

## Road to WIPP paved with pitfalls

*INEEL & Hanford shipments encounter problems, states work toward solutions*

The Department of Energy suspended transuranic waste shipments from the Idaho National Engineering and Environmental Laboratory in mid-July after workers at the Waste Isolation Pilot Plant in southeastern New Mexico discovered drums of waste that should not have been in a shipment. The drums had been added after a batch readied for shipment had been tested.

New Mexico state officials said suspect drums had been sent from Idaho since March. The shipments of mixed waste—containing hazardous chemicals as well as radioactive waste—included 107 drums that had not undergone proper testing to ensure that they met criteria to be buried in WIPP.

In August, the state of New Mexico's Environment Department fined the Department of Energy nearly \$2.4 million for violating state hazardous waste management regulations in shipments from Idaho to the Waste Isolation Pilot Plant near Carlsbad. New Mexico's Environment Department issued the compliance order for violations that carry total fines of \$2,397,450. Any fines paid will go to the state's hazardous waste emergency fund, which pays for environmental cleanups. The state of New Mexico has jurisdiction because it issued and enforces the state hazardous waste permit that allows WIPP to accept mixed waste.

The compliance order requires the Dept. of Energy to submit a plan to the state for removing the untested waste from the repository as well as a technical justification showing that the 107 drums pose no elevated risk to human health or to the environment. The documents are due in 30 days.

New Mexico decided not to order the waste removed from WIPP at this time after analyzing available information on the shipments. However, the State of New Mexico will not give the Department of Energy final approval on disposal of the 107 drums until the proper characterization reports are received and carefully reviewed. The order also requires DOE to give the state a plan to provide the public with access to parts of a database on information on waste slated for disposal at WIPP. Such access will improve information for the public and may put greater pressure on DOE not to allow these mistakes to happen again.

### Hanford waste also encounters problems

A truck driver is looking for a new job after he briefly deviated from his assigned route while driving a shipment of nuclear waste across Idaho. It was the second time this happened in the last four months.

The truck was carrying a load of transuranic waste from the Hanford site in Washington to the WIPP (Waste Isolation Pilot Plant) in New Mexico. Transcomm, a computerized vehicle-tracking program, immediately notified those monitoring the shipment that the truck was off course just after 1:30 on Thursday, June 3.

The driver missed the exit to continue on I-84 south into Utah and instead traveled about four miles east on I-86. When the driver detected his mistake, he inappropriately used a maintenance crossover to turn around.

