



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Idaho Cleanup Project Progress to Date Citizens Advisory Board

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Idaho Cleanup Project

June 23, 2016

Idaho Cleanup Project Scope

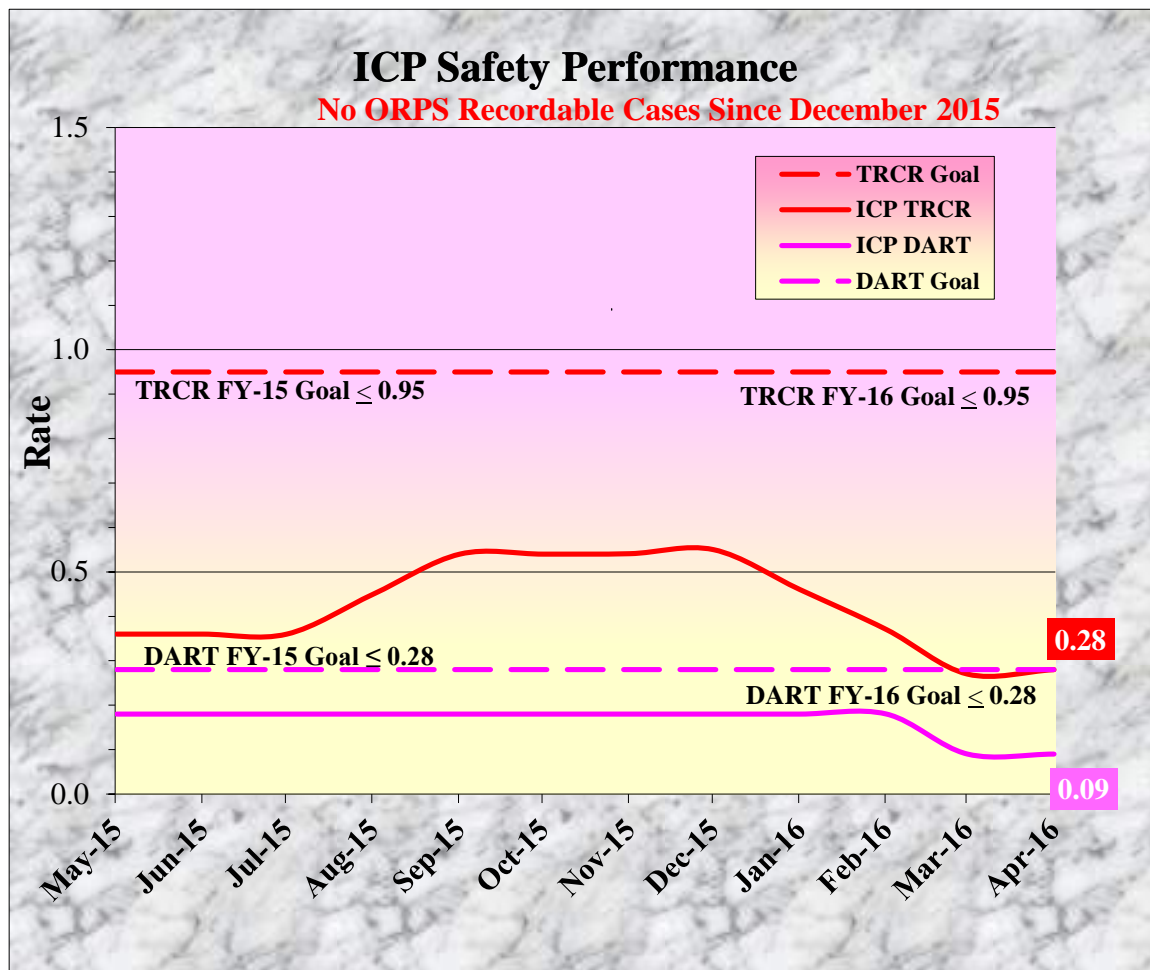
- Transuranic Waste Disposition
- Advanced Mixed Waste Treatment Project (AMWTP)
- Comprehensive Environmental Response Compensation Liability Act (CERCLA) Remediation
 - Waste Area Group (WAG) 1 – Test Area North (TAN)
 - Waste Area Group (WAG) 2 – Test Reactor Area (TRA) - **Complete**
 - Waste Area Group (WAG) 3 – Idaho Nuclear Technology and Engineering Center (INTEC)
 - Waste Area Group (WAG) 4 – Central Facilities Area (CFA) - **Complete**
 - Waste Area Group (WAG) 5 – Power Burst Facility (PBF)/Auxiliary Reactor Area (ARA) - **Complete**
 - Waste Area Group (WAG) 6 – Experimental Breeder Reactor No. I (EBR-I) - **Complete**
 - Waste Area Group (WAG) 7 – Radioactive Waste Management Complex (RWMC)
 - Waste Area Group (WAG) 9 – Argonne National Laboratory – West (ANL-W) - **Complete**
 - Waste Area Group (WAG) 10 – Site-wide Miscellaneous Sites/Snake River Plain Aquifer
- Idaho CERCLA Disposal Facility

Idaho Cleanup Project Scope (cont.)

