UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

November 8, 2010

MEMORANDUM TO: ACRS Members

FROM: Neil Coleman, Senior Staff Scientist ***/RA/***
Reactor Safety Branch B, ACRS

John Flack, ACRS Consultant ***/RA/***

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS SUBCOMMITTEE ON SITING (MOX FUEL FABRICATION FACILITY), AUGUST 19-20, 2010

The minutes for the subject meeting were certified on November 5, 2010. Along with the transcripts and presentation materials, this is the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc w/o Attachment: E. Hackett
C. Santos
A. Dias

cc w/ Attachment: ACRS Members

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MEMORANDUM TO: Neil Coleman, Senior Staff Scientist
Reactor Safety Branch B - ACRS

John Flack, ACRS Consultant

FROM: Dana Powers, Chairman
Siting Subcommittee

SUBJECT: MINUTES OF THE MINUTES OF THE ACRS SUBCOMMITTEE ON SITING (MOX FUEL FABRICATION FACILITY), AUGUST 19-20, 2010, ROCKVILLE, MD

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting are an accurate record of the proceedings for that meeting.

/RA/ November 5, 2010
Dana A. Powers, Chairman Date
Siting Subcommittee

Certified by: Dana Powers
Certified on: November 5, 2010

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MEETING MINUTES OF ACRS SUBCOMMITTEE ON SITING
THE MOX FUEL FABRICATION FACILITY
ROOM T-2B1, 11545 ROCKVILLE PIKE, ROCKVILLE, MARYLAND
AUGUST 19-20, 2010
MEETING MINUTES

INTRODUCTION

On August 19-20, 2010, the Advisory Committee on Reactor Safeguards (ACRS) Subcommittee on Siting met with representatives from NRC's Office Nuclear Materials Safety and Safeguards, and the MOX Fuel Fabrication Facility (MF^3) licensee applicant MOX Services LLC. The purpose of the meeting was to review and discuss MOX Services license application and associated draft NRC Safety Evaluation Report. Parts of the meeting involving proprietary and security related information were closed to the public. The meeting was held at the Headquarters of the U.S. Nuclear Regulatory Commission (NRC) located at 11545 Rockville Pike, Rockville, Maryland, room T-2B1.

The Subcommittee gathered information, analyzed relevant issues and facts, and formulated proposed positions for deliberations to be held with the ACRS Full Committee scheduled for September 9-11, 2010. Dr. Dana Powers chaired the meeting; Neil Coleman of the ACRS senior engineering staff served as the Designated Federal Official. The Subcommittee received no written comments or requests for time to make oral statements from any members of the public. The meeting began at approximately 8:30am on August 19, 2010 and closed at 5:00pm on August 20, 2010. A detailed agenda for the meeting is provided in Attachment 1, the sign-in sheets in Attachment 2, and presentation viewgraphs in Attachment 3.

Speakers responded to specific questions and comments from the ACRS Subcommittee members throughout the meeting. All questions, comments, and responses during the open session have been captured verbatim in a transcript which can be found at the following NRC Internet website location*: http://www.nrc.gov/ reading-rm/doc-collections/acrs/tr/subcommittee/*.

Attendees

Attendees at the meeting included ACRS members and staff; representatives of the NRC staff; and members of MOX Services as follows:

ACRS Members	**ACRS Staff**
D. Powers, Subcommittee Chairman	N. Coleman, Designated Federal Official
M. Ryan	J. Flack, ACRS Consultant
D. Bley	
S. Armijo	

NMSS Staff

L. Campbell, NMSS
D. Tiktinsky, NMSS
M. Norato, NMSS
C. Tripp, NMSS
A. Chowdhury, NMSS
K. Morrissey, NMSS
D. Rahn, NMSS

MOX Services

Eric Chassard, Executive Vice President
Bill Hennessey, Nuclear Safety Manager
Sven Bader, Lead ISA Engineer for Aqueous Polishing System
Brian Stone, ISA Technical Safety Engineer
Scott Salzman, Lead Isa Engineer for Fuel Fabrication System
Paul Duval, Isa Chemical Safety Lead
Scott Barney, Expert Consultant, Chemical Interactions
Bob Foster, Criticality Safety Lead
Frank Cater, Civilian Structural Manager
Tarun Sau, Lead Engineer on NFFF Seismic Analysis
Rick Imker, Lead Engineer on Human Factor
Dealis Gwyn, Licensing Manager
Larry Rosenbloom, Lead Fire Protection Engineer
Gary Bell, Software Design Manager

SCHEDULED PRESENTATIONS:

The presentations included the following topics: overview of the MOX Facility, overview of the regulatory process, energetic events (fires and explosions), criticality safety, external events, nuclear waste and materials, integrated safety assessment, instrumentation and control, and confinement.

