

**National Spent Nuclear Fuel Program/Office of Nuclear Materials Disposition (EM-14)**  
**Bringing Innovation to Spent Nuclear Fuel Management**

**Draft Meeting Notes**

**April 14-15, 2009**

**Washington D.C. Forrestal Bldg. /Room GJ-015**

Barb Beller, the National Spent Nuclear Fuel Program Manager opened the NSNFP SNF and HLW Strategy Meeting held April 14-15, 2009 at the DOE Forrestal Building in Washington, DC. The presentations made at this meeting are posted on the NSNFP web site. These minutes provide summary information of each presentation. A list of action items that came out of this meeting is also provided.

**Welcome and Opening Remarks (Barb Beller, DOE/ID, EM/ICP)**

Barb Beller and Gary DeLeon, Director of the Office of Nuclear Materials Disposition, welcomed everyone to the meeting. Over the course of the two day meeting, seventy five people from DOE sites, DOE EM, DOE-NNSA, DOE-NE, Naval Reactors, the Nuclear Waste Technical Review Board, and the Defense Nuclear Facilities Safety Board attended the meeting.

**EM-10 Programmatic Plans, Stimulus Status, HLW Plans (Frank Marcinowski, EM-10 – Slide Set 1)**

Mr. Marcinowski provided an overview of the two day agenda as well as synopsis of EM's current strategy. DOE-EM, in a time of programmatic uncertainty, is staying the course while at the same time examining alternatives to a geologic repository. EM plans to place more emphasis on R&D to help solve SNF and HLW challenges. EM-20 has the lead for the technology development effort. The SNF and HLW programs are among EM's top priorities and constitute a significant portion of EM's budget. Since there are multiple Department programs (EM, NE, and NNSA) that share responsibility for management and disposition of Na-bonded SNF, it is imperative that these programs will work together to develop a corporate and cost effective approach for the management of these fuels. NNSA and EM also collaborate on the Foreign Research Reactor Program.

EM received \$6 B for environmental cleanup as part of the American Recovery and Reinvestment Act. These funds will be spent by 2011 to reduce the legacy footprint of the EM complex by focusing cleanup activities on decontamination and demolition of excess contaminated facilities, soil and groundwater remediation, and solid waste disposition, all of which have proven technologies and an established regulatory framework—things EM does well.

In the near-term, there will be little impact on EM programs from the recent announcement by the Secretary regarding Yucca Mountain. The EM HLW/SNF projects will proceed according to their current baselines. The treatment, processing, and handling activities required to prepare the HLW and SNF for safe interim storage will continue as well as efforts to support existing regulatory agreements. Irrespective of the Department's long-term repository and disposal plans, EM will continue its efforts to develop new and improved, more cost-effective technologies for treatment and storage of HLW and SNF. DOE-EM's plans will also evolve to support recommendations of the Blue Ribbon Panel.

## **RW-1 Yucca Mountain Status and Budget Outlook (Chris Kouts, RW-1 – No Slides)**

OCRWM signed two contracts for TAD development at a fixed price. Another vendor is developing a TAD proposal on their own.

OCRWM recently issued reports on Interim Storage and The Need for a Second Repository. These reports can be found at <http://www.ocrwm.doe.gov/>.

OCRWM has received 375 Requests for Additional Information and responded to 222. Responses to another 150 RAIs are under development.

The NRC Atomic Safety and Licensing Board (ASLB) Construction Authorization Boards (CABs) listened to three days of oral arguments at the NRC Hearings facility in Las Vegas on the admissibility of the 320 filed contentions and the various petitions to intervene in the proceeding. During the oral arguments counsel for DOE, along with counsel for the NRC Staff and the petitioners addressed various areas of interest raised by the three CABs. The next step will be the issuance of the First Prehearing Conference Order in which the CABs will rule on the petitioner's standing and the admissibility of contentions. This order is expected by mid-May.

Other issues discussed included:

Commercial liability – the standard contract states that DOE shall commence acceptance of commercial spent nuclear fuel by January 31, 1998. Approximately seventy lawsuits were filed due to DOE's delay. Damages are calculated through a date prior to the trial. The utilities can then file another lawsuit for damages incurred from the date in the prior lawsuit until a date prior to the new trial. The Government has paid out approximately 570 M in tax dollars from the judgment fund (not the nuclear waste fund) in judgments and settlements.