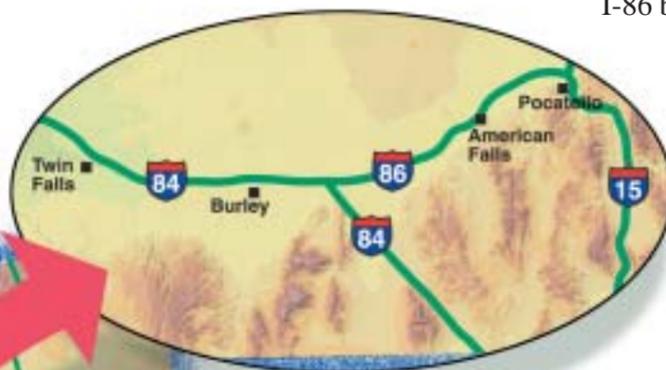
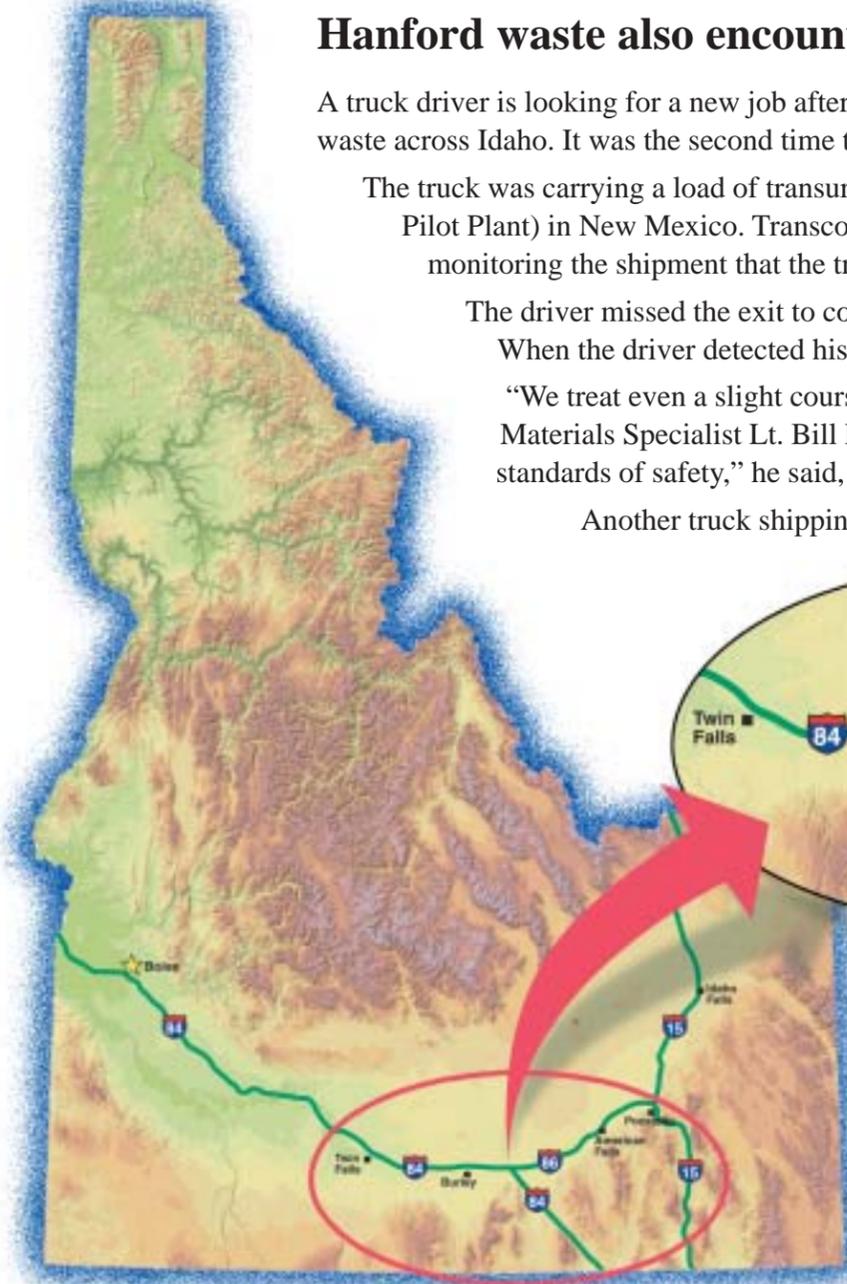
"We treat even a slight course deviation seriously for two reasons," explains Idaho State Police Hazardous Materials Specialist Lt. Bill Reese. "First, because any truck carrying nuclear waste is held to the highest standards of safety," he said, "...and secondly, because this is not the first time this has happened.

Another truck shipping WIPP material deviated from its route in April, traveling almost to Pocatello on I-86 before discovering their error," said Reese.

"At that time we reminded the Department of Energy of the importance of meeting each and every shipping plan requirement. With the security and safety concerns we have over these shipments, especially at a time of heightened awareness over homeland security issues, we must remain

**WIPP-bound Hanford shipments travel through Idaho on I-84, which enters Idaho just south of Payette and travels through Boise, Twin Falls, and Burley before leaving the state and entering Utah.**

**Hanford will send about 2,500 shipments (80,000 drums) of transuranic waste to WIPP over the next 30 years.**



ever-vigilant as these loads are transported on our highways,” said Reese. “We will be communicating with DOE, our safety partners, and the trucking company to determine what needs to be done as a result of this incident.”

DOE has set stringent standards regarding WIPP shipments. The waste is transported in TRUPACT-II containers that meet Nuclear Regulatory Commission requirements for radioactive shipping containers. Drivers must meet strict experience and driving record requirements.

“Trucks are inspected at the point of origin twice; first by the driver who has received certification from a WIPP-specific certification program, and secondly by a certified team of ISP inspectors,” said Tom Wright, also an ISP Hazardous Materials Specialist.

