

March 18, 2008

MEMORANDUM TO: Margie Kotzalas, Chief
MOX Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

FROM: David Tiktinsky, Senior Project Manager */RA/*
MOX Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

SUBJECT: IN-OFFICE REVIEW SUMMARY: MIXED OXIDE FUEL FABRICATION
FACILITY HUMAN FACTORS ENGINEERING

On December 12th and 13th, 2007, U.S. Nuclear Regulatory Commission and Brookhaven National Lab staff conducted an in-office review at Shaw AREVA MOX Services in Aiken, South Carolina, of human factors engineering information supporting the license application for the Mixed Oxide Fuel Fabrication Facility. I am enclosing the in-office review summary, with a meeting attendance list, for your use. This summary contains no proprietary or classified information.

Docket: 70-3098

Enclosure:
Human Factors Engineering Meeting Summary

cc: G. Smith, NNSA
J. Olencz, NNSA
H. Porter, SC Dept. Of HEC
D. Silverman, Esq., MOX Services
D. Gywn, MOX Services
A.J. Eggenberger, DNFSB
L. Zeller, BREDL
G. Carroll, Nuclear Watch South
D. Curran, Esq., Nuclear Watch South

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Summary of MOX Human Factors Engineering In-office Review December 12-13, 2007

PURPOSE

The NRC staff and human factors engineering safety reviewers, John O'Hara (BNL) and Jim Higgins (BNL) performed an in-office review of the human factors engineering aspects supporting the MFFF at the Aiken, SC offices December 12-13, 2007. This review is a part of staff's ongoing review of the adequacy of the applicant's license application.

DISCUSSION

Representatives from BNL and the NRC staff traveled to the MOX Facility at the DOE Savannah River Site on December 12 and 13, 2007 to meet with facility design, licensing, and human factors engineering (HFE) personnel and to conduct an initial audit/review of HFE-related documentation. A list of documents reviewed onsite, and personnel contacted, is included in this summary.

Discussions were held regarding the status of facility design and construction. The applicant stated that a new revision to LA Chapter 12 on HFE will be submitted in January 2008 to NRC. To avoid some potential misunderstanding, one needs to understand that the LA is now written using verb tenses as if the facility is already operating.

Discussions were also held regarding Items Relied On For Safety (IROFS), including: Administrative, Enhanced Administrative, and Engineering (both active and passive). During the design process MOX Services used a two hour rule as guidance for when to automate an action or process; that is if actions were needed in less than two hours, the guidance is to automate. MOX Services used NUREG-0700 as a guide and have developed a Principles Document (or style guide) for all displays. According to their present schedule, procedures will be developed in 2009.

One key document reviewed was the HFE Program Plan. The Plan is written at a high-level and MOX personnel are preparing an HFE Implementation Plan which will provide the methodological detail for performing HFE activities. The Implementation plan will be a major focus of the staff's review. A draft of the HFE Implementation Plan was not yet available, but the applicant expected it to be ready for NRC review in February, 2008.

The review team noted the following items for MOX attention:

- A draft of the HFE Program Plan was reviewed and some comments provided to MOX personnel. The most significant comment relates to the scope of the plan. While the current plan scope includes only administrative IROFS, the reviewers determined that the scope should be broadened to include the controls, displays, and alarms associated with both the administrative and the engineering IROFS, the defense-in-depth items, and their related Control Rooms.
- MOX should inform NRC when the HFE Program Plan and Implementation Plan are finalized and ready for review.

Enclosure

- The HFE Implementation Plan could be submitted as one document or as multiple documents where each HFE element is a separate implementation plan. The use of separate plans may provide for earlier plan completion and earlier review by NRC. If this course is chosen, then MOX Services should either notify the NRC as plans are completed or inform NRC as the individual implementation plans are ready for review.
- The various elements of the HFE program as described in NRC NUREG-0800 and NUREG-0711 should be included in the HFE Program and Implementation Plans.

Documents Reviewed at MOX Facility on December 12 & 13, 2007

1. DCS01-AAJ-05-NTF-D-40027, MOX Fuel Fabrication Facility Design Description
2. Shaw Areva MOX Services, LLC, NS-02, Integrated Safety Analysis Workplace Plan, Rev. 3, Aug. 30, 2007
3. DCS01-CCJ-DS-NTE-C-28024-0, Human Factors Engineering Summary Report of NCSE and NSE Administrative IROFS Compilatory List for MOX Fuel Fabrication Facility, Sept. 6, 2007, with 230 page Attachment A, Administrative IROFS
4. DCS-PFE-EQ0000-OR-RDE-0, Operations RAMI Implementation Checklist
5. DCS01-CCJ-DS-NTE-C-28001-0, Human Factors Engineering Program Plan (HEPP), Draft
6. DCS01-CCJ-DS-NTE-C-28051-2, HFE Results Summary Report Concerning Functional Requirements Analysis and Functional Allocation of Enhanced Administrative Controls (EAC) and Administrative Controls (AC) Peculiar to Items Relied On For Safety (IROFS), Sept. 6, 2007
7. DCS01-ZMJ-CG-NTE-M-05570-E, MOX Process Area – Lessons Learned From Experience at MELOX – Overall Summary, no date, Rev. E
8. DCS Lessons Learned Program, PP1-7, Rev. 1, March 1, 2006
9. LA-13638, A Review of Criticality Accidents, Los Alamos National Laboratory, 2000 Revision.
10. SDD for Fire Protection, Attachment B – Glovebox Locations and Sizes, 31 pages of gloveboxes with about 10 gloveboxes per page.
11. PLC Software Standards Technical Specification, General Rules and Principles for SCADA System Design, (~180 pages)
12. Drawings of several MOX Facility control rooms (CRs) with IROFS actions in them:, i. e.,
 - a. B-238 Cladding CR and B-256 VDU VDR CR;
 - b. B-142 Powder CR;
 - c. B-168 Rod Area CR
 - d. B-178 Assembly Area CR
 - e. D-301 Main CR and Auxiliary CR
 - f. D-318 Emergency CR Train and D-319 Emergency CR Train B
13. List of MFFF Human Factors Engineering Committee, December 11, 2007
14. Copy of ISA Process presentation to NRC dated October 26, 2006
15. Samples of Items entered into the HFE/HED Tracking System
16. RAI response letter to NRC DCS-NRC-000060 dated August 31, 2001

**U.S. Nuclear Regulatory Commission-MOX Services
Human Factors Engineering In-Office Review-Session I
MOX Services MAC Rm. 212
December 12 & 13, 2007
Attendance Sheet-Page 1 of 1**

<u>Name</u>	<u>Representing (MOX Sevices-U.S. NRC-Other)</u>
Wesley Don Dotson	MOX Services
Jim Higgins	Brookhaven National Lab/NRC
Kevin Morrissey	NRC
Dealis Gwyn	MOX Services
John Gregory	MOX Services-Operations
Mosi Dayani	NNSA (DOE)
Bill Hennessy	MOX Services-NS
Gary Bell	MOX Services-Software
Mike Brickey	MOX Services-Elect & I&C Manager
John O'Hara	Brookhaven National Lab
Walt Elliott	MOX Services
Rick Inker	MOX
Mike Boggi	NRC