- Sodium Bearing Waste Treatment
- INTEC Liquid Waste Treatment Facility (Tank Farm Closure)
- Calcine Disposition
- Spent Nuclear Fuel Management
- Decontamination and Decommissioning: Materials and Fuels Complex

Safety Performance – November-December 2015

(Information and Data through April 24, 2016)



March 2016

Two First Aid Cases and No Recordable Injuries

One ORPS Reportable Occurrences:

- Positive USQ – Potential overpressure condition of isolated IWTU off-gas system piping

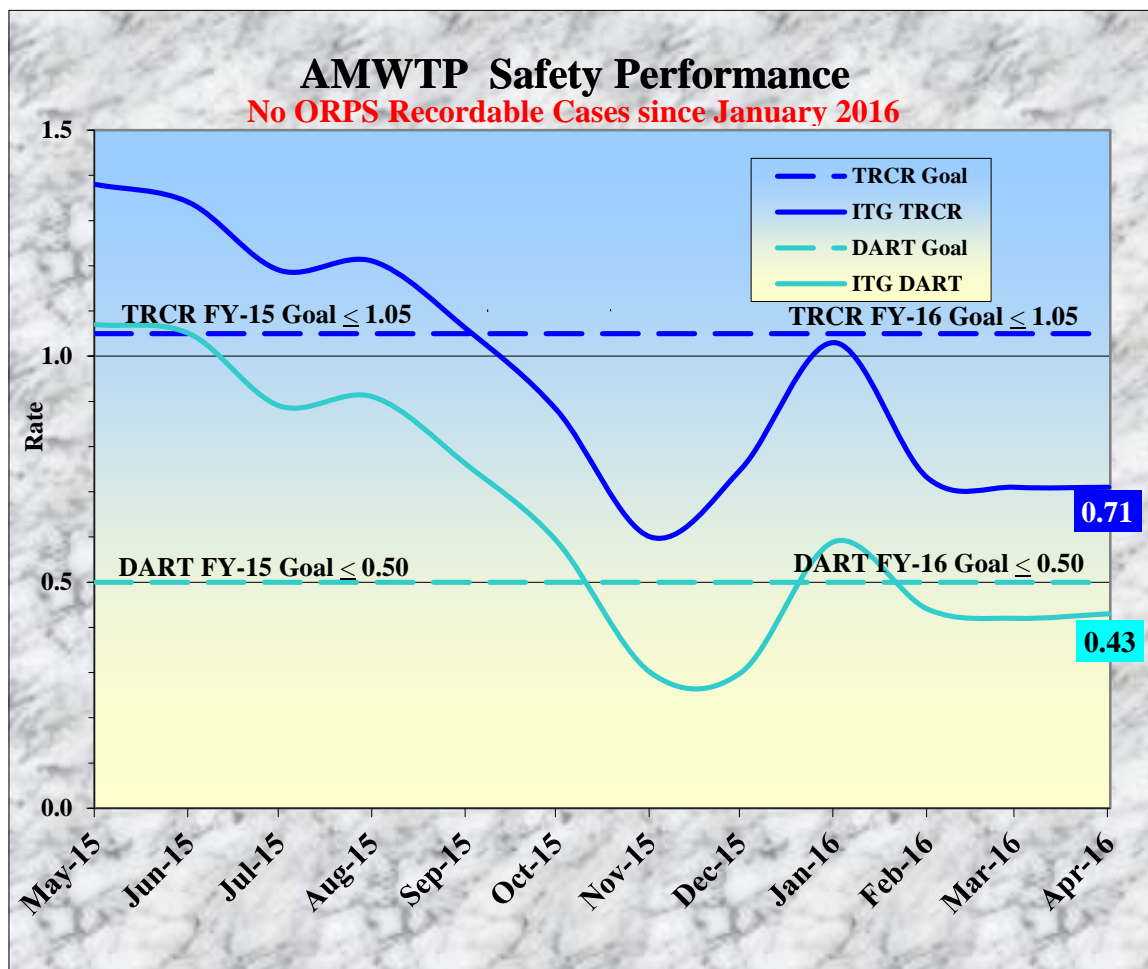
April 2016

No First Aid Cases and No Recordable Injuries

No ORPS Reportable Occurrences

Safety Performance – January-February 2016

(Information and Data through April 24, 2016)



March 2016

One First Aid Case and No Recordable Injuries

One ORPS Reportable Occurrence

- Non-compliance with Hazardous Energy control process - failure to place lock on lock box during cell entry