“The driver also inspects the truck every 100 miles or every two hours along the route. States may also inspect trucks at ports-of-entry and at random.”



An ISP officer inspecting a WIPP truck.

## Idaho will allow laboratory to examine spent nuclear fuel

### Governor, Attorney General allow project, but attach a list of conditions

The state of Idaho has told the US Department of Energy it can accept one shipment of commercial spent nuclear fuel for examination in Idaho if certain conditions are met.

DOE asked the state for permission to accept a shipment of four spent nuclear fuel rods and two control rod tubes from a nuclear power plant in North Anna, Virginia. Each fuel rod and control rod tube is about 3/8 of an inch around and thirteen feet long.

Under DOE's proposal, Argonne National Laboratory-West will examine the fuel. The data from the examination will help Framatome, the company who makes the fuel, address Nuclear Regulatory Commission licensing requirements for use of the fuel in commercial power plants. This request is part of ongoing efforts to significantly increase energy production at commercial nuclear power plants. Related research efforts have helped double nuclear fuel energy efficiency over the past few years.

Nuclear fuel is measured based on its content of uranium and other heavy metals. The fuel rods in the proposal contain roughly 7.4 kilograms (7,400 grams) of “heavy metal.” ANL-W will examine the rods and tubes, with samples from each preserved in “lab mounts.” About 20 lab mounts will be prepared from the fuel and control rods.

The fuel and control rods will be shipped out of Idaho by the end of 2006, except for the lab mounts and laboratory waste from chemical sampling. The lab mounts and lab waste, containing about 185 grams heavy metal, would remain in Idaho awaiting out-of-state disposal at a later date.

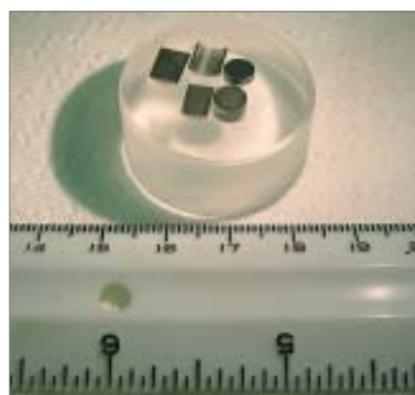
DOE had to receive permission from the state to accept these fuel rods because Idaho's 1995 Settlement Agreement prohibits the import of commercial spent nuclear fuel into Idaho. When Idaho and DOE signed the Settlement Agreement, however, they recognized INEEL would continue to have a nuclear research mission.

In considering DOE's request, the State took into account the site's long-term mission as the nation's lead nuclear laboratory; the commitments DOE made in the 1995 Settlement Agreement, and public comment received on a similar proposal that DOE made but chose not to pursue last year.

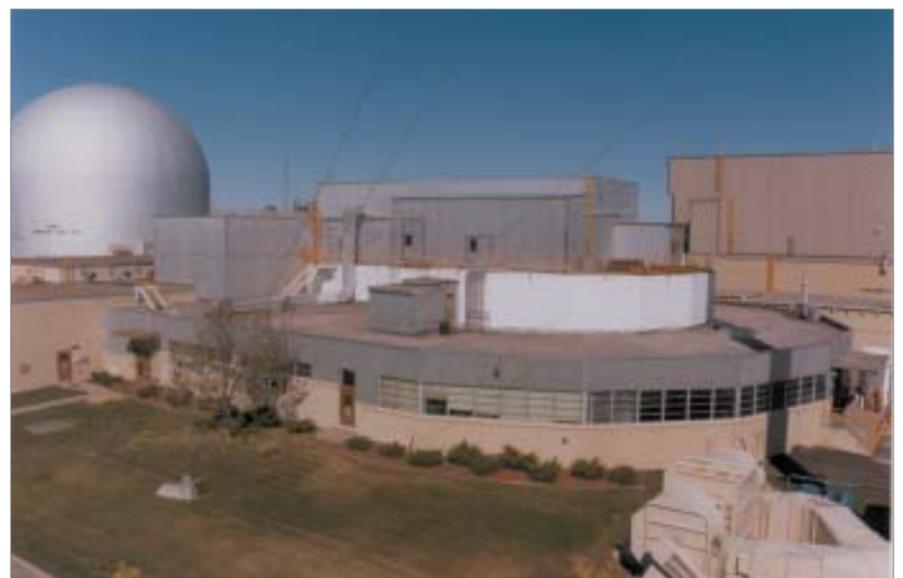
“The request is consistent with the principles of the 1995 Settlement Agreement and appropriately balances competing public concerns,”

