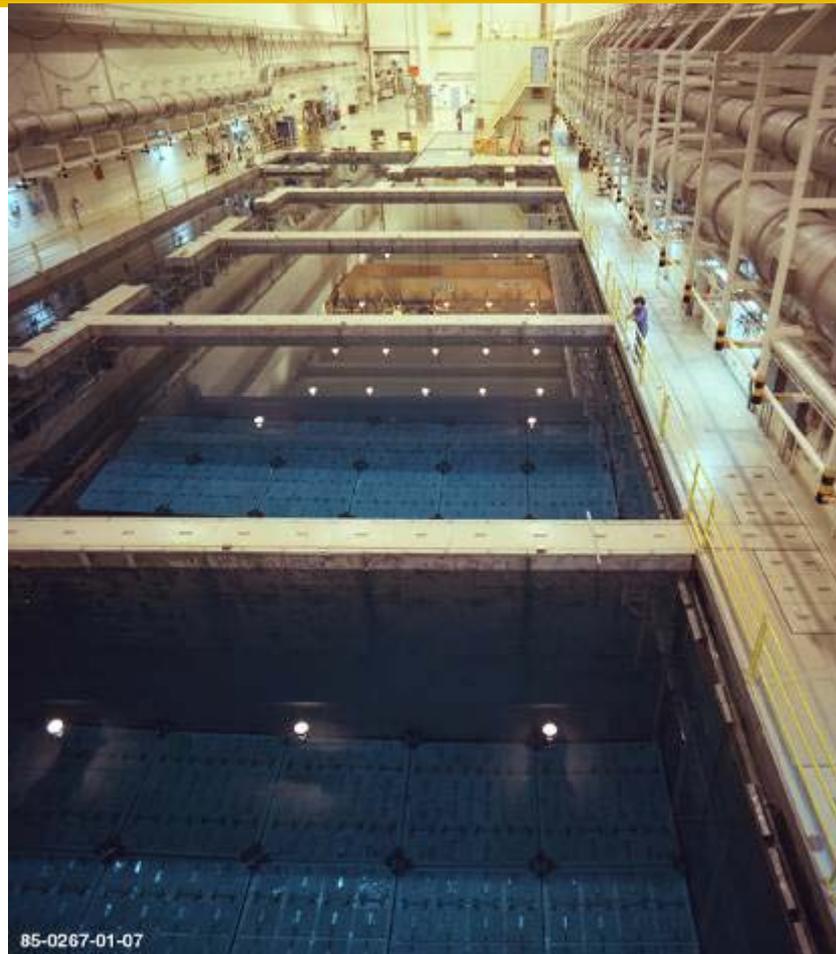
Idaho Was on Ground Floor Of Spent Fuel, High-Level Waste Management

- Idaho Chemical Processing Plant was built in 1950s to manage government fuel
- Reprocessing and calcination of liquids began in 1950s, continued until 1990s/2000s
- When reprocessing was ended, plant focus became spent fuel storage, preparation for shipping; solidifying remaining liquid waste and preparing high-level waste for removal



Idaho Has Spent Fuel from Many Different Sources

- On-Site Reactors
- Naval Reactors
- Commercial (FSV)
- TMI Core Debris
- Foreign Research
- West Valley





Reprocessing, Calcining Processes Were Supported through the 1980s

- Recovered Highly-Enriched Uranium was used for driver fuel for Savannah River reactors
- Liquid waste was “calcined,” tanks never leaked (piping and valve boxes did, prompting soil remediation later)
- While spent fuel backlog was starting to build up, reprocessing offered ultimate “disposition path”
- Regulators, political leaders were largely content



In 1992, Decision Was Made to Discontinue Reprocessing

- End of Cold War left U.S. with large quantities of special nuclear material
- Shutdown of Savannah River reactors meant no immediate end use for recovered uranium
- Reprocessing generated large quantities of liquid waste
 - No need to generate the waste if end product not needed



Savannah River reactors were shut down



Delays in WIPP Opening and End to Reprocessing Led to Conflict

- 1988: Delays in WIPP opening prompted Idaho's governor to stop Rocky Flats transuranic shipments into Idaho
- 1990: State extended fight to Fort Saint Vrain and Navy spent nuclear fuel
- Long legal battle resulted in June 1995 Programmatic Environmental Impact Statement, then October, 17 1995 Idaho Settlement Agreement

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THE IDAHO STATESMAN
BOISE ID
1/14/95

Andrus: Idaho is de facto nuke dump

He says the Navy won't keep its promise to Batt

By Charles Ellinger
The Idaho Statesman

Idaho is again on track to be an unwilling repository for federal nuclear waste, former Gov. Cecil Andrus warned Friday. Gov. Phil Batt agreed Thursday to allow eight new shipments of U.S. Navy nuclear waste, a



Cecil Andrus



Phil Batt

move Andrus sees as a "deeply disappointing" setback of his crusade to keep radioactive waste out of the Idaho National Engineering Laboratory.

