

DUKE COGEMA STONE & WEBSTER

DOCKET NO. 70-3098

MIXED OXIDE FUEL FABRICATION FACILITY

CONSTRUCTION AUTHORIZATION

Construction Authorization No. CAMOX-001

1. The United States Nuclear Regulatory Commission (the Commission) having found that:
  - A. The Construction Authorization Request (CAR), as revised, submitted by Duke Cogema Stone & Webster (DCS) complies with the requirements of the Atomic Energy Act of 1954, as amended (the Act), and the rules and regulations of the Commission, there is reasonable assurance that the activities authorized by this construction authorization will be conducted in compliance with those rules and regulations, as more fully documented in the Final Safety Evaluation Report (FSER) on the CAR;
  - B. In accordance with 10 CFR 70.23(b), on the basis of information described in the CAR, as revised, and the additional statements and commitments heretofore made by DCS in docketed correspondence listed in Attachment A, the design bases of the principal structures, systems, and components (PSSCs) for the proposed Mixed Oxide Fuel Fabrication Facility (sometimes referred to hereafter as "the facility"), and the quality assurance program, provide reasonable assurance of protection against natural phenomena and the consequences of potential accidents;
  - C. Findings necessary to authorize possession and use of licensed material at the facility are deferred pending submission and evaluation of an application requesting such a license;
  - D. After weighing the environmental, economic, technical, and other benefits of the facility against environmental costs and considering available alternatives, the issuance of a construction authorization is in accordance with 10 CFR 70.23(a)(7), 10 CFR Part 51, and the requirements of Section 102(2)(A) and (C) of the National Environmental Policy Act; and
  - E. The issuance of this construction authorization will not be inimical to the common defense and security, and will not constitute an unreasonable risk to the health and safety of the public.
2. Pursuant to 10 CFR Part 70, the Commission hereby issues a construction authorization to DCS for a plutonium processing and fuel fabrication plant as described in the revised CAR filed by DCS. The plant, known as the Mixed Oxide Fuel Fabrication Facility, will be located on the Department of Energy's Savannah River Site near Aiken, South Carolina.

3. This construction authorization is subject to all applicable requirements of the Act, and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the conditions specified or incorporated below:
  - A. Authorized activity: To construct a plutonium processing and mixed oxide fuel fabrication plant in accordance with the statements, representations, and conditions of: (1) the CAR dated October 30, 2002 (as revised in supplements dated December 12, 2002; February 18, 2003; April 1, 2003; April 8, 2003; July 28, 2003; June 10, 2004; January 27, 2005, and February 9, 2005); (2) the MOX Project Quality Assurance Plan dated March 26, 2002; and (3) the Environmental Report dated December 19, 2000 (as revised in supplements dated July 11, 2002; December 10, 2002; January 15, 2003; June 20, 2003; August 13, 2003; and June 10, 2004).
  - B. The facility shall be constructed and located at the site as described in the CAR on the Department of Energy's Savannah River Site, near Aiken, South Carolina.
  - C. This construction authorization authorizes DCS to construct the facility in accordance with the design bases of the PSSCs described in the CAR, and environmental protection commitments set forth in DCS' Environmental Report and revisions thereto.
  - D. During construction of the facility, the inspection program set forth in 10 CFR 70.55 will apply to all of DCS' construction-related activities.
  - E. As more fully set forth in the FSER, the facility will be designed so that  $k_{\text{eff}}$  shall not exceed an Upper Subcritical Limit of 0.9249 for normal and credible abnormal conditions covered by Area of Applicability (4), [AOA(4)]. DCS shall not increase the  $k_{\text{eff}}$  limits or change the AOA boundaries beyond those contained in FSER Chapter 6 without prior Commission review and approval.
  - F. As more fully set forth in the FSER, the facility will be designed so that a safety function of the Emergency Control Room (ECR) Air Conditioning System will maintain hazardous chemical concentrations in each ECR below CAR Table 8-5 TEEL-1 limits for the duration of credible hazardous chemical release events.
4. This construction authorization is subject to the limitation that a license authorizing operation of the facility will not be issued by the Commission until DCS has submitted, and the Commission has reviewed and approved, a request for a license to possess and use licensed material at the facility.