Funding – OCRWM started 2009 at \$386M. Contractor staff shrank from 2,600 to 1,700 people last fiscal year. This year contractors have been reduced from 1,700 to about 600. There are approximately 200 federal employees and about another 35 from other parts of the Department. Federal employees are picking up the additional workload resulting from the reductions in contractor staff.

OCRWM's primary focus is to continue to support the License Application, and the "Blue-Ribbon" panel that is being formed by the Secretary.

## **EM Strategic Plan/Options/Timing for Implementation, in context of the policy/position of the current administration (Jay Rhoderick, EM-32 - No Slides)**

EM-32 strategic planning is in four areas; Footprint reduction/D&D, HLW programs, SNF programs including the interplay with NNSA, and the Special Nuclear Materials Program.

EM-32 is beginning work on the 2011 budget and targets in 2012 and 2013 are expected to be lower. There is interest in pursuing options to look for cost/benefits through analysis.

## **National Spent Nuclear Fuel Program Role in DOE's Transformation (Barb Beller, DOE-ID – Slide Set 2)**

The NSNFP manager outlined the role of the National Program and the current primary focus that includes:

- Supporting the NRC licensing process for SNF and HLW disposal at Yucca Mountain
- Maintaining the base program e.g. QA, SNF Database, and RAI support
- Compiling a requirements document to provide a baseline and configuration control mechanism to help ensure SNF management decisions are compatible with path(s) for final disposition of SNF.

Future activities for NSNFP may include:

- Acting as a resource to HQ in support of the Blue Ribbon Panel or DOE re-planning effort
- Supporting time critical issues/decisions that may impact the path forward
- Recommending development of a Risk Management Plan that consolidates site risk plans for HLW and SNF.

The future role of NSNFP could evolve as these questions are resolved:

- Will the disposition path for DOE owned SNF and HLW be the same as commercial fuel i.e. NRC license in our future?
- Should DOE-EM disposition all DOE owned fuel?
- Is co-disposal specific to Yucca post closure SAR?
- Will HLW and SNF have the same disposition path?
- In addition to “preparation for transport” should the NSNFP manage cask development?

In response to a question about whether the SNF database includes NE fuel as well as EM fuel, Ms. Beller explained that the SNF database includes the entire population of DOE SNF, although the NSNFP only develops plans for the EM-owned fuel.

## **Transportation and Packaging Certification (Steve O'Connor, EM-63 – Slide Set 3)**

The EM Office of Packaging and Transportation (EM-63) manages a robust and mature DOE transportation program and provides operational support and the package certification program to the entire DOE complex. DOE has successfully completed over 81,000 shipments in the past 5 years, primarily by highway. As of August 2008, the FRR program had shipped 8,365 total assemblies or elements on 44 shipments to the U.S. EM-63 coordinates and supports transportation operational activities with the sites through the Packaging Management Council and the Transportation Management Council. EM-63 also coordinates with State and Regional Groups and Tribal nations by providing funding for transportation emergency preparedness training and through periodic stakeholder meetings.

The DOE transportation program has a higher safety record than the hazardous material shipping industry. This safety record is the result of multiple performance oversight programs and coordination with the sites. EM-63 has worked with industry to benchmark transportation recordable accidents and found that the average DOT recordable accident rate for hazardous material carriers remains at about 0.5 accidents per million miles, while EM's annual average is 0.18 accidents per million miles. This safety record is a direct result of the higher performance standards required

of DOE carriers through the Motor Carrier Evaluation Program, and through periodic EM-63 assessments of DOE transportation contractor activities

### **Standard Canister Packaging for DOE (Brett Carlsen, NSNFP – Slide Set 14 including 2 Video Clips)**

The canister design objectives include standardizing interfaces for handling DOE SNF, providing a high-integrity barrier to assure public and worker safety, and precluding the need for any future repackaging. The features that make the standardized DOE SNF canister an effective solution for repository handling provide similar benefits for on-site operations and long-term interim storage. Use of the standardized canister increases surety of operations and reduces overall risk by standardizing handling equipment and operations and by eliminating the need for fuel characterization to obtain and justify reliance on fuel-specific mechanical and chemical properties. The canister is compatible with all remaining life cycle phases (i.e. storage, transport, disposal and/or reprocessing). Technology needs include a canister welding system, advanced neutron absorption development, and extended interim storage considerations.

