National Spent Nuclear Fuel Program
Technical Exchange Meeting
January 13 - 14, 2004
Washington, DC

AGENDA

Tuesday, January 13

8:00	Welcome and Introductions	Mark Gardner
8:15	Action Items – April 2003 Strategy Meeting	Phil Wheatley
8:20	National Spent Nuclear Fuel Program Direction • NSNFP Transition Status • EM/RW Roles for NSNFP	Mark Gardner*

8:30	Repository Program Update
	• Status of License Application
	  ○ Aluminum-based SNF
	  ○ FSV Fuel
		Joe Price

9:10	DOE SNF Representation in LA	Bill Hurt*
9:50	Alternative Waste Form Analysis	Jim Duguid*
10:10	*Break*	
10:30	CPT/Subproject Team Reports *Predecisional Information*	Christine Gelles
11:30	EM HLW Corporate Project Team Report *Predecisional Information*	Ken Pica
12:30	*Lunch*	
2:00	RW Transportation Planning Update	Gary Lanthrum*
3:00	AECL Spent Fuel Conditioning and Storage Update	David Cox*
3:30	Site SNF Strategies *Focus discussion on plans to accelerated cleanup, and identify needs to implement*	
	3:30 Hanford	Larry Earley*
	3:55 SRS	Randy Ponik*
	4:15 INEEL	Ron Ramsey*
	4:45 ANL-W	Bob Pahl*
5:30	Adjourn	

Wednesday, January 14

8:00	Opening Remarks	Mark Gardner
8:05	EM Canister/MCO Analysis Results	Tom Hill*
8:30	DOE / Contractor Strategy Session Breakout • Site Strategies • CPT Recommendations • Sodium bonded fuel disposition • Issues the NSNFP can address to assist the Sites in meeting their Accelerated Clean-up Schedules	
10:45	*Break*	
11:00	Summary Reports on Breakout Sessions	M. Gardner/ P. Wheatley
11:30	Quality Assurance	Bob Blyth*
12:00	*Lunch*	
1:00	Ni-Gd Poison Status	Bill Hurt*
1:30	Emerging Issues for NSNFP • Integrated Acceptance Schedule Update • Transportation Coordination • Topical Meeting on Site Activities	Mark Gardner/ P. Wheatley
2:00	Safeguards & Security • Status of HQ S&S analyses for DOE SNF	John Vlahakis*
2:45	Meeting Summary/Actions	
3:00	Adjourn	

*Copies of the presentations will be available electronically on the NSNFP Web page at http://nsnfp.inel.gov/program after February 15, 2004.

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ACTION ITEMS

#	Action Item	Designee	Completion Date/Status
1	E-mail presentations to Lori Braase (bse@inel.gov) for inclusion on the NSNFP web page.	Presenters	Complete
2	Organize the next NSNFP Technical Exchange Meeting for September – October timeframe.	NSNFP / Phil Wheatley	
3	Organize a site interchange meeting on a topic of interest (pilot test).	NSNFP / Phil Wheatley	
4	Redo the Federal bi-weekly call for Wednesday at 11:00 a.m. EST, beginning January 28, 2004. Add additional NE and others as appropriate.	Mark Gardner	
5	Follow up on who will be the lead on other SNF not currently in the Yucca Mountain License Application (i.e., sodium-bonded fuel). Send to Christine Gelles	Joe Price	2/15/04
6	Keep sites apprised of transition status and who has been designated the lead. (QA Transition)	NSNFP QA / Bob Blyth	
7	Prepare SNFisms for the next meeting.	Mark Gardner	
8	Work with Hanford to send test MCOs to the INEEL.	NSNFP	

PATH FORWARD

The next NSNFP Technical Exchange Meeting will be scheduled in the September-October 2004 timeframe.

NSNFP TECHNICAL EXCHANGE MEETING SUMMARY

The information below represents discussion highlights or questions raised during the presentations. Copies of the presentations will be available electronically on the NSNFP Web page after February 15, 2004, at http://nsnfp.inel.gov/program.

TUESDAY, JANUARY 13, 2004

Welcome / Introductions
Mark Gardner

Mark Gardner, DOE NSNFP Manager, welcomed the participants to the NSNFP Technical Exchange Meeting.

April 2003 Strategy Meeting Highlights
Phil Wheatley

- Phil Wheatley reviewed the highlights from the last NSNFP Strategy Meeting held in Washington DC in April 2003. Discussions focused on licensing issues and discussions regarding the Corporate Project Teams. Some of the presentations made in this Technical Exchange Meeting will provide updates to the information presented in April.