Chairman's Opening Comments

Chairman Dr. Dana Powers convened the meeting at 8:30 a.m. He stated that the purpose of the meeting was to examine the MOX fuel fabrication license application and associated NRC safety evaluation report. He instructed the committee to formulate proposed positions and actions as appropriate for deliberation before the full committee scheduled for September, 2010. He noted that the meeting notice had incorrectly stated that the entire meeting will be open to the public. The published meeting agenda, however, correctly showed that most of the presentations will be held in closed session.

Chairman Powers stated that the Committee had previously examined the MOX facility for construction authorization and that it is now being looked at during the construction phase. He commented that it was regrettable, because of various legal barriers, Dr. Ed Lyman had not been able to provide his perspective, and that the Committee could have benefitted from his particular viewpoint. He proceeded and called upon Larry Campbell from the Office of Nuclear Material Safety and Safeguards (NMSS) to open the staff presentation.

NRC Presentation

Larry Campbell, Branch Chief of the Mixed Oxide and Uranium Conversion Branch, NMSS, provided opening remarks stating that representatives from both MOX Services and NRC staff are prepared to discuss the safety evaluation report and other specific topics identified by the Committee. He looked forward to discussions with the subcommittee, and as always, valued the subcommittee's comments.

SUMMARY OF PRESENTATION

1. Overview of MOX Facility

Eric Chassard introduced himself as the MOX Services executive vice president and deputy general manager. He had been working for AREVA for 14 years, a career that began in the nuclear reactor field. Mr. Chassard stated that the La Hague facility in France had been used as the reference plant for the aqueous polishing part of the MOX facility, and Melox facility for fuel fabrication. He noted that the technology used for the MOX facility had been based on 30 years of successful French experience. He briefly described his worldwide experience and involvement with overseas facilities in Japan and UK. He expressed his appreciation for meeting with the ACRS, and then introduced the MOX team and upcoming presentations. A video presentation followed that provided an overview of the MOX facility.

Video Presentation

The video presentation introduced the MOX technology as a technology selected by the National Nuclear Security Administration, an agency within the DOE. The proposed technology had been in use in Europe for more than 35 years. MOX fuel is now being used in 30 reactors worldwide. MOX Services had been contracted to design, build, operate, and deactivate the MOX facility, which is owned by the Shaw Group and AREVA. The MOX facility consists of two major processes, aqueous polishing, and fuel fabrication. A brief overview of the processes stated that the facility will provide upwards of 70,000 pellets each day, 360 are used to create one fuel rod. A typical fuel assembly contains 264 fuel rods in a 17 X 17 array of 13 ft length and weighing about 1500 lbs. Because of the plutonium content, MOX fuel fabrication occurs in glove boxes. The NRC authorized construction in March, 2005. Construction officially began on August 1, 2007, and as of 2008, the MOX construction project is considered to be the largest project in Southeastern U.S. Over 4500 people are currently working on the project, a project that is estimated to cost $4.8 billion to complete. The buildings that make up the MOX facility total 500,000 sq. ft. Construction will consume 170,000 cubic yards of concrete and 35,000 tons of reinforcing steel. When finished, facility operation will employ 800-1000 employees.

Aqueous Polishing

Sven Bader, a senior member of MOX Services introduced the subject material which included the aqueous process and associated purification cycle, and conversion facility. He described two sources of material that feed the MOX facility; the first being plutonium from the Pit Disassembly and Conversion Facility (PDCF), a facility that is yet to be built. The second source is alternate feedstock or plutonium from all other sources within the DOE complex. According to Mr. Bader, alternate feedstock contains additional impurities and challenges because of chlorine contamination. Two of three electrolyzers are dedicated to remove the chlorine, which comes out in gas form and is, then, converted to sodium chloride. Other impurities are removed in the raffinates later in the process. Nine of the 34 metric tons of plutonium to be processed will come from alternate feedstock. Alternate feedstock that doesn't meet specification will be returned to DOE.