5. This construction authorization is effective as of its date of issuance, and shall expire ten years from its date of issuance, provided, however, that the Director of the Office of Nuclear Material Safety and Safeguards may, in writing and for good cause shown by DCS in writing not less than 90 days before the date of expiration, extend the authorization.

For the Nuclear Regulatory Commission

/RA/

Jack R. Strosnider, Director  
Office of Nuclear Material Safety  
and Safeguards

Date of Issuance: March 30, 2005

## Attachment A

DCS shall conduct its operations in accordance with all commitments, representations, and statements made by DCS that are contained in the following submittals, and which are hereby incorporated by reference, except where superceded by conditions in this construction authorization.

DCS 2000. Hastings P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission, RE "Choice of MFFF Process Glovebox Window Material," (DCS-NRC-000030), December 15, 2000.

DCS 2001. Hastings P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE "MOX Fuel Fabrication Facility CAR Supplemental Information—Site Geotechnical Report," (DCS01-WRS-DS-NTE-G-00005- A), April 24, 2001.

DCS 2001. Hastings P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE "Responses to Request for Additional Information for Duke Cogema Stone & Webster (DCS) Mixed Oxide (MOX) Fuel Fabrication Facility (FFF) Environmental Report (ER)," July 12, 2001.

DCS 2001. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission, RE "MOX Fuel Fabrication Facility Site Geotechnical Report," (DCS01-WRS-DS-NTE-G-00005-C), August 10, 2001.

DCS 2001. Hastings P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE "Response to Request for Additional Information - Construction Authorization Request," August 31, 2001.

DCS 2001. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE "Proprietary DCS Financial Information," August 31, 2001.

DCS 2001. Hastings P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE "Response to Clarification Request — Responses to Request for Additional Information on the Duke Cogema Stone & Webster Oxide Fuel Fabrication Facility Environmental Report," October 22, 2001.

DCS 2001. Hastings P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE "Responses to Request for Clarification of Additional Information for Duke Cogema Stone & Webster (DCS) Mixed Oxide (MOX) Fuel Fabrication Facility (FFF) Environmental Report (ER)," October 26, 2001.

DCS 2001. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE "Clarification of Responses to NRC Request for Additional Information," December 5, 2001.

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DCS 2001. Hastings P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Changes to Mixed Oxide Fuel Fabrication Facility Environmental Report,” December 11, 2001.

DCS 2002. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Clarification of Responses to NRC Request for Additional Information,” January 7, 2002.

DCS 2002. Hastings, P., Duke Cogema Stone & Webster, letter to Nuclear Regulatory Commission RE “Clarification of Responses to NRC Request for Additional Information,” February 11, 2002.

DCS 2002. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Clarification of Responses to NRC Request for Additional Information,” March 8, 2002.

DCS 2002. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Quality Assurance Program for Construction of the Mixed Oxide Fuel Fabrication Facility,” March 26, 2002.

DCS 2002. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Clarification of Responses to NRC Request for Additional Information,” April 23, 2002.

DCS 2002. Hastings, P., Duke Cogema Stone and Webster, letter to U.S. Nuclear Regulatory Commission RE “Mixed Oxide Fuel Fabrication Facility – Evaluation of the Draft Safety Evaluation Report (DSER) on Construction of a Mixed Oxide Fuel Fabrication Facility,” July 9, 2002.

DCS 2002. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Responses to the Request for Additional Information on the Environmental Report Revisions 1 & 2,” October 29, 2002.

DCS 2002. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Corrections to Responses to the Request for Additional Information on the Environmental Report Revisions 1 & 2,” November 15, 2002.

