

April 24, 2009

MEMORANDUM TO: Margie Kotzalas, Chief
Mixed Oxide and Uranium
Deconversion Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

FROM: David Tiktinsky, Senior Project Manager */RAI/*
Mixed Oxide and Uranium
Deconversion Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

SUBJECT: SUMMARY OF CLOSED MEETINGS WITH SHAW AREVA MOX
SERVICES TO DISCUSS DRAFT REQUESTS FOR ADDITIONAL
INFORMATION FOR VARIOUS DISCIPLINES RELATED TO THE
INTEGRATED SAFETY ANALYSIS SUMMARY AND LICENSE
APPLICATION FOR THE MIXED OXIDE FUEL FABRICATION
FACILITY TO BE BUILT NEAR AIKEN, SOUTH CAROLINA

The U.S. Nuclear Regulatory Commission staff met with representatives from Shaw AREVA MOX Services (the applicant) to discuss draft requests for additional information (RAI) related to the following technical areas described in the license application to possess and use special nuclear material and in the integrated safety analysis summary for the Mixed Oxide Fuel Fabrication Facility.

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| 1. Confinement and Fire Safety RAI responses | November 19-20, 2008 |
| 2. Material Control and Accounting RAIs | December 10-11, 2008 |
| 3. Load Handling and Fluid Systems RAIs | February 18, 2009 |
| 4. Electrical and Instrumentation and Control RAIs | March 4, 2009 |
| 5. Human Factors RAIs | March 5, 2009 |
| 6. Chemical Processing RAIs | March 17-18, 2009 |

CONTACT: David Tiktinsky, NMSS/FCSS
(301) 492-3229

For all of the meetings except confinement and fire safety, the purpose of the discussions was to assure that the applicant understood the intent of the staff's RAIs. For the confinement and fire safety meeting, the purpose was to discuss the applicant's draft responses to the staff's RAIs in order to assure that the staff's concerns have been addressed.

Please see the enclosed meeting summaries for more detail and the lists of attendees. None of the summaries contain sensitive material.

Enclosures: As stated

cc w/enclosures:

S. Glenn, NNSA
J. Olencz, NNSA
S. Jenkins, SC Dept. of HEC
D. Gwyn, MOX Services
D. Silverman, Esq., MOX Services

A.J. Eggenberger, DNFSB
L. Zeller, BREDL
G. Carroll, Nuclear Watch South
D. Curran, Esq., Nuclear Watch South

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- G. Carroll, Nuclear Watch South
- D. Curran, Esq., Nuclear Watch South

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NAME	DTiktinsky	CGibbs	MKotzalas
DATE	04/15/09	04/22/09	04/24/09

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SUMMARY OF THE CLOSED MEETING WITH SHAW AREVA MOX SERVICES RELATED TO DRAFT REQUESTS FOR ADDITIONAL INFORMATION RELATED TO FIRE SAFETY AND CONFINEMENT SYSTEMS FOR THE LICENSE APPLICATION AND INTEGRATED SAFETY ANALYSIS SUMMARY FOR THE MIXED OXIDE FUEL FABRICATION FACILITY

DATE November 19-20, 2008

PLACE Rockville, Maryland

<u>ATTENDEES</u>	<u>NRC</u>	<u>MOX SERVICES</u>	<u>NNSA</u>
	David Tiktinsky	Dealis Gwyn	Sam Glenn
	Kevin Morrissey	Scott Salzman	
	Rex Wescott	Bill Hennessey	
	Tim Johnson	Larry Rosenbloom	
	James Downs		

PURPOSE

The purpose of the closed meeting was for Shaw AREVA MOX Services (the applicant), to present its draft responses to the U.S. Nuclear Regulatory Commission (NRC) staff's requests for additional information (RAI) on the fire safety and the confinement system safety sections as described in the license application (LA) to possess and use radioactive material and in the integrated safety analyses (ISA) summary for the Mixed Oxide Fuel Fabrication Facility.

DISCUSSION

In order to facilitate communication between the applicant and the staff and to assure an understanding of the RAIs, a meeting was held to discuss the staff's draft questions. After the meeting the staff formally transmitted its RAIs to the applicant. This meeting was held to ensure that the applicant's responses fully and completely addressed the staff's requests.