### **Site Status/Vulnerabilities/Focus Areas – Hanford SNF (Sen Moy – Slide Set 4)**

Hanford loaded, dried, and shipped the final two multi-canister overpacks containing legacy fuel from K basins in September 2008. A total of 388 MCOs containing fuel from K basins are now in interim storage at the Canister Storage Building. The knock-out-pot sludge material was accumulated at K-West basin during cleaning of SNF and sludge consolidation activities. The sludge material is now under evaluation to determine a disposition path by FY 2011.

Also, small quantities of SNF were discovered during remediation of B, C, D, F, and H reactor burial grounds. The discovery of additional fuel is possible during remediation of the remaining burial grounds. Fuel found in the past was transferred to K basins and this capability will continue through FY 2011 while the knock-out-pot material is under evaluation, after which a new path will be implemented to receive and store found fuel. Other near term activities include; MCO license application support and OCRWM QARD transition (to QARD 20) activities.

### **Site Status/Vulnerabilities/Focus Areas – Hanford HLW (Albert Kruger – Slide Set 5)**

The HLW vitrification facility design is 77% complete with construction 23% complete. The plan for quality assurance surveillances of DOE/ORP and BNI HLW concluded that BNI has established an acceptable HLW QA program. Phase 2 will document review and RW acceptance of the initial QARD Requirements Matrix and implementing procedures in conjunction with a technical review and RW concurrence of the HLW technical baseline documents. Phase 3 will be the initial compliance-based audit of the ORP and BNI QA programs to evaluate the adequacy and effectiveness of the QAPs implementation for QARD compliance.

### **Site Status/Vulnerabilities/Focus Areas – SRS SNF (Dawn Gillas – Slide Set 6)**

The SRS SNF program mission is to support the United States' nuclear weapons nonproliferation policy by reducing civil commerce in HEU, since HEU can be used directly in the production of nuclear weapons. The SRS baseline is to receive AL-based FRR, DRR, and INL SNF until 2019 and deinventory SRS non-AL to INL by 2019. Deinventory for all AL-based SNF inventory will be through H-Canyon by 2019 and deinventory of all target materials and sources will be by 2020. SRS is waiting for a decision to determine

whether using H-Canyon is still the baseline. (Alternatives are being compiled).

#### **Site Status/Vulnerabilities/Focus Areas – SRS HLW (John Owen – Slide Set 7)**

SRS has processed 3.7M gallons of salt solution with 1.4M gallons processed since the start of the current campaign in March 2007. The processing rate is 120K gallons per week. Vault 2 is under construction. There are still 98M gallons of salt solution to be processed. Issues and challenges facing SRS include tank closure, canister fissile loading – processing limitations, construction and startup of SWPF, total canister production, and availability of a federal repository.

#### **Site Status/Vulnerabilities/Focus Areas – INL SNF (Barb Beller – Slide Set 8)**

The INL SNF baseline is to maintain all SNF inventory and facilities in a safe configuration, transfer EM SNF to dry storage by 9/30/2009 (Settlement Agreement), receive and safely store foreign and domestic research reactor fuel (FRR/DRR), safely store Advanced Test Reactor (ATR) SNF in CPP-666, receive ATR SNF through 9/30/2010, implement fuel exchange with SRS (not in contract baseline), and remove SNF from Idaho and Colorado by January 1, 2035. The fuel exchange with SRS is uncertain and INL continues limited DRR/FRR receipts. INL is also interested in EM's role in transformation of the SNF program and how it will affect the Settlement Agreement to remove all fuel from the state by 2035.

#### **Site Status/Vulnerabilities/Focus Areas – INL HLW (Jan Hagers – Slide Set 9)**

Mr. Hagers reports that 9.9M gallons of liquid HLW has been converted to 4,400 cubic meters of granular solid achieving a 7 to 1 volume reduction containing roughly 44 metric tons heavy metal. The waste is currently stored in 43 bins in 6 bin-sets. Regulatory challenges include meeting the Idaho Settlement Agreement and Idaho Site Treatment Plan milestones. Several disposal options for calcine were presented and various technology initiatives were noted.

#### **Repository Requirements for DOE Sites, including RAI Status (Henry Loo, NSNFP – Slide Set 10)**

The NSNFP is tasked by DOE EM to support the RAIs from the NRC and to support the YMP contentions process. The RAIs coincide with the 5 LA SAR groups of documents. As of April 10, 328 RAIs have been received with 185 responses completed. All contentions, DOE responses, and petitioner counter responses can be viewed in the NRC's Adams Web Page.