Governor Kempthorne and Attorney General Wasden wrote in a letter to DOE. “It allows important research to improve nuclear energy production to continue while ensuring most of the nuclear waste involved in the project is removed from Idaho in a timely manner.”

Idaho's approval of the project is predicated on a number of conditions. Most importantly, all of the material brought into Idaho, with the exception of the slide mounts and about a liter of solidified waste that will be created from the fuel examination, must leave the state by December 31, 2006.



Argonne National Laboratory-West will prepare about 20 slide mounts, about the size of the one pictured above, from commercial spent fuel rods and control rods. The volume of the slide mounts will be about a pint. Photo courtesy ANL-W.



Argonne National Laboratory-West is a facility at the INEEL run by the University of Chicago for the Department of Energy. ANL-W is now run under a separate contract than the rest of the site. Under the new request for proposal for site management, ANL-W operations will become part of the site's nuclear laboratory.

The University of Chicago is a member of one of the consortia which will bid on the site operations contract.

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The material shipped to Idaho must remain within a fixed amount, and the shipment would count towards shipment limits described in the Settlement Agreement. The material remaining in Idaho would count towards the Settlement Agreement's limits on the amount of spent nuclear fuel that can be stored on the site.

“This proposal has explicit plans for removal of most of the fuel, and consequences if DOE does not meet its schedule,” explained Idaho's Oversight Chief Kathleen Trever. If DOE doesn't remove the Framatome fuel from Idaho by December 31, 2006, it can't make any other shipments of fuel to Idaho until the Framatome fuel leaves.

Idaho's Division of INL Oversight will closely monitor activities and ensure DOE meets the State's requirements.

# Settlement Agreement

Idaho's guarantee that cold war waste will be treated and removed

Since 1995, both DOE and the Navy have met all Settlement Agreement milestones and requirements. During calendar year 2003, progress was made on all remaining Settlement Agreement milestones. The AMWTP is nearing operations which will allow significant amounts of transuranic waste to be shipped out of Idaho. The Pit 9 GEM project was ahead of schedule at showing the feasibility of excavating buried transuranic waste. Technical discussions are taking place as to how best to proceed with removing "all" transuranic waste from Idaho. Research is continuing on the alternatives for treating the high-level waste liquid (SBW) and calcine so that they can be safely removed from Idaho. Spent nuclear fuel was removed from aging storage pools and progress was made on the preparations for licensing a new spent fuel dry storage facility. The Settlement Agreement has been and continues to be an effective tool for the state to ensure that radioactive waste and spent fuel management at the INEEL is in keeping with the State's objective of ensuring long-term protection of the people and environment of Idaho, including protection of the Snake River Plain Aquifer.

## TRANSURANIC WASTE

Transuranic waste is defined as waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes with half-lives greater than 20 years per gram of waste, except for a (a) high-level radioactive waste; (b) waste that the U.S. Department of Energy has determined, with the concurrence of the Administrator of the U.S. Environmental Protection Agency, does not need the degree of isolation required by 40 CFR 191; or (c) waste that the U.S. Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR 61.

