



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

Meeting Minutes

July 12, 2011

The Idaho National Laboratory (INL) Site Environmental Management (EM) Citizens Advisory Board (CAB) held its bi-monthly meeting on Tuesday July 12, 2011, at the Hilton Garden Inn, Twin Falls, Idaho. An audio recording of the meeting was created and may be reviewed by phoning CAB Support Staff at 208-557-7886.

Members Present

Willie Preacher, Chair
Nicki Karst, Vice Chair
Herbert Bohrer
Harry Griffith
Mark Luper
R.D. Maynard
Bill Roberts
Robert Rodriguez
Tami Sherwood
Teri Tyler
Bruce Wendle

Members Not Present

Sean Cannon
Harrison Gerstlauer
Fred Sica

Deputy Designated Federal Officer, Federal Coordinator, and Liaisons Present

Mark Searle, Acting for Jim Cooper, Deputy Designated Federal Officer, U.S. Department of Energy Idaho Operations Office (DOE-ID)
Brad Bugger, Acting for Bob Pence, Federal Coordinator, DOE-ID
Susan Burke, State of Idaho
Daryl Koch, State of Idaho

Others Present

Beatrice Braisford, Snake River Alliance
Joel Case, DOE-ID
Jim Malmo, DOE-ID
Mark Brown, DOE-ID
Mark Searle, DOE-ID
Nicole Hernandez, DOE-ID
Bruce LaRue, DEQ
Mark Hutchison, NRF
Chris Henvit, NRF
Linda Bohrer, public
Carl Lovell, ICP
Erik Simpson, ICP
Howard Forsythe, ICP
Michael Roddy, ICP

Valerie Nelson, Support Services
Bryant Kuechle, Support Services Facilitator
Peggy Hinman, Support Services

Opening Remarks

Mr. Willie Preacher, Chairman, kicked-off the meeting and asked each member to introduce themselves. He welcomed the new CAB member, Bill Roberts. Mr. Preacher noted that Mark Searle was filling in for Jim Cooper and Brad Bugger was filling in for Bob Pence. Mark Searle congratulated Jim Cooper on his selection as Assistant Manager for the Idaho Cleanup Project (ICP). Mr. Searle has worked on the ICP for many years and looks forward to the meeting. Susan Burke commented that the state is watching the budget for EM and hopes that the accelerated cleanup will continue. ICP is progressing on its waste treatment. The INL Oversight program has just put out an updated publication on the status of cleanup. Department of Environmental Quality (DEQ) recently updated its website and it is intended to be streamlined and more user-friendly. The INL Oversight page has new maps and information. Daryl Koch noted that DOE is looking at a 2015 date to complete the Advanced Retrieval Project (ARP), which is 10 years ahead of schedule. The blip over the last few years is the Test Area North (TAN) groundwater cleanup. This project is confusing and it is difficult to understand how the bugs are breaking down the (trichloroethene (TCE). He is looking forward to the presentation on this issue today. Koch noted that American Recovery and Reinvestment Act (ARRA) money is going away, and that is a downside. He appreciates the CAB's support on funding for ICP.

Recent Public Involvement

On behalf of Mr. Jim Cooper, the DOE Deputy Designated Federal Officer for the CAB, Brad Bugger provided an overview of public involvement since the last meeting. He noted that a recent meeting in Meridian was attended by high school science students who asked a lot of good questions and showed a lot of interest in the INL. He also noted that there would be a public meeting on the Blue Ribbon Commission reports due out in draft in July. He also commented that DOE expected to issue a draft Environmental Assessment on a Remote-Handled (RH) Low-Level Waste Disposal project in the next month.

Progress to Cleanup

Mr. Mark Searle, acting for Jim Cooper, provided a status of the cleanup progress with active discussion among the CAB, including ARRA work. Mr. Searle briefed the CAB on Transuranic Waste Disposition, the Advanced Mixed Waste Treatment Project (AMWTP), the Idaho Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Disposal Facility (ICDF), as well as CERCLA remediation: Waste Area Group (WAG) 1 – TAN, WAG 3 – Idaho Nuclear Technology and Engineering Center (INTEC), WAG 7 Radioactive Waste Management Complex (RWMC), and WAG 10 – Site-wide Miscellaneous Sites/Snake River Plain Aquifer. He continued by outlining the progress related to the decontamination and decommissioning (D&D) at TAN (completed), the Advanced Test Reactor (ATR) Complex, INTEC, RWMC, the Power Burst Facility (PBF) under ARRA funding (completed), and the Materials and Fuels Complex (MFC; ARRA funding). Additionally, Mr. Searle briefed the CAB on the Nuclear Materials Completion (completed), the Integrated Waste Treatment Unit (IWTU; Sodium-Bearing Waste), the INTEC Liquid Waste Treatment Facility (Tank Farm Closure), Spent Nuclear Fuel (SNF) Disposition, and Calcine Disposition. The status update also included the safety performance for CWI and AMWTP.

Mr. Searle provided an outline for the Transuranic Waste Disposition project, listing key activities and upcoming actions. They have shipped 8 cubic meters (m³) of RH transuranic (TRU) waste shipments to the Waste Isolation Pilot Plant (WIPP). They have received the final shipment of RH-TRU waste from the MFC. They have completed off-site transport, treatment, and disposal of EM RWMC RH-TRU waste. They will continue repackaging and shipping MFC RH-TRU waste out of Idaho, with a target date for completion of June 2012. They plan to complete conceptual design of the Sodium Process System in August 2011.

Mr. Searle outlined the accomplishments of the AMWTP. AMWTP employees have reached 12 million hours without a lost time injury. Since October 1, 2010, they have shipped 2,190 m³ of stored TRU radioactive waste out of Idaho. They are implementing macroencapsulation technology for cost effective mixed low-level waste (MLLW) treatment. They are developing sludge treatment technology for organic sludge, the last remaining waste stream at AMWTP. AMWTP has assumed operations of the Analytical Chemistry Laboratory. Completion of the Retrieval Containment Enclosure is targeted for the end of July. The recent contract award has been protested, DOE is working to resolve the protest.