- **Repository Analysis Review – (Henry Loo, NSNFP – Slide Set 11)**

The repository analysis review is needed because repository acceptance and document packages are not currently defined. DOE EM needs to understand the repository analysis bases as part of DOE SNF and HLW management planning in order to ensure packaged materials are consistent with the analysis bases, maintain proper documents to support repository acceptance, and ensure interim fuel and HLW management will not compromise repository analysis bases.

Interim review results for DOE SNF and HLW indicate that all information used to support the LA SAR have been transmitted to RW. Additional specific DOE SNF or HLW information to support the current licensing basis is not needed at this time. Since no additional information will be required at this time, interim recommendations include; EM/RW establishing acceptable waste

form characteristics (i.e., an accepted fuels list) based on current LA analytical bases and developing an EM compliance record package that could contain the following:

- SNF per the accepted fuels list
- Certification that DOE materials are packaged in a properly fabricated, loaded, dried (except HLW), and sealed canister (i.e., DOE SNF standardized canister, MCO, or HLW canister)
- Certification that the canister contains the amount of neutron absorber materials as analyzed
- EM Certification that HLW in the canister has been produced per the Waste Form Compliance Plan
- MC&A data for both SNF and HLW (741 form)

NSNFP will work with RW to formulate a process to document an accepted fuels list based on the LA analytical bases and finalize the record package content that will accompany each DOE SNF and HLW canister.

### **GAO Report Assumptions and Methodology (Ric Cheston, GAO – Slide Set 12)**

The GAO received a request from Senators' Boxer, Reid and Ensign to provide information on the objectives and costs of:

- The Yucca Mountain Repository
- Storing radioactive waste at centralized interim storage facilities, then geologic disposal
- Storing radioactive waste on-site at nuclear power plants and DOE facilities, then geologic disposal

The GAO is gathering the final round of informal feedback on the draft report and will then obtain formal comment from DOE on the draft report before issue. The report will not attempt to estimate what reprocessing would cost due to the uncertainties in future technologies. The analysis is for 500 years but may go to 2000 years costed in 2008 dollars. The GAO report will not compare or analyze the costs for the options. The GAO has interviewed NEI, individual power plants that have been deactivated (those who have reached settlements talk more freely) and talked with national laboratories (INL, Hanford, SRS) on defense waste. The GAO will use the published DOE life cycle costs for the geologic repository. The report will then be posted on the GAO website unless classified. The study is anticipated to be issued in late 2009.

### **Technology Development, Latest R&D Activities, Future Funding/Stimulus Package (Steve Krahn, EM-21 – Slide Set 13)**

In response to an FY2007 Congressional Request, EM prepared a roadmap that identified program risks in the areas of waste processing, ground water and soil remediation, D&D, SNF and challenging (formerly orphan) materials. EM-21 implements the roadmap via the Waste Processing Multi-Year Program Plan.

Future goals for EM-21 are to provide a portfolio of waste processing tasks that address key programmatic risks (safety and project) and develop a structured, consistent and robust process for program management and decision making. Challenges being faced by technology development include; striving for balance between strategic R&D and near-term tasks, shifting focus from task

prioritization to “need” prioritization and development/use of Communities of Practice to help determine key technical needs and approaches.

### **Sodium-Bonded Fuel Discussion and Overview (Debbie Kula, EM-14 – Slide Set 15)**

DOE is responsible for the safe and efficient management of ~57 metric tons of Na-bonded SNF from EM, NE, and NNSA, all of which has been consolidated at the INL. Of this fuel, EM is responsible for the Fermi-1 and FFTF fuel, NE is responsible for the EBR-II fuel, and NNSA is responsible for the Na-bonded debris bed fuel capsules from SNL. The WASRD states that the national repository will only accept HLW and/or SNF that is not subject to regulation as hazardous waste under RCRA. The Na-bonded SNF contains metallic sodium and could be considered a characteristic reactive waste under RCRA. The challenge is to either remove the Na or demonstrate the amount present is not reactive and will not negatively impact the repository. If a national repository is not opened, EM may need to assess the impact of Na on long-term storage. Although there is a 2000 Record of Decision and subsequent studies on the management of Na-bonded SNF, there is no concrete, integrated plan for all of the Department’s Na-bonded SNF. EM’s objective is to determine an optimum solution for management (storage/treatment/disposal) of this SNF by convening a working group to determine what makes sense from a corporate standpoint. The working group will first focus on short-term activities and decisions and will eventually consider longer term strategies after the Blue Ribbon Panel makes their recommendation.

