

February 19, 2010

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

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

SUBJECT: SUMMARY OF THE CLOSED MEETING WITH SHAW AREVA MOX
SERVICES TO DISCUSS THE SAFETY MODEL RELATED TO THE
POSTULATED HYDROXYLAMINE NITRATE EXPLOSION EVENT

On December 10, 2009, the U.S. Nuclear Regulatory Commission staff met with representatives from Shaw AREVA MOX Services to discuss the Hydroxylamine Nitrate (HAN) safety model description for the postulated HAN explosion event for the Mixed Oxide Fuel Fabrication Facility to be built in Aiken, South Carolina.

Please see the enclosed meeting summary for more details (Enclosure 1). The meeting attendance list is also enclosed (Enclosure 2). The meeting handout can be found in Enclosure 3 (OUO-SRI and Proprietary). The meeting summary does not contain any official use only material.

Enclosures: As stated

cc w/enclosures 1 and 2 only:

S. Glenn, NNSA/SRS	A.J. Eggenberger, DNFSB
J. Olencz, NNSA	L. Zeller, BREDL
S. Jenkins, SC Dept. of HEC	G. Carroll, Nuclear Watch South
D. Silverman, Esq., MOX Services	D. Curran, Esq., Nuclear Watch South
D. Gwyn, MOX Services	

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(301) 492-3229

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DATE	2/02/10	2/ 3 /10	2/ 19 /10

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SUMMARY OF THE CLOSED MEETING WITH SHAW AREVA MOX SERVICES TO DISCUSS
THE SAFETY MODEL RELATED TO THE POSTULATED HYDROXYLAMINE NITRATE
EXPLOSION EVENT FOR THE MIXED OXIDE FUEL FABRICATION FACILITY TO BE BUILT
IN AIKEN, SOUTH CAROLINA

DATE December 10, 2009

PLACE Rockville, Maryland

ATTENDEES See Enclosure 2

PURPOSE

The purpose of the closed meeting was for Shaw AREVA MOX Services (the applicant) personnel to present and discuss with the U.S. Nuclear Regulatory Commission staff their Hydroxylamine Nitrate (HAN) Safety Model description and its application to the aqueous polishing process.

DISCUSSION

In its License Application and ISA Summary for the MOX Fuel Fabrication Facility (MFFF), Shaw AREVA MOX Services (MOX Services) presented its demonstration that a HAN explosion event was highly unlikely. The NRC staff prepared a request for additional information regarding the safety case for the HAN explosion event. In this meeting the applicant discussed the safety model and sensitivity studies that had been performed to support their analysis.

The model was developed in an attempt to accurately predict solution conditions that could result in an autocatalytic reaction between HAN and nitric acid and apply the model to the Aqueous Polishing process at the MFFF. The model was used to analyze specific process upset conditions for the appropriate tanks, mixer/settlers, and columns in the AP process.

The conclusions of the safety study indicated that the mathematical model reasonably correlates to laboratory measurements of HAN-Nitric acid solution stability. The model has been applied to a number of vessels in the AP process under nominal and off-normal conditions to develop safety limits to make the HAN event highly unlikely.

No regulatory decisions were made at the meeting.

The meeting was then adjourned.

December 10, 2009, HAN Safety Model Meeting Attendees

David Tiktinsky	NRC
Kevin Morrissey	NRC
Michael Norato	NRC
Jonathon DeJesus	NRC
Dealis Gwyn	MOX Services
Bill Hennessey	MOX Services
Scott Barney	MOX Services
Paul Duval	MOX Services