- Phil commented that these meetings have been a good resource to share and discuss lessons learned and to keep the dialog open between the DOE sites. This meeting, as well as subsequent meetings will now be referred to as the *NSNFP Technical Exchange Meeting,* rather than a strategy meeting.

- There were no specific actions from the last meeting.

NSNFP Direction (Transition Status and EM/RW Roles)
Mark Gardner

- The current direction is to move the NSNFP from EM to RW by FY-05.

- We met yesterday with DOE-RW to discuss the roles and responsibilities associated with the NSNFP. Further discussions will be held to resolve the remaining interface issues.

- In the breakout meetings tomorrow, please discuss ideas of how the NSNFP can support the sites after transition to DOE-RW.

- NSNFP Transition Plan (see diagram).

- Assumes we will receive direction from RW.
- The program will probably continue to be managed out of the Idaho DOE Field office.
- Regardless of which DOE office manages the NSNFP, the key is to make sure the DOE SNF is accurately identified in the License Application for Yucca Mountain, regardless of where the reporting authority resides.

- The NSNFP Program Plan will be updated.

- There have been some changes to the Quality Assurance Program. The NSNFP is no longer responsible to manage the 0333P actions for the DOE SNF sites. Further information will be provided by Bob Blyth later in the meeting.

- DOE Site input is requested as to what roles are needed in the NSNFP.

Repository Program Update – Status of License Application

Joe Price

- The items in the Yucca Mountain schedule are shifting due to some program direction changes.

- Discussions continue on the aluminum-based fuel. The SRS Melt and Dilute (M&D) Process was included in the Waste Acceptance Criteria (WAC), but that direction was changed. Additional analytical work will need to be done to determine if and how the aluminum-based SNF will be received at the repository.

  The analysis will be focused primarily on criticality work. The original analysis used MIP and we need to review it. The M&D included poison and produced a lower enriched waste form. The aluminum-based fuel is enriched with no poison; therefore there is a need to reevaluate criticality. Aluminum was first analyzed in 1998 to determine the treatment at SRS. The criticality analysis methodology has changed at Yucca, so we need to rerun some of the calculations.

- All fuel (except commercial SNF that the repository would normally handle) will be packaged in standard canisters. This is a key aspect for the repository licensing basis. Use of the standard canister mitigates concerns for preclosure safety analysis and moves us to beyond design basis events. We have some backup information on the standard canister, such as drop analysis. Fort St Vrain (FSV) SNF is tentatively being looking at for receiving bare.

- Closure and preclosure activities continue at Yucca Mountain.
  - Seismic work will continue through March 2004.
  - This year we will have ongoing interactions with NRC on key technical issues. It continues to be a challenge for RW on how to respond to the NRC issues.

Alternative Waste Form Analysis

Jim Duguid

Key deliverables for the Alternative Waste Form Analysis were

- Phase 1 report, due April 11, 2003, which included preliminary screening based primarily on existing analyses
- Phase 2 report, due August 15, 2003, and covered detailed preclosure safety analysis, postclosure performance assessment, geochemical analyses, and postclosure in-package criticality analyses
    - RW has looked at aluminum-based SNF in standardized canisters and it is acceptable.
    - RW has looked at glass with higher waste loading and it is acceptable.
    - Bare SNF receipts will be more expensive by their analysis. No quantification data was given.

    ATR SNF would require a C4 alloy (selected as baseline material) fuel basket design with a plate thickness of 0.375 inches that contains 2-weight percent gadolinium. The canister design for HFIR SNF would require use of aluminum shot with 1 percent gadolinium.

DOE SNF Representation in the Yucca Mountain License Application

Bill Hurt

- The standardized canister and MCO for packaging DOE SNF is the base for the license application.

- The transportation nuclear criticality analysis shows the standard canister will meet the 10 CFR 71 requirements for fully flooded containers.

- The “no nuclear criticality” basis relies on moderator exclusion and no breach of the standardized canister or MCO.

- The full criticality analysis for TRIGA and Fermi SNF has been completed. The remaining SNF types lack the final analysis of fully degraded SNF in a canister. They will be completed after initial LA submittal.