Mr. Searle briefed the CAB on CERCLA remediation project objectives. WAG 1: continue TAN groundwater remediation. WAG 3: complete Phase I, II, and III of the OU 3-14 Record of Decision (ROD); and operate ICDF to compliantly disposition CERCLA waste from CERCLA and D&D actions. WAG 7: exhume 5.69 acres of buried waste. WAG 10: maintain site wide institutional controls, maintain Groundwater Monitoring Program, maintain the site wide CERCLA Ecological Monitoring Program, maintain the New Site Identification Process for future CERCLA sites, and remediate unexploded ordnance (UXO) and explosives.

Mr. Searle outlined recent actions and upcoming activities. They have completed groundwater sampling for WAGs 1, 7, and 10. The OU3-14 Phase I Tank Farm remedial action is scheduled for completion in August 2011; and Phase II is in design. Actions to address surficial conditions at the Mass Detonation Area are scheduled for completion in November 2011.

The ICDF accomplishments include the disposal of CFA-54 site soils and disposal of the MFC D&D Alcohol Recovery Pad tanks. Upcoming activities at the ICDF are disposition of debris from the ATR D&D projects and disposition of the TRA-632 Hot Cell (1.5 million pounds) at the landfill.

Mr. Searle briefed the CAB on the RWMC (WAG 7) project objectives. Remediation work will be completed in accordance with the ROD for Operable Units (OUs) 7-13/14. They will conduct targeted waste retrieval at the ARP I, II, III, and IV (completed) and at ARP V, VI, and VII. They have completed the objective of in situ grouting of 21 locations. They will continue subsurface solvent vapor extraction and environmental monitoring and institutional controls. Key activities and actions include ARP V exhumation operations (75% complete and ahead of schedule); ARP VI exhumation (50% complete); continuing construction of ARP VII; and design of ARP VIII. Upcoming activities include completing ARP VII construction in September 2011.

Mr. Searle outlined D&D objectives. They will decommission and demolish under the baseline program 171 excess facilities (166 completed). Under ARRA funding they will decommission and demolish 49 facilities (40 completed). The ARRA D&D-ATR project accomplishments include: completion of the TRA-603 roof explosives demolition. Upcoming activities include: demolition of TRA-603, the Materials Test Reactor (MTR) reactor building; demolition of TRA-632, the TRA Hot Cell Building; demolition and reroute of TRA-610 fanhouse; and demolition of the TRA retention basins.

ARRA D&D-INTEC project activities include the exterior demolition of CPP-601 (Fuel Processing Facility) and CPP-602. Upcoming activities include completing demolition of CPP-601 and CPP-602, and completing demolition of CPP-1635 and CPP-1656. These are scheduled for September 2011.

The ARRA D&D MFC activities include completing passivated sodium treatment in the MFC-766/767 transfer lines using a citric acid solution developed by the D&D project. Upcoming activities include continuing 'melt and drain' operations to heat, liquefy, drain and treat solidified sodium in piping components.

The IWTU (Sodium-Bearing Waste) project objectives are to design, construct, test, and operate the Sodium-Bearing Waste Treatment Facility and process all sodium-bearing waste material no later than December 31, 2012.

Construction of IWTU is complete and all systems have been turned over to the testing program. Upcoming activities include initiation of the hot nitrogen test. Operations are scheduled to commence 12/31/2011.

Mr. Searle described the accomplishments and goals for the INTEC Liquid Waste Facility (Tank Farm) Closure Project. Current activities include continued design work for asphalt placement. Upcoming activities include design work for closure of the last four tanks and fabrication of tents for containment during cleaning activities.

Mr. Searle briefed the CAB on the SNF Disposition Project objectives. They will transfer legacy, EM-owned SNF from wet storage to appropriate dry storage (completed). Receive and store SNF from the ATR and receive Domestic and Foreign Research Reactor (FRR) SNF for storage. They will prepare the Special Nuclear Materials facilities for transition to another government entity by installing a segregation fence (completed). Additionally, they will provide safe, regulatory-compliant, routine operations for INTEC SNF handling and storage facilities. Key activities include resumption of ATR shipments to CPP-666 and receipt of a Domestic Research Reactor shipment from Reed College. Upcoming activities include inspection of a FRR facility in Mexico City, preparatory work for EBR-II fuel moves and continued ATR shipments to CPP-666.

The Calcine Disposition Project is focused on completing the Resource Conservation and Recovery Act (RCRA) Part B Permit modifications governing the treatment of calcine. Upcoming activities include: continued engineering evaluations and design in support of the RCRA Part B permit modification; and initiation of technology proof of principle testing in support of the permit modification.

Mr. Searle provided a table illustrating the ARRA performance measures, and provided a timeline of accomplishments and goals related to key activities and completion dates from 2005 to 2013. The Idaho project milestones, post 2012, were also displayed in a timeline up to 2027.

In conclusion, Mr. Searle identified Human Capital Reports and the Projected Budget as items of potential interest for the CAB.

Discussion

Willie Preacher asked what happens if ICP does not meet the settlement agreement deadline for sending TRU waste offsite. Searle noted there were penalties in the settlement agreement if the deadline was not met.

R.D. Maynard asked if there were time frames for deciding the protest that has been filed with the General Accounting Office (GAO) on the AMWTP. Mr. Searle replied that it is 100 days. Searle clarified the membership of the teams that had proposed on AMWTP. Bill Roberts asked for explanation of acronyms. Tami Sherwood asked whether the protest of AMWTP was a cost to DOE and the taxpayer? Mr. Searle noted that there is little down-side for a contractor to protest. DOE hopes that once GAO completes its review, GAO will find there is no merit to the protest and that all the paperwork was in order.

