

August 9, 2004

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

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

FROM: William Troskoski, Sr. Chemical Engineer /RA/
Mixed Oxide Facility Licensing Section
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

SUBJECT: July 14, 2004, MEETING SUMMARY: MEETING WITH DUKE
COGEMA STONE & WEBSTER TO DISCUSS THE REVISED
CONSTRUCTION AUTHORIZATION REQUEST FOR THE MIXED
OXIDE FUEL FABRICATION FACILITY

On July 14, 2004, U.S. Nuclear Regulatory Commission (NRC) staff met with Duke Cogema Stone & Webster (DCS), the mixed oxide fuel fabrication facility (MFFF) applicant, to discuss the Revised Construction Authorization Request (RCAR) that was submitted on June 10, 2004. The meeting agenda, summary, handouts, attendance list, and clarifying information provided by DCS are attached (Attachments 1, 2, 3, and 4 respectively).

Docket: 70-3098

Attachments: 1. Meeting Agenda
2. Meeting Summary
3. Meeting Handouts
4. Attendance List

cc:

P. Hastings, DCS	L. Zeller, BREDL
J. Johnson, DOE	G. Carroll, GANE
H. Porter, SCDHEC	D. Curran, GANE
J. Conway, DNFSB	D. Silverman, DCS

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OFC	MOFLS	GCFLS	GCFLS	MOFLS
NAME	WTroskoski	DBrown	LMarshall	SMagruder
DATE	08/03/04	08/05/04	08/9/04	08/09/04

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**MEETING AGENDA
MOX FUEL FABRICATION FACILITY
July 14, 2004**

July 14, 2004

1:00 PM Discussion of changes to the Revised Construction Authorization Request

3:00 PM Adjourn

MEETING SUMMARY
MOX FUEL FABRICATION FACILITY
July 14, 2004

Purpose:

The purpose of the meeting was for Duke Cogema Stone and Webster (DCS) to identify the changes made to the Revised Construction Authorization Request (RCAR) that resulted from the Department of Energy's (DOE's) decision to relocate the controlled area boundary (CAB) from the Savannah River Site (SRS) boundary to the MOX Fuel Fabrication Facility (MFFF) boundary.

Meeting Summary:

DCS described the changes that it made to the RCAR dated June 10, 2004. The major changes related to the CAB change included:

1. CAB relocation from the SRS boundary (with a minimum distance of 8 km) to the MFFF site boundary (with a minimum distance of about 160 m from the MFFF stack).
2. Changed the public receptor to an "individual outside controlled area" (IOC).
3. Changed the analysis methodologies by revising the ARCON96 methodology and deleting the MACCS2 and ALOHA methodologies.

As a result of the above changes, the process cell exhaust system (POE) is now designated as a PSSC in order to meet the 10 CFR 70.61 performance requirements. Other major changes made to the RCAR that are not related to the CAB included:

1. Replacement of the Uranium Oxide Dissolution Unit with the Uranyl Nitrate System.
2. Addition of a Waste Organic Solvent Unit.
3. Clarification of crane/hoist equipment requirements.
4. Corrections to codes and standards.
5. Geotechnical report related changes.

The NRC staff noted that the RCAR would be reviewed by the appropriate technical reviewers to determine whether the proposed changes are acceptable or whether any request for additional information (RAI) was needed to clarify the information in the submittal.

**DUKE COGEMA STONE & WEBSTER SLIDES
MIXED OXIDE FUEL FABRICATION FACILITY
CONSTRUCTION AUTHORIZATION REQUEST (CAR)
REVISION SUMMARY
July 14, 2004**

MEETING ATTENDEES

<u>NAME</u>	<u>AFFILIATION</u>
William Troskoski	Nuclear Regulatory Commission (NRC)
Rex Wescott	NRC
Joseph Giitter	NRC
David Brown	NRC
Christopher Tripp	NRC
Hironori Peterson	NRC
Michael Lamastra	NRC
Joel Klein	NRC
Herman Graves	NRC
Garrett Smith	NRC
David Ayres	NRC
Wilkins Smith	NRC
Steward Magruder	NRC
Darrell Gardner	Duke Cogema Stone & Webster (DCS)
Brenda Lucas	DCS
Thomas Clements	Green Peace International
Samuel Glenn	NNSA/Savannah River
Donald Williams	Oak Ridge National Laboratory
Faris Badwan	Los Alamos National Laboratory
Vijay Nilekani	International Access Corp.
Herb Feinroth	Gamma Engineering
Jim Clark	J.R. Clark Associates
Daniel Horner	McGraw-Hill



