

YMP/NSNFP Quarterly Meeting

December 11th and 12th, 2006

Las Vegas, NV

To: Distribution

From: Phil Wheatley / Mark Arenaz

Subject: YMP/NSNFP Quarterly Meeting Minutes

1. Introductions and Opening Remarks

Chris Kouts (DOE-RW) welcomed everyone to the meeting and said that the LA is scheduled to be provided to the NRC by June 30, 2008. Steve Gomberg (DOE-RW) said that he looked forward to this informal meeting where information could be shared. Mark Arenaz (NSNFP) thanked everyone for their time in preparation for this meeting and their attendance. He also looked forward to an open discussion of issues. This quarterly meeting has become a semi-annual meeting.

2. NSNFP Roles and Responsibilities (Phil Wheatley, NSNFP)

Phil has had discussions with DOE-EM HQ in both SNF and HLW areas concerning the upcoming License Application (LA) reviews. Henry Loo (NSNFP) has set up a web site where large LA files can be obtained by EM sites and HQ for review. DOE-EM HQ, EM sites and the NSNFP need to be ready to meet the LA review schedule by the due dates. This team of people has already been reviewing Yucca Mountain Project (YMP) EIS documents. It was said that some YMP requests for information are going directly to EM sites and the NSNFP and DOE-EM HQ are working to formalize these requests through the NSNFP. An EM letter providing guidance on this could be issued in the near future. The NSNFP keeps files of everything that they provide to the YMP. If this same information is requested in the future, it can be provided again and the information remains consistent. This will be discussed more at the January Strategy Meeting in Augusta.

3. TAD Canisters (Chris Kouts, DOE-RW)

The TAD specification was issued on November 29, 2006 and is available on the OCRWM web site <http://www.ocrwm.doe.gov/>. It is on the right side of the opening page under WHAT'S NEW. Cask vendors will work directly with utilities and the NRC to receive certification for the use of TAD systems. DOE-RW will be responsible for reviewing TAD system designs and affirming compliance with TAD performance specifications. The TAD performance specifications will be reviewed by the NRC as part of the LA and feedback will be provided to cask vendors. Qualified vendors are already developing TAD canister conceptual designs. Upon DOE-RW approval of conceptual designs, cask vendors will proceed with development of complete TAD system designs of TAD components and safety analysis reports (SARs) to be submitted to the NRC.

After NRC certification, cask vendors will fabricate and utilities deploy TAD systems for utility at-reactor storage. This could be as early as 2011. The utilities would have to decide to use the TAD systems on their own but some incentives might be available to help with this decision. DOE-RW will be able to use the TAD system at time of receipt, which could be in 2017. TAD vendors are also developing the aging overpack that would be used to age commercial SNF.

4. Nevada Rail (Gary Lanthrum, DOE-RW)

The scope of the rail EIS has been expanded to include the Mina corridor, which could add a year to the EIS preparation time. The Mina corridor is being studied and it could reduce the rail line needed in Nevada by about 100 miles. It also crosses fewer mountain ranges than some of the other routes. It has been estimated that using this route could save over \$600M in construction costs. It is estimated that the rail EIS could be completed by May/June 2008. The overall goal is to have the rail line installed and available for use to move construction supplies to Yucca Mountain by 2014. The YMP plans to work with DOE-EM HQ and the NSNFP on the DOE SNF and HLW cask design but this might not be done for a couple of years until most of the TAD canister work is completed. Jim Linhart reported that he had looked at a possible TAD overpack cavity size, which had been provided by BSC, and it is larger than the inside cavity size of a waste package that can hold two MCOs (25.2" diameter) and two 15-foot HLW canisters (24" diameter). Therefore, if a divider were placed inside of the TAD cask, it could be used to transport four DOE SNF or HLW canisters of the largest sizes.

5. LSN (Dong Kim, DOE-RW)

The LSN is very important, as everyone knows, and it must be certified six months prior to submittal of the LA to the NRC. If the LA were to be provided to the NRC by the end of June 2008, the LSN would have to be certified by the NRC by the end of December 2007. To facilitate this, the LSN will be submitted to the NRC for certification by September 21, 2007, which allows three months for the NRC to certify the LSN. A new set of guidance has been developed for the LSN with input provided by General Council (GC). It was issued to one levels, such as EM-1, on November 3, 2006. Training on this guidance will be provided starting January 2, 2007. Dong encourages everyone to read the guidance and to let him know if you have any questions. The NSNFP has already met with Dong and went over NSNFP documents in relation to the LSN.