Regarding the ARP, Susan Burke clarified that the agreement with the State of Idaho is that 5.69 acres must be exhumed. The volume is estimated at 7,485 m³ to be sent out of state. However, exhumation must continue until the 5.69 acres is exhumed. The bottom line is the acreage. In response to a question from Nicki Karst, Burke noted that the agreement lays out the specific areas the make up the 5.69 acres. These acres are believed to contain the waste volume to be exhumed. Mr. Searle noted that DOE was assuming it would exhume about 9,000 c m³. Teri Tyler asked how many subcontractors were working on the ARPs. Mr. Searle noted that a subcontractor was constructing ARP VII. CWI does the exhumation.

Mr. Preacher asked about the sodium bearing waste treatment. Would DOE continue with its treatment and then store this waste at INTEC until a repository is available? Searle replied that the hope is that the waste will be declared TRU so that it can be sent to WIPP.

Ms. Sherwood asked what was meant by treatment of spent nuclear fuel. Searle replied that some of the spent fuel is removed from the pools and taken to MFC for reprocessing. Brad Bugger clarified that the treatment is called electrometallurgical processing. It is a dry process and done in a hot cell. The treatment is to separate the hazardous sodium from the rest of the fuel so the fuel can be stored and disposed properly. It is a treatment for disposal; it can be used to recover materials but DOE is not doing it for this purpose. DOE has agreed it will not be recovering materials for reuse, but will be treating the hazard.

R.D. Maynard asked about the timeframe for the employee reduction at ICP. Searle replied that the reductions have started, and voluntary separation has been offered. DOE is looking at all alternatives for the future, and part of the decision on the workforce depends on whether the ICP contract is extended. But about 300 to 400 workers could be affected. Ms. Sherwood noted that at the January meeting there was a presentation on workforce restructuring, and it seemed as though a lot of effort was going into assisting the workforce. Maynard commented that he was interested in knowing what the specific impact would be to the workforce in September. Mr. Searle agreed that more information could be provided in September. Maynard asked if more people would be laid off if the contract was extended. Mr. Searle replied that if the work was done early then people would have to be laid off. The issue is that the contract ends in 2012, while cleanup continues through 2015, so it is hard for the contractor to plan. Koch asked if DOE has a date when it will know whether it will go out with a new RFP or extend the contract. Searle replied that this depends on how the contractor continues to perform.

Searle noted that Inez Triay has resigned EM-1. EM will now be reporting to the deputy secretary along with National Nuclear Security Administration (NNSA) and Legacy Management. Searle noted that it makes sense to continue to contract, but from a contractual standpoint, other companies may also be interested. Searle stated that the Request for Proposal is ready to be issued. A representative from the ICP indicated that the ICP contractor team members have recently received contract awards for other DOE work. There are opportunities for people to be placed on other work. ICP is trying to create a soft landing for as many people as possible.

Willie Preacher asked what Searle could foresee with EM being part of NNSA. Searle commented that NNSA is very project driven. It has been perceived by some that EM has a hard time completing projects. It may be that benefits were seen in transferring EM to the NNSA. He thinks the biggest challenge for funding in Idaho is Hanford and Savannah River. Idaho gets the 'left overs' from the bigger sites.

Advanced Mixed Waste Treatment Project Status Update

James A. Malmo, DOE-ID, provided a status update on the AMWTP. The mission of AMWTP is to safely retrieve, characterize, treat, and package approximately 65,000 m³ of transuranic waste and shipping it out of Idaho to WIPP in New Mexico. The project's schedule is aligned with court-mandated milestones in a 1995 Governor's Settlement Agreement between the state of Idaho, the U.S. Navy, and DOE to remove the waste from Idaho. Since initiating shipments in 1999, Idaho has safely shipped more than 44,173 m³ of waste — out of approximately 65,000 m³ of waste that was historically managed as transuranic waste — out of Idaho for disposal. This volume includes 6,074 m³ of contact-handled TRU waste and 8,099 m³ of MLLW (historically managed as TRU waste). Malmo presented a map showing TRU waste shipments to WIPP from DOE facilities. He noted that AMWTP has shipped 49 percent of the waste to WIPP, more than any other facility in the complex.

Mr. Malmo identified several capital improvement projects at AMWTP. A Retrieval Contamination Enclosure/Inner Contamination Enclosure (RCE/ICE) is being constructed to provide enhanced confinement of retrieval activities inside the Transuranic Storage Area Retrieval Enclosure (TSA-RE). There are significant amounts of waste yet to be retrieved: 800 boxes in various stages of degradation; and 19,000 drums, in-place since 1971. Construction of the Retrieval Contamination Enclosure/Inner Contamination Enclosure (RCE/ICE) began in April, 2011. Construction is substantially complete; start-up will occur by August 31, 2011.

A new sludge treatment process is designed to decrease the rejection rate of treated containers and to increase the capacity for treating organic sludge waste, speeding up the treatment schedule by one year.

AMWTP is developing the capacity to treat some of the MLLW that previously was required to be shipped offsite for treatment to meet hazardous waste land disposal restrictions (LDR) prior to disposal. Macroencapsulation is an acceptable treatment method to meet LDR. AMWTP's approach will utilize cargo containers modified with stainless steel inner liner. These are filled with waste to achieve <10% void volume in accordance with Nevada National Security Site (NNSS) waste acceptance criterion. The end plate is welded in place for impermeable closure. Proof-of-principle testing is planned to determine cost-effectiveness for life-cycle of the facility.

In June 2011, AMWTP completed installation of 40 additional units to conduct gas-generation testing needed to support shipment of organic sludge waste. This doubles the capacity to test this waste for shipment.