Mr. Bader described the purpose, process, and equipment for each of the units associated with aqueous polishing starting with the Dissolution Unit (KDB) and the Dechlorination & Dissolution Unit (KDD). The KDB and KDD units dechlorinate and dissolve the PuO_2 in nitric acid. The main equipment associated with these units include three electrolyzers, filters to remove any undissolved materials, and tanks used to treat the mixture with hydrogen peroxide and depleted uranium. Silver catalyzed electrolysis in the electrolyzers moves PuO_2 into Pu^6 nitrate solution, and also helps to oxidize uranium and move it to a soluble state. Depleted uranium is added to avoid criticality. Once a solution is established, hydrogen peroxide is added to bring PuO_2^{2+} to the Pu^{4+} valence state. Oxygen comes off as a gas in this process, and passed through glass fiber HEPA filters before it's released. Equipment is made of titanium to avoid corrosion issues.

Mr. Bader next described the Purification Cycle (KPA) used to purify the plutonium by separating out the impurities, primarily gallium and americium, from the plutonium and uranium solution. The plutonium and uranium is extracted from the solution by using an organic solvent tributyl phosphate (TBP) 30% in a hydrogenated tetrapropylene dilute. Once extracted into the solvent, the mixture is moved to a scrubbing column, aluminum nitrate is added, and then passes to a stripping column to separate the plutonium from the uranium. Hydroxylamine nitrate (HAN) stabilized by hydrazine is used in the stripping. The uranium remains in the organic phase, the plutonium moves into the aqueous phase. A dilute washing column is used to ensure all organic material has been removed from the aqueous stream. The hydrazine plutonium solution is then moved to an oxidation & stripping column to destroy the hydroxylamine and hydrazine, and oxidize the plutonium to a PU^{4+} nitrate state.

Plutonium leaving KPA stripping column enters into the Oxalic Precipitation Filitration Oxidation Unit (KCA) that precipitates out the plutonium nitrate as plutonium oxalate to be converted to PuO2 after filtering, drying and calcining the oxalate. Samples are taken prior entering the processing portion to ensure reducing agents have been removed. The plutonium is treated with oxalic acid to produce plutonium oxalate which is then filtered, skinned and placed into a furnace to calcine the oxalate and form plutonium oxide. The Homogenization & Sampling Unit (KCB) ensures that materials leaving the furnace are properly prepared for the MOX processor that is next inline.

Mr. Bader next briefly discussed block diagrams to show the supporting units that are used to remove degradation products from the organic material after the uranium and plutonium had been removed. Waste is sent to the waste solidification building for treatment. The presentation next focused on the Oxalic Mother Liquor Recovery Unit (KCD), the Nitric Acid Recovery Unit (KPC), the Laboratory Liquid Waste Receipt Unit (LGF), the Offgas Treatment Unit (KWG), the Waste Units (KWD), and the Solvent Waste Unit (KWS). Mr. Bader noted that it is important to recycle acid because of the large quantities being used. This is accomplished by first sending the acid through three stages of evaporators. The waste concentrates from the evaporators are transferred to the high alpha waste unit. Any low level waste is transferred to the waste solidification building.

Mr. Bader concluded his presentation by noting that the KWG unit is one of the more interesting units because all vessels are vented to it. There are two portions, one for the pulse column, and the other for the rest of the process. The system is designed to remove any entrained plutonium in the evolved gasses. It involves a NOx scrubbing column, air scrubbing column and several other pieces of equipment to treat the gas before it passes through the final filters. He completed his presentation by briefly describing the KWS unit and its interface with the other units.

Committee Members questions and comments

J. Sam Armijo asked whether the process would run alternate feedstock together with other materials, or they would be run as totally separate batches. Mr. Bader stated that there would be separate batch processes, materials would not be mixed. There are three electrolyzers, two are dedicated to chlorine treatment, one is dedicated to nonchlorinated feeds.