6. LA Development (Marty Bryan, BSC)

Marty reported that Attachment #1 of the LA Management Plan will provide guidance on the LSN. Marty went over the LA preparation schedule. Phase 1 of the LA (Storyboard) will allow one week for review. Phase 2 (Interim Draft) will allow two weeks. Phase 3 (Final Draft) will allow two weeks but shouldn't require much reviewing time as should be essentially a completed LA section that has only a punch list of items that remain. Phase 4 (Final Final) is just a validation review of the section. The schedule that was shown in the meeting is being updated to include preclosure and postclosure changes and the revised schedule could be available in the near future. When the LA sections have been completed, there is currently no plan to ask for a DOE HQ EM-1 level review. Instead a briefing will be provided. It is important that EM-1 be kept briefed on the LA

preparation throughout the development process so that they could approve of the LA if requested in 2008. DOE-EM HQ said that an EM-1 letter is being drafted to request EM site support of the LA reviews.

Action Item

1. NSNFP (Jim Linhart) once the LA preparation schedule has been update, obtain the P3 schedule for LA preparation, which is more detailed, and provide it to DOE-EM HQ, EM sites and the NSNFP. Due Date = week of January 8th

7. YMP Document (Steve Gomberg, DOE-RW)

Steve provided the status of several documents that are in the process of being revised. DOE-RW is currently resolving comments that have been provided on the WASRD. The comments provided on the EM/RW MOA have been incorporated and the document is being routed for final EM and RW signature. The IICD Rev. 3 was recently revised to include Naval Program cask information and updated DOE SNF standardized canister labeling and the comments provided are being addressed. It was asked if MCO, DOE SNF standardized canister, and DOE HLW canister temperature limits are going to be incorporated into the IICD and it was said that RW was planning to place them in the IICD (*They were added to Rev. 3D of the IICD-1*). It was also asked if TAD canisters would be used for DOE SNF and HLW canisters (TAD canisters loaded at EM sites) and it was said that this is not being considered at this time but it could be considered in the future.

8. EM Waste Form Issues (Phil Wheatley, NSNFP)

Phil stated that in simple terms, the LA addresses HLW as borosilicate glass and DOE SNF. Other waste forms such a Na bonded SNF and vitrified Pu waste are mentioned in the LA but not enough analysis work has been performed so that they are in the first repository allocation. Additional waste forms such as non-treated calcine, electrometallurgical ceramic and metal waste, and cesium and strontium capsules are not mentioned in the LA. Phil's draft list was provided to Steve Cereghino (BSC) so that he could update a decisions paper that is being written on this subject.

Action Items

2. NSNFP (Jim Linhart) obtain the decisions paper from Steve Cereghino once it has been revised and distribute to DOE-EM HQ and the NSNFP as information. Due Date = week of January 1st. *This action was completed and the paper was sent to DOE-EM HQ and the NSNFP on January 2nd.*
3. NSNFP (Bill Hurt) make a list for DOE-EM HQ of DOE SNF and HLW that is not included in the LA or is shown in the LA but not analyzed. Include waste forms such as epoxy SNF. Due Date = week of January 8th
4. DOE-EM (Tony Kluk) check with SR to make sure they understand how Pu is addressed in the LA. It is discussed as a placeholder for future disposition in the repository but more detailed information is needed for inclusion in the repository at this time. Due Date = week of January 1st

9. Surface Facilities (Chris White and Jim Gardiner, DOE-RW)

The Canister Receipt and Closure Facility #1 (CRCF) is scheduled to be operational on March 2017. It will be capable of disposing of all wastes, except Naval SNF canisters that will be processed through the Initial Handling Facility (IHF), and have a throughput capability of 160 waste packages per year. It will be equipped with some canister storage racks to help facilitate the loading of waste packages. It will be furnished with Important to Safety (ITS) HEPA filters on the exhaust systems powered by ITS electrical supplies. There will be three CRCF facilities.

The IHF is scheduled to be operational on April 2016 but it would probably not go hot until 2017 when the CRCF is put into service. It will be capable of disposing of Naval SNF canisters and HLW canisters and process 40 waste packages per year (24 with Naval SNF and 16 with HLW). There are no canister storage racks in this facility. It will be furnished with HEPA filters but they won't be classed as ITS because of the nature of the waste forms handled. It was said that there is no plan to process DOE SNF through the IHF, as its waste form is not considered at this time to be such that the facility could be operated with non-ITS HEPA filters. Therefore, waste packages coming out of the IHF could contain only HLW canisters with no DOE SNF canister in the center location of the waste package. Since the IHF and CRCF are now to go hot at the same time, the need to process DOE HLW through the IHF has diminished and the concern for not putting a DOE SNF canister in the center location of waste packages coming out of the IHF has also diminished.