DCS 2002. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Requests for Additional Information, Clarifications, and Open Item Mapping into the Construction Authorization Request Revision,” November 22, 2002.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Duke Cogema Stone & Webster Mixed Oxide Fuel Fabrication Facility Criticality Validation Report - Criticality Validation Report - Revision 1 of Part I and Original Issue of Part II,” January 8, 2003

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DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Responses to Site Description, Instrumentation and Criticality Open Items/Additional NRC Questions on Construction Authorization Request (CAR) Revision,” February 11, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Responses to Financial Qualification, Fire Safety, Chemical Safety, Aqueous Processing, Material Processing and Ventilation Open Items/Additional NRC Questions on Construction Authorization Request (CAR) Revision,” February 18, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to the U.S. Nuclear Regulatory Commission RE “Response to DSER Open Item FS-2,” DCS-NRC-000134, May 14, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to the U.S. Nuclear Regulatory Commission RE “Response to DSER Open Items AP-3 and CS-3,” May 23, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to the U.S. Nuclear Regulatory Commission RE “Response to DSER Open Items AP-10 and CS-2,” May 30, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Evaluation of Draft Safety Evaluation Report (DSER) on Construction of Proposed Mixed Oxide Fuel Fabrication Facility, Revision 1,” May 30, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Meeting Minutes from the 02-04 June 2003 Public Meeting on Chemical Safety Open Items,” June 5, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Response to DSER Open Item NCS-04,” June 13, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “MOX Fuel Fabrication Facility Site Geotechnical Report ,” (DCS01-WRS-DS-NTE-G-00005-E), June 30, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE “Criticality Validation Report–Revision 3 of Part I, Revision 2 of Part II, and Revision 1 of Part III, Response to DSER Open Item NCS-04,” July 2, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster (DCS), letter to U.S. Nuclear Regulatory Commission RE “Response to DSER Open Item CS-2,” July 28, 2003.

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DCS 2003. Hastings, P., Duke Cogema Stone & Webster (DCS), letter to U.S. Nuclear Regulatory Commission RE "Response to Request for Additional Information–MFFF Criticality Validation Report, DSER Open Item NCS-04," July 29, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster (DCS), letter to U.S. Nuclear Regulatory Commission RE "Response to Request for Additional Information - Chemical Safety Open Items CS-09, AP-02, AP-08, and AP-09," September 29, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster (DCS), letter to U.S. Nuclear Regulatory Commission RE "Response to Request for Additional Information - Chemical Safety Open Items CS-01 and CS-02," October 6, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster (DCS), letter to U.S. Nuclear Regulatory Commission RE "Response to Request for Additional Information - DSER Open Items MP-01 (UO2) and AP-03 (Titanium Fires)," October 10, 2003.

DCS 2003. Hastings, P., Duke Cogema Stone & Webster (DCS), letter to U.S. Nuclear Regulatory Commission RE "Criticality Validation Report–Revision 3 of Part II: Response to DSER Open Item NCS-04," October 10, 2003.

DCS 2004. Hastings, P., Duke Cogema Stone & Webster (DCS), letter to U.S. Nuclear Regulatory Commission RE "Mixed Oxide Fuel Fabrication Facility (MFFF), Response to Questions on the Criticality Validation Report–Revision 3 of Part II," February 12, 2004.

DCS 2004. Hastings, P., Duke Cogema Stone & Webster (DCS), letter to U.S. Nuclear Regulatory Commission RE "Response to Request for Additional Information - DSER Open Item AP-03 (Titanium Fires)," March 12, 2004.

DCS 2004. Swiegart, R., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission, RE "Mixed Oxide Fuel Fabrication Facility, Response to Request for Additional Information," October 11, 2004.

DCS 2005. Ashe, K., Duke Cogema Stone & Webster, letter to U.S. Nuclear Regulatory Commission RE "Criticality Review," February 28, 2005.

NRC 2001. Persinko, A., U.S. Nuclear Regulatory Commission, memorandum to Leeds, E., NRC, RE "January 4-5, 2001 Summary of Meeting with Duke Cogema Stone & Webster to Discuss Design Basis for the Mixed