Chairman Powers asked how is one to know what else is in feedstock. Mr. Bader responded that they will receive a pedigree from DOE that is based on material studies. In addition, MOX Services will also take samples to ensure the feedstock meets a long list of their own specifications. Chairman Powers asked what happens if you reject the material. Mr. Bader stated that it would be sent back to DOE.

Chairman Powers questioned why depleted uranium had been added to the process to reduce the isotopic sum of the uranium and Mr. Bader responded that it was for criticality reasons in order to dilute the ^{235}U in the feedstock.

Chairman Powers asked about the HEPA filters used in aqueous processing, and the potential for a fire hazard. Mr Bader stated that the HEPA filters were glass fiber; it's part of a dedicated ventilation system with HEPA filters at its end. The possibility of a fire hazard is to be addressed later in the meeting.

Chairman Powers questioned the use of tetrapropylene. Mr. Bader stated that it is not as susceptible to acid degradation and robust in a radiation field. Chairman Powers indicated that it could reduce polymerization reaction, but asked whether the applicant had a data base on radiolysis of tetrapropylene. Mr. Norato stated that there is not a lot of hard data, but that operating experience from La Hague indicated that it performed quite well. Dr. Powers stated he would really like to see a calculation, a number.

Chairman Powers asked about the type of stainless steel being used and the transition between stainless steel and titanium in the piping. Mr. Bader responded that for most vessels in KPA, it is 316 stainless steel, and transition from titanium tanks to stainless steel occurs after hydrogen peroxide is added in the dissolution unit and the silver is reduced.

Chairman Powers asked whether there is a problem with gallium accumulating in grain boundaries of the stainless steel which could cause cracking. Mr. Duval stated that gallium was evaluated in their corrosion studies, and he believed they had done corrosion experiments. Chairman Powers commented that it would be interesting to see the kinds of experiments that were performed and would not trust a model. J.S. Armijo agreed.

Chairman Powers asked how accumulation of suspended or otherwise unidentified particulates in the material gets filtered. Mr. Bader responded that they have several stages of filters up front in the process coming out of the electrolyzer, and that includes a pre-filter and a titanium filter downstream that would remove any undissolved solids.

J S. Armijo asked about the cleanliness of the material that goes into solid recovery as far as plutonium is concerned. Mr. Bader responded that once it comes out of the pulse column where the plutonium has separated from the uranium, there is an analyzer that can measure down to a very low level on plutonium.

J .S. Armijo asked whether recovered solvents are considered to be radiation waste. Mr. Bader responded that it is radioactive waste. The uranium separated from the plutonium is actually part of the uranium waste. The degradation products that come out are part of another waste stream which gets treated and sent to the high alpha waste process. Solvent gets replaced regularly; the waste goes into another unit and is considered TRU waste.

M. Ryan asked how the waste would be classified and Mr. Bader responded that it is all going to Savannah River into the waste solidification building for treatment.

M. Ryan indicated that the applicant may want to reuse as many of these materials as they can, but the wastes then become more concentrated and have to be treated differently.

MOX Processing

Scott Salzman introduced himself as the MOX process safety lead in the ISA group and that his overview will address the back end or dry side of the MOX process. According to Mr. Salzman, the MOX Facility process is based on the Melox facility in France, and includes a receiving area, powder area, pellet process area, and rod and assembly area. The receiving area receives handles, identifies, and stores PuO_2 in 3013 containers, and UO_2 in sealed in drums. Once opened, the UO_2 and PuO_2 powders are sent to the powder area where the powders are mixed to produce a batch powder for a specific PuO_2 concentration. Initially the blend down is to 20% PuO_2, and then the mixture is placed in a J60 jar for storage or the next stage of the process. From jar storage, the mixture or batch enters ball milling to obtain the proper grain size. From ball milling the mixture is moved to final dosing where it is blended down to the specific PuO_2 concentration of 4, 5, or 6 percent. The powder is sent to the palletizing unit where zinc stearate in a pore former is added and mixed in a homogenizer. The powder is then fed to the pellet presses where the pellets are punched out. Green pellets are stored in molybdenum boats to get processed through the sintering furnace. From the furnace, pellets are moved to a storage area, to be ground to a specific size, and then sent to the rod area where the pellets are loaded into cladding to form fuel rods. The rods are moved to the assembly area to create fuel assemblies and packaged for shipment.

