

June 17, 2011

Mr. Kelly Trice  
President and COO  
Shaw AREVA MOX Services  
P.O. Box 7097  
Aiken, SC 29804-7097

SUBJECT: PARTIAL APPROVAL OF CHANGES TO THE MIXED OXIDE PROJECT QUALITY ASSURANCE PROGRAM, REVISION 10

Dear Mr. Trice:

By letter, dated February 28, 2011, Shaw AREVA MOX Services (MOX Services) submitted proposed changes to the Mixed Oxide Project Quality Assurance Plan (MPQAP) for the U.S. Nuclear Regulatory Commission's (NRC's) review and approval in accordance with paragraph 70.23(b) of Title 10 of the *Code of Federal Regulations* (10 CFR). The proposed changes include revisions to Section 2, "Quality Assurance Program," to include guidance on modifications to the MPQAP on changes to editions of codes or standards referenced in NQA-1-1994 Part II; revisions to Section 7, "Control of Purchased Material, Equipment, and Services," to add clarifications on calibration suppliers; and revisions to Attachment A, "Commitment to Quality Assurance Standards," to take exception to Section 5.2 (c) Subpart 2.5 of NQA-1-1994 Part II. Additional changes include updates of organization names under Section 1, "Organization," and editorial changes thought the MPQAP.

The enclosed Safety Evaluation Report (SER) documents the NRC staff's conclusions that changes to the MPQAP continue to satisfy the criteria of Appendix B to 10 CFR Part 50 as required by Footnote 3 of 10 CFR 70.23(b), with the exception of the proposed changes to Section 2 (with corresponding change in Attachment A) of the MPQAP. The SER specifically states the reasons why the staff did not accept the specific modification regarding revisions to the MPQAP. MOX Services should revise the MPQAP to remove the proposed revisions to Section 2 and the opening paragraph in Attachment A.

In accordance to 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible through the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

If you have any questions related to this letter or our MPQAP review, please contact David Tiktinsky at 301-492-3229, or via e-mail to [David.Tiktinsky@nrc.gov](mailto:David.Tiktinsky@nrc.gov).

Sincerely,

**/RA/**

Marissa G. Bailey, Deputy Director  
Special Projects and Technical  
Support Directorate  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 70-3098

Enclosure:  
As stated

cc w/enclosure:

S. Glenn, NNSA/SRS

J. Olencz, NNSA

S. Jenkins, SC Department of HEC

D. Silverman, Esq., MOX Services

D. Gwyn, MOX Services

P. Winokur, DNFSB

L. Zeller, BREDL

G. Carroll, Nuclear Watch South

D. Curran, Esq., Nuclear Watch South

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SAFETY EVALUATION REPORT  
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
PROPOSED CHANGES TO THE MIXED OXIDE PROJECT  
QUALITY ASSURANCE PLAN, REVISION 10

## 1.0 INTRODUCTION

By letter, dated February 28, 2011, AREVA MOX Services (MOX Services), the applicant, submitted proposed changes to the Mixed Oxide Project Quality Assurance Plan (MPQAP) for the U.S. Nuclear Regulatory Commission's (NRC's) review and approval in accordance with paragraph 70.23(b) of Title 10 of the *Code of Federal Regulations* (10 CFR). The proposed changes include revisions to Section 2, "Quality Assurance Program," to include guidance on modifications to the MPQAP on changes to editions of codes or standards referenced in NQA-1-1994 Part II; revisions to Section 7, "Control of Purchased Material, Equipment, and Services," to add clarifications on calibration suppliers; and revisions to Attachment A, "Commitment to Quality Assurance Standards," to take exception to Section 5.2 (c) Subpart 2.5 of NQA-1-1994 Part II. Additional changes include updates of organization names under Section 1, "Organization," and editorial changes thought the MPQAP.

## 2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR) 70.23(b), Footnote 3, requires that the Fuel Fabrication Facility's (MFFF) quality assurance (QA) program satisfy the requirements of Appendix B to 10 CFR Part 50. NUREG-1718, "Standard Review Plan for the Review of an Application for a MFFF," states that an acceptable means for meeting the requirements of Appendix B to 10 CFR Part 50 is to follow the 1994 edition of the ASME NQA-1, with the 1995 Addenda.