April 2016

One First Aid Case and No Recordable Injuries

No ORPS Reportable Occurrences

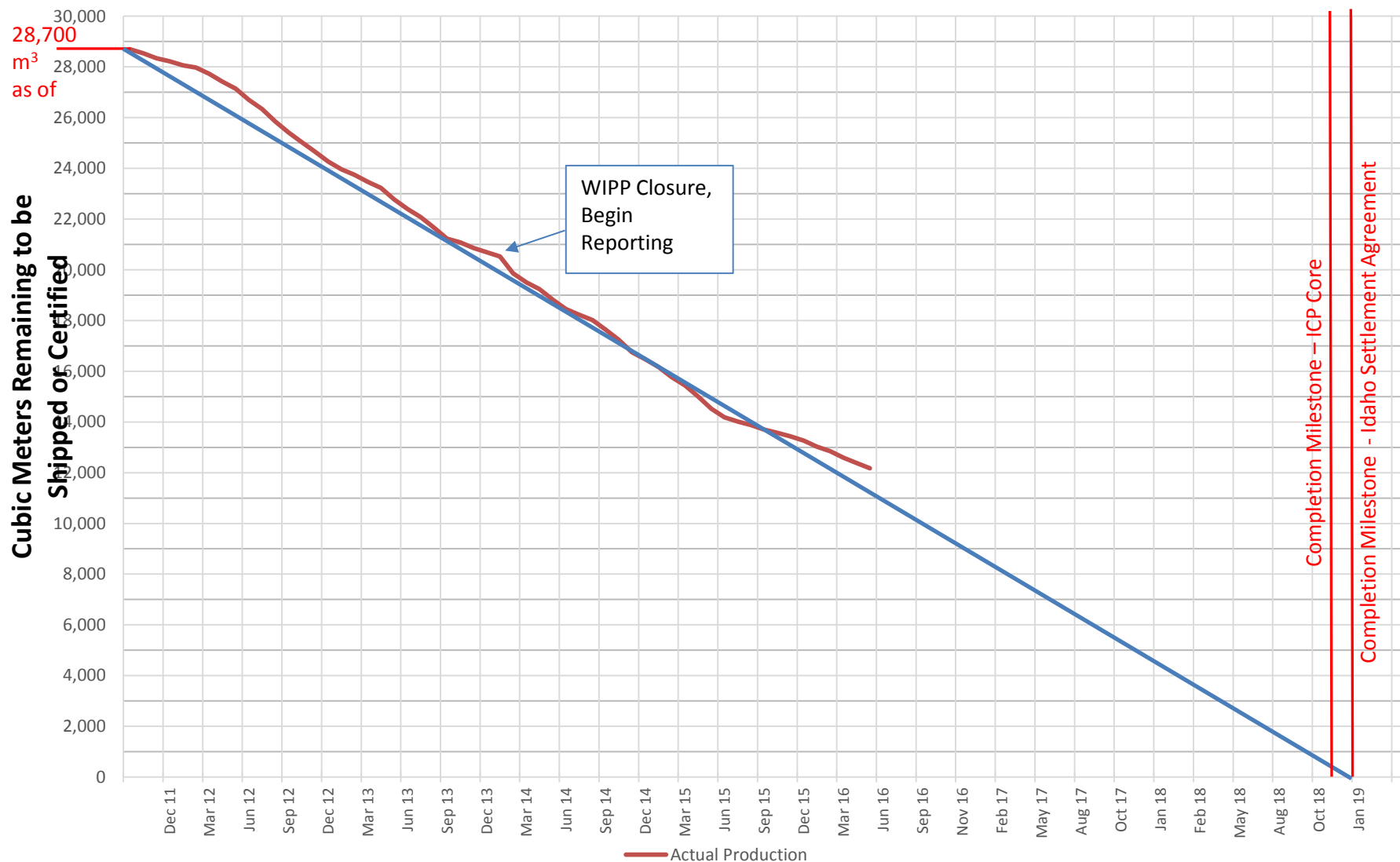
Context: Off-site Waste Disposition

- What is the Waste: TRU and MLLW, principally from Rocky Flats, Argonne National Laboratory, Mound, and other smaller generators stored in retrievable configurations at the Transuranic Storage Area and at the Radioactive Scrap and Waste Facility.
- Potential Risks: Waste contains long lived transuranic isotopes which pose a risk to the workers and the environment. Retrieval of the waste and shipment for disposal in a deep geologic repository (i.e. WIPP) ensures that humans and the environment are protected from the waste for the thousands of years that it remains harmful.
- Settlement Agreement: Requires removal of estimated 65,000 cubic meters of stored transuranic waste from the State of Idaho by December 31, 2018.
- How treated/disposed: Repackaged, treated to remove prohibited conditions, characterized and certified to meet waste acceptance criteria for WIPP or MLLW disposal facilities as appropriate.