AMWTP recently took over operation of the Analytical Chemistry Laboratory located at RWMC. This laboratory performs chemical and radionuclide analysis. It complements AMWTP characterization capabilities and will support waste shipments to WIPP.

Mr. Malmo addressed the status of the AMWTP contract for project completion. DOE awarded contract on May 27, 2011 to the Idaho Treatment Group (ITG). Contract takeover was to occur on August 1, 2011. On June 14, 2011, a protest was filed by one of the unsuccessful bidders, invoking an automatic stay of performance. DOE-ID announced its intention on June 22, 2011 to extend the current contract with BBWI through September 30, 2011.

Mr. Malmo noted that AMWTP does receive offsite TRU waste, and that he will address this in more detail in a separate presentation. AMWTP has received offsite contact-handled transuranic waste from five sites during this fiscal year. The total amount of waste received is approximately 124 m³ through June 30, 2011. The estimated volume that might yet be shipped this fiscal year is approximately 7-8 m³. There is one additional site that might send up to 20-25 m³ of offsite contact-handled transuranic waste to AMWTP this fiscal year. AMWTP does not anticipate any significant project cost or schedule impacts from processing offsite contact-handled transuranic waste during this fiscal year.

Discussion

Harry Griffith commented that the slide showing the waste shipments was informative. Tami Sherwood asked what sites on the waste shipment map had completed shipments. Malmo replied that Rocky Flats had completed shipments. Lupher asked whether the number of shipments corresponded to the volume of waste. Malmo replied that it did not. A small shipment may contain a small volume of waste or a larger volume depending upon the type of waste and the inventory. Robert Rodriguez asked if WIPP would get to a point where it could not handle any more TRU waste. Malmo replied that the facility has the capacity to take all the TRU waste.

Teri Tyler asked about the process for retrieving the waste from the enclosures. Mr. Malmo explained the plans for retrieving using the enclosures. Mr. Preacher asked how much radiation could be present. Malmo replied that the capability to conduct remote operations would be used if needed. The workers have been trained on how to use the remote equipment. Maynard commented that although construction of the closure slowed down the process, he observed on the tour that the deterioration of the boxes in the middle of the waste was severe, and the closure would help with retrieval. Malmo noted that the oldest boxes did not have a fiberglass coating, and the wood has deteriorated and is much harder to handle. Tyler asked when decisions would be made on how to control contamination. Malmo replied that decisions would be made as retrieval was taking place.

Herb Bohrer asked about the reject rate for the drums that were being treated. There is a 30% rejection rate for drums that fail treatment. The new process is planned to eliminate rejected drums. Tami Sherwood asked if there

was a date when Nevada National Security Site would no longer accept waste. Malmo noted that a cell had been filled up, and a new cell had to be permitted. That permit has been approved and the new cell is now in use. Bohrer asked what the purpose of Real Time Radiographs (RTR) was. Malmo replied it was to confirm the absence of prohibited items. Tyler asked about the liner used in the cargo containers and the welding. Malmo explained how the liner would be sealed. Preacher asked how RTR would be done on a cargo container. Malmo replied that RTR would be completed prior to loading a box into the cargo container.

Teri Tyler asked why shipments appeared to be slowing down in 2011. Malmo replied that shipments were slowing from INL because WIPP was focusing on taking shipments from smaller sites that had ARRA funding for a limited time to conduct shipments. This reduces the number of shipments INL can send. In addition, WIPP shuts down once per year to do maintenance on the mine to keep the corridors open. This year, WIPP was shut down for a month longer than anticipated.

Mr. Wendle asked how the macroencapsulated containers would be disposed in Nevada. Malmo explained that at Nevada, a trench would be dug and the boxed would be placed into the trench and then covered with soil. Once the pit is full, it would be closed and capped. Susan Burke commented that the cell at NNSS is huge. It is lined and has a leachate collection system. The site receives only about 8 inches of rain a year, and it is about 800 feet to groundwater. Wendle asked if Idaho has a preference where the waste would be disposed. Burke commented that as long as the waste goes out, Idaho does not have a concern about where it is disposed.

Public Comment

Beatrice Brailsford, Snake River Alliance, asked where DOE was in proving the process for macroencapsulation treatment. Malmo replied that the process is still in the readiness assessment process. The goal is to ship two containers this year. The contractor is currently verifying that the weld process will meet requirements. Malmo described the remaining actions needed to verify the process was ready and that a shipment would meet the waste acceptance criteria for Nevada. Brailsford asked about the cost-effectiveness analysis and how many m³ total were involved. Malmo noted that costs had been running about \$10,000 per drum. About 40-50 drums can go into one cargo container. The amount of mixed waste that may be generated will depend upon how much is generated from management of TRU waste.

Integrated Waste Treatment Project Update

Joel Case, DOE-ID, provided an update on the IWTU, also known as the Sodium-Bearing Waste Treatment Project. This is a new facility to treat 900,000 gallons of radioactive liquid waste currently stored in underground tanks at the INTEC Tank Farm. The Idaho Settlement Agreement Requires Treatment of Tank Waste by December 2012. The Consent Order requires the remaining INTEC Tank Farm tanks to be emptied by December 2012. The facility will use a steam-reforming technology to process the liquid waste, forming between 650-700 RH waste canisters. Project construction was completed on June 3, 2011. Overall project completion is approximately 93%. Systems turnover/testing is in progress. All process systems have been turned over and are in testing. Hot Nitrogen Systems Integrated Systems testing is scheduled for August 2011. Emergent work resulting from system testing is challenging. The CD-4 project completion date is December 31, 2011.

