

SAFETY EVALUATION REPORT

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS APPROVAL OF THE MOX FUEL FABRICATION FACILITY QUALITY ASSURANCE PROGRAM DESCRIPTION, REVISION 14

1.0 INTRODUCTION

By letter dated January 16, 2015 (Ref. 1), CB&I AREVA MOX Services (MOX Services), the applicant) submitted proposed changes to the Mixed Oxide Project Quality Assurance Plan (MPQAP) for U.S. Nuclear Regulatory Commission (NRC) review and approval in accordance with Paragraph 70.23(b) of Title 10 of the *Code of Federal Regulations* (10 CFR). The changes included (1) the removal of a list of special processes from Section 9, "Control of Special Processes," of the MPQAP, and (2) removal of some audit schedule information from Section 18, "Audits."

By letter dated February 9, 2015 (Ref. 2), MOX Services submitted its justification for the proposed changes.

2.0 REGULATORY EVALUATION

Footnote 3 of 10 CFR 70.23(b) identifies that the criteria in Appendix B of 10 CFR Part 50 (Appendix B) will be used by the Commission in determining the adequacy of the Mixed Oxide Fuel Fabrication Facility (MFFF) Quality Assurance (QA) program. Criterion II, "Quality Assurance Program" of Appendix B requires, in part, that "The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety."

NUREG-1718 (NRC, 2000), "Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility," 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 (NQA-1-1994/1995a). Basic Requirement 2, "Quality Assurance Program," of NQA-1 1994/1995a states, in part, that "The [quality assurance] program shall provide control over activities affecting quality to an extent consistent with their importance."

The applicant's QA program applicable to the design, construction, and operation of the MFFF is described in the MPQAP. MOX Services has committed to comply with the guidance contained in NQA-1-1994/1995a. The predominant criteria of Appendix B and NQA-1-1994/1995a that are related to the proposed MPQAP changes and which may be affected are Criterion IX, "Control of Special Processes" and XVIII, "Audits."

Enclosure

3.0 TECHNICAL EVALUATION

3.1 Control of Special Processes

Criterion IX of Appendix B requires that measures be established to assure that special processes, including welding, heat treating, and nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

In Section 9 of the MPQAP, MOX Services describes its program for the control of special processes. Section 9 provides criteria that MOX will apply to determine which activities shall be treated as special processes. These criteria include: (1) The results are highly dependent on the control of the process; or (2) the results are highly dependent on the skill of the operator; and (3) inspection or test of the product cannot readily determine quality of the results.

Section 9 also includes commitments to perform special processes in accordance with work-controlling documents that identify or make reference to personnel qualification requirements, conditions necessary for performance of the special process, and any applicable requirements identified in codes or standards. Section 9 also provides specific requirements for the qualification of nondestructive examination personnel.

In Revision 14 of the MPQAP, MOX deleted Section 9.2.1.c, which stated that MOX would establish and maintain a list of special processes that will be performed by each MOX organization. The list, as described in the MPQAP, was based on the criteria provided in the MPQAP for identification of special processes (i.e., results are dependent on human skill or control of the process, etc.).

The NRC staff reviewed the proposed change and finds it acceptable to meet the requirements of Criterion IX of Appendix B. The provisions in Section 9 of the MPQAP provide criteria for determination of what activities are to be designated and controlled as special processes, and, as such, preparation and maintenance of a list identifying the specific special processes to be performed by each organization in MOX is unnecessary and duplicative. The controls in Section 9 of the MPQAP provide clear criteria for the identification of special processes, and the Section identifies measures to assure that special processes are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable requirements.

3.2 Audits

Criterion XVIII of Appendix B provides requirements for the conduct of audits and requires, in part, that a comprehensive system of planned and periodic audits be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program.

In Section 18 of the MPQAP, MOX Services describes controls for the planning and implementation of their audit program. The MPQAP states that internal audits will be scheduled in a manner to provide coverage, consistency, and coordination with ongoing work, and at a frequency commensurate with the status and importance of the work, and performance history.

