



INL Site Environmental Management

C I T I Z E N S A D V I S O R Y B O A R D

FROM THE BOARD CHAIR

Keith Branter, CAB Chair

On May 10 and 11, Marvin Fielding (CAB Vice Chair) and I attended the Environmental Management (EM) Site Specific Advisory Board (SSAB) Spring Chairs Meeting in Paducah, Kentucky. Several of the presentations at that meeting directly pertain to Idaho and the environmental cleanup of the INL.



Steve Trischman, Director of the Office of Budget and Planning, delivered a detailed presentation on the DOE budget process. It appears the FY 2017 House proposed budget for Idaho is just over \$390 million; this is an \$11.8 million reduction from the FY 2016 enacted budget.

WIPP officially reopened on January 9 of this year, and on April 8 a transuranic (TRU) waste shipment from Idaho arrived. WIPP then received a TRU waste shipment from the Savannah River Site on April 13 and another from Waste Control Specialists on April 28.

Projected shipments to WIPP through the end of January 2018:

- Idaho – 61
- Oak Ridge – 24
- Los Alamos – 24
- Waste Control Specialists – 11
- Savannah River – 8

TOTAL Shipments – 128

INL has over 900 TRU waste shipments ready to go to WIPP. At the current rate of shipping, it will take 14.75 years to complete this milestone. The Idaho CAB has requested that INL be given shipping priority, but no long-term shipping schedule has been developed.

As a result of the WIPP shutdown, INL will miss two important Settlement Agreement milestones related to the removal of this TRU waste from the state.

During next week's meeting, the Idaho CAB will discuss two recommendations

June agenda at a glance:

- Recent Public Outreach
- ICP Overview
- IWTU Update
- WIPP Update
- Calcine Update
- SDA Cap Design
- DEQ and EPA Regulatory Insights
- New Site Process
- TMI-2 License Renewal
- EM SSAB Chairs Meeting Report and Recommendations
- INL Site EM CAB Recommendation: WIPP

Miss our February Meeting?

Access the [meeting materials](#) to view the minutes and review presentations on the following:

- ICP Overview
- IWTU Update
- WIPP Update
- Calcine Update
- History of the Waste Area Group (WAG) 7 Record of Decision (ROD) – Cap Design
- EM Budget Priorities

drafted during the Spring SSAB Chairs meeting. They pertain to: 1) Cleanup performance road map and communication strategy, and 2) WIPP above-ground storage. The implementation of latter could help alleviate Idaho's problem of shipping TRU waste out of the state in a timely manner.

As always, we hope to see you there. The meeting will be next Thursday, June 22 at the Hilton Garden Inn in Idaho Falls.

SPENT NUCLEAR FUEL (SNF)

Betsy McBride, CAB Member



“Spent nuclear fuel” is the fuel removed from nuclear reactor cores when it becomes too depleted. The pelletized fuel is contained in cylindrical containers referred to as fuel rods. The U.S. Department of Energy describes spent fuel “as a resource until such time as it is declared a waste and is dispositioned to an operating repository.”

The SNF currently stored in Idaho has different origins; nuclear engineering research, and nuclear-powered military vessels and commercial nuclear power units. No matter the origin, the standard procedure for SNF management is to place the very hot fuel assemblies in cooling basins/pools and later transfer it into above-ground heavily-shielded storage casks.

The Idaho Settlement Agreement (ISA) of 1995 identified an inventory of spent fuel that was required to be transitioned by two deadlines, one in 2010 and another in 2023. At one time, EM was managing SNF at 11 different facilities at INL. Begun in 1997 and completed by 2005, SNF at those 11 facilities was consolidated into one location, the Idaho Nuclear Technology and Engineering Center, more known by its acronym – INTEC. By the 2010 deadline, all of the EM-managed spent nuclear fuel had been transitioned through wet storage cooling pools and into dry storage.

EM is currently working with the Office of Nuclear Energy (NE) to remove the remaining fuel from the Experimental Breeder Reactor (EBR-II) and the Advanced Test Reactor (ATR) out of the spent fuel basins at CP-666 and into dry storage by the Settlement deadline of 2023. The fuel from the EBR-II will be transferred to the Materials and Fuels Complex (MFC) for treatment or to dry storage at INTEC. The fuel from the ATR will be transferred to INTEC for dry storage.

As of June, 2016 Environmental Management was managing 265 Metric Tons of Heavy Metal (MTHM) spent fuel in Idaho and another 15 MTHM of spent fuel still located at the closed Ft. Saint Vrain plant north of Denver.

A limited amount of commercial reactor SNF has been moved to Idaho for research related to the research mission of the Office of Nuclear Energy (NE). Other commercial reactor fuel, along with contaminated debris, was moved to Idaho following the accident at the Three-Mile Island nuclear power plant.

The Navy SNF from its ships is an ongoing source of SNF coming to Idaho. When a nuclear-powered ship is “re-

fueled,” its spent fuel is sent from the shipyard to Idaho via railcars. The ongoing mission to send Navy SNF to Idaho has generated a proposal for DOE to replace its 50-plus-year-old cooling pool with an updated version needed to meet design standards partially related to new SNF containers.

The Idaho Settlement Agreement also links receipt of limited amounts of commercial SNF for research to precise milestones and deadlines. Because of two missed milestones (one related to shipping treated waste from Idaho to the Waste Isolation Pilot Project - WIPP), SNF for research is currently (February 2017) not allowed to be shipped to INL.

Further, the ISA requires that by January 1, 2035 most SNF, including Navy SNF and Three-Mile Island SNF is removed from Idaho. The Navy can continue to ship additional SNF to Idaho to be cooled in the proposed new facility for six-years. Then, it must be moved to dry storage and shipped out of Idaho.