Discussion

R.D. Maynard asked whether the HEPA filters would filter mercury. Mr. Case replied that mercury would be volatile and would go through the HEPA filters. Mr. Preacher asked what would be used to start the fluidized bed. Case replied it was a carbonate based compound. Case noted that the temperature was balanced to maintain the particle size. The system is less sensitive than the calciner process. Testing was performed to optimize the temperature to get the right size of particles. The testing was done a 1/10 scale at a facility in Colorado. The

testing was rigorous, and DOE is fairly confident in the process. Case explained that the sodium would be bound up in the particle. Teri Tyler asked how much mercury would be generated. Case replied he did not have the specific number but it was in the kilograms.

Robert Rodriguez asked if the process was new or had been used before. Case replied that there was a commercial facility in Tennessee that processed power plant resin waste. The radioactivity in the waste was similar. DOE visited this facility and gathered lessons learned. He noted that a smaller scale facility is being looked at for tank waste in Savannah River. Rodriguez asked how the HEPA filters would be disposed. Case replied the filters would be disposed as LLW.

Bill Roberts asked where the sodium came from. Case replied that a lot of sodium was contained in decontamination solutions used at INTEC. Preacher clarified that a clean out was conducted frequently between processing campaigns and this led to sodium waste that was sent to the tanks. Preacher noted that some processes used tributyl phosphate and hexone and asked if DOE expected to see these contaminants. Case replied that the waste was very acidic and that these compounds were not expected. Case noted that the processing costs would be separate from the costs of construction, which has a total project cost of \$571M.

Willie Preacher asked if the facility had its own stack. Case pointed out the stack on a photo of the facility. Harry Griffith asked about the new work that was needed on the facility. Case explained that during testing, some issues such as vibration of blowers and calibration of instruments came up. Case sees the most critical issues are those that need to be resolved in order for testing for hot nitrogen to start. The challenge is the number of issues that must be worked off in order to start the hot nitrogen testing.

Mark Luper asked how many treated waste canisters would be in one shipment. Each canister would be a shipment. The canisters are stored in vaults, but the entire vault would not be shipped. Nicki Karst asked how long construction has been going on. Case replied that there was a one year delay in 2007, and construction started in about January 2008. The total construction time will be about 4 years. Karst asked if the construction schedule was aggressive. Case replied that one key lesson learned was not to change design requirements in the middle of design. This change in performance requirements for the facility and other issues caused the schedule to increase.

INL EM Budget Update

Mr. Searle provided a discussion (no PowerPoint presentation provided) of the EM budget status. He started by noting how funding flexibility is important. When a line item is funded, the money can only be spent on that item. Operating dollars can generally be used for any purpose, although Congress placed some restraints on these dollars in recent years. From 2008 to 2010 these constraints were in place. It is difficult to efficiently use the money when there are restrictions on what the money can be used for. He discussed the drop off of base funding in recent years, and he noted that ARRA funding had supplemented it. The ARRA funding is going away, so the drop in the base budget will have a big effect. DOE hopes to be able to keep its momentum, but the opportunity for extra funds, such as carryover funds, is diminishing. DOE feels that about \$400M is needed for next year. Maynard asked for clarification of the funding request. The President's request is \$392M. Searle explained the budget process and how each site's request is built up to an EM budget. There is review by OMB, and then it becomes the President's budget. Then the budget goes to Congress, and the budget may be increased or reduced by Congress. Maynard noted that the CAB had sent a letter asking for a higher amount than DOE came out and put in its request from HQ. Maynard wanted to avoid a disconnect between the CAB and the Headquarters budget. Searle replied that DOE could work locally with the CAB on the number. Maynard also asked about the base number versus a number that could include other projects or add ons. Searle replied that the base number was most representative of the actual number. Luper asked if a tight budget ever produces efficiencies or just cuts down on work that is accomplished. Searle noted that efficiencies do result; however, there is a minimum level of safety that needs to be maintained. Luper asked if a manager might select a different thickness of steel because of budget restraints.

Searle replied that contractors are motivated to reduce costs if it can be done safely. Searle explained the fee system for contractors and how it motivates contractors. Even if a contractor may struggle in one area, they may be successful in other areas of their scope, and this keeps them motivated to continue.

Advanced Mixed Waste Treatment Project – Offsite Waste 101

Mr. Malmo provided a presentation on waste received from offsite at AMWTP. A March 2008 amendment to the ROD for the Waste Management (WM) Programmatic Environmental Impact Statement (PEIS) authorizes receipt and processing of offsite TRU waste. Under the ROD, TRU waste could be sent to INL for characterization and/or treatment — the same characterization and treatment currently being performed for site waste. Waste is only accepted at INL if it meets Waste Acceptance Criteria for WIPP. Generator sites must pay for processing beyond AMWTP capacity — priority will be given to small quantity sites. DOE must comply with the Site Treatment Plan and Settlement Agreement. This means waste must be approved by the state prior to receipt at the INL; waste must be characterized or treated within 6 months of arrival; and waste must be shipped out of Idaho within 6 months of characterization or treatment. Use of AMWTP for offsite waste allows AMWTP to be recognized as a national DOE asset assists generator sites in meeting regulatory commitments, reduces risk to worker safety and the environment at generator sites, and enables better utilization of WIPP capacity due to volume reduction of waste. This service is provided to the DOE Complex at low cost per m³.

Discussion

Willie Preacher asked if the waste that comes from other sites to Idaho is covered by DOE's system for providing information on transportation of radioactive shipments. Malmo replied that these sites have enough information to characterize the waste for transportation but not for disposal. It makes sense to have the preparation for disposal performed at INL. The transport to INL is covered by transportation communication requirements. Herb Bohrer noted the significant cost savings associated with the approach of using INL for characterization and certification of waste for disposal because it saves duplication of this capability at many smaller sites. Malmo commented that this saves a lot of money by eliminating the need to develop a certification capability for small volumes of waste.