- Complications occur when we analyze for degraded material in the waste package. The geochemistry in the waste package has to considered. The analyses for the nine groups have not been completed, but they should be done by the end of April. Once these are done we can start the K_{eff} analysis for the configuration generator that will assign the probabilities of getting into these configurations. In our current DOE environment, we analyze these conditions, but in a risk informed environment, we don’t have to.

- Completion of the Features Events Process (FEP) is the last step.

- By LA in December 2004, two fuels (TRIGA and FERMI) will have been described and analyzed with this process. Supplemental analysis will be required to support future LA amendments. TRIGA and FERMI SNF were selected based on the repository receipt schedule and the selection of the WP designs described in the LA.

The LA will describe 4 flagship WP configurations (not all ten configurations). The WPs are not standard in basket design or in internal configuration. The two fuels will fit into the 10" WP and basket.

- RW expects to use licensing specifications as a means to describe what material can be accepted in Part 63. The WASRD will be a vehicle to communicate the license specification to the "outside world." The LA specifications will be amended to include the remaining criticality groups.

- From the presented matrix, we will have most of the criticality calculations completed. We have them basically completed for the 9 groups. What we lack is some of the far field calculations outside the WP and the configuration generation model. We hope that a description of the methodology of how these calculations were done and proof of the methodology for the two fuels will be sufficient to bound specific fuel types. Then subsequent amendments should show how these fit into the methodology. Resources are tight for LA completion, so getting theses calculations done may not happen soon.

- To summarize, out intent is to include in the LA the licensing basis for the methodology that is consistent between DOE and commercial fuels. Then show regulators the methodology and the model to demonstrate the calculations to prove they work and to provide some examples. Therefore, DOE SNF is fully represented in the LA and the methodology is explained.

IPT/Subproject Team Report (*Presentation contained Pre-decisional Information)*
Christine Gelles

- The presentation material is pre-decisional pending upcoming briefings and direction.

- Disposition of SNF is a challenge. The Corporate Project Team effort has been ongoing for the last 18 months, and is not quite done.

- Team reports have not been issued and still need to be presented to management.
  - Brief EM 1,2,3 and DAS around January 23, 2004.
  - Brief Bob Card.
  - Send proposal to the sites.

- Part of the CPT charter has been to close the EM sites by 2025 and save $100B.

- Their latest version is Case 5.
  - Move fuel from wet to dry, safe storage.
  - Disassociate the actions from repository availability or waste acceptance.
  - Reduce programmatic risks.
  - Defer treatment and packaging.
  - Provide contingency for repository delay.
  - Reduce cost by minimizing any new construction.

- Plan for potential delay in shipments to YM until 2015.
- If YM is ready in 2010, it may make sense to begin with transporting MCOs and SRS glass because they are ready to ship.
- Expected inventory to be shipped
  - 18,702 HLW canisters
    - 5120 canisters from SRS
    - 9200 canisters from Hanford
    - 4400 canisters from ID
  - 1645 SNF canisters including FSV from Colorado.

- EM-RW cooperation
  - Working on the Case 5 integrated acceptance schedule.
  - Working on acceptance of all waste forms.
  - Working on operations scenarios.
  - Helping RW in cask acquisition.
  - The MOA will be replaced by the policy directive, because it is more enforceable.

- Integrated Acceptance Schedule: Everything regarding SNF, treatment, etc., is constantly changing with new information every day. Baseline decisions and contractual obligations also affect the schedule. These are some of the reasons this effort is not completed yet.

- Office of Environmental Management Organization Chart: DOE EM reorganization is evolving.
  - Primary responsibility for disposal – EM-10 Logistics and Waste Disposition Enhancements.
  - Published on EM Web page under mission reorganization and function statements.

- Summary:
  - We have revised Case 5. We still need to get to an optimized strategy.
  - Expect to present results of Case 5 to undersecretary.
  - RW and EM are working together to develop the business strategies needed to move forward (policy directive, cask acquisition, evaluation of alternate operating scenarios and design alternatives, etc.)

EM HLW Corporate Project Team (CPT) Report – (*Presentation contained Pre-decisional Information)*

Ken Pica

- The HLW CPT deferred the transportation of DOE HLW to the SNF CPT.

- We focused on alternatives to reduce the amount of DOE HLW.

- DOE was unsuccessful in challenging some applicable HLW litigation in Idaho last year. These issues are currently being worked, but the decision was made not to go after some of the baseline alternatives.