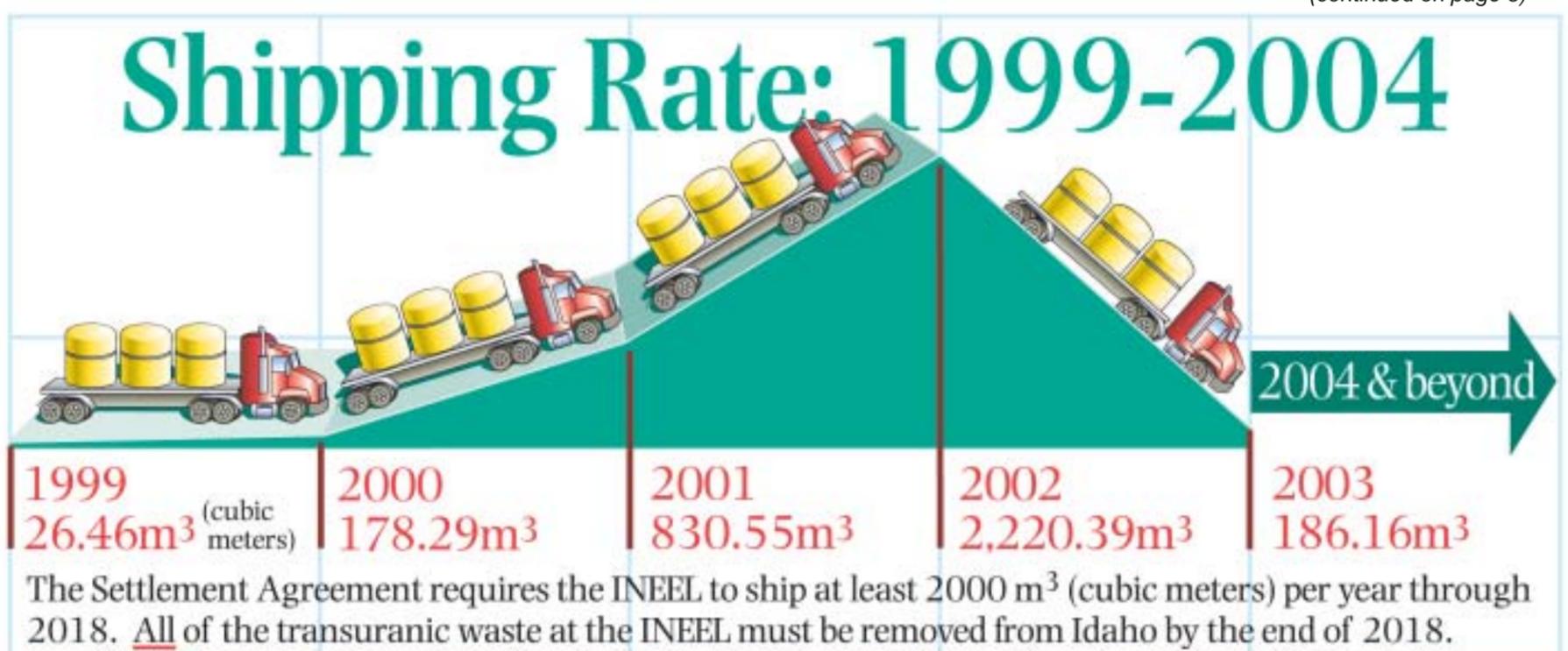
DOE shall ship "all" transuranic waste now located at INEEL, currently estimated at 65,000 cubic meters in volume, to the Waste Isolation Pilot Plant (WIPP) or other such facility designated by DOE, by a target date of December 31, 2015, and in no event later than December 31, 2018. DOE shall meet the following interim deadlines:

The first shipments of transuranic waste from INEEL to WIPP or other such facility designated by DOE shall begin by April 30, 1999. **DONE**

By December 31, 2002, no fewer than 3,100 cubic meters (15,000 drum equivalents) of transuranic waste shall have been shipped out of the State of Idaho. **DONE**

After January 1, 2003, a running average of no fewer than 2,000 cubic meters per year shall be shipped out of the State of Idaho. **ONGOING**

**DETAILS** During 2003, the INEEL shipped a total of 30 shipments containing 149 cubic meters of transuranic waste to WIPP. These shipments were made between March and June and were composed of waste certified by BBWI prior to the turn-over of facilities to BNFL. During the year, as a result of concerns from EPA and the New Mexico Environmental Department, the Advanced Mixed Waste Treatment Facility  
(continued on page 6)