Wendle asked who coordinates the offsite shipments. Malmo replied that the coordination is conducted by WIPP. There is the potential that more shipments will come to Idaho as the small sites get the capability to ship. The focus for the next year at WIPP will be Idaho, Savannah River, and Lawrence Livermore. Nicki Karst asked whether it would be a cost savings to send the equipment and people to the waste instead of shipping the waste to Idaho. Malmo indicated that the characterization costs are the biggest costs compared to shipping costs. These offsite shipments do help offset facility costs because the other sites are required to pay for their waste. The money recovered goes into maintaining the facility, and this keeps the costs born by Idaho down. R.D. Maynard asked if waste would go back to the generator. Malmo replied that if it could not be treated to be accepted at WIPP it would be returned, but that this has not happened yet.

Blue Ribbon Commission Update

Mr. Searle provided an update (no PowerPoint presentation provided) on the Blue Ribbon Commission. Recommendations are being drafted by the Commission. Regarding disposal, the draft recommendation is to continue to pursue a disposal facility. A second recommendation focuses on forming a new organization to implement nuclear waste policy. A federal corporation chartered by Congress is suggested as a model. The third recommendation is to provide funds for the new organization from the nuclear waste fund. A fourth recommendation is to promote transparency in the siting process and to create a process that is phased and flexible. Other recommendations address involvement of communities. The nuclear fuel and technology subcommittee provided recommendations including recommendations to support research and development of new technologies and effective licensing processes. It also recommended that the U.S. continue its joint efforts with other countries

to address nuclear waste issues. The transportation and storage subcommittee recommended that consolidated storage facilities be developed, but that storage of fuel at dispersed sites may occur for some time. The report is to come out on July 29.

Tami Sherwood questioned the need to start a new agency to deal with these issues. Teri Tyler asked whether the draft would be available to the public. Willie Preacher replied that it was on the Blue Ribbon Commission website. When the draft is issued there will be a public comment period and public meetings will be conducted. Harry Griffith asked what the state was thinking about these issues. Susan Burke responded that the Governor and Attorney General of Idaho would be reviewing the recommendations to see if any additional comments needed to be made to make sure the Settlement Agreement is preserved.

Idaho Site Lessons Learned from the Fukushima Dai-ichi Nuclear Power Plant Earthquake/Tsunami Event

Mark Brown, DOE-ID, provided a presentation on lessons learned from the Fukushima-Dai-ichi nuclear power plant earthquake/tsunami event. On March 11, 2011, a major earthquake, magnitude 9.0, occurred off the eastern shore of Japan. The earthquake resulted in the automatic shutdown of three operating reactors at the Fukushima Dai-ichi ("Fukushima") Nuclear Power Station. The earthquake resulted in the loss of all commercial power to the station. All backup electrical generators at the station automatically came online and provided power for essential equipment. The earthquake caused a very large tsunami, which overwhelmed the Fukushima station within an hour of the earthquake. Backup electrical generators were lost (diesel generators were flooded, as was the fuel supply). Battery powered systems remained functional until exhausted. Defenses in place to protect against a 19 feet high tsunami were useless against the actual tsunami wave, which was greater than 46 feet high. The complete loss of electrical power resulted in: the loss of reactor and spent fuel pool cooling systems, causing: fuel damage or meltdown in reactors and spent fuel storage pools; and hydrogen generation and explosions in the reactor buildings and one spent fuel pool.

On March 23, 2011, the Secretary of Energy issued Safety Bulletin 2011-01. The Safety Bulletin required DOE sites to: review how design basis events have been analyzed and considered; evaluate the ability to safely manage a total loss of power event; confirm safety systems are maintained operable in accordance with requirements; and on firm emergency plans, procedures and equipment are current, functional, and tested, including plans and procedures in response to "natural phenomena events." DOE-ID reported the results of the reviews to the DOE Headquarters Office of Health, Safety, and Security by May 13, 2011.

Mr. Brown summarized results and lessons learned. There are no beyond design basis conditions similar to those that occurred at the Fukushima plant that could occur at the Idaho site: earthquakes are less severe (based on history and modeling); and tsunamis are not possible. Other notable differences are that the ATR operates at low temperature, low power, short durations; spent fuel in ATR fuel pools generate much less heat than commercial reactor spent fuel; ATR fuel is aluminum clad (much less probability to generate hydrogen); all spent fuel stored at the INTEC Fuel Storage Area pool has been out of a reactor > 3 years (very little heat generation). Evaluations went beyond the specific nature of the event at Fukushima and considered the following natural phenomena hazards: earthquake, extreme wind, and flooding. INL also looked at snow (loading issues), volcanic activity and lightning. INL determined that the existing safety bases and emergency plans are adequate. Emergency drill programs are in place and adequately exercise emergency response capabilities. ATR has developed and implemented simulator training on extended loss of power scenarios. Improvements are being considered in some safety basis documents to better describe some beyond design basis events, including event causes and include discussion of event mitigation based on existing emergency plans and facility design. Improvements are being considered in emergency planning. INL is evaluating the need for additional equipment such as portable electrical generators and is planning for multiple events at multiple facilities.

In conclusion, Mr. Brown noted that INL has determined that the existing safety bases and emergency plans are adequate. Improvements are being considered and industry lessons learned are regularly reviewed by DOE as part of our continuous improvement processes. More lessons learned from the Japanese disaster are expected in the future.

Discussion

The group discussed how processes at the Fukushima-Dai-Ichi Plant and decisions on reactor operations may have contributed to the failures that were experienced. One issue DOE is reviewing is how analyses of design basis events and beyond design basis events are conducted. It appears that at the Fukushima plant, past history of events such as tsunamis and earthquakes were not considered when determining what constituted a design basis accident. Mr. Luper noted that the City of Challis is near the fault line of the Mount Borah earthquake. He noted that when the earthquake occurred, he experienced a phenomenon of water in a raceway being moved at more velocity than the velocity of the earthquake. Mr. Brown noted that fuel pools have baffles in the walls to absorb some of the sloshing, and the pools have room to contain water that moves around.