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Mixed Oxide Fuel Fabrication Facility Construction Authorization Request (CAR) Revision Summary

Meeting with NRC Staff
NRC Headquarters
14 July 2004



Agenda

- **Overview of CAR Revision**
 - Controlled Area Boundary (CAB)-Related Changes
 - Design Basis-Related Changes
 - Changes to Incorporate Previously Open Items
 - Other Changes
- **Summary of CAR Changes by Chapter**
- **CAR Revision Review Schedule**



CAB-Related Changes

- CAB-related changes generally consist of the following:
 - CAB Location
 - Receptor Definition
 - Methodology
 - PSSC
 - Editorial
- Minimal design changes resulted from change in CAB
 - New CAB similar to original distance used for “site worker”
 - Worker and public dose limits are different by less than an order of magnitude
 - Significant margins in design and accident analysis assumptions



CAB-Related Changes

- CAB Location
 - Revised physical location of *controlled area boundary*
 - Moved from existing Savannah River Site boundary (minimum distance ~ 8 km) to MFFF site boundary (minimum distance ~160 m from MFFF stack)
 - Added new figure depicting controlled area boundary
- Receptor Definition
 - Previous “public” receptor changed to “individual outside controlled area” (IOC) throughout the CAR
 - IOC is located at 160 m
 - Deleted commitment to train non-workers within controlled area under 10CFR70.61(f)(2) and will now comply with 10CFR70.61(f)(1)



CAB-Related Changes

- Methodology
 - Revised ARCON96 Methodology
 - Added X/Q information for 160 m receptor
 - Deleted MACCS2 Methodology
 - Not the preferred methodology for distances close to the release point (e.g., 100 to 160 m)
 - Deleted ALOHA Methodology
 - PSSC
 - Upgrade Depressurized Exhaust System (POE)
 - Editorial
 - Added Units to Equations
 - Added Information for Completeness
-



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CAB-Related Changes

- Impacts of CAB-related Changes on Results
 - POE is now designated as a PSSC
 - Analyses demonstrate that 10 CFR 70.61 Performance Requirements are satisfied with margin



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Design Basis-Related Changes

- Additional changes were provided in this CAR update, but were not directly related to the CAB change
- These additional changes were:
 - Design Progress
 - Clarification of Crane/Hoists Equipment Requirements
 - Codes/Standards
 - Geotechnical Report



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Design Basis-Related Changes

- Design Progress
 - System Updates
 - Uranium Oxide Dissolution Unit replaced with Uranyl Nitrate System
 - Added Waste Organic Solvent Unit
 - Updated Chemical Inventory List
 - Updated Am and Waste Stream Values
 - Revised Release Values from DOE Reference for Pu Powders
 - PSSCs
 - Maintenance Activity Control (Electrolyzer Fire)
 - Sintering Furnace Pressure Controls
 - Pneumatic transfer system – double walled pipes



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Design Basis-Related Changes

- Clarification of Crane/Hoists Equipment Requirements
 - seismic requirements were clarified
 - updated information regarding codes and standards
- Corrections to Codes and Standards
 - Corrected typographical errors on code dates from previous CAR
 - Corrected code versions to be consistent with basis of design document
- Geotechnical Report Related Changes
 - References to 2000 and 2001 report updated to 2003 Geotechnical Report
 - References to 2001 WSRC site-wide spectra report updated to 2003 WSRC Report
 - Changes consistent with revised Geotechnical Report submitted to NRC 30 June 2003
 - There was no impact to CAR information



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Incorporation of Previously Open Items

- Resolution of previously Open Items have been incorporated into the CAR
 - CS-01 Red Oil
 - CS-05b TEELS
 - MP-01 Uranium Burnback
 - AP-10 Titanium Fires