The applicant's QA program for design and construction of the Mixed Oxide (MOX) MFFF is described in the MPQAP. The MPQAP identifies the regulatory guides and standards to which the applicant has committed in satisfying the criteria of Appendix B to 10 CFR Part 50 as required by Footnote 3 of 10 CFR 70.23(b). The applicant has committed to RG 1.28, Revision 3, and NQA-1-1994, with the 1995 Addenda. The predominant criteria of NQA-1-1994, the standard used to meet the criteria of Appendix B of 10 CFR Part 50, that are related to the proposed MPQAP changes which may be affected are Sections 1, 2 and 7.

## 3.0 TECHNICAL EVALUATION

### 3.1 MPQAP Section 2 "Quality Assurance Program"

The applicant proposed changes to MPQAP Section 2.1.1, "Program Basis" and Attachment A, "Commitment to Quality Assurance Standards," to include additional guidance on the applicability of revisions to the MPQAP when: a) alternatives due to using a later edition of a code or standard than that identified in NQA-1-1994 Part II, or b) when a code or standard identified in NQA-1-1994 Part II has been cancelled or superseded. The applicant proposed to identify the changes in project procedures and specifications if the changes only address the methods for implementing a specific requirement without prior NRC approval.

The NRC staff has reviewed this proposal against NUREG 1718 and NQA-1-1994 and applicable regulations and found it unacceptable. The use of revisions or later editions of a code or standard or a new standard not currently in NQA-1, Part II, may result in a reduction in

QA commitments. The regulations in 10 CFR Part 50.54(a)(3) and Section 2 of the MPQAP requires that a reduction in QA commitments be reviewed and approved by the NRC prior to its implementation. Further, the justification provided for this change does not provide an adequate technical basis for the use of alternative codes and standards and is not consistent with the provisions of Section 7 of the introduction to NQA-1 Part II (Part II), "Referenced Codes, Standards, and Specifications." The NRC staff notes that Section 7 of NQA-1-1994 states, in part, that "Users of this part (Part II) should review the acceptability of the date or edition to be referenced with the regulatory and enforcement authorities having jurisdiction at the nuclear facility." Therefore, the use of later editions and revisions or new codes and standards that could potentially reduce QA commitments must be reviewed by the NRC prior to its implementation. If a potential change in commitments has been identified, the applicant should follow the approved Change Control System within the Configuration Management system to evaluate, review and approve the changes in a manner that ensures that the safety design bases are not affected. Changes to the MPQAP that do not reduce commitments can continue to be made without prior NRC approval in accordance with Section 2.2.9 of the MPQAP.

### 3.2 MPQAP Section 7 "Control of Purchased Material, Equipment, and Services"

The applicant proposed changes to Section 7.2.2, "Source Evaluation and Selection," of the MPQAP to add clarifications on the accreditation verification process to ensure that calibration suppliers have been accredited by bodies accepted as signatories (full members) to the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement. Such accreditation bodies provide alternatives to the methods used by licensees to qualify suppliers of commercial-grade calibration services, as referenced in letter, dated April 22, 2008, from Patrick L. Hiland, Director of the Division of Engineering of the NRC's Office of Nuclear Reactor Regulation to Mr. Douglas Leonard, Managing Director of the Laboratory Accreditation Bureau (Agencywide Documents Access and Management System [ADAMS] Accession No. ML081140564). The NRC staff previously evaluated this clarification against NUREG 0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," and found it to be an acceptable measure for evaluating and accepting calibration supplier services. Based on this previous evaluation, the staff finds the proposed clarifications acceptable for use in the MPQAP. The staff notes that the certificate holder has the responsibility to decide which suppliers to select, approve, and maintain.

The applicant also made an editorial change in the definition of basic components in Section 7.2.8, "Commercial Grade Items," of the MPQAP to align it with the definition of basic components documented in 10 CFR Part 21. The staff found this editorial change consistent with observations documented in Inspection Report No. 70-3098/2010-004.

### 3.3 MPQAP Attachment A, "Commitment to Quality Assurance Standards"

#### 3.3.1 Exception to Section 5.2 (c), "Materials," of Subpart 2.5 of NQA-1-1994 Part II

The applicant proposed an exception to Section 5.2 (c), "Materials," of Subpart 2.5 of NQA-1-1994 Part II. This section identifies the inspections and qualification testing of stockpiles or borrows pits that shall be performed to verify conformance to specified requirements. The applicant proposed an exception to the maximum and minimum index density of soils using the ASTM D 4253, "Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table," and ASTM D 4254, "Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density." The applicant specified the use of standard ASTM D 1557, "Standard Test Methods for Laboratory Compaction

Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> [2,700 kN-m/m<sup>3</sup>]),” for determining maximum dry density with a commitment to use standards ASTM D 4253 and ASTM D 4254 if the soils used for backfill operations are cohesionless, free-draining soils with fines less than 15 percent, such as pure sand.