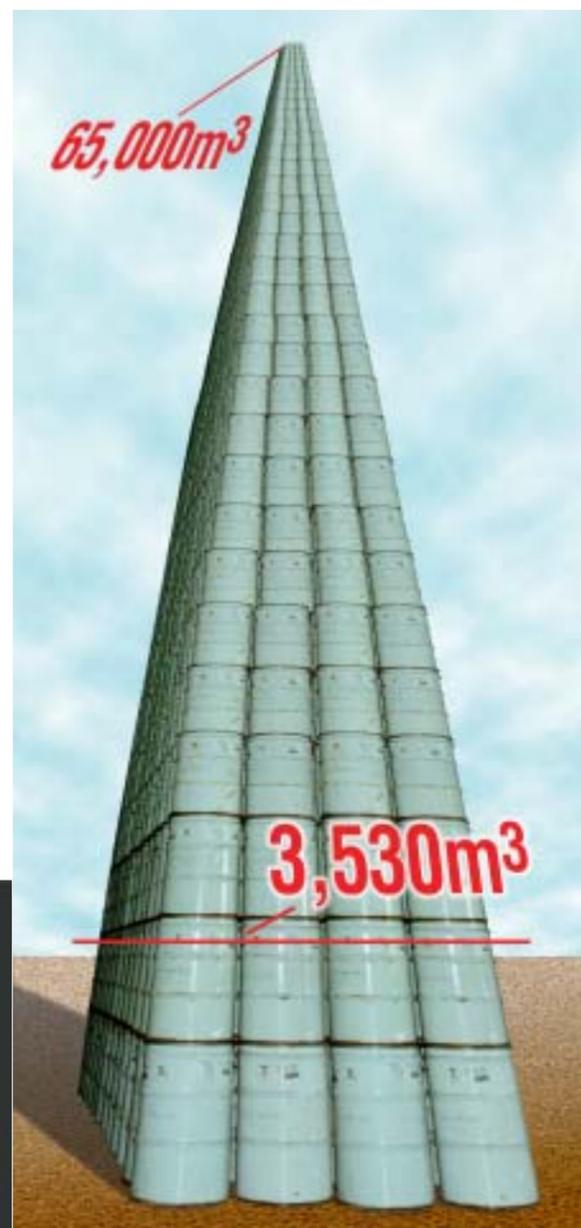
(AMWTP) experienced delays in receipt of permission to begin certifying and shipping waste.

**ONGOING** Corrective actions and technical changes have been made to processes used at the AMWTP and the facility is now treating waste. Because the settlement agreement requires DOE to ship a running average of 2000 cubic meters per year, the total for 2003, 2004 and 2005 must be at least 6000 cubic meters.

During 2003, U. S. District Judge Edward Lodge issued a decision in the court case which asked for clarification of the word “all” in the 1995 Settlement Agreement. The state insisted that “all” transuranic waste included waste buried at the INEEL before 1970, while the Department of Energy defined “all” as only that waste that was stored above ground.

Judge Lodge, who reviewed the Settlement Agreement in 1995, affirmed the state’s contention in his statement, “The Court finds that the 1995 Settlement makes up the entirety of the parties agreement and is clear and unambiguous. The express language of the Agreement, when taken as a whole, expressly requires that all transuranic waste be removed from INEEL. The parties specifically define transuranic waste without any limitation as to its location within INEEL nor any limitation as to amount.”

*“...language of the Agreement...  
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waste be removed from INEEL.”*



High-level waste is defined as the highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly from reprocessing and any solid waste derived from the liquid that contains a combination of transuranic and fission product nuclides in quantities that require permanent isolation. High-level waste may include other highly radioactive material that the U.S. Nuclear Regulatory Commission, consistent with law, determines by rule requires permanent isolation.

DOE shall treat all high-level waste currently at INEEL so that it is ready to be moved out of Idaho for disposal by a target date of 2035. The Settlement Agreement also specifies the following interim deadlines:

DOE shall commence operation of the high-level waste evaporator by October 31, 1996, and operate the evaporator in such a manner as to reduce the tank farm liquid waste volume by no fewer than 330,000 gallons by December 31, 1997. Efforts will continue to reduce the remaining volume of the tank farm liquid waste by operation of the high-level waste evaporator. **DONE**

DOE shall complete the process of calcining all remaining non-sodium bearing liquid high-level wastes currently located at INE(E)L by June 30, 1998. **DONE**

DOE shall commence calcination of sodium-bearing liquid high-level wastes by June 1, 2001. **DONE**

DOE shall complete calcination of sodium-bearing liquid high-level wastes by December 31, 2012.