The following comments were made on the applicant's draft responses:

(1) With regard to RAI FP-1, the applicant was requested to provide a list of relevant codes and standards in the LA which were utilized for prevention of ignition in glove-boxes. The applicant provided a proposed revision to the LA which listed these codes. The NRC requested an explanation of how these codes would be used to prevent ignition. The applicant agreed to provide this information in the next revision of the ISA summary.

(2) The applicant discussed the operation of the manual fire dampers in the draft RAI response. The staff stated that a license amendment may be needed if the applicant later considers the elimination of the manual fire dampers under the change authority of Title 10 of the *Code of Federal Regulations* 70.72

(3) With regard to RAI FP-4, the applicant was requested to provide information regarding the maximum fire suppression demand and a description of the water supply system demonstrating its ability to meet the demand. The applicant responded with the maximum suppression

demand in terms of flow and pressure, a description of the water distribution system, and the system pressure at the maximum suppression demand. The staff indicated that a supply curve of flow versus pressure at the site would be useful to demonstrate margin.

(4) With regards to RAI FP-6, the applicant was requested to provide the results of a fire model calculation of a fire in the hydraulic pump room assuming the leakage from one tank of hydraulic fluid into a drip pan. The applicant modeled the resulting pool fire, assuming complete leakage of one tank of hydraulic fluid into its associated drip pan. No criticality related items relied on for safety (IROFS) or leak sensing capabilities were credited. The calculation demonstrated that as long as the contents of the hydraulic fluid tank can be constrained to its drip pan, no additional IROFS are required. The applicant is still performing calculations to determine where transient combustibles may be safely placed.

(5) With regard to RAI FP-7, the applicant was requested to provide more details regarding the glovebox Very High Depressurization Exhaust System (VHD) with regard to its ability to remain operational and provide dynamic confinement during a fire. The applicant responded by listing the credited IROFS of the VHD system. As part of the discussion, the applicant committed to add "testing of the glovebox filters" as a fire IROFS (presently a criticality IROFS). The applicant will also add as an IROFS, the "filter transfer procedure based on the temperature and pressure differential at the final filters."

(6) With regard to RAI FP-8, the applicant was requested to provide more detail regarding fire protection in the laboratory VHD system. The applicant replied that the temperature interlock that would shutdown the VHD fans is no longer incorporated in the design. The applicant listed combustible material loading controls, ignition source controls, and temperature and differential pressure monitors as IROFS. In the course of the discussion, fire detection and suppression were also identified as IROFS. These IROFS will be added to the ISA summary.

(7) With regard to RAI FP-13, the applicant was requested to explain what would happen in the event of a fire if the control rod sensors prevented door closure of the active rod process area fire doors. The applicant responded that the rod tray would be cleared manually to allow closure of the fire door. The staff requested that the applicant expand the discussion to include the probability of the doors being open during a fire and the procedure of closing the door which would involve an alarm and dispatch of an operator. If the procedure needs to be an IROFS, based on consequences and likelihood, it should be identified as such.

No regulatory decisions were made at the meeting.

The meeting was then adjourned.

SUMMARY OF THE CLOSED MEETING WITH SHAW AREVA MOX SERVICES RELATED TO
DRAFT REQUESTS FOR ADDITIONAL INFORMATION ON MATERIAL CONTROL AND
ACCOUNTING DESCRIBED IN THE FUNDAMENTAL NUCLEAR MATERIAL CONTROL
PLAN FOR THE MIXED OXIDE FUEL FABRICATION FACILITY

DATE December 10-11, 2008

PLACE Rockville, Maryland

<u>ATTENDEES</u>	<u>NRC</u>	<u>MOX SERVICES</u>
	David Tiktinsky	David Adkins
	Tom Pham	Amy Johnson
	Jane Marshall	
	Glenn Tuttle	

PURPOSE

The purpose of the closed meeting was for the U.S. Nuclear Regulatory Commission staff to present and discuss with Shaw AREVA MOX Services (the applicant), the remainder of its draft requests for additional information (RAIs) related to material control and accounting as described in the Fundamental Nuclear Material Control Plan (FNMCP) for the Mixed Oxide Fuel Fabrication Facility. The first meeting to discuss the staff's RAIs was held on June 25, 2008 (ML082590465).