Mr. Griffith asked about an event that causes a loss of electrical power such as an electromagnetic pulse. Mr. Brown noted that the INL fuel storage pools are less of an issue because of the volume of the water and the age of the fuel. At the ATR, there is sufficient battery life to supply power. If the battery fails, water can cool the plant through a gravity system. The gravity system would not require power.

Tami Sherwood questioned if any commercial operation could have withstood the tsunami that occurred in Japan. She thinks the plant did a great job of responding to the event and the cleanup. Susan Burke asked about the Navy fuel in CPP 666 and how that equates to being low heat. Mr. Brown replied that the Navy fuel is part of the documented safety analysis heat generation review. Mr. Brown confirmed that Naval Reactors Facility has pools as well. Mr. Henvit, Naval Reactors, responded that the Navy had performed a similar review of its storage pools. The Navy prepared a report similar to the report prepared by DOE-Idaho.

Public Comment

No public comment was provided.

Idaho Cleanup Project Test Area North Project Review

Nicole Hernandez, DOE-ID, provided a presentation on the cleanup at TAN Operable Unit 1-07B. This is an injection well at TAN, used from 1953 to 1972, contaminated the aquifer with solvents TCE, low-level radioactive wastes, and sanitary sewage. Aquifer contamination was discovered in 1987. The TCE plume is nearly 2 miles long. Actions started in 1987 when low levels of TCE, PCE were found in TAN drinking water. An air sparger installed to protect TAN workers. In January/February 1990 – the lower 55 feet of sludge was removed from TSF-05. The plume is subdivided into three zones based on TCE concentrations in 1997. A remedial timeframe of 100 years is set. A ROD Amendment in 2001 selected in situ bioremediation (ISB) for the hot spot in place of the pump-and-treat remedy selected in the 1995 ROD. It changed distal zone remedy from pump-and-treat to monitored natural attenuation (MNA). ISB was selected to treat the hot spot to reduce the residual volatile organic compound (VOC) source in the aquifer and reduce downgradient VOC flux. Pump-and-treat is selected to treat VOC concentrations in the medial zone using the New Pump and Treat Facility (NPTF). MNA monitors distal zone contaminant concentrations to determine if natural declines are on track to meet Remedial Action Objectives (RAOs).

ISB functions by adding electron donors (amendments), such as sodium lactate and whey, to the aquifer to stimulate biological activity. Microbes cometabolize TCE and dechlorinate it to ethane. The ISB injection facility

was built in 2003 (field lab, high bay for injection and storage, office). Data suggest that more than 95% of the contactable source material will be removed in wells within the residual source area by 2012. TCE concentrations have remained elevated at some medial zone wells (e.g., TAN-28, TAN-29, and TAN-1860). An evaluation of the cause for the elevated TCE concentrations at the downgradient medial zone wells (TAN-28, TAN-29, and TAN-1860) will be addressed in an ISB rebound test. TCE concentrations have not decreased as expected at aquifer monitoring well TAN-28 downgradient of the hot spot. To address this issue, a test plan will be prepared to address the TCE concentration issue at well TAN-28 via a rebound test and vadose zone vapor monitoring. It will address whether a contaminated vadose zone exist and whether TCE concentrations in TAN-28 will trend downward. The ISB rebound test objectives are to evaluate whether a residual TCE source will remain in the aquifer after ISB has stopped, to evaluate whether a vadose zone source affects the aquifer, and to evaluate potential causes of persistent TCE concentrations at wells TAN-28 and TAN-1860. A fourth objective is to evaluate whether radionuclide concentrations will begin to trend downward after ISB has stopped.

Review of the pump- and-treat remedy indicates that it is working as intended.

In the distal zone, ICP is reviewing the monitoring data to determine if MNA processes will meet RAOs for the distal zone and if plume expansion is less than 30%. TCE data collected during FY 2011 and beyond will be compared to model predicted TCE concentration curves to determine if TCE concentrations are on track to meet the RAOs. Sample data from distal zone wells indicate that the plume could be heading more south-southwesterly than anticipated; therefore, the monitoring strategy should be modified to adequately evaluate plume expansion in that direction. Plume expansion remains less than 30 percent to the south-southwest. Data show MNA is functioning as intended for VOCs. TCE Plume expansion has been less than the 30% permitted in the ROD Amendment. Evaluation of TCE peak concentrations in distal zone wells continues and is needed to confirm that TCE concentrations will meet RAOs. An issue identified related to MNS is that the monitoring strategy may not be adequate for evaluating plume expansion. The recommendation is to prepare a Monitoring Plan to increase monitoring frequency to yearly rather than once every 3 years at wells TAN-57 and GIN-4. If TCE concentrations at either TAN-57 or TAN-56 exceed 10 micrograms per Liter ($\mu\text{g/L}$), evaluate install a downgradient monitoring well. This will allow better track of the leading edge of the plume. Monitoring Sr-90 and Cs-137 in the vicinity of TSF-05 is conducted to determine if these radionuclides will decline to meet the RAOs. Because continuing ISB operations may be increasing radionuclide concentrations in the hot spot and medial zone, it is not clear that radionuclides in the source area will meet remedial action objectives. Cs-137 concentrations have been increasing at the hot spot, and Sr-90 concentrations remain high in the hot spot and several locations in the medial zone. The recommendation is to prepare a test plan to address radionuclide concentrations in the hot spot via a rebound test. This will determine if radionuclide concentrations trend downward once ISB has stopped.

