

April 9, 2004

MEMORANDUM TO: Joseph G. Giitter, Chief
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

THRU: Hironori Peterson, Acting Chief /RA/
Mixed Oxide Facility Licensing Section
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

FROM: Wilkins R. Smith, Quality Assurance Scientist /RA/
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SUBJECT: MARCH 15 - 26, 2004, IN-OFFICE REVIEW SUMMARY: DUKE
COGEMA STONE AND WEBSTER QUALITY ASSURANCE PROGRAM
FOR THE MIXED OXIDE FUEL FABRICATION FACILITY

On March 15 - 26, 2004, U.S. Nuclear Regulatory Commission staff conducted an in-office review of the quality assurance program implementation for the Duke Cogema Stone & Webster (DCS) Mixed Oxide Fuel Fabrication Facility at DCS offices in Denver, Colorado, and Charlotte, North Carolina. A detailed summary of the meetings is attached.

Attachment: Meeting Summary

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Docket: 70-3098

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**MEETING SUMMARY
IN-OFFICE REVIEW
DCS MOX FUEL FABRICATION FACILITY**

Executive Summary

The Nuclear Regulatory Commission (NRC) conducted an in-office review of the Duke Cogema Stone and Webster (DCS) project activities and quality assurance (QA) program implementation, for the proposed Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) on March 15-26, 2004. The purpose of the in-office review was to observe a DCS QA audit of MFFF engineering processes and to verify the adequate implementation of the DCS MOX QA program for the current programmatic, design, engineering, and procurement activities. On March 15-19, 2004, the review assessed the QA audit activities and the implementation of the DCS MOX QA requirements at the MFFF contractor offices of Merrick & Company (Merrick) in Aurora, Colorado. On March 22-26, 2004, NRC staff observed the QA audit activities and assessed the implementation of the NRC-approved MOX Project QA Plan (MPQAP), Revision 3, in DCS offices in Charlotte, North Carolina,

QA issues addressed during the in-office review included organizational interfaces, procurement control, categorization of structures, systems, and components (SSCs) and items relied on for safety (IROFS), design control, engineering software control, engineering procedures and instructions, calculations, drawings and specifications, and inspection and test requirements. In addition to observing the conduct of the DCS internal QA audit, the applicant's project procedures, deficiency action requests (DARs), management assessments, prior DCS internal audit reports and various engineering documents were reviewed. The applicant responded to questions from NRC staff about the MPQAP, QA procedures, and interpretation and implementation of QA requirements for the MOX project activities. The DCS audit team noted a number of deficiencies, observations, and recommendations for the engineering and design document activities. A significant QA procurement control program deficiency was noted by the DCS auditor and the NRC reviewer in that appropriate supplier QA requirements were not specified or assured by DCS for the Merrick engineering activities. DCS' internal QA audit concluded that the areas for improvement included procurement control for supplier QA requirements, and attention to detail and procedural compliance in engineering activities. The NRC reviewers concluded that, with the exception noted for procurement control, the DCS MFFF QA program was adequate and was being effectively implemented for the activities reviewed in Aurora and in Charlotte.

Background, Purpose, and Scope

Merrick is a supplier to the DCS MFFF project as a contractor to DCS consortium member Cogema, Inc. Merrick is on the DCS Approved Supplier List (ASL) to perform engineering design activities for the MOX project. Merrick, designated as the Denver Design Office (DDO), provided engineering services as a part of the DCS Manufacturing Design Group (MDG). MDG is responsible for the manufacturing design integration and preparation of procurement packages for major systems of the MFFF. DDO performs detailed engineering of MOX Powder (MP) and Aqueous Polishing (AP) MFFF process units. MFFF engineering activities are conducted by various DCS design groups in the Merrick offices, DCS offices in Charlotte, North Carolina and Aiken, South Carolina, and Cogema offices in France. All MFFF activities are required to be in accordance with the applicable MOX QA program requirements of the DCS MPQAP and applicable QA procedures. The MPQAP, Revision 3, has been approved by the NRC for all MFFF design, procurement, and construction activities.