DISCUSSION

In order to facilitate communication between the applicant and the staff and to assure an understanding of the RAIs, a meeting was held to discuss the staff's draft questions. Additional interactions with the applicant may be warranted to ensure a complete understanding of the RAIs and to ensure that the responses fully and completely address the staff's requests.

The remainder of the staff's RAIs are related to the material control and accounting aspects of Chapter 2 through 4 of the FNMCP. The draft RAIs covered a wide range of items including: (a) item monitoring frequency; (b) storage; (c) item measurement, verification and sampling; (d) laboratory sampling; (e) alarm resolution; (f) alarms; (g) response time; (h) database security and validation; (i) records; (j) quality assurance; (k) training program; (l) measurements; (m) bias measurements; (n) inventory listing; (o) shipper receiver difference evaluation; and p) inventory control.

No regulatory decisions were made at the meeting.

The meeting was then adjourned.

SUMMARY OF THE MEETING WITH SHAW AREVA MOX SERVICES RELATED TO DRAFT REQUESTS FOR ADDITIONAL INFORMATION ON LOAD HANDLING AND FLUID SYSTEMS DESCRIBED IN THE LICENSE APPLICATION AND INTEGRATED SAFETY ANALYSIS SUMMARY FOR THE MIXED OXIDE FUEL FABRICATION FACILITY

DATE February 18, 2009

PLACE Rockville, Maryland

<u>ATTENDEES</u>	<u>NRC</u> David Tiktinsky Kevin Morrissey	<u>MOX SERVICES</u> Dealis Gwyn Scott Salzman
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PURPOSE

The purpose of the closed meeting was for the U.S. Nuclear Regulatory Commission staff to present and discuss with Shaw AREVA MOX Services (the applicant), its draft requests for additional information (RAIs) related to load handling and fluid systems as described in the license application to possess and use radioactive material and in the integrated safety analyses (ISA) summary for the Mixed Oxide Fuel Fabrication Facility.

DISCUSSION

In order to facilitate communication between the applicant and the staff and to assure an understanding of the RAIs, a meeting was held to discuss the staff's draft questions. Additional interactions with the applicant may be warranted to ensure a complete understanding of the RAIs and to ensure that the responses fully and completely address the staff's requests.

The draft RAIs covered a wide range of items including: (a) clarifications in the load handling section of the ISA summary; (b) independence of items relied on for safety (IROFS); (c) consistent terminology; and (d) IROFS sampling.

No regulatory decisions were made at the meeting.

The meeting was then adjourned.

SUMMARY OF THE MEETING WITH SHAW AREVA MOX SERVICES RELATED TO DRAFT REQUESTS FOR ADDITIONAL INFORMATION ON ELECTRICAL AND INSTRUMENTATION AND CONTROL DESCRIBED IN THE LICENSE APPLICATION AND INTEGRATED SAFETY ANALYSIS SUMMARY FOR THE MIXED OXIDE FUEL FABRICATION FACILITY

DATE March 4, 2009

PLACE Rockville, Maryland

<u>ATTENDEES</u>	<u>NRC</u>	<u>MOX SERVICES</u>
	David Tiktinsky	Dealís Gwyn
	Kevin Morrissey	Scott Salzman
	David Rahn	

PURPOSE

The purpose of the closed meeting was for the U.S. Nuclear Regulatory Commission staff to present and discuss with Shaw AREVA MOX Services (the applicant), its draft requests for additional information (RAIs) on the electrical system and instrumentation and control described in the license application to possess and use radioactive material and in the integrated safety analyses summary for the Mixed Oxide Fuel Fabrication Facility.

DISCUSSION

In order to facilitate communication between the applicant and the staff and to assure an understanding of the RAIs, a meeting was held to discuss the staff's draft questions. Additional interactions with the applicant may be warranted to ensure a complete understanding of the RAIs and to ensure that the responses fully and completely address the staff's requests.

The draft RAIs covered a wide range of items including: (a) loss of offsite power events; (b) time to restore power; (c) criteria for designing emergency power load application sequence; (d) calibration and surveillance; (e) methodologies to establish allowances in the ranges in items relied on for safety due to uncertainties in instrumentation; (f) equipment qualification; (g) utility auxiliary control system design basis; (h) safety system software quality; (i) design characteristics of the safety control system; and (j) separation and isolation of safety functions from non-safety.