During the discussion, Mr. Salzman described how scrap would be treated and fed back into the process, and how dust would be controlled, collected and added to the scrap to be sent back for recycling. He noted how samples would be taken along the way, visual checks, and dimensional inspections would be done using mechanical sensors and lasers. Any transuranic waste would be shipped to the Waste Isolation Pilot Project, and low-level waste would stay on site to be handled by DOE.

Committee Members questions and comments

J. S. Armijo asked whether they will use dry grinding or wet grinding. Mr. Salzman responded that they will use dry grinding and that there will be dust. They have vacuum units and blowers to collect dust at critical points. The dust is collected on sintered metal filters. It's back pulsed with nitrogen, dropped into a hopper, collected in dust jars, and added to scrap and sent to recycling.

Chairman Powers asked how much material penetrates the HEPA filters and Mr. Salzman stated that nothing leaves the glovebox.

J. S. Armijo asked whether there is a special DOE-type truck, security, etc. for shipping the fuel. Mr. Salzman responded that security is going to be there, and that there will be a special shipping package designed for plutonium fuel. Mr. Campbell reminded the subcommittee that security is outside the scope of the presentation.

J. S. Armijo asked who owns the fuel and Mr. Glenn, deputy project director for NNSA responded that DOE will maintain title to the fuel until it's signed over to the utility.

ISA Process/Event Development

Bill Hennessey presented an overview of the ISA process for the MOX facility. The ISA team used AIChE methodologies approaches and guidelines in addition to NRC guidelines for doing the analysis. According to Mr. Hennessey, the ISA captured hundreds of glove boxes, vessels and tanks, and thousands of deviations and event scenarios; they had spent over $80 million to do the ISA, equivalent to roughly 45 full time equivalents over 10 year period.

Mr. Hennessey next summarized the application of regulatory requirements and associated performance criteria. Consequence criteria were defined as combinations of dose to the operators, facility workers, and public, and uranium uptake for chemical exposures. An environmental criterion of 5,000 times the Part 20 Appendix B values was used for intermediate consequences. He explained that qualitative criteria had been chosen for the likelihood of the events, and that it would typically take two active IROF safety components, or one very robust passive component, to change likelihoods levels from one to another. To reduce the likelihood, a very robust passive component would be considered as a first priority, followed by two active safety systems, and then administrative controls. "Not unlikely" events were defined as an event that could occur during the lifetime of the facility. Quantitatively, these could be roughly equivalent to 10^{-5} events per year for highly unlikely events, 10^{-2}/yr for unlikely events, and 1 for those termed "not unlikely." Credible events were defined in terms of their inverse, not credible, i.e., very infrequent or natural phenomena that are less than one in a million, or extremely low initiating event frequency, or sequences of many unlikely human actions or errors for which there is no reason or motive.

Mr. Hennessey discussed the importance of industry codes and standards, QA programs, and management measures for ensuring IROFS are reliable, not only throughout the design but through fabrication, installation and operation of the facility. Periodic surveillance of the IROFS on a monthly basis is expected to reduce the likelihood of failure by a factor of 10.

Mr. Hennessey briefly went through the major steps involved in performing an ISA, including first determining the internal, natural phenomena, and external hazards, radiological and chemical hazards and the potential event scenarios for each of the hazards. The next step involved the determination of the consequences and likelihood of events associated with the hazards, and identification of IROFS relied on to prevent or mitigate the events in order that the regulatory performance criteria are met.

The ISA had been done in two phases; the first phase supported the construction authorization request, the second supports the license application and ISA summary. He described the safety assessment phase that included the identification of hazards and event associated with the MOX facility design, safety strategies, and principal system, structures, and components (PCCS) required for preventing or mitigating the events.

To help clarify the ISA process, Mr. Hennessey presented an example of a breach of a powder glove box, resulting in dispersal of plutonium. The consequence from such an event had been classified as high, and the likelihood as "not unlikely."