The MPQAP commits to perform audits of organizational areas that perform quality-affecting activities annually during design and construction and once every 2 years during operations. During operations, an annual evaluation will be performed. Based on the results of the annual evaluation, the performance of audits may be extended in 1 year periods such that, at a minimum, an audit is performed once per 4 year period. This provision is consistent with Revision 3 of Regulatory Guide (RG) 1.33, "Quality Assurance Program Requirements (Operations)". RG 1.33 endorses use of ANSI/ANS 3.2-2012, "Managerial, Administrative, and Quality Assurance Controls for the Operational Phase of Nuclear Power Plants," which allows the extension of internal audit frequencies up to once per 4 year period provided that an annual evaluation is performed and that the evaluation includes a detailed performance analysis of the functional area and sufficient consideration of changes in responsibilities, resources, or management. ANSI/ANS 3.2 also identifies that the extended audit periodicity for any given functional area should be rescinded if an adverse trend is identified. The MPQAP mirrors these commitments for the conduct of internal audits.

In Revision 14 of the MPQAP, MOX removed Section 18.2.1.E from the quality plan. The provision identified that: "Nuclear Criticality Safety (NCS) audits are conducted and documented such that aspects of the Nuclear Criticality Safety Program will be audited at least every two years." The commitment to perform NCS audits every 2 years is unnecessary because NCS is covered by the general audit scheduling and performance commitments of the MPQAP described above and more rigorous provisions are not necessary. As stated in the MPQAP, internal audits will be scheduled and performed in a manner to provide coverage, consistency and coordination with ongoing work, and at a frequency commensurate with both the status and importance of the work and the performance history for the program area being audited. The frequency of internal audits can be adjusted within controlled parameters provided that no adverse trends are identified and that the results of a thorough annual evaluation indicate sustained performance.

The NRC staff reviewed the proposed change and finds it acceptable to meet the requirements of Criterion XVIII of Appendix B. Removal of the existing specified periodicity for NCS audits does not detract from the effectiveness of the MOX internal audit program nor alter MOX's compliance with Appendix B. Specifically, the NRC staff determined that the commitments for audit planning and frequency in the MPQAP continue to provide for a comprehensive system of planned and periodic audits. These audits, as described in Revision 14 of the MPQAP, will enable MOX to verify compliance with all aspects of the quality assurance program and determine the effectiveness of the program at regular intervals consistent with safety and performance.

3.3 Additional Changes

Revision 14 of the MPQAP also included administrative changes as follows:

- The Introduction Section was revised to address current relationships and to reflect corporate changes.

- Sections 1 was updated to align with the current organizational structure of MOX Services, including removal of reference to the “COO” and revision of organizational reporting structure for the human resources function.
- Section 7 was revised to add “Laboratory” between International and Accreditation and to change “Agreement” to “Arrangement” to use the correct terminology.

These changes do not represent reductions in commitment and do not require a technical analysis.

CONCLUSIONS

The NRC staff has reviewed the QA program changes requested by MOX Services in Revision 14 of the MPQAP and finds them acceptable on the basis that the provisions of Sections 9 and 18 of the MPQAP, as revised, continue to meet the requirements of Appendix B to 10 CFR Part 50. Specifically, the measures described by MOX Services in Revision 14 of the MPQAP continue to provide (1) sufficient guidance to identify activities that are controlled as special processes, and (2) suitable measures for conducting internal audits of the NCS function and other quality-affecting activities at the appropriate frequency.

REFERENCES

1. Letter from MOX Services to the U.S. NRC, “Submittal of Revision 14 of the MOX Project Quality Assurance Plan,” January 16, 2015, (ML15016A294).
2. Letter from MOX Services to the U.S. NRC, “Submittal of Justification for Revision 14 of the MOX Project Quality,” February 9, 2015 (ML15041A236).
3. Revision 3 of RG 1.33, “Quality Assurance Program Requirements (Operations),” June 2013.
4. ANSI/ANS 3.2-2012, “Managerial, Administrative, and Quality Assurance Controls for the Operational Phase of Nuclear Power Plants”.