The above-mentioned standards are used for evaluating the state of compactness of a given soil mass and provide the basis for the determination of compaction that a soil needs to achieve the required engineering properties. The applicant stated, as part of their justification for the use of ASTM D 1557 for compaction control, that the soils used for backfill operations at the site show well-defined, moisture-density curves and since the applicant is not using cohesionless, free draining soils with fines less than 15 percent the ASTM D 1557 is more applicable to use for compaction control. The applicant also discussed the differences between the above-mentioned standards and stated that published data indicates that the results of ASTM D 4253 and ASTM D 4254 have a high degree of variability.

The NRC staff has reviewed the applicant’s justification for the exception to Section 5.2 (c) Subpart 2.5 of NQA-1-1994 Part II and found it acceptable and in conformance with standard industry practices. The staff agrees with the applicant in that, given the conditions and materials used at the site, the use of ASTM D 1557 is a suitable and reliable method for compaction control of non-free draining soils. With the commitment to use standards ASTM D 4253 and ASTM D 4254 if soils conditions changes, the staff has reasonable assurance that the applicant will continue to provide for adequate compaction control at the site. The standard ASTM D 4253 and ASTM D 4254 are recommended to be used in circumstances where the soil does not show a distinct optimum water content resulting in flat moisture density curves with no pronounced peak. In such cases the standards ATSM D 4253 and ASTM D 4254 might show a higher maximum dry density/unit weight than that obtained from ASTM D 1557.

### 3.3.2 Clarification to Section 5.3, “Placing and Compacting Equipment,” and Section 5.5(e), “Soils Compaction,” of Subpart 2.5 of NQA-1-1994 Part II

The applicant proposed to add a clarification to Section 5.3, “Placing and Compacting Equipment,” and Section 5.5(e), “Soils Compaction,” of Subpart 2.5 of NQA-1-1994 Part II in that construction specifications will not include details required for compaction equipment used to compact material within utility trenches. The applicant stated that the specifications will identify the lift thickness, material to be used, and required degree of compaction. The implementing construction entity will develop a backfill plan, taking into consideration the specified requirements, the equipment required, the minimum number of passes, and the minimum overlap of the passes to achieve the specified degree of compaction. This plan will be developed during the first lift of backfill work, and it will be validated or changed as appropriate.

The NRC staff has reviewed the applicant’s proposed clarification to Section 5.3, “Placing and Compacting Equipment,” and Section 5.5(e), “Soils Compaction,” of Subpart 2.5 of NQA-1-1994 Part II and found it acceptable and in conformance with standard industry practices. The proposed clarifications do not reduce any commitments made by the applicant. The applicant’s validation process and documentation of the inspections will provide good controls to ensure that soils are being compacted to specifications.

### 3.4 Other Changes in the MPQAP

The applicant made several editorial and minor changes in the MPQAP. This included clarification of phrases, change of titles for specific individuals to be consistent with current

organizational charts, corrections to spelling, and other editorial changes. The changes proposed do not reduce any commitments in the MPQAP and are acceptable to the staff.

#### 4.0 CONCLUSIONS

The NRC staff has reviewed the proposed changes to the QA program as documented in MPQAP, Revision 10; and evaluated the changes against applicable regulatory requirements and the provisions of the 1994 edition of ASME NQA-1 with the 1995 addenda. Based on its review, the staff determined that the proposed changes to the MPQAP identified in Section 3.1 of this SER does not meet the criteria contained in Appendix B to 10 CFR Part 50, as required by Footnote 3 of 10 CFR 70.23(b); and are not acceptable for design and construction activities at the MFFF. Note that changes to the QA plan that do not reduce commitments can continue to be made without prior NRC approval in accordance with Section 2.2.9 of the MPQAP.

The staff's review determined that the proposed changes to the MPQAP identified in Section 3.2, 3.3 and 3.4 of this SER does satisfy the criteria of Appendix B to 10 CFR Part 50 as required by Footnote 3 of 10 CFR 70.23(b); and are acceptable for design and construction activities at the MFFF.

Prior to implementing Revision 10 of the MPQAP, the applicant should revise the document to remove the sections that were not found acceptable by the staff.