- Idaho Court decision:
    - There has been a draft appeal prepared.
    - The schedule for arguments is not final, but optimally the court will hear oral arguments this summer with a decision in the fall.
    - Jesse Roberson was asked to testify regarding a GAO report on HLW that identified the litigation as a vulnerability for DOE. Legislation was drafted to define HLW for disposal.

- The HLW team identified over 40 alternatives and a set of 13 recommendations, both programmatic and site specific.
    - The Acquisition Executive approved several of the alternatives.

- HLW Technology Procurement: (This information is Pre-decisional information)

RW Transportation Planning Update

Gary Lanthrum

- DOE and commercial sites have been reduced from 131 sites to 128 sites.

- The plan is to start shipments to Yucca Mountain in 2010.

- $10 million budget last year; $63 million for FY-2004.

- RW is trying to push back cask development, but continue development in a broad sense to ensure we develop what is really needed.

- There is a new rail car standard for moving SNF and HLW. Currently, there are no rail cars built and certified to meet the standard. In addition, the load bearing and buffer cars will also have to meet the standard.
- EM and Naval Reactors Program have experience in moving SNF and HLW. RW will have to develop new capabilities and relationships with stakeholders.

- We estimate needing a fleet of about 100 casks. A place to maintain the casks will be required as well. The rail facility capability and location are under review. Working with repository to determine if locating this facility at Yucca Mountain makes sense. The number of casks (100) is mainly based on moving bare fuel. It does include HLW, but this is very preliminary estimate.

- The procurement approach is to maintain vendor competition and broaden the field as much as possible. We do plan on soliciting vendor input on the cask development approach.

- We want to ensure a broad integrated approach between transportation projects; between transportation and Yucca Mountain; and between SNF and HLW programs.

- Baseline is to have 3 casks per train. But some utilities may not have a siding for 3 rail cars.

- There are five routes for transportation into Nevada. Note: Las Vegas objects to any southern routes; therefore option 2 and 3 were eliminated.
    1. Calienta-east. This is the preferred route, but also the most expensive. Our concern is our responsibility for damages. Every year of delay costs us as much as the most expensive option.
    2. Jean-Southern route
    3. Valley modified-Southern route
    4. Calienta-Chalk Mountain. Comes through Area-51. No effort to build through Area-51 for national security reasons.
    5. Carlin. Comes in from the north. This is the second choice.

- We have filed to withdraw the lands around the Calienta corridor for ½ mile on each side for a two-year period to develop the detailed assessment for permanent land withdrawal.

AECL Spent Fuel Conditioning and Storage Update

David Cox

- There are many similarities between the Canadian and US programs.
    - Dealing with historical SNF (since the 1950s).
    - Shared transportation routes.
    - SNF storage.
    - Etc.

- Volumes of spent fuel are significantly smaller than in the US. AECL has approximately 19 MTHM of SNF; some is significantly degraded.
    - There are 3 types of storage containers or cans located in tile holes.
    - They are not sealed; there is pumping capability through top of tile holes.

- IAEA Safeguards is driving inspections for some special SNF.

- The Whiteshell Lab is currently being decommissioned.

SITE SNF STRATEGIES

Hanford

Larry Earley

- We have an MCO inventory issue with regards to the uncertainty with the sludge. We may need to have some contingency by buying a few more MCOs. More certainty should be attained by July after all the fuel will is repackaged and the sludge and scrap material are known. We will be in the middle of procurement at that time.

- There is a project to evaluate whether to dispose of the sodium bonded fuel without treatment. They are looking for opportunities to avoid treatment of the FFTF fuel. They are talking about doing some reactivity tests. PNNL is working toward closure on the treatment of this fuel.

Savannah River Site

Randy Ponik

- H-Canyon must remain operational and available until SNF packaging starts.

- A pre-conceptual dry storage design for SRS will be completed by 2004, with the conceptual design completed by 2005. The facility should be operational in 2011.

- A pilot plant to dry and package SNF into standardized canisters is desired.

- SRS is actively shrinking the site by removing buildings. By 2006 they hope to have many of the exterior buildings removed. This is meeting HQ's footprint reduction initiative and it may lead to the designation of SRS as the premier site for EM operations.

Idaho National Engineering and Environmental Laboratory

Ron Ramsey

- Ralph Hartline is Frank Holms deputy for the SNF program.

- To meet the present schedule, it will take 64 transfers per year to de-fuel.
    - It will require packaging 51 standard canisters per year.
    - There will be 445 shipments to Yucca Mountain with 9 standard canisters per shipment.
    - There will be 200 additional off site shipments (Navy, EBR-II, Fermi).