DOE has some commercial SNF that if in good condition could be shipped to the repository as bare SNF in a cask. It was said that the YMP might like to send TAD canisters to EM sites to be loaded with this SNF. DOE-EM HQ and the NSNFP said that this would have to be evaluated by EM sites before it could be concluded that this could be done. The EM sites, for example, will have the equipment needed to weld the tops on 18-inch and 24-inch DOE SNF standardized canisters but they may not have the equipment to weld the top on a large TAD canister.

10. Preclosure (Bill Spezialetti, DOE-RW)

The DOE SNF Canister Survivability Report, the DOE TRIGA Fuel Criticality Screening Analysis, and the DOE SNF Beyond Category 2 Estimated Dose calculation will all be updated. The all canister approach, that is now being used at the repository will minimize surface facility airborne releases during normal operations and prevent the oxidation of failed commercial SNF in air. Casks will even be vented through HEPA filter systems. The cutting process of DPCs is still being evaluated.

There was some discussion on how the reliability/probability of failure of certain passive components, such as canisters, might be determined. BSC asked the NSNFP if they had any cask information that might be used by the YMP to evaluate the drop of a cask without impact limiters. The NSNFP reported that they had completed some work that might be of interest to the YMP in this area.

Action Item

5. NSNFP (Henry) set up a meeting (probably at the INL) to discuss with the YMP what cask information may be used in Preclosure to analyze drops of casks with no impact limiters and how the reliability/probability of DOE canisters might be determined if they are dropped while being lifted or dropped as part of a cask drop. Due Date = possibly the week of January 8th. *This action was completed and the meeting has been scheduled for January 9th.*

11. Criticality (Jim Low, DOE-RW)

BSC is responsible for Preclosure criticality analyses and the Lead Lab is responsible for Postclosure criticality. Borated stainless steel will be used by the YMP as a neutron poison for control of criticality. The key FY-07 preclosure criticality products are (1) the Preclosure Criticality Analysis Process Report, (2) IHF, CRCF, RF criticality safety calculations, (3) WHF criticality safety calculation, (4) aging facility criticality safety calculation, (5) preclosure criticality screening analysis and (6) LA Section 1.14 (final by about mid-September 2007).

12. Postclosure (Rob Rechar, Sandia)

Rob provided a list of minor issues concerning DOE SNF for postclosure criticality that need to be resolved. They are as follows:

1. Evaluate consistency in treatment of igneous scenario for DOE SNF, CSNF, and Naval SNF. Complete by August.
2. Evaluate probability of loading errors for DOE SNF. Need information by mid April.
3. Provide reference for NiGd degradation rates for "Degradation" AMR. Need reference by June.
4. Review FFTF criticality calculation. Lead Lab will review in FY-07.

It was suggested by the NSNFP that the yellow and green chart that had been produced by Halim, that shows the status on DOE SNF criticality work be updated and provided to both the Lead Lab and the NSNFP.

Action Items

6. NSNFP (Henry Loo) set up meeting(s) with Sandia to discuss the first three Postclosure issues listed above and provide the needed information by the due dates. Due Date = month of January for meeting(s). *This action was completed on December 20th and the meeting has been scheduled for January 15th via telephone conference.*

7. BSC (Halim Alsaed) update the yellow and green chart that shows the status of DOE SNF criticality work and provide it to the Lead Lab and the NSNFP. Due Date = week of January 1st. *This action was completed on December 19th*

13. Waste Streams for TSPA (Jim Blink, LLNL)

Jim provided information on the commercial SNF and DOE SNF and HLW waste streams that will be analyzed in the TSPA model. There are 3,279 DOE co-disposal

waste packages (WPs) that contain the DOE SNF and HLW. Of these, 1,286 WPs would contain only one DOE SNF canister since there aren't enough HLW canisters in the 9,334 HLW canister allocation to co-dispose with all of the DOE SNF. For TSPA, it is assumed that the 1,286 WPs are filled with HLW canisters even if the 70,000 MTHM first repository allocation has been exceeded. The total of all WPs (7,482 commercial, 3,279 DOE co-disposal, 400 Naval) = 11,161. The number used in the previous version of the LA was 11,184.

The heat output from these WPs is also used to calculate the line load within the drifts so that it doesn't exceed the limit of 1.45 kW/m. The lengths of the WPs are also used to determine the line load and each DOE co-disposal WP now has a shield plug of about 9-inches which assists with the WP lid welding process and increases the length of the DOE co-disposal WPs. The TSPA model looks at a group of seven WPs that repeats itself throughout the repository. The seven WPs includes five containing commercial SNF in TAD canisters and two DOE co-disposal WPs (one long and one short).