Mr. Hennessey described the process hazard analysis as the “meat” of their safety analysis. Modes of operation included normal operation, shut down and maintenance activities. Software malfunctions, communications, and human errors were considered. He noted that human factors had been a major part of the process and that a human factors engineer had been on the team. The team makeup also included a couple of process experts, fire protection expertise, human factors engineer, five or six safety engineers, and expertise in chemistry, criticality safety, nuclear safety, and radiation protection. They also had operations personnel from Melox and La Hague participate on the hazard operations team. Mr. Hennessey recognized that ISA is a continuous process for the life of the facility and they need to continue to demonstrate IROFS are adequate to ensure performance criteria are met. In closing, he believed they had identified all the potential accident sequences of concern, all the safety systems and IROFS to protect the public and the workers, and have demonstrated that the regulatory requirements have been met.

Committee Members questions and comments

M. Ryan commented that plutonium, in the absence of anything else that could be used as a marker, is very hard to detect at levels that are well under the overexposure annual limit. He asked how Derived Air Concentration (DAC) hours be detected. Mr. Hennessey responded that they have an extensive continuous air monitoring (CAM) system at the workers' workstations, at the hand level, waist high.

Chairman Powers asked whether masks were credited and Mr. Hennessey stated alarms were credited but not masks.

Chairman Powers asked how human reliability had been evaluated. Mr. Imker responded that they had not done a reliability analysis only deterministic analysis. Human error had been considered from the perspective of carrying out operations and making mistakes, omissions and commissions. Chairman Powers asked whether human error had a probability associated with it. Mr. Imker responded by saying no, but they looked to the reactor guidance documents for human factors evaluation, and that there is a thorough review process by the staff that is included as part of our safety basis.

Chairman Powers indicated that he was still unclear about how errors of omission and commission were assessed because of the probabilistic criteria that must be met (e.g., unlikely, highly unlikely). Mr. Hennessey stated that they did not apply probabilistic criteria, but applied single failure criteria, codes and standards, and QA program. They have a human factors specialist on the team that looks at the commissions, omissions. Many of the initiators in the process hazards analysis are operator errors. The process looks at potential failures; the operator is one of those failures.

2. Overview of Regulatory Process

NRC project manager for the licensing review, Dave Tiktinsky, presented an overview of the staff’s licensing process and SER development including PSSCs verification. According to Mr. Tiktinsky, the plan is to integrate ACRS comments and finalize the SER by December 2010, but not issue the license until after all other required licensing pieces were completed, including PSSC verification. (PSSC verification is estimated for completion in 2014.)

Mr. Tiktinsky noted that the ACRS had reviewed the staff's SER on the construction authorization in 2005. ACRS comments were integrated into the SER and it was issued. The license application (LA) for possession and use of special nuclear material had been submitted in 2006. The staff completed their safety evaluation report in June 2010; however, litigation is still ongoing. Although mandatory hearings are not required, there are two separate opportunities for petitioners to come in and file contentions. One occurred during the construction authorization phase (one of which was accepted by the ASLB), the other contentions had been recently submitted. A hearing will be held on the contentions once the staff has completed its safety evaluation.

Mr. Tiktinsky stated that the staff followed the standard review plan (NUREG-1718), held numerous discussions and meetings with the applicant, and used requests for additional information to gather additional information for their evaluation. The SER has no open items.

Mr. Tiktinsky next described the principal systems, structures and components, (PSSC) verification process, a unique requirement for plutonium fuel processing facilities. The NRC must verify that construction of the PSSCs has been completed in accordance with the application before a license is issued. There are 53 PSSCs identified in the construction authorization request, they vary in complexity from relatively simple administrative controls, to the very complex criticality controls. The verification process will be a joint NMSS and Region 2 process. Because there are many thousands of IROFS, the NRC developed a level of inspection effort that ranks each particular item to determine how much time and effort is going to be spent based on their risk significance basis. For those that are highly risk significant, the staff would spend more inspection effort. He noted that PSSCs are complicated, i.e., some PSSCs are also part of other PSSCs. Verification activities will be based on their nature and could include components, programmatic areas, procedures, or compliance. Verification will assure that the design basis safety function for each PSSC can be met. Each PSSC will have its own staff plan, and a separate system will track the verifications. For each PSSC, the staff will write a verification letter that documents all the inspection and review activities and how they were verified complete. At the completion of the process, an SER supplement will be issued that summarizes the verifications. A petitioner has an opportunity after the final review to add additional contentions related to our verification activities.

Mr. Tiktinsky noted that regional inspections have been ongoing since construction began four years ago. Many of the inspections relate to the structure of the facility. Upcoming and current activities include vessels, tanks, and gloveboxes. Inspection activities will substantially increase in 2011 and go through 2014.