Argonne National Laboratory - West

Bob Pahl

- ANL-W is looking at the MEDEC process to treat the EBR-II blanket fuel. They are also looking at ways to speedup the electrometallurgical process.

- ANL has been asked by NE to look at options for the management of NE SNF. A DOE EM/NE-40 task team has been formed to address NE SNF management.

DOE / CONTRACTOR STRATEGY SESSION BREAKOUT MEETINGS
Wednesday, January 14, 2004

DOE Site Contractors

- Continue the semi-annual site meeting no matter what they are called.
- A position and a strategy should be developed for the metallic sodium SNF for direct disposal or treatment.
- NSNFP would support holding technical exchanges between the DOE Sites and others to share technical research and operations. SRS would like to have the first one on SNF drying and dry storage.

Department of Energy HQ and Field Offices

- The fed phone call was moved to Wednesdays.
- Need to meet on the transportation issues, meeting set for later in the week.
- Continue this NSNFP site meeting in some form.
- HQ should take the lead in resolving the sodium bonded fuel issue.
- Can the TRIGA SNF remain at SRS or does it need to go to the INEEL? Specifically the Indonesia shipment? HQ has the lead.
- Need to resolve how the CPT will affect the Integrated Acceptance Schedule, and how NE SNF will be addressed.

NSNFP PRESENTATIONS

Quality Assurance

Bob Blyth

- An EM/RW roles memorandum letter was prepared and contains a subset of information that had been in the MOA, including QA coverage.
    - It appears that a joint audit team between EM and RW will be used to audit EM sites.
    - The team could be lead by EM.
    - The letter should be signed very soon.
    - The EM oversight audits, with RW participation, will use the new procedure AP-18.4Q DOE EM/RW Oversight Process.
    - RW QA procedures will be used for other processes related to audits (such as records, CAP, etc.). Details on this have not yet been provided.
- Great improvements have been made at the EM sites in the area of QA compliance and timely correction of findings. Most findings deal with issues, such as not following procedures.

Ni-Gd Poison Status

Bill Hurt

- An ASTM standard is expected in late January. The ASME submittal is being prepared and will be sent to ASME before the end of FY-04.

- Advanced neutron absorbers will supply credit during transportation. The corrosion rate is critical to ensure that it remains with the fuel as it degrades in the repository.

EM Canister/MCO Analysis Results

Tom Hill

- Drop tests of the MCO have been modeled.
    - A simulated flat bottom drop from 23 feet and 3 degrees off vertical of the Mark IA MCO and the Mark V, showed some internal basket, internal center post, and outer rods deformation, but the shell damage was slight and acceptable.
    - It was concluded that the MCOs would maintain containment after a 23 foot vertical drop, 3 degrees off vertical.
    - A worst-case drop was also simulated. This was a drop from two feet at 60 degrees from vertical. The MCOs maintained containment during this worst-case condition.

- The results of this MCO modeled drop simulation work provided information as to which actual drop tests would be conducted next summer.
    - The MCOs will be dropped from 23 feet, 3 degrees from vertical and from two feet, 60 degrees from vertical.

- The NSNFP will be working with Hanford to obtain MCOs that could be used for these drop tests. Three MCOs are desired to accomplish the two planned tests with one extra MCO as a backup should there be a drop-testing problem.

- The 18-inch DOE standardized canister was previously drop tested at 30 feet.
  - These drops tests confirmed the computer modeling that had been done before the drop test and proved that the canister containment would be maintained.
  - These same drop tests will now be conducted on the 24-inch Foster-Wheeler canister. The 24-inch Foster-Wheeler canister is a modified 24-inch DOE standardized canister and the main difference is that the Foster-Wheeler canister has a shield plug in the top.
  - All of the MCO and 24-inch canister drops tests will be conducted at Sandia.

Emerging Issues for NSNFP

Mark Gardner/Phil Wheatley

These issues are pending the FY 2005 transfer of funding from EM to RW for the NSNFP.

Safeguards and Security

John Vlahakis

- DOE held several workshops to evaluate the relative attractiveness for theft between commercial SNF and DOE SNF. The workshops concluded that DOE SNF when, packaged in standard canisters, is nominally equivalent to commercial SNF from an attractiveness point of view. A NRC meeting is being scheduled to discuss the workshop results and the overall YMP security approach with the NRC. Contact John Vlahakis at 202-586-1464 for more information.