### **Overview of electrochemical process/stimulus status (Sue Lesica NE-54 – No Slides)**

Electrochemical process technology started under the integrated fast reactor program to separate uranium and TRU. The original technology for treating Na fuels was separation of only the uranium and leaving the TRU with the wastes headed for the repository. That technology was used in the 3 year demonstration project starting in 1996. At the conclusion of the demonstration project, NAS agreed that all success criteria were met and NAS could not identify any better technologies for treating the fuel in the given timeframe. An EIS was initiated and the ROD was issued. There are differences between EBRII blanket fuel and Fermi-1 blanket fuel so the ROD had a different recommendation for each.

### **Recent advances in electrochemical processing technology (Mike Simpson, NE-INL – Slide Set 16)**

Electrorefining technology started under the integrated fast reactor program to separate uranium and TRU to be recycled. Two high-level wastes are produced from pyrochemical processing. One is a sodalite-based ceramic waste that stabilizes fission products that form chlorides and the other is a stainless-steel-15% zirconium metal waste that stabilizes cladding hulls and more noble fission products. EMT is the preferred technology for treating the fuel but they are not yet in production operations mode.

Factors to be considered in treating EBR-II fuel include:

- Electrorefining technology is sufficiently advanced to initiate production operations in FY-2010, including treatment of FFTF fuel and EBR-II blanket fuel. EBR-II driver fuel currently at INTEC can also be processed.
- Decision needs to be made on whether to recover U/TRU to minimize salt waste generation and provide feed material for experimental fast reactors.

- Ceramic waste process scale-up and qualification is not complete but is ongoing and is not needed until 2012 based on current processing plan
- Continued R&D is needed for implementing: Advanced cathode processor crucibles, online actinide monitoring, and U/TRU recovery on a solid cathode

With sufficient ramp up in manpower, throughput could be increased to up to 3.4 MT/year for the blanket fuel and up to 0.6 MT/year for the driver fuel.

### **Path forward for Advanced Fuel Cycle Initiative (Buzz Savage, NE-5 – Side Set 17)**

The mission of the Advanced Fuel Cycle Initiative (AFCI) is to develop fuel cycle management strategies that support the safe, secure, economic, and sustainable expansion of nuclear energy while reducing proliferation risks. Research and development is focused on nuclear fuel recycling and waste management to meet U.S. needs. Current options include:

- developing options for used nuclear fuel management that reduce the long-term environmental burden,
- enhancing overall nuclear fuel cycle proliferation resistance via improved technologies for used fuel management,
- enhancing energy security by extracting energy recoverable in used fuel, avoiding uranium resource limitations, and
- continuing competitive fuel cycle economics and excellent safety performance of the entire nuclear fuel cycle system.

In 2007, establishment of the Advanced Fuel Cycle R&D Program led to the creation of the Technical Integration Office (TIO) at Idaho National Laboratory. Campaigns were established to represent key technical elements of the program to accomplish the mission and objectives of AFCI. These campaigns utilize National Laboratory expertise and establish interfaces with industry and the NRC. The AFCI path forward should include establishing long-term, science-based fuel cycle R&D programs, continuing evaluation of a broad suite of fuel cycle options, and continuing to pursue international collaboration with other fuel cycle nations to leverage expertise and resources. The non-proliferation argument is still very strong by current administration.

### **Q&A/Discussion on NA Bonded Fuel (Debbie Kula – No Slides)**

A question about the international components of GNEP indicated that there are major collaborations with fuel cycle states. The French are interested in building collaborative dialogues. India has expressed interest but no method exists to collaborate though we can cooperate on light water reactors, materials and advanced fuels. Developing countries have different needs and some need smaller reactors. The GNEP international program is looking at infrastructure needs, options for the closing the fuel cycle, and meeting the non-proliferation objectives. The GNEP principle is to not encourage countries that do not have reprocessing technologies now to develop them.

A meeting participant from Savannah River Site asked why ARRA funds are being used to move the EBR-II fuel from INTEC to MFC. The answer was given that moving all of the EBR-II fuel from the Fuel Storage Facility to MFC would help with the security posture at the Fuel Storage Facility. Many in the audience disagreed with this answer because there will still be ATR fuel in the basin. After the meeting, it was clarified that if and when the Department implements the new graded safeguards

table, the EBR-II fuel, because of its unique properties, will require additional security measures and costs if it is still located at the Fuel Storage Facility.