Context (continued)

- Current Budget: (Annually)
 - AMWTP ~ \$120M (Contact-handled TRU waste retrieval, characterization, certification)
 - ARP Support to AMWTP ~ \$20M (Processing sludge waste, large items)
 - RH-TRU ~ \$30M (Processing remote-handled transuranic waste)
 - ICP MLLW ~ \$20M (Processing low-level waste for offsite disposal)
 - Total ~ \$190M

Idaho Settlement Agreement Work-off Status



Waste Programs Overview

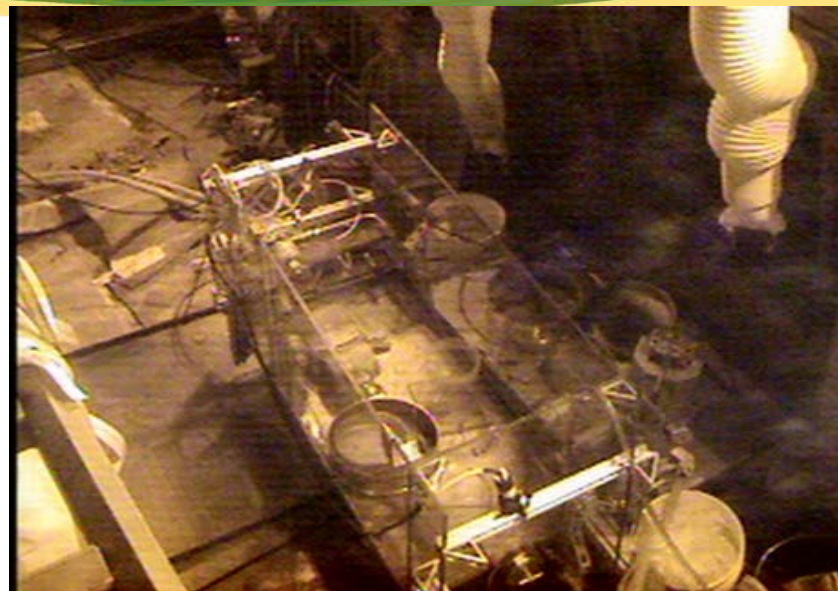
- Idaho TRU Certified Backlog:
 - 20,030 Containers
 - 813 CH-TRU shipments
 - 90 RH-TRU shipments
- MLLW Key Activities/Actions:
 - In FY2016, ITG has shipped 320 m³ of legacy salts and 23 m³ of legacy soils for treatment and disposal at Energy Solutions in Clive, Utah.
- MLLW Upcoming Activities:
 - Continue shipment of legacy salts
 - Continue shipment of legacy debris

	Certified Containers	Shipments
CH-TRU Waste		
Product Drums	3,745*	250
Direct Ship	1,965*	105
SWB's	8	2
SRP Drums	10,052	335
Buried Waste	4,260	122
CH-TRU Total	20,030	813
RH-TRU Waste		
Drums	161	90
* Includes containers in pre-sub certified status that require Flammable Gas Analysis prior to certification.		

Remote-Handled Transuranic Waste Disposition

Key Activities/Actions:

- Remote-handled transuranic waste shipments are on hold until WIPP re-opens.
- Activity Status
 - Continue with re-works.
 - Continue with Lot 9G drum treatment.
 - Continue with bulk Sodium treatment.
 - Continue processing waste stream approvals for ISA waste.
 - Continue preparations for Navy waste stream.
- Remaining EM RH-TRU waste to meet Idaho Settlement Agreement:
 - Approximately 25 cubic meters.
 - Six waste streams are submitted and pending approval.
 - Waste stream approval by EPA and CBFO is required prior to certification and transport for disposal.



Above: Argon Repackaging Station

Below: Thermal Image During Sodium Treatment



Advanced Mixed Waste Treatment Project



Above: New Brokk 400s Delivered to AMWTP

Below: View from Newly Installed Box Line Camera



Key Activities/Actions:

- Contact-handled transuranic waste shipments are on hold until WIPP resumes operations.
- 814 Shipments of CH TRU have been certified for shipment to WIPP*.
- Shipment of 537 m³ of Legacy LLW/MLLW off-site in support of ISA milestone in FY2016.

**Includes containers that require Flammable Gas Analysis for DOT Transport prior to certification.*

Upcoming Activities:

- Complete CCP transition to AMWTP for visual exam and assay 3rd Quarter 2016.
- Continue Infrastructure Improvements through the 3rd and 4th Quarters of 2016.
- Continue work on chemical compatibility requirements with WIPP.

Advanced Mixed Waste Treatment Project



Pad 1 remaining containers, May 31, 2016

Key Activities Retrieval and Cargo Operations:

- Retrieved 871 m3 as of May 31.
- Emptied 59 of 104 cargo containers.
- Continued retrieving waste from Pad 1 Cell 1, the final cell with waste containers.
- We have about 150 boxes and 3,000 drums left to retrieve – about 1,100 cubic meters.

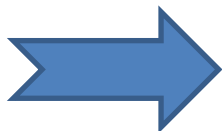
Upcoming Activities:

- 14 empty cargo containers ready for transferring to ICDF.

Dashboard Legend



Ahead of schedule, under budget, better than expected.









On schedule, on budget, performance as expected.



Behind schedule, over budget, performance less than expected.