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Other Changes

- Treatment of Secured Warehouse Material
 - Regulated under 10 CFR Part 40 (will be discussed in operating license application)
- Editorial Changes
 - Updated Building Dimensions
 - Added Information for Completeness
 - Added Units to Equations
 - Updated DCS Corporate Officer Information and Titles



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Summary of CAR Changes

Chapter 1

- Section 1.1.2.1
 - Updated Definition of CAB and defined Individual Outside Controlled Area (IOC)
 - Updated Figure 1.1-2 to show new CAB and restricted area
 - Deleted Figure 1.1-3 (previously showed CAB at SRS boundary)
- Section 1.2.1
 - Updated the names/titles of the MFFF DCS corporate officers
- Sections 1.3 – 1.8
 - Updated references to 2003 Geotechnical Report and WSRC Site-Wide Spectra Report



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Summary of CAR Changes

Chapter 4

- Section 4.1.1
 - Editorial change to reflect the revised DCS organizational structure and titles



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Summary of CAR Changes

Chapter 5

- Generic to Chapter 5
 - Editorial change - Public to IOC
 - System Information
 - Deleted Uranium Dissolution (replaced with RUN as necessary)
 - Added Solvent Waste Reception Information
 - Revised Depleted Uranium Information
 - Miscellaneous Editorial
- Sections 5.1-5.4
 - Revised Discussion on receptors and locations to be consistent with Chapter 1 and new CAB
 - Revised Methodology Discussion for *X/Q*
 - Deleted MACCS2 information (for 5 mile receptor)
 - Added ARCON96 methodology for IOC



Summary of CAR Changes Chapter 5 (continued)

- Section 5.5
 - Revised event scenarios
 - Added prevention/mitigation features for IOC (deleted Public)
 - Credited POE as a PSSC
 - Revised/Added defense-in-depth discussion (i.e., C2/C3)
 - Added bounding events for IOC
 - Revised bounding events due to mature design information
 - Revised Release Fractions consistent with waste drum
 - Used established criticality limit for waste drums
 - Added Waste Reception Unit tanks
 - Updated Red Oil safety strategy to reflect open item CS-01 resolution
 - Revised depleted uranium discussion in the secured warehouse



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Summary of CAR Changes

Chapter 5 (continued)

- Section 5.5 (cont.)
 - Updated material inventory
 - Form (i.e., powder)
 - Location (identified new/deleted tanks)
 - Updated MAR information for Americium
 - Updated Fire Information
 - Revised fire areas as design matured
 - Updated Material Inventory in some fire areas
 - Added description of AP Electrolyzer Fire
 - PSSCs
 - Regrouped generic glovebox information into specific Electrolyzer Group
 - Added maintenance activity for electrolyzer
 - Identified Combustible Loading Controls for C1/C2 areas
 - Regrouped Process Safety Control Information into Sintering Furnace Control



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Summary of CAR Changes

Chapter 6

- Section 6.5
 - Editorial – made consistent with words in Chapter 14 regarding Emergency Plan



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Summary of CAR Changes

Chapter 8

- Generic to Chapter 8
 - Editorial - Public to IOC
 - Updated Chemical Inventory information
 - Deleted Uranium Dissolution; added Waste Organic Solvent titles
 - Miscellaneous editorial
- Section 8.3
 - Methodology information deleted or revised due to deleting public receptor at 5.0 miles and using the IOC at 160 meters
 - ALOHA and MACCS2 information deleted
 - Updated commitment to IDLH and use of TEELs as result of closure of open item CS-05b



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Summary of CAR Changes

Chapter 8 (continued)

- Section 8.4
 - Deleted depleted uranium analysis in secured warehouse
- Section 8.5
 - Included commitment on solution temperature and rate of temperature rise for red oil control (Open Item CS-01 closure)
 - Changed from instrument air to service air and changed the flow rate from 1.3 to 0.92 kg/hr



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Summary of CAR Changes Chapter 8 (continued)

- Chapter 8 Tables
 - Added CAS number for Hydrogen
 - Added footnote 3 to quantity definition (indicates that these table values are approximate values)
 - Change to the reaction product
 - Uranyl nitrate - updated comment; deleted reference to Note 1
 - Updated discussion on reaction product for water and changed public to IOC
 - Expanded the diluent discussion added footnote identifier
 - Updated Chemical Inventory List and Added TEEL information (sodium sulfite)