No regulatory decisions were made at the meeting.

The meeting was then adjourned.

SUMMARY OF THE MEETING WITH SHAW AREVA MOX SERVICES RELATED TO DRAFT REQUESTS FOR ADDITIONAL INFORMATION RELATED TO HUMAN FACTORS ENGINEERING DESCRIBED IN THE LICENSE APPLICATION AND INTEGRATED SAFETY ANALYSIS SUMMARY FOR THE MIXED OXIDE FUEL FABRICATION FACILITY

DATE March 5, 2009

PLACE Rockville, Maryland

<u>ATTENDEES</u>	<u>NRC</u>	<u>MOX SERVICES</u>	<u>BROOKHAVEN NATIONAL LABORATORY</u>
	David Tiktinsky Kevin Morrissey Steve Fleger	Dealis Gwyn Scott Salzman Mike Brickey Rick Imker	John O' Hara Jim Higgins

PURPOSE

The purpose of the closed meeting was for the U.S. Nuclear Regulatory Commission staff to present and discuss with Shaw AREVA MOX Services (the applicant), its draft requests for additional information (RAIs) on human factors engineering as described in the license application to possess and use radioactive material and in the integrated safety analyses summary for the Mixed Oxide Fuel Fabrication Facility.

DISCUSSION

In order to facilitate communication between the applicant and the staff and to assure an understanding of the RAIs, a meeting was held to discuss the staff's draft questions. Additional interactions with the applicant may be warranted to ensure a complete understanding of the RAIs and to ensure that the responses fully and completely address the staff's requests.

The draft RAIs covered a wide range of items including: (a) level of detail in human factor implementation plan; (b) scope of human factors engineering activities; (c) basis of automation; (d) operating experience; (e) human actions in material control; (f) task analysis scope; (g) design for error tolerance; (h) alarm management and procedures; i) training; and j) verification and validation.

No regulatory decisions were made at the meeting.

The meeting was then adjourned.

SUMMARY OF THE MEETING WITH SHAW AREVA MOX SERVICES RELATED TO DRAFT REQUESTS FOR ADDITIONAL INFORMATION ON CHEMICAL PROCESSING DESCRIBED IN THE LICENSE APPLICATION AND INTEGRATED SAFETY ANALYSIS SUMMARY FOR THE MIXED OXIDE FUEL FABRICATION FACILITY

DATE March 17-18, 2009

PLACE Rockville, MD

<u>ATTENDEES</u>	<u>NRC</u>	<u>MOX SERVICES</u>	<u>DOE-NNSA</u>
	David Tiktinsky	Dealis Gwyn	Sam Glenn
	Kevin Morrissey	Scott Salzman	
	Michael Norato	Sven Bader	
	Cinthy Roman	Paul Duval	
	Jonathon DeJesus		
	Soly Soto		
	Rex Wescott		
	Amy Luebbering		
	Maria Guardiola		

PURPOSE

The purpose of the closed meeting was for the U.S. Nuclear Regulatory Commission staff to present and discuss with Shaw AREVA MOX Services (the applicant), its draft requests for additional information (RAIs) on the chemical process safety as described in the license application to possess and use radioactive material and in the integrated safety analyses summary for the Mixed Oxide Fuel Fabrication Facility.

DISCUSSION

In order to facilitate communication between the applicant and the staff and to assure an understanding of the RAIs, a meeting was held to discuss the staff's draft questions. Additional interactions with the applicant may be warranted to ensure a complete understanding of the RAIs and to ensure that the responses fully and completely address the staff's requests.

The draft RAIs covered a wide range of items including: (a) chemical process systems designated as items relied on for safety; (b) decanning and recanning; (c) electrolyzer; (d) off-gas system; (e) sampling; (f) chemical interactions; (g) sintering furnace hydrogen explosion; (h) radiolysis; i) hydroxylamine nitrate; j) hydrogen peroxide; k) hydrozoic acid; l) solvent; m) red oil; n) metal azide; and o) plutonium (VI) oxalate.

No regulatory decisions were made at the meeting.

The meeting was then adjourned.