### **RW/EM QA Process - QARD Direction (Bob Toro, EM-64 – Slide Set 18)**

Bob Toro overviewed the audits conducted in FY2008 and those planned for FY2009. He noted that EM-60 issued the March 2008 Memorandum which was EM's commitment to implement QARD Revision 20. Though sites have inquired about implementing QARD 21 vs. QARD 20, EM plans to complete implementation of and then maintain Revision 20 through the RAI process.

### **10 CFR Part 21 (Tim Gunter, RW/Las Vegas – Slide Set 19)**

Tim Gunter discussed the 10 CFR Part 21 requirements and the manner in which OCRWM has implemented them. Part 21 was implemented by RW when the LA was filed in June 2008. EM implementation of 10 CFR Part 21 was agreed to in the Memorandum of Agreement for Acceptance of Spent Nuclear Fuel and High-Level Radioactive Waste between EM and RW (Rev 2, February 2007). EM will ensure existing procedures are adequate or implement new procedures to identify deficiencies and non-compliances and notify RW. RW can evaluate deficiencies and non-compliances for substantial safety hazards, and report to the NRC per existing RW procedures. Appropriate posting of EM facilities should be determined by EM.

### **SRS Led Study on SNF Alternatives, including status of H-Canyon (Allen Gunter, EM/SRS – No Slides)**

Allen Gunter discussed an options study he is completing for disposition of SNF at SRS for DOE-EM. The goal is to complete the study by July and obtain a recommendation from DOE EM. Evaluation criteria for each option include technical requirements, safety requirements, life cycle costs, and funding profiles for each option. The five options are

- Continue the baseline to process through H canyon
- Waste system plan to introduce 300,000 gallons of HLW into the waste system ( can we accelerate, costs to operating facilities, options that could reduce processing time by 25% - then accelerating the Idaho SWAP to complete in 5 years) The canyon processes cannot be limited by what we can ship, we have to figure out how to ship faster.
- Melt and dilute
- Interim dry storage similar to commercial facilities under NRC license, and
- Interim wet storage with transfer later to dry storage.

### **Status of HEU Blend-down Program & TVA Agreement. ( Robert George, NA-26 – Slide Set 20)**

The NNSA's HEU Disposition Program is a key nonproliferation program that down-blends surplus HEU and uses the derived LEU in commercial and research reactors. Robert provided a detailed chart of HEU disposition paths and identified the three HEU down-blenders. The Reliable Fuel Supply Initiative (RFS) was announced by Secretary Bodman at the IAEA's General Conference in September 2005. The initiative is for foreign users who do not pursue enrichment and reprocessing. This program ensures that in the event nuclear fuel is not available commercially, there will be reliable access to the market. The 12.1 MTU HEU Down-blending Project is a new HEU disposition

project similar to RFS. HEU will be down-blended during the 2009-2012 time period and provide total derived LEU of about 224 MTU with used in MOX reserve. The FRR LEU fuel is provided in support of the Reduced Enrichment for Research and Test Reactors (RERTR) Program which reduces civil uses of HEU worldwide.

#### **NNSA/EM Discussion on FRR/DRR Receipts – Status of the FRR Program (Jeff Chamberlin, NA-21 – Slide Set 21)**

Jeff Chamberlin described the Global Threat Reduction Initiative (GTRI) Nuclear Removal Program goal as removing or disposing of excess WMD-usable nuclear materials located at civilian sites worldwide. These efforts result in permanent threat reduction because each kilogram of this dangerous material that is secured and disposed of removes it from possible diversion for malevolent purposes.

The Russian-origin HEU removal includes partnering with the IAEA and Russia to repatriate Russian-origin HEU fresh and spent fuel from over 20 Russian-supplied research reactors in 17 countries. The U.S.-origin HEU removal will repatriate U.S.-origin HEU and LEU spent nuclear fuel and HEU target material by May 2019. Jeff described the GAP removal effort as one to disposition of high risk, vulnerable nuclear material not covered by other removal efforts. Since the program began approximately 146 kilograms of HEU has been removed from Belgium, Canada, the Netherlands, and Italy.