DCS QA scheduled an internal QA audit of engineering processes at the Merrick offices March 15-19, 2004, and at the DCS Charlotte project offices from March 15-26, 2004. NRC staff scheduled the in-office review to coincide with the DCS audit of MFFF engineering activities at Merrick on March 15-19, 2004, and in Charlotte on March 22-26, 2004, to maximize efficiency. The purpose of the NRC review was to observe the DCS audit team perform the internal QA audit of the engineering processes, products, and quality affecting activities associated with the MOX project. The NRC the review was to confirm that the DCS commitments in the NRC approved MPQAP were adequately implemented for the MFFF activities. In addition, the NRC review observed the implementation of DCS' project and QA procedures for the current and planned MOX activities.

The NRC in-office review scope included the implementation of the DCS QA program for all activities at the Aurora and Charlotte offices, in particular for audits, procurement control, and design control.

Observations and Findings – March 15-19, 2004, Aurora, CO

DCS began the QA audit at Merrick with an entrance meeting with Merrick staff and management. The focus of the entrance meeting was to provide an overview of the goals and purpose of the audit over the next week. The NRC staff reviewer discussed the purpose and objectives of the in-office review during the entrance meeting. The DCS Audit Plan referenced the requirements, procedures, and other technical documents related to the engineering processes as a basis for this audit.

The NRC staff observed the DCS auditor select and review a sample of engineering drawings, calculations, other technical products, and supporting administrative documents pertaining to the engineering processes and QA procedure requirements. The auditor reviewed a variety of technical documents to ensure adequate compliance with the QA Program. Technical documents reviewed included Design Requirements, Basis of Design, System Descriptions, Specifications, Calculations, Drawings, and Bills of Material. These documents were also reviewed to ensure that the IROFS categorization and quality levels were appropriate. Interviews were conducted with cognizant engineering and support personnel to verify QA and engineering procedure requirement implementation and to investigate issues. Pertinent records

were examined to support or confirm compliance with QA program requirements, including training and qualification, document control, and records management. The audit team held daily meetings to discuss issues that arose. Daily meetings were also held with the engineering, QA, and management personnel to discuss audit and review progress and issues.

The in-office review of the DCS QA audit was accomplished by observing the audit team as they evaluated programmatic and technical documents assigned by the DCS Lead Auditor. NRC also selected sample technical documents, verified compliance with QA requirements, and participated in discussion with DCS and Merrick staff regarding specific audit review areas or issues.

During review of the documentation of DCS QA program requirements to Merrick and the Merrick project QA commitments, DCS auditors and NRC staff noted that Merrick had been using Job Bulletins to document exceptions to some DCS QA procedure requirements as being not applicable to the Merrick scope of work. Upon further review it was determined that the applicable DCS QA program requirements to Merrick were not clear and definitive, and Merrick's documentation of its commitments and implementation did not assure compliance with applicable DCS QA program requirements. The Cogema contract stated that Merrick will implement the QA Program established by the Merrick QA Manual and DCS Engineering Directives (ED). DCS QA performed a QA program audit of Merrick in February 2002, and Merrick was subsequently placed on the DCS ASL. MDG issued ED 1600-1 to identify DCS QA and Engineering procedures for indoctrination and training requirements applicable to Merrick. Merrick reviewed the ED listing and, using Job Bulletins, specified that some DCS procedural (and regulatory) requirements are not applicable to their work. The basis for these exceptions or an equivalent substitute was not documented. The Merrick Project QA Plan was also not revised to fully reflect applicable DCS QA requirements. On March 17, 2004, in an audit conference call with the audit team, the NRC reviewer expressed his concern with the findings and recommended that the full extent and impact on quality of this issue be evaluated by DCS management. In a conference call with the audit team and NRC reviewer on March 18, 2004, the DCS QA Manager stated that DCS senior management was concerned over the QA issue. In addition, DCS senior management indicated that the DCS MPQAP and QA procedures for corrective action will be used to control and document actions to identify the extent of the quality and organizational issues and the actions to correct the discrepancies.

Observations and Findings – March 22-26, 2004, Charlotte, NC

On March 22, 2004, NRC staff met with the audit team leader in Charlotte to review issues noted during the prior week, to discuss the plans for the remainder of the audit, and to plan the review activities.

The NRC staff observed the DCS audit team review a wide range of areas pertaining to engineering processes. The Lead Auditor, Audit Team Member, and Technical Specialist individually reviewed a variety of technical documents to ensure adequate compliance with the QA Program. The DCS Audit Lead chose a cross-section of documents to review in order to validate that aspects of the engineering design were properly determined from the correct reference and input information. To ensure this, the DCS auditors evaluated technical documents in such areas as software, criticality, mechanical, electrical, structural, and

integrated safety analysis (ISA). The types of technical documents reviewed included Design Requirements, Basis of Design, System Descriptions, Specifications, Calculations, and Drawings. These documents were also reviewed to ensure that they were classified to the appropriate quality level. Periodically throughout each day, the audit team and NRC reviewers would reconvene to discuss issues that arose or interview certain DCS staff to further investigate QA issues.