Dear Reader: You may now be asking “Out of Idaho to where?” Unknown. Currently, there is no agreed-upon interim or semi-permanent storage or disposal site for SNF.

Betsy McBride

Member of INL Citizens Advisory Board, aka the CAB

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p.s. Thank you to staff who patiently answered my detailed questions.

A BRIEF HISTORY OF RWMC

Keith Branter, CAB Chair

The Radioactive Waste Management Complex (RWMC) is located within the INL, formerly the National Reactor Testing Station (NRTS). The U.S. Atomic Energy Commission (AEC), now the U.S. Department of Energy (DOE), established NRTS in 1949 as a site for building and testing various types of nuclear facilities.

Below is a timeline showing some of the historical events at RWMC. DOE and/or the contractors:

- 1952 Established RWMC on 13 acres of the INL for the burial and disposal of site-generated radioactive waste
 - 1954 Began receiving wastes from Rocky Flats Colorado and other off-site generators
 - 1957 Expanded the burial ground to 86.98 acres; began accommodating large, bulky waste in pit disposal; placed TRU waste in separate pits
 - 1958 Constructed flood control project on the Big Lost River, adjacent to burial grounds, and including diversion dam and spreading areas
 - 1960 Established 10 monitoring holes drilled into the basalt adjacent to waste-filled excavations (Health Services Laboratory)
 - 1960-63 Adopted procedures for acceptance of shipments and standardized forms
 - 1962 Constructed system of dikes and ditches around the burial ground; constructed a diversion dike
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- for the Big Lost River by diking the spreading area
- 1963 Began random dumping (rather than stacking) of Rocky Flats waste in pits
 - 1966 Increased the minimum soil cover over the buried waste from two feet to three feet and the minimum trench depth from three feet to five feet; improved fire protection; instituted requirement to cover waste with soil at the end of each week
 - 1969 Constructed an extensive dike system to protect burial ground from runoff in local drainage basin; reinstated stacking of Rocky Flats waste
 - 1970 Expanded RWMC to 97 acres, 55 of which were added for the Transuranic Storage Area (TSA); discontinued burial of TRU waste and instead stored it above ground on asphalt pads, covered with layers of plywood, plastic and soil; completed diking around the subsurface disposal area (SDA)
 - 1971 Graded the land to provide major drainage channels for surface water; implemented a computerized waste management information system
 - 1972-73 Formulated an environmental surveillance plan; began sampling small mammals and soil outside the SDA; started burial ground subsurface water monitoring plan; required TRU combustible and noncombustible waste to be packaged separately
 - 1974-78 Began Initial Transuranic Drum Retrieval (IDR) program; removed 20,262 drums of waste from pits 11 and 12, repacked the waste and stored it at the TSA Retrieval Enclosure; placed air support structure over the IDR; completed railroad spur to TSA allowing direct shipment of waste to RWMC; completed second TSA pad; developed and implemented computerized Transuranic-Contaminated Waste Container Information System (TCWCIS)
 - 1976 Constructed and placed in operation the TSA-R pad; started environmental sampling/studies of flora and fauna
 - 1979 Initiated removal of basalt in the SDA pits to increase disposal space
 - 1980 Began testing explosive fracturing of basalt in SDA scale-model pit; started disposal of Argonne East low-level waste
 - 1981 Initiated first production-scale explosive rock fracturing of basalt in SDA pit 17 and removed 3,900 cubic yards of basalt; began stacking shipments in the Air-supported Weather Shield (AWS-2)
 - 1982 Upgraded flood controls after RWMC was flooded by rapid snowmelt
 - 1983 Reviewed offsite and onsite packaging criteria and combined into two DOE-ID documents; continued explosive rock fracturing of basalt in SDA pits 18 and 19; removed 30,000 cubic yards of basalt
 - 1984-85 Began operating the Stored Waste Examination Pilot Plant (SWEPP); implemented use of Geotextile on the bottom of pit floors; continued explosive rock fracturing of basalt in SDA pits 19 and 20; removed 31,500 cubic yards of basalt; developed and began using an automated TRU waste interim tracking system
 - 1988 Postponed the opening of WIPP; as a result, Governor Cecil Andrus ordered Idaho State police to

- stop any railcars bringing shipments of transuranic waste from Rocky Flats to the INL
- 1995 Signed the Idaho Settlement Agreement alongside Idaho Governor P. Batt; various agencies began the Remedial Investigation/Feasibility study for the SDA at RWMC
- 1999 Sent the first truckload of TRU waste to WIPP
- 2005 Began active remediation of transuranic waste

During active RWMC operations about 241,000 cubic meters of waste were disposed in 21 pits, 58 trenches and 21 soil vault rows (totaling approximately 35 acres).

Current status of remediation work at the RWMC and the future of the RWMC

Work in structures one through seven of the Accelerated Retrieval Project (ARP) has been completed. Retrieval work in ARP VIII is at least 50 percent and ARP IX is under construction. Crews at RWMC have exhumed 4.47 acres of the 5.69 acres required by the 2008 Record of Decision, there are 1.2 acres left to remediate in ARPs VIII and XI. The exhumation should be completed by the conclusion of 2019. The ARP project is nearly two years ahead of the initial projected completion date. Vacuum vapor extraction has removed 246,000 pounds of solvent vapors from beneath the SDA and it continues to operate. In November of last year, RWMC workers completed exhumation of the 7,485 cubic meters of TRU waste required by the Record of Decision.

The end result for the RWMC after all remediation work is completed will be the installation of a cap, the design for which is in the very early stages.

Click [here](#) if you are interested in reading more about RWMC's history.

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