In conclusion, Ms. Hernandez noted that the remedy is currently protective. Follow-up actions are needed to ensure remedy remains protective for the long term. A rebound test and consolidated groundwater monitoring plan, approved by the Agencies, will be implemented to address the issues raised in the 5-year review. The rebound Test and consolidated groundwater monitoring plan have been submitted to Agencies, and ICP is currently resolving comments. The rebound test and monitoring will dictate the need for any potential remedy changes in the future.

Discussion

Daryl Koch mentioned that the process of bioremediation should be explained so it is understood by the CAB. An ICP representative summarized the process. A nonoxidizing condition is desired so that the bugs will strip the chlorine from the TCE through metabolization. The remaining compounds break down to ethane. Tami Sherwood asked whether microbes are injected. He replied that a natural colony of microbes is developed and that no new microbes are injected. Teri Tyler asked where the chlorine goes. It goes into the groundwater in amounts that do not contribute to a water quality issue in the groundwater. The ethane volatilizes. The goal is this complete dechlorination process. Harry Griffith asks how the microbes that would be present in natural conditions

correspond to what density of microbes are there now. It is expected that there may be more microbes now, but that the increased density of microbes will die off as conditions change when treatment is completed.

Herb Bohrer noted that the problem is in three dimensions. He asked how DOE was monitoring for progress along all three dimensions. Ms. Hernandez and the ICP representative replied that there are deep wells that are sampled so that vertical distribution can be evaluated. Mr. Roberts asked how many injection wells had caused an issue. Ms. Hernandez replied that one well was used. These wells were used when no requirements were in place to protect water resources. Ms. Hernandez recognized that there was uncertainty related to how the cleanup could be completed. The plume must be reduced to drinking water standards in order to be able to release the area for future use. Harry Griffith asked if there were better bugs that could be used. The ICP representative noted that use of naturally occurring bugs poses an advantage because no new organisms are introduced which can lead to uncertainty. Daryl Koch noted that INL has worked with the state Department of Water Resources on approval of the bugs and the approach.

Ms. Hernandez addressed the increase of cesium-137 at the hot spot in the plume at TAN. The ICP contractor suspects that there is sludge in the wells that may contain higher concentrations of radionuclides as a result of the TCE is being treated. DOE will be tracking this. Remedial action on the radionuclides may be needed if the concentrations appear to be creeping up. Mr. Koch noted that the question is why the radionuclides are releasing more than they thought they would. The Record of Decision assumed the radionuclides would be held up in the soil and not release to the water. Herb Bohrer asked if all the source terms had been identified. Ms. Hernandez noted that the injection well was the known source of contamination; however, the routes of the contamination are not well understood. There may be a vadose zone source or a larger source area that is not known. Mr. Koch stated that the constituents disposed in the injection well are known but the amounts and concentrations are not known. Ms. Hernandez also noted that the amount of water injected is not known either. The decay rate of cesium and strontium are about 30 years. Decay is continuing but indications are the source term is unclear. The depth to aquifer in the area of ISB is about 230 feet. The level has dropped about 30 feet since it was started. The injection well goes down a little over 300 feet. Teri Tyler asked about pH and the effect of the sodium and whey additions on pH. The ICP representative stated that pH is maintained at about 5.5 to 7. Sodium lactate is used to buffer the pH to keep the pH from falling too low. When straight whey was used, the acids from the biological activity dropped the pH. There is a correlation between increases in radionuclide concentrations and injections. However, the concentrations then decreased. The process for volatiles is sampled regularly; the radionuclides are sampled once per year. Now, the goal is to determine if radionuclide concentrations trend down when ISB stops. There are different parameters being reviewed to see if performance can be improved. Willie Preacher asked if any activities at SMC could affect cleanup. Mr. Malmo replied that SMC has no liquid discharges to groundwater, so no problems are anticipated.

CAB Work Session

Mr. Preacher started the CAB work session by providing a summary of the EM Site Specific Advisory Board (SSAB) meeting in Las Vegas. The meeting included tour of the Nevada National Security Site and its disposal facility. He described the purpose of the EM SSAB meetings to bring the CABs together to discuss their issues and identify common concerns. In his view, the problems at Idaho are much smaller than the problems at Hanford in terms of cleanup. Presentations from EM were provided at the meeting. He went over the recommendations that came out of the meeting. The CABs have been asked to provide feedback on the recommendations. The first one is asset retention. The CAB voted to approve the recommendation. The second recommendation is about a rail car. It appears the recommendation seeks to get DOE's support for transferring a rail car to a community. The CAB did not approve this recommendation because this seemed to be an unnecessary cost. The third recommendation came from the Northern New Mexico CAB and addressed a preference for use of rail cars instead of trucks for transport of waste. The CAB identified their concerns with this recommendation: economics should be considered along

with safety and efficiency; and waste shipments are covered by an environmental analysis that should consider the alternatives. The CAB decided not to approve this recommendation and to indicate what its objections were.

The CAB reviewed the new website and provided several suggestions for improvements. DOE will look into placing a link to the CAB website on the DOE website. CAB members will review their biographies and provide any comments; the bios will be included on the website. A link to INL press releases will be added.

The CAB reviewed a draft budget letter and made revisions. The draft will be sent to DOE for review and comment before it is finalized. Then the letter will be circulated to the CAB for a final review. The issue of the addressee for the letter needs to be resolved.

The CAB set a draft agenda for the retreat and the next two meetings. The CAB discussed finalization and distribution of the annual report.

Action Items:

1. Support staff to prepare letter to Cate Brennan with results of CAB vote on EM SSAB Chairs recommendations.
2. The CAB will finalize the letter regarding EM budget after asking DOE to review it for accuracy.

Presentations given at this meeting are available on request from the INL EM CAB Support Staff.

I certify that these minutes are an accurate account of the July 12, 2011, meeting of the Idaho National Laboratory Site Environmental Management Citizens Advisory Board.



Willie Preacher, Chair
Idaho National Laboratory Site Environmental Management Citizens Advisory Board
WP/ph