In June of 2000, DOE ceased use of the calciner for processing the sodium bearing liquid high-level waste (SBW). The tank farm at INTEC still holds approximately 1 million gallons. Although calcination is still being evaluated for the treatment of this liquid, it seems likely that some other treatment technology will be selected to convert the SBW into a form suitable for disposal outside of Idaho. Removing the SBW from the tanks remains one of the State of Idaho’s highest waste management priorities for the INEEL.

As of January 2003, the Department of Energy had selected four technologies - calcination, steam reforming, cesium ion exchange and direct evaporation for further evaluation in treating the SBW. DOE held public meetings in 2003 to inform the public of these treatment alternatives and of the process that they said they would use for selection of one of the alternatives. During 2003, DOE continued to review options before selecting a technology to treat the remaining liquid radioactive waste stored in the tank farm. As of January 2004, DOE stated that the imminent change of contractors at the INEEL has changed their philosophy on selection of a SBW treatment alternative. They are now waiting to see if the contract proposals result in any new information related to the treatment selection.

A Record of Decision (for the treatment of calcined high-level waste) shall be issued not later than December 31, 2009.

During 2003, meetings were held between DOE, DEQ, and EPA to discuss characterization, treatment and permitting strategies for calcine. DOE



The tops of waste storage vaults at the Idaho Nuclear Technology & Engineering Center, where high-level waste is managed at the INEEL.

sampled and analyzed calcine representative of that in Bin Set 2. The results of that analysis will help DOE to determine the most appropriate treatment alternative to prepare the calcine for removal from Idaho.

During 2003, news about the Yucca Mountain High-Level Waste Repository focussed mostly on lawsuits filed by the state of Nevada and others to stop DOE from opening the facility. In January 2004, a federal appeals court heard arguments for the first time on these lawsuits which have been consolidated by the court.

The court will rule on the lawsuits sometime later this year. Meanwhile, DOE plans to go ahead with the license application for the repository also later this year. Current plans are for the repository to begin accepting waste as early as 2010.

# SPENT NUCLEAR FUEL

Spent nuclear fuel is nuclear fuel which has been removed from a nuclear reactor. The settlement agreement defines “DOE spent nuclear fuel” as any spent fuel which DOE has the responsibility for managing with the exception of naval spent fuel and commercial spent fuel which DOE has accepted or will take title to pursuant to the Nuclear Waste Policy Act of 1982.

DOE shall remove all spent fuel, including naval spent fuel and Three Mile Island spent fuel from Idaho by January 1, 2035. The Settlement Agreement also includes the following interim storage requirements:

DOE shall complete construction of the Three Mile Island dry storage facility by December 31, 1998. DOE shall commence moving fuel into the facility by March 31, 1999, and shall complete moving fuel into the facility by June 1, 2001. **DONE**

By December 31, 1999, DOE shall commence negotiating a schedule with the State of Idaho for the transfer of all spent fuel at INE(E)L out of wet storage facilities. **DONE**

DOE shall, after consultation with the State of Idaho, determine the location of the dry storage facilities within INE(E)L, which shall, to the extent technically feasible, be at a point removed from above the Snake River Plain Aquifer. **DONE**

Spent fuel loading into dry storage shall commence by July 1, 2003. **DONE**

DOE shall complete the transfer of all spent fuel from wet storage facilities at INE(E)L by December 31, 2023. **ONGOING**

**DETAILS** Removal of spent nuclear fuel from aging storage pools has been a priority for the State of Idaho. Placing the spent fuel into dry storage provides yet another barrier between the radioactivity and the Snake River Plain Aquifer in the case of an earthquake or other accident. During 2003, spent nuclear fuel from the Power Burst Facility’s 30 year-old underwater storage canal was safely moved to a modern, dry storage facility located at the Idaho Nuclear Technology and Engineering Center (INTEC). Also during 2003, 28 shipments of spent fuel were moved from wet storage at Test Reactor Area to dry storage at INTEC.