Dashboard Summary – Solid Waste Disposal

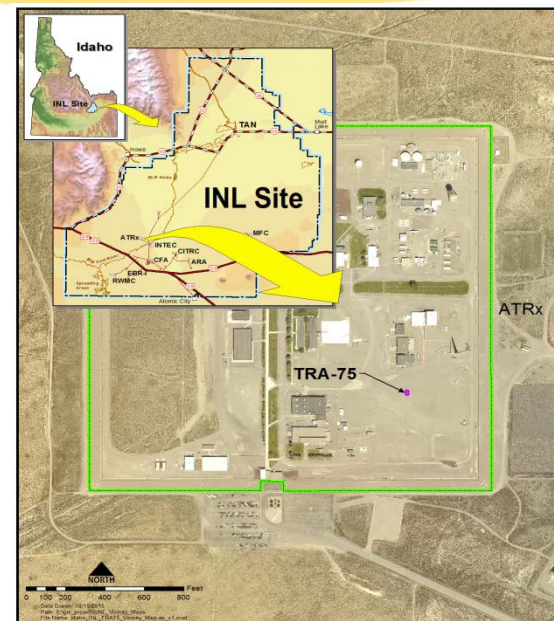
Key Questions	Dashboard Indicator	Comments
Percent of project completed		Flour assumed contract on 6/1/16.
Percent of budget expended		
Impact on employment/economic development		Work is ongoing at AMWTP and INTEC.
Affect on agreements		Closure of WIPP has precluded shipment of 2,000 cubic meter rolling average.
Impact on safety and environment		Waste disposition operations were performed safely and compliantly during the reporting period.
Impact on cleanup DOE-wide		No impact on complex wide cleanup.

CERCLA Remediation Project Objectives

- WAG 1: Test Area North (TAN)
 - TAN Groundwater Remediation
- WAG 3: Idaho Nuclear Technology and Engineering Center (INTEC)
 - Complete the work associated with the OU 3-14 Record of Decision
 - Operate the Idaho CERCLA Disposal Facility (ICDF) to compliantly disposition CERCLA waste
- WAG 7: Radioactive Waste Management Complex (RWMC)
 - **Exhume 5.69 acres of buried waste (Completed 4.14 acres as of May 31, 2016)**
 - Complete the work associated with the OU 7-13/14 Record of Decision
- WAG 10: Site Wide
 - Maintain site wide institutional controls, and operations and maintenance program
 - Maintain groundwater monitoring program
 - Maintain the New Site Identification Process for future CERCLA sites

CERCLA Remediation – WAGs 1, 3, and 10

- Key Activities/Actions:
- WAG 1
 - Continue ISB injections into new injection/monitoring well at Test Area North.
 - Perform “Snapshot” sampling event.
- WAG 10
 - Preparing the CERCLA 5-Year Review Explanation of Significant Differences (ESD).
 - Completed OU 10-08 New Site ESD.
 - Preparing to remediate New Site TRA-75.
 - Consists of properly closing two shallow injection wells (dry wells) by removal of contaminated soil (estimated 2,000 ft³), and grouting.
- Ongoing Activities:
- WAG 1 - Continue partial ISB rebound test and ISB injections into new wells.
- WAG 3 - Continue perched water monitoring and groundwater recharge controls at INTEC.
- WAG 10 –
 - Continue monitoring and institutional controls.
 - Continue New Site evaluation/remediation.



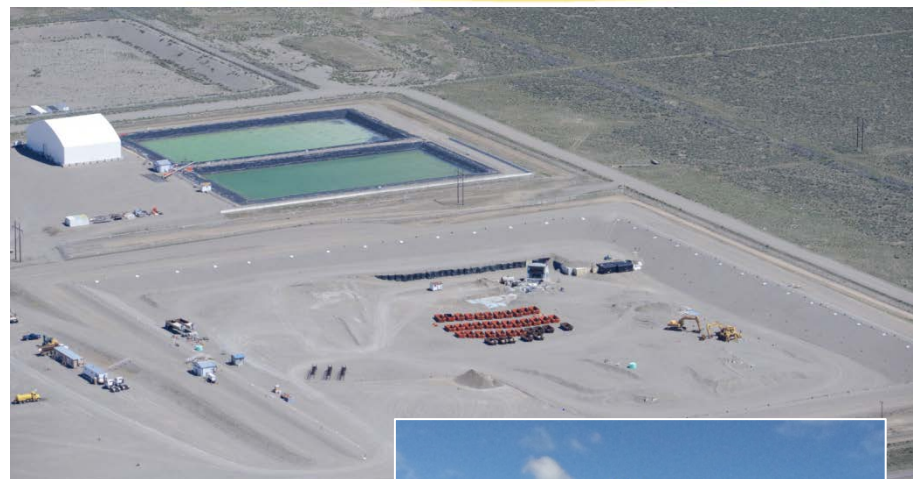
Top: Location of TRA-75; Middle: Air intake building that housed two shallow injection wells prior to D&D of building; Bottom: After removal of air intake building – the two shallow injection wells remain below ground.