Mr. Tiktinsky closed his presentation by noting that upcoming discussions will address items raised by the ACRS during construction authorization, and introduced the staff that will make the presentations. He summarized his key points, and noted that the staff is requesting ACRS endorsement of the SER. Chairman Powers ended the session noting that the next part of the meeting will be closed.

Committee Members questions and comments

J. S. Armijo requested the name of the applicant and Mr. Tiktinsky responded that the applicant is Shaw AREVA Mox Services with DOE/NSA the owner.

Chairman Powers asked when the SER would be sent to the Commission and Mr. Tiktinsky stated that they did not have an exact date.

Chairman Powers asked whether the facility would first operate with a non-plutonium feed and Mr. Tiktinsky stated that it would, i.e., there will be a cold startup phase, followed by a hot start up phase that would begin production of fuel assemblies.

Chairman Powers commented that he wanted to know how the staff plans to do a risk assessment of the facility. Mr Tiktinsky stated that their risk assessment would be based on staff knowledge and expertise. Chairman Powers followed with a general warning that the staff not use the word risk, but significance is fine.

Chairman Powers recommended that that the staff's presentation to the full committee remains focused on the safety evaluation and less on the details of the PSSCs verification. He also recommended that the staff avoid using the term "risk," which could distract the members and lead to discussions on differences between ISA verses PRA.

M. Ryan asked whether South Carolina being an agreement state will have any interactions with the MOX facility and Mr. Hennessey stated that they would be limited to environmental issues involving, for example, soil permits, water hookups, and sewer connection.

Chairman Powers asked how risk will be determined and the applicant responded that each reviewer performs vertical slice reviews of certain portions of their processes they believe are most important. So risk is based on the knowledge and expertise of the staff. IROFS are selected based on their significance to meet their safety function.

J.S.Armijo commented that this is really a sampling, and question whether or not it's a 100 percent verification of every PSSC. The staff responded that, according to the regulations, they will have to verify all the PSSCs, but that they take a sample of the subset of what's within the scope of a PSSC.

(The Committee then went into closed session to discuss proprietary information.)

Second Day – August 20, 2010, Open Session:

Chairman Powers introduced the subcommittee members in attendance: Sam Armijo, Michael Ryan, Dennis Bley and consultant John Flack. As noted, the purpose of the meeting is to continue the examination of the MOX fuel fabrication license application and associated NRC safety evaluation report. Neil Coleman was recorded as the designated federal official for the meeting.

(The Committee then went into closed session to discuss proprietary information.)

SUBCOMMITTEE DELIBERATION

(Meeting returned to open session)

Chairman Powers noted that the subcommittee will need to do two things (1) identify what to present to the full Committee and (2) document draft member positions.

At this point, Mr. Coleman attempted to contact Dr. Lyman.

Chairman Powers provided guidance to both the applicant and staff on how to present at the ACRS full committee. He noted there were two chores for the Members: (1) to write a letter that comments on the quality of the review, and (2) to determine based on the information provided whether the facility can be built and operated with no undue risk to the public health and safety.

Members Bley, Armijo,Ryan, and Consultant Flack provided their closing comments. Member Armijo noted that the only area that had not been addressed is a large deliberately set fire by virtue of the aircraft impact. Member Ryan commented that the presentation on waste could be sharpened a little bit and, it would be helpful if the presentation addressed how the radiation protection program will work, especially with respect to the internal dosimetry program that involves plutonium which is hard to detect.

Chairman Powers noted that there had been substantial progress since the construction authorization and that the applicant's approach to red oil is robust and goes well beyond the DNFSB. The mechanistic treatment of HAN is well-founded, but there still is a concern about plutonium precipitation, although it could be resolved by looking at some of the modeling.

Chairman Powers noted that criticality safety is pretty classic and that the applicant may have gone a little beyond what is to be expected by relying on double contingency and the four-pillar approach.

Dr. Powers noted that the fire analysis follows industrial standards, but the issue of extinguishing fires needs to be resolved, although that is going to happen with the interface with the fire services at Savannah River.

In closing, Chairman Powers stated that the presentations were vastly better than anticipated and expressed his appreciation. The meeting was then adjourned.