In 2003, the remaining spent nuclear fuel was removed from underwater storage at Test Area North (TAN) and placed in dry storage. Most of the spent nuclear fuel from the TAN-607 storage pool was transferred to dry storage at the INTEC. A small amount of spent nuclear fuel remains in dry storage at Test Area North. As part of future cleanup work, this spent nuclear fuel will be consolidated into dry storage at INTEC.

At the end of 2003, the only wet storage of spent fuel is in the modern wet storage pool at INTEC and at the Expanded Core Facility basin at the Naval Reactors Facility.

To provide for safer storage of spent nuclear fuel until such time as it is removed from storage above the Snake River Plain Aquifer, DOE has begun plans and preparation for building a modern dry storage facility. This project is divided into three phases: the design and licensing; facility construction; and facility operations. The design and permitting of this facility is under a privatized contract with the company Foster Wheeler. During 2003, an Environmental Impact Statement and several related safety documents were prepared for this facility.

In August 2003, the INEEL Oversight Program reviewed the draft for the EIS and provided comments. The final document was issued in January 2004. Also during 2003, the Nuclear Regulatory Commission reviewed safety documents related to the facility. After issuance of a license, it is expected that construction of the facility would take about 2 years and it would operate for about three years, transferring the rest of the INEEL spent nuclear fuel to dry storage.

## Spent Nuclear Fuel Shipments to Idaho

After December 31, 2000, and until an interim storage facility or permanent repository is opened and accepting spent fuel from INE(E)L, DOE shall not ship to INEEL more than 20 truck shipments of spent fuel in any calendar year, except that:

- (i) In one calendar year only, DOE may make not more than 83 truck shipments of spent fuel to INEEL from the West Valley Demonstration Project; **DONE**

From 1995 through 2003, DOE received about 45 shipments (in the Settlement Agreement, we call them “equivalent truck casks”) of spent nuclear fuel to the INEEL.

From calendar year 2001 through 2035, the Navy may ship a running average of no more than twenty shipments per year to INEEL. The total number of shipments of naval spent fuel to INE(E)L through 2035 shall not exceed 575 shipments or 55 metric tons of spent fuel. **ONGOING**

**DETAILS** From 1995 through 2003, the Navy made about 150 shipments (in the Settlement Agreement, we call them “equivalent truck casks”) of spent nuclear fuel to the INEEL.

**This summary of Settlement Agreement progress is current as of September, 2004. Activities relating to the Settlement Agreement are ongoing at the INEEL, so the status of ongoing and pending milestones and tasks will change.**

**Contact Oversight for a copy of the Settlement Agreement. Call our toll-free number 1-800-232-4635, e-mail [AskOversight@deq.state.id.us](mailto:AskOversight@deq.state.id.us), or return the postage-paid postcard from this newsletter.**

**You can also download a copy or follow progress of DOE’s Settlement Agreement activities at [www.Oversight.state.id.us](http://www.Oversight.state.id.us).**

# Settlement Agreement



## Idaho's guarantee that cold war waste will be treated and removed

**The Road to WIPP:** The State of New Mexico and the Department of Energy office in Carlsbad, New Mexico have identified problems with shipments sent to WIPP from the INEEL. New Mexico regulators aren't pleased, and weren't reassured by several audits they performed at the Idaho site. New Mexico has now assessed a \$2.4 million fine against the INEEL for these and other regulatory infractions.

Shipments originating at the Department of Energy's Hanford site in Washington have also encountered problems, including two wrong turns on Idaho highways. Read about the problems that have been encountered with WIPP shipments, and the steps being taken to address them, in pages 1 and 2 of this newsletter.

**Spent nuclear fuel to be examined at Argonne National Laboratory-West:** The Governor and the Attorney General have granted permission for a research project at the INEEL to proceed, but only if certain conditions are met. Read more about the proposed project, and the state's conditions, on page 2 of this newsletter.

**Settlement Agreement update:** In the 1995 Settlement Agreement, the Department of Energy agreed to take certain actions with transuranic waste, high-level waste, and spent nuclear fuel at the INEEL. How is it doing? An update on progress toward meeting Settlement Agreement milestones on pages 3, 7, and 8.

**Waste table:** Data and information about types of waste at the INEEL are compiled into a table in the center portion of this newsletter.



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