In addition to observing the DCS audit team, NRC staff reviewed other documentation as follow-up items to previous in-office reviews at DCS offices. Since the previous NRC in-office review in November 2003, two internal audits had been performed. The results from those audits, and their associated Deficiency Actions Requests (DARs) were reviewed. The audit results appeared to be comprehensive and indicated a number of areas for further improvement by DCS.

DARs include corrective actions taken to ensure that the deficiencies are resolved and will not reoccur. The amount of time for completion of corrective actions was tracked and DCS procedures specified a 100 day limit. Currently, the average time for corrective action completion was approximately 86 days, an increase from an average of 70 days in recent months. DCS planned to address this performance measure in the August 2004 Quality Assurance Status Report.

DCS maintains an electronic document management system, "Documentum", for all materials associated with MFFF activities. Staff is able to access and share internally a multitude of information from Documentum. In order to upload most documents to the Documentum system, they need to be scanned by members of the Records Management Center. Currently, there is no backlog of documents requiring input to the system.

When DCS internal policies and procedures were updated, staff was required to review the updated sections and verify their compliance with the new rules. DCS had recently implemented new software procedures and NRC staff noted that approximately 63 people had completed required reading of the new procedures.

Conclusions

As a result of the QA oversight issues during the audit at Merrick, DCS senior management committed to identify the problem areas and causes and take necessary action to resolve them under the MPQAP and QA procedures for corrective Action. The Merrick DDO works closely with Charlotte and Aiken engineering personnel (they are on the DCS organization chart), and DDO products (glove box designs, drawings, etc.) are required to go through independent design verification by DCS procedures and organizations. The first package of DDO products for major container/cask storage transfer process unit had been sent to Charlotte shortly before the audit to begin that verification process. The DCS auditors noted some relatively minor deficiencies and mixups, some possibly a conflict between DCS and Merrick procedures. The NRC reviewer's observation at Merrick indicated general good engineering practice and understanding of requirements, including IROFS categorization and design control and verification requirements.

Other QA, quality, and organizational issues noted by the DCS audit team pertaining to engineering processes will be documented in an audit results report along with deficiencies, observations and recommendations. The audit team thoroughly investigated a wide range of discipline areas of the engineering processes. The interviews conducted by the audit team were focused on resolving questions and/or concerns identified from a variety of document reviews. NRC staff observing the audit noted that the auditors thoroughly and appropriately evaluated and investigated the technical and programmatic areas. NRC staff observing the DCS audit concluded that the audit team performed according to their audit plan and to the DCS MPQAP and QA procedure requirements.

The NRC reviewers concluded that, with the exception noted for procurement control and QA program requirements at the DDO, the DCS MFFF QA program was adequate and was being effectively implemented for the activities reviewed at Merrick and in Charlotte. The NRC staff will verify corrective actions regarding the findings and deficiencies in the next in-office review of the DCS QA program implementation.

LIST OF IN-OFFICE REVIEW PARTICIPANTS AND PERSONNEL CONTACTED

[Merrick]

NRC	Wilkins Smith
DCS	Dennis Ivey
	Don Dalton
	Robert Justice
	Jim Shipp
Merrick	Greg Morris
	Marlene Aldrich
	John Buckle
	Marty Reibold
	John Andrzejczak
	Rick Sanchez
	Phil Voegtle
	Jean Anderson
	Bill Fillingim
	Nicholas Mendez

[CHARLOTTE]

NRC	Scott Gordon
	James Pearson
DCS	James Cassidy
	Dennis Ivey
	Don Dalton
	Tom Doering
	Mikie Gibson
	Mindy Singleton
	Gary Medley

LIST OF ACRONYMS USED

ASL	Approved Supplier List
DCS	Duke, Cogema, Stone & Webster
IROFS	Items Relied On For Safety
ISA	Integrated Safety Analysis
MFFF	MOX Fuel Fabrication Facility
MOX	Mixed Oxide
MPQAP	MOX Project Quality Assurance Plan
NRC	Nuclear Regulatory Commission
QA	Quality Assurance