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Summary of CAR Changes

Chapter 9

- Section 9.1
 - Editorial - refers to Chapter 10 for Environmental Protection discussions
 - Editorial - remove distinction of minimizing exposure to only site workers and public



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Summary of CAR Changes

Chapter 10

- Editorial
- Section 10.1
 - Revised Waste Acceptance Criteria discussion. Waste stream will now go to the WSB and the chloride concern expressed earlier is not valid at this point.
 - Removed reference to the high alpha waste and depleted uranium streams. WSB is designed to manage the MFFF liquid and solid wastes.
 - Waste Solvents - Deleted level of detail for HP technician actions
 - Chloride streams - Reference to the SRS Effluent Treatment Facility changed to SRS LLW treatment facility
 - Potentially Contaminated Water- Removed leak detection previously identified on the transfer lines
 - Laboratory Waste - "solidified" has been replaced with "will be packaged"
- Section 10.2
 - Deleted "20%" of 10CFR20, Appendix B, Table 2. No specific percent specified.
 - Deleted detail associated with collection of grab samples from the stack



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Summary of CAR Changes

Chapter 11

- Generic to Chapter 11
 - Updated System/Unit Information
 - Replaced Uranium Dissolution Unit with Uranyl Nitrate System
 - Added Solvent Waste Reception (Waste Organic Solvent) Information
 - Revised Depleted Uranium Information
 - Editorial Changes (e.g., IOC Terminology, text and terminology made consistent with other changes)
- Section Chapter 11.1
 - Added/revised descriptive information (i.e., areas, dead loads, structural model description)
 - Added Codes and Standards (i.e., Supplement 1 of ANSI/AISC N690-1994; AWS D1.6 for Structural Welding Code of SS)



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Summary of CAR Changes

Chapter 11

- Section 11.3
 - Updated System/Unit Information
 - Deleted Uranium Dissolution Unit Information
 - Revised through-put (i.e., amount of Cl_2 decreased)
 - Added Solvent Waste Reception (Waste Organic Solvent) Information



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Summary of CAR Changes

Chapter 11 (Cont)

- Section 11.4
 - Revised Text to Reflect Upgraded POE design
 - Added Descriptive Information to VHD Exhaust System
 - Corrected Typo (AMCA-1999 should have been AMCA-99-1986)
 - Corrected Date on Design Basis for Non-Principal SSCs
 - ASHRAE 90.1-1999 corrected to 1989
 - NFPA 90A-1999 corrected to 1996
 - Added Additional Codes and Standards
 - Gloveboxes (i.e., AAWS D1.6-1999, EJMA-1993)
 - Loads and Forces (i.e., AISC N690)
 - Load Combinations and Stress Limit Coefficients (i.e., AISC N 690)



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Summary of CAR Changes

Chapter 11 (Cont)

- Section 11.7
 - Identified Double Wall Pneumatic Transfer Piping in C2 Areas
 - Added Clarification Information for Cranes, Hoists and Lifting Equipment (i.e., maintenance cranes vs overhead cranes)

- Section 11.9
 - Updated System/Unit Information
 - Deleted Uranium Dissolution Unit Information (text and figure)
 - Added Uranyl Nitrate System (text and figure)
 - Added Solvent Waste Reception (Waste Organic Solvent) Information
 - Revised Scavenging Air System (POE related)
 - Added Methane/Argon System to List of Gas Systems



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Summary of CAR Changes

Chapter 11 (Cont)

- Section 11.10
 - Added Clarification Information for Cranes, Hoists and Lifting Equipment (i.e., types, locations)



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Summary of CAR Changes

Chapter 13

- Editorial corrections



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Summary of CAR Changes

Chapter 14

- Editorial - clarified language



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CAR Revision Review Schedule

- CAR update submitted June 10, 2004
- Construction anticipated in May 2005
- DCS does not anticipate any additional CAR updates
- NRC discussion of anticipated Construction Authorization
 - CAR update review schedule
 - Schedule for closure of remaining open items