#### **INL Acceptance Criteria for FRR/DRR fuel (Barb Beller, EM/ID – Slide Set 22)**

Barb Beller noted that the 1998 EM-60 memo to INL and SRS directed use of technically based criteria for receipt of FRR SNF. EM had little experience receiving FRR SNF. Criteria were based on the National Spent Nuclear Fuel Program, Foreign Research Reactor Fuel Acceptance Criteria – Failed Fuel Report. Material control and accountability compliance, and receipt and handling of individual fuel elements had to be addressed. ICP currently completes physical fuel examination prior to loading and “accountability” at loading for both FRR and DRR SNF (2 trips). She overviewed the basis for acceptance at the INL receipt facility and described the elements of the ICP examination program for dry storage. ICP requires canning of damaged SNF to prevent contamination of storage facilities, reduce exposure to current and future workers, and to ensure retrievability and material control during future characterization and packaging processes.

#### **SRS Acceptance Criteria for FRR/DRR fuel (Bill Swift, EM/SRS – Side Set 23)**

Bill Swift reviewed the SRS SNF acceptance criteria for FRR/DRR fuel. The acceptance criteria include the areas of environmental impact statements, L-Area authorization basis, spent fuel engineering review, (DOE Appendix A and B) and nuclear criticality safety review. Bill noted that extending the FRR program beyond 2019 is still under discussion.

#### **Session Close (Barb Beller, Hitesh Nigam, Sandy Birk)**

Sandy Birk and Barb Beller reviewed action items from the meeting.

Barb and Hitesh thanked all the presenters and the participants for contributing to the success of the meeting.

## **Action items (Sandra Birk, NSNFP)**

### **A. From March 2008 Strategy Meeting**

- Establish a top level process to address 10CFR21 reporting requirements (EM and RW). (Toro) – This action remains open; EM is currently assisting RW with the development of 10CFR21 reporting requirements and/or process. This action will remain open until RW issues formal reporting requirements.
- Discuss the approval process for DOE submittals to NRC with DOE General Council. (Hagers/Deleon/Gomberg) – Ongoing

### **B. From August 2008 Strategy Meeting**

- Linhart/Loo develop write-up of the RAI and contention support process that will be implemented by EM in relation to the existing YMP LA response procedure. Distribute YMP LA response procedure with EM support process for review and concurrence. This was completed on 9/19/08.
- Linhart/Loo update distribution list for those who support RAI and contention process. Completed 9/16.08
- Toro confirm whether the DOE EM Corporate QA program relates to other programs. Ongoing
- To enhance communications, a request was made that presenters provide notes and slides to invitees prior to the meeting. Also prior to future meetings, advise presenters of which version of software to use in developing presentations. Presentations and notes will be available after the meeting on a web site to conserve paper. Complete
- Identify requirements for different waste forms in the LA. (Henry Loo, NSNFP) This is being worked by the NSNFP with their preparation of the Yucca Mountain Compliance Approach for the Disposal of DOE SNF and HLW Document. See Loo Presentation above)

### **C. From this Strategy Meeting**

- Evaluate the relationships between NE, EM, NNSA, and others such as the Office of Science regarding SNF and HLW disposition. As an action item the NSNFP will coordinate a meeting with individuals from each organization that own or manage SNF and individuals from the financial side that are responsible for SNF in their individual organizations. (Action – DOE-HQ by 9/30/09).
- Review site risk plans for potential technology needs that can be submitted to the SNF Integrated Development Team managed by EM-21. (Action – NSNFP – by 8/30/09).
- Evaluate current processes for facility life extensions when contemplating extended storage at sites. (Action - NSNFP by 12/31/09).
- Establish a working group to develop an integrated plan to manage sodium-bonded fuel. (Action – Kula by 7/31/09).
- Identify potential deficiencies for site implementation of 10CFR21. (Action – Toro by July 31, 2009).
- Develop a discussion paper that identifies the issues, concerns, questions and opportunities facing the program given the possibility that SNF and HLW may take other than the current reference disposal path. Include, where appropriate, identification of analyses, studies, R&D, or additional data needed to address each issue. Group these activities by their requisite period of completion as near (FY09), intermediate (Fy10-11) or long-term (FY12 and beyond). Work with the site and HQ leads to compile the list. The NSNFP will work with DOE-HQ to identify the steps for completion of this item. A preliminary step will be a bibliography that describes the decisions, assumptions, and basis for documents prepared that influence SNF and HLW management and disposition (inclusive of DOE and documents outside of DOE). This document may be used by DOE-EM to provide information and support to the Blue Ribbon Panel. (Action – NSNFP by 12/31/09)