CERCLA Remediation – Idaho CERCLA Disposal Facility (ICDF)

Key Activities/Actions:

- FY2016 - Received 19,356 gallons of liquid for disposal to evaporation
 - WAG3 Well Purge water
 - USGS Well Purge water
- FY2016 - Received a total of 846 m³ of solid waste for landfill disposal
 - MFC D&D debris
 - AMWTP – cargos and soil sacks



Flyover of ICDF May 3, 2016



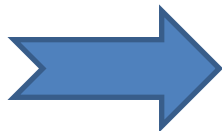
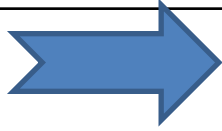
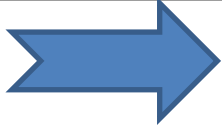

Upcoming Activities:

- Continue receipt and disposal of aqueous wastes in Evaporation Ponds.
- Dispose of solid waste from environmental restoration actions, including Phase II of AMWTP cargo containers and soil sacks and MFC D&D debris.
- Continue operation and maintenance of ICDF complex processes and facilities.



Grouting void spaces in legacy containers

Balance of CERCLA (WAGs 1, 3, & 10) Dashboard

Key Questions	Dashboard Indicator	Comments
Percent of project completed		Fluor assumed contract on 6/1/16.
Percent of budget expended		
Impact on employment/economic development		Project will continue at a similar level of effort for several years.
Affect on agreements		Project continues to meet regulatory milestones.
Impact on safety and environment		No ongoing safety issues; Safety goals are being met.
Impact on cleanup DOE-wide		No impact on DOE-wide cleanup.

Context: Buried Waste Exhumation

- What is the Waste: TRU waste, principally from Rocky Flats, buried in pits and trenches at the Subsurface Disposal Area at RWMC prior to 1970.
- Potential Risks: Potential contamination of the Snake River Plain Aquifer to above drinking water standards (volatile organic compounds primary contaminants of concern).
- Settlement Agreement: N/A; Part of CERCLA remediation of the buried waste under OU 7-13/14 ROD.
- How treated/disposed: Packaged to meet acceptance criteria for disposal at WIPP.
- Current Budget: Current Fiscal Year Budget for buried waste exhumation is \$24.2M.

CERCLA Remediation - WAG 7 Objectives

- Complete remediation work in accordance with the Record of Decision (ROD) for OU 7-13/14
- Conduct Targeted Waste Retrieval at the Accelerated Retrieval Projects (ARP) and disposition waste:
 - ARP I, II, III, IV, V, VI and VII - **completed**
 - ARP VIII: .86 acres out of 1.72 acres have been exhumed as of 5/31/16.
 - ARP IX: Design and foundation construction -- **completed**
 - ARP I & VI D&D - **completed**
- Complete in situ grouting of 21 locations - **completed**
- Subsurface solvent vapor extraction (OCVZ)
- Environmental monitoring and institutional controls

Key Activities/Actions:

- Continued ARP VIII waste exhumation. 0.86 acres have been exhumed as of May 31, 2016.
- ARP IX design and foundation construction complete. Building components in storage at RWMC. Building construction contract was awarded to North Wind Services March 2016.
- Since 1996, 244,199 pounds of TVOC removed using vapor extraction as of May 22, 2016.

Non-CERCLA Activities:

- Continued ARP V repackaging AMWTP sludge waste. 1,855 drums and 60 boxes have been repackaged as of 5/31/16 (since March 2, 2015).
- Started up AMWTP debris repackaging process in ARP VII on March 9, 2016. 18 boxes have been processed and repackaged as of 5/31/2016.

Ongoing Activities:

- Continue to exhume targeted buried waste in ARP VIII.
- Continue AMWTP sludge repackaging in ARP V.
- Continue AMWTP debris repackaging in ARP VII
- Complete ARP IX facility construction.
- Continue organic vapor extraction.



ARP VIII – Exhumation



Debris Boxes - Large Items

ARP VII Repackaging— Personnel Skin Contamination

- On 5/10/16, during oversize box repackaging activities, waste container breach resulted in worker contamination.
- All the planning and multiple layers of protection worked as designed.
- Workers left contaminated area, but received minor skin contaminations while removing protective clothing.
- Three workers with skin contamination were successfully decontaminated; no indications of internal contamination.