14.TSPA (Jerry McNeish, Sandia)

The TSPA model will have no differences in relation to DOE SNF. The TSPA models will be run in the spring of 2007 and the draft document should be available around August 2007. The TSPA document should be finalized in November/December 2007 and input will be provided to Section 2.3 of the SAR. For the peak dose analysis, the YMP has developed a prototype model that runs out to 1M years. Some radionuclides have been added that become important out to 1M years. The main changes to the TSPA are caused by (1) use of TAD canisters, (2) IVRT review panel comments, (3) peak dose and (4) infiltration information from the USGS investigation.

15. EM Canister Topical Report (Tom Hill, NSNFP)

The NSNFP met with the NRC on the draft Topical Report and went over the DOE SNF standardized canister drop test results. The Topical Report should be completed and presented to the NRC in March/April 2007. The cask vendor will perform the criticality analyses for the fully loaded cask array. The transportation cask performance will be credited in the analyses and the deceleration will be limited to 100g or less. It is assumed that the canisters will not be squashed by other canisters or the cask wall and the canister temperature will be maintained between -20F and 600F. The standardized canister has been analyzed for an accidental drop from 30-feet while within a cask and was shown to remain leak-tight. It was also analyzed for a static external water pressure of 290 psig on the canister surface and was shown to remain leak-tight. The 18-inch by 10-foot and 15-foot canisters are being evaluated for their maximum design weight of 5005 and 6000 pounds respectively.

Since the canisters are made of 316L stainless steel, they will be evaluated for a storage period of 50 years with exposure to water. Potential sources of damage are from corrosion, internal gas pressure, and metal embrittlement. Monitoring and sampling will validate conditions within selected canisters. For criticality analysis, ATR SNF establishes the boundary and the standardized canister provides moderator exclusion. Some of the analysis assumptions are beginning-of-life fissile content, all SNF rubblized

and in a vertical orientation, effects of neutron poisons minimized, and canisters remain leak-tight during normal and hypothetical accidents. In the absence of moderator intrusion into the canister, criticality is not credible.

16. QARD (Ram Murthy, DOE-RW)

QARD Rev. 18 became effective October 2, 2007. Sandia and BSC have their own QA programs that have been accepted by the YMP as implementing the QARD. Ram said he wrote an impact analysis paper that compares QARD Rev. 18 to Rev. 17 in relation to EM and sent it to Duli Agarwal and Dick Blaney (DOE-EM HQ). It was said that EM (Marcinowski) had sent a letter to DOE-RW QA asking that EM follow Rev. 17 until the EM/RW MOA is approved. No word had been received back from RW.

Action Item

8. NSNFP (Don Armour) check with DOE-RW QA to determine if EM has been given permission to follow QARD Rev. 17 until the EM/RW MOA has been approved. Due Date = week of January 8th

17. Closing Remarks

Everyone was thanked for their participation in this meeting. This was an excellent meeting to share information. The action items from the meeting were reviewed and are listed above. After the meeting, a separate meeting was held between DOE-EM HQ and the NSNFP and the following action items were assigned.

Action Items

9. DOE-EM HQ (Tony Kluk) obtain the November 3rd LSN guidance document and send it to EM sites, DOE-EM HQ, and the NSNFP. Due Date = week of January 8th

10. NSNFP (Henry Loo) forward to Dick Blaney and Tony Kluk the e-mail that contains guidance information on how to convert DOE SNF canister numbers to waste package numbers and the letter from Phil Wheatley which informs the YMP that Source Term Estimates for DOE Spent Nuclear Fuels (DOE/SNF/REP-078) is a document that contains DOE SNF canister numbers and can be referenced. *This action was completed shortly after the meeting.*

11. NSNFP (Henry Loo) obtain the latest status on Pu LaBS glass development and provide the information to the YMP, DOE-EM HQ and the NSNFP. Due Date = week of January 8th

12. NSNFP (Bill Hurt) provide to DOE-EM HQ a list of SNF documents that are in the NSNFP file system that are pertinent to the YMP. Due Date = week of January 8th.

18. Next Meeting

No date was set for the next Quarterly Meeting, which are now being held about once every six months. To meet the six-month schedule, the next meeting would be held some

time in June 2007 but work on the YMP LA and EIS might establish a need to hold this meeting sooner or later than June.

Concurrences:

Steve Gomberg, YMP

Mark Arenaz, NSNFP

Action Item List

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