Andrus said the pressure he's been exerting for years on the federal government to solve its nuclear waste problems is off again.

"I'm afraid that (the federal government) has gone back to business as usual, that Idaho becomes the de facto repository."

INEL, the eastern Idaho nuclear and research facility, is one of five Department of Energy sites under consideration by the DOE for 5,100 shipments of spent fuel from Navy nuclear-powered ships. They would be moved by rail from various Navy yards be-

tween now and 2035.

Since the 1960s, the INEL has received nuclear waste from the Navy and the federal nuclear weapons complex.

Batt maintained Friday that he had little choice but to take the eight shipments, which could begin within six weeks. He said the Navy would have quickly prevailed in court on grounds of national security.

The Navy has publicly agreed for the first time it doesn't believe Idaho should be a permanent repository for the highly-radioactive spent fuel, Batt said.

"I believe that gaining the cooperation of the Navy is the first step in opening a permanent repository for spent fuel outside of Idaho," he said.

One possible site: a proposed Yucca Mountain repository in Nevada. That project has been creeping along, but Rep. Mike Crapo, R-Idaho, said he expects progress in Congress with the GOP takeover of committee chairmanships.

Andrus has disputed the national security rationale for many of the shipments. The Navy maintains that eight ship-

ments of USS Enterprise spent fuel must be moved now from Newport News, Va., to make way for refueling of another aircraft carrier, the USS Nimitz, in 1998.

Other facilities are available in and next to the shipyard, Andrus maintains, but he says Virginia Sen. John Warner doesn't want it there.

Andrus said he has no intention of continually second-guessing Batt's actions, but the former governor said, "What they're promising Gov. Batt is what they promised Idaho 30 years ago. They've never lived up to it."



Some Citizens Objected to Idaho Settlement Agreement; Petition Drive Began

- 1996: After litigation with state was settled, petition drive by some Idaho citizens led to ballot proposition that would have rescinded Idaho Settlement Agreement
- November 1996: Idaho voters overwhelmingly supported Agreement by rejecting the ballot proposition
- The agreement's enforceable milestones put pressure on DOE to perform

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WARNING

It is a felony for any one to sign any initiative petition or referendum petition with any name other than his own, or to know or believe his name more than once for the measure, or to sign such petition when he is not a qualified elector of the STATE

96 FEB 20 AM 9 50 INITIATIVE PETITION COPY

To the Honorable Pete T. Cenarrusa, Secretary of State of the State of Idaho:

"We the undersigned citizens and qualified electors of the State of Idaho, respectfully demand that the following proposed law, to wit:

INITIATIVE AMENDING CHAPTER 30, TITLE 39, IDAHO CODE, BY THE ADDITION OF NEW SECTIONS 39-3031, 39-3032, 39-3033 AND 39-3034, IDAHO CODE, TO LIMIT STATE OFFICIALS' AUTHORITY TO ENTER INTO AGREEMENTS FOR RECEIPT AND STORAGE OF ADDITIONAL RADIOACTIVE WASTE, REQUIRING APPROVAL OF PRIOR AGREEMENT BY THE LEGISLATURE AND THE PEOPLE OF THE STATE, DEFINE TERMS, INCLUDE SAVINGS AND SEVERABILITY CLAUSE; AND, DECLARING AN EFFECTIVE DATE.

Be It Enacted by the People of the State of Idaho:

SECTION 1. That Chapter 30, Title 39, Idaho Code is hereby amended by the addition thereto of a NEW SECTION, to be known and designated as Section 39-3031, Idaho Code, and to read as follows:

39-3031. Limitations on Entering Into Agreements. Neither the governor nor the attorney general is authorized to enter into any agreement with any agency or department of the United States providing for the receipt and storage of additional radioactive waste in the state of Idaho unless and until: (1) the state legislature passes a bill approving the agreement; (2) the bill is referred to the people of the state for a referendum in accordance with Sections 34-1801 through 34-1822, Idaho Code; and, (3) the measure so referred to the people of the state is approved by a majority of the votes cast thereon, and not otherwise, as provided under Sections 34-1801 through 34-1822, Idaho Code.

SECTION 2. That Chapter 30, Title 39, Idaho Code is hereby amended by the addition thereto of a NEW SECTION, to be known and designated as Section 39-3032, Idaho Code, and to read as follows:

39-3032. Approval of Prior Agreement Required. To be effective, the agreement providing for the receipt and storage of additional radioactive waste at the Idaho National Engineering Laboratory, entered into by the governor and the attorney general with representatives of the United States on October 16, 1995, must be approved by the state legislature and referendum of the people of the state in accordance with Section 39-3031, Idaho Code.