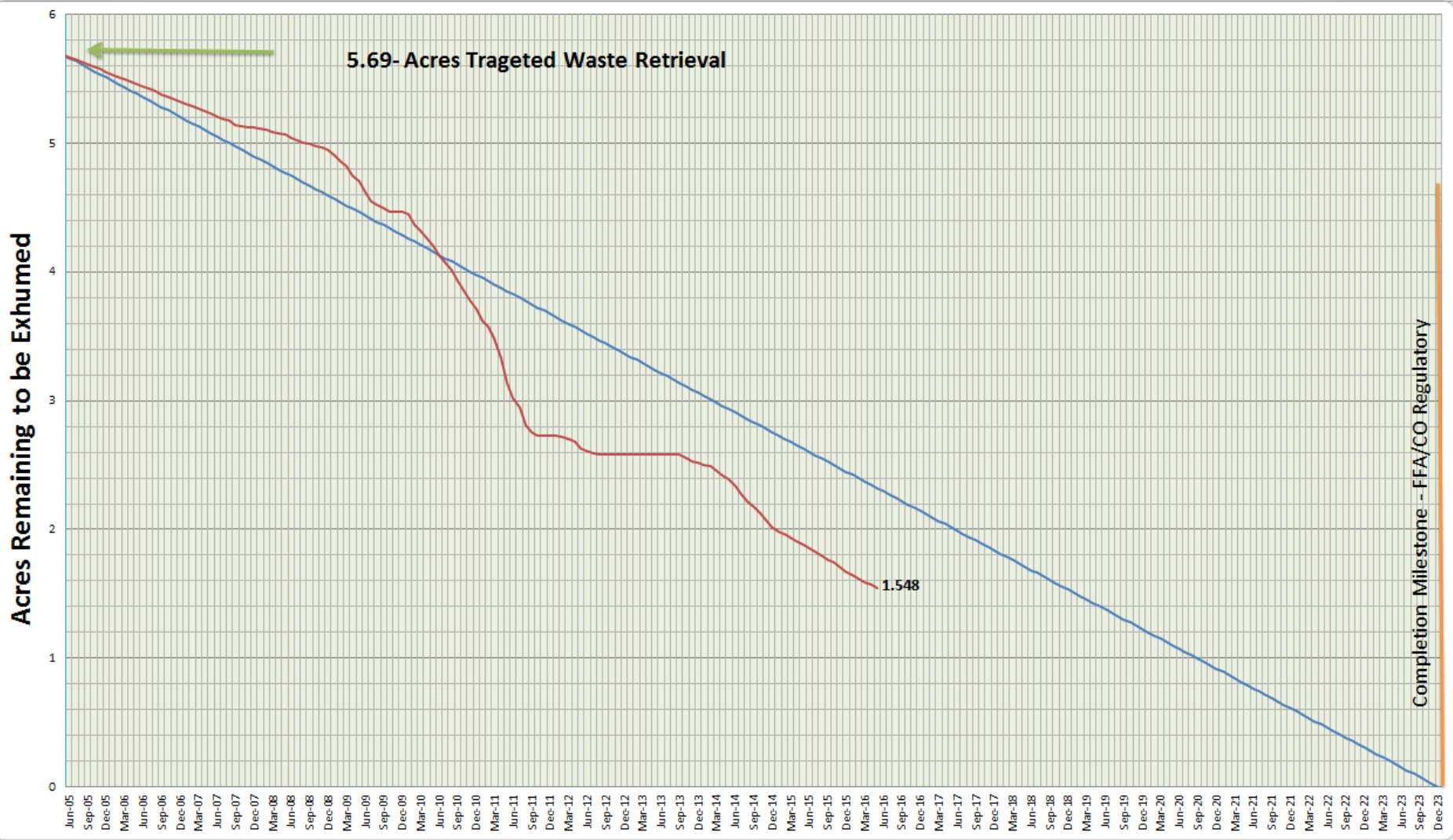


File photo of ARP VII large box repackaging



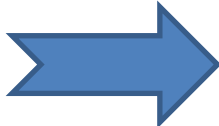



Lessons Learned:

- Remove items in the top portion of the box, then re-inspect box looking for hidden items lower in the box
- Remain vigilant for changing radiological conditions
- Evaluate improvements in removing protective clothing

Buried Waste Exhumation Work-off Chart



WAG 7 Dashboard

Key Questions	Dashboard Indicator	Comments
Percent of project completed		As of May 31, 2016, 4.14 acres (72.7%) of the required total of 5.69 acres have been exhumed.
Percent of budget expended		
Impact on employment/economic development		Project is expected to continue with same level of employment for several years.
Affect on agreements		Project is ahead of pace to meet regulatory milestones.
Impact on safety and environment		Decline in safety performance due to ARP VII contamination event; no ongoing safety-related issues; safety goals being met.
Impact on cleanup DOE-wide		Crew performing buried waste exhumation and sludge/debris repackaging in ARP V/VII

CERCLA Progress

Waste Area Group (WAG)	Milestone Title	Milestone type	Milestone Date	FY2016
WAG 3 (INTEC)	Interim INTEC Tank Farm Cover Phase <ul style="list-style-type: none"> Phase A (western 2/3) Phase B (eastern 1/3) 	<ul style="list-style-type: none"> FFA/CO Regulatory FFA/CO Regulatory 	<ul style="list-style-type: none"> Submit RA Report by March 30, 2017 (on track) Submit RA Report by Nov. 30 of first field season after tank farm closure (on track) 	<ul style="list-style-type: none"> N/A N/A
WAG 3 (INTEC)	Final Tank Farm Evapo-transpiration cover	FFA/CO Regulatory	After INTEC Closure	N/A

CERCLA Progress (continued)



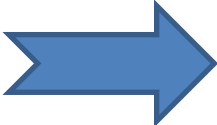
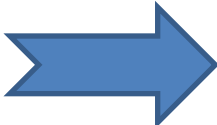


Waste Area Group (WAG)	Milestone Title	Milestone type	Milestone Date	FY2016
WAG 7 (RWMC)	Exhume .35 acres of targeted buried waste	DOE Fiscal Year Work Plan goal	9/30/16	FY 2016 goal
WAG 7 (RWMC)	Complete ARP IX construction	Contract commitment	2017	N/A – Pursuing acceleration
WAG 7 (RWMC)	Complete 90% Design for final Subsurface Disposal Area (SDA)	FFA/CO Regulatory	9/30/2020	N/A
WAG 7 (RWMC)	Complete Buried waste exhumation (5.69 acres)	FFA/CO Regulatory	12/31/2023	N/A
WAG 7 (RWMC)	Completed SDA final Cover construction	FFA/CO Regulatory	12/31/2028	N/A

Milestone Title	Milestone type	Milestone Date	FY2016
Repackage up to 1,380 drums and 40 boxes sludge waste, 12 boxes debris waste and 10 drums roaster oxides	DOE Fiscal Year Work Plan goal	9/30/16	805 drums and 36 boxes sludge waste have been processed and 18 debris boxes have been repackaged so far during FY2016

Completed Activities/Actions:

- Completed demolition preparations for MFC-767 (EBR-II reactor plant building). Work was originally planned to occur in 2019, but Fluor is evaluating potential to expedite the project.

Dashboard Summary – MFC D&D

Key Questions	Dashboard Indicator	Comments
Percent of project completed		Fluor evaluating expediting project.
Percent of budget expended		
Impact on employment/economic development		D&D workers have been transferred to RWMC to support waste operations.
Affect on agreements		Project completed RCRA closure of MFC 766.
Impact on safety and environment		
Impact on cleanup DOE-wide		No impact complex wide
safety ♦ performance ♦ cleanup ♦ closure		www.energy.gov/EM

Context: Spent Nuclear Fuel

Type of Waste: The term “spent nuclear fuel” means fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. (Nuclear Waste Policy Act, 1982) Within DOE, spent nuclear fuel (SNF) is managed as a material of interest and value until it might be declared a waste prior to final disposition.

Hazard to Public, Environment: Low. While SNF typically is highly radioactive, it is appropriately stored, managed and protected. The high radiation levels require some sort of shielding: cask, water, concrete, etc.

How Treated: SNF is managed through safe, secure, compliant storage, which includes surveillance and maintenance of storage facilities. It will be repackaged prior to transfer to a final repository.

Context: Spent Nuclear Fuel (cont.)

How Disposed: DOE intends to dispose of SNF in a geologic repository.

Current Year Budget: FY16 PBS 12:

- Defense-funded SNF program: \$15.25 million
- Non-defense funded SNF program (NRC-licensed facilities): \$5.9 million

Total program: \$21.15 million

Spent Nuclear Fuel Disposition Project

Key Activities/Actions:

- Completed 6 of 6 planned EBR-II SNF transfers out of INTEC to MFC.
- Received 1 of 3 ATR receipts into INTEC within the CPP-666 basin.*

Upcoming Activities:

- Continue ATR and EBR-II SNF fuel transfers.
- Continue to prepare Three Mile Island's NRC license renewal application.



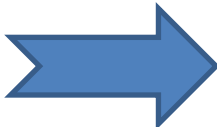



* ATR was unable to ship.

Metric	FY 16 Baseline*
Ship Advanced Test Reactor fuel	3 ATR
Ship EBR-II	6 EBR II









Spent Resin Cask Shipment

Dashboard Summary – Spent Nuclear Fuel Disposition Project

Key Questions	Dashboard Indicator	Comments
Percent of project completed		As of 5/31/16, the CWI project is complete.
Percent of budget expended		As of 5/31/16, the CWI project is complete.
Impact on employment/economic development		As of 6/01/16, Fluor presented job offers to all the INTEC staff.
Affect on agreements		The CWI project has met its planned scope commensurate with existing agreements.
Impact on safety and environment		INTEC projects routinely report among the lowest recordable incidents and contribute to the overall positive performance towards ICP safety goals.
Impact on cleanup DOE-wide		The CWI project has met its goals.

ICP Dashboard Summary

Key Questions	Dashboard Indicator	Comments
Amount of project completed		With exception of IWTU, on, or ahead of schedule.
Amount of budget expended		IWTU delays are causing costs to rise, but overall ICP budget is within target.
Impact on employment/economic development		Fifteen involuntary separations under new contract.
Affect on agreements		IWTU delay, WIPP closure impacting milestones.
Impact on safety and environment		CWI and ITG exceeded established safety goals.
Impact on cleanup DOE-wide		No outstanding impacts.