SECTION 3. That Chapter 30, Title 39, Idaho Code is hereby amended by the addition thereto of a NEW SECTION, to be known and designated as Section 39-3033, Idaho Code, and to read as follows:

39-3033. Definitions. As used herein: (1) "receipt" means receiving additional radioactive waste at a facility owned or operated by any agency or department of the United States; (2) "additional radioactive waste" means any waste that emits ionizing radiation, including but not limited to high-level, mixed, and low-level radioactive waste, spent nuclear fuel or transuranic waste, and that is not located in the state of Idaho as of the effective date of this chapter; and (3) "storage" means retention of additional radioactive waste with the intent to maintain such waste for subsequent use, processing or disposal.

SECTION 4. That Chapter 30, Title 39, Idaho Code is hereby amended by the addition thereto of a NEW SECTION, to be known and designated as Section 39-3034, Idaho Code, and to read as follows:

39-3034. Savings and Severability. Nothing in Sections 39-3031 through 39-3033, Idaho Code, shall: (1) limit the authority of the governor or attorney general under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 et seq., as amended by Public Law 102-386 (42 U.S.C. § 6939(c)), or the Comprehensive Environmental Response Compensation and Liability Act, 42 U.S.C. § 9601 et seq.; and, (2) if any provision of this chapter, or the application of such provision to any person or circumstance is held invalid, the remainder of this chapter, or the application of such provision to persons or circumstances other than those as to which it is held invalid, shall not be affected thereby.

SECTION 5. This initiative shall be in full force and effect on and after its passage.

ICPP Became INTEC, Focus Shifted

- The “Chem Plant” became Idaho Nuclear Technology and Engineering Center
- Focus shifted to most efficient ways to dry store spent fuel, prepare it for shipment to repository
- About 1.8 million gallons of liquid waste remained – about half was calcined
- Calciner then was shut down: expense to bring up to emissions standards, not well suited for sodium waste
- Much of the Tank Farm “closed” (cleaned and grouted)
- Remaining liquid will be treated at Integrated Waste Treatment Unit



1995 Idaho Settlement Agreement Limits SNF Shipments to Idaho; Requires SNF Removal by Jan. 1, 2035; Requires Stored TRU Removal by Dec. 31, 2018

- DOE has been meeting Settlement Agreement Requirements in timely manner
- Finishing liquid treatment, closing final tanks, treating calcine are next big milestones
- July 2008: agreement that targeted buried waste is required to leave Idaho (2008 Agreement to Resolve Disputes)



DOE signs Record of Decision selecting Hot Isostatic Pressing Technology for Treatment of High Level Waste Calcine

December 28, 2009 —The U.S. Department of Energy (DOE) has signed the Record of Decision (ROD) for the treatment of high level waste calcine at the Department's Idaho Site, meeting a legal commitment to the State of Idaho for a decision no later than the end of 2009.

DOE today announced its decision to treat high-level waste (HLW) calcine using an industrially mature manufacturing process known as hot isostatic pressing (HIP). DOE selected this technology to treat roughly 5,750 cubic yards of highly radioactive waste generated from the reprocessing of spent nuclear fuel to recover uranium. Reprocessing of spent nuclear fuel was terminated by a DOE policy decision in 1992.

HIP allows for a significant volume reduction over vitrification, is more suitable for the dry heterogeneous calcine material, and has cost and schedule benefits over other alternatives. The decision to select HIP over other reasonable alternatives was based on the ability of this process to produce a waste form that meets the comparable waste acceptance criteria as vitrification into borosilicate glass, which is the method of treatment decided for liquid HLW at the Savannah River Site in South Carolina and the Hanford Site in Washington.

In the HIP process, calcine and treatment additives are mixed and then loaded into thin wall canisters that are welded shut. These canisters are placed in a pressure vessel which is heated to "melt" the calcine mixture while being pressurized with argon gas. The net effect is production of a waste form that will meet or exceed any disposition criteria likely to be established for HLW by DOE. If an ultimate disposition criterion does not require further treatment of calcine (i.e., utilizing the treatment additives to produce a ceramic waste form), this HIP process will be used without treatment additives to reduce the volume of material to be dispositioned, at significant cost savings. The HIP technology and facilities could also be used for other waste treatment or other missions once the calcine treatment campaign is completed.

DOE-ID Will Rely on Blue Ribbon Commission, Administration to Provide Path Forward

- DOE-ID is focused on meeting spent fuel dry storage requirement, preparing spent fuel for ultimate shipment, and continuing to ship transuranic waste out of Idaho
- DOE is also focused on finishing liquid processing, preparing to treat (Hot Isostatic Pressing) calcine
- The Idaho Settlement Agreement has 102 milestones associated with it that DOE agreed to meet between 1995 and 2035; DOE has met all 46 required to date – one of them seven weeks late and all rest on time
- DOE's relationship with the state of Idaho has steadily improved in recent years, as DOE has consistently met its cleanup and waste management commitments
- This performance by DOE has increased the state's trust of the department – trust that is critical to the Idaho National Laboratory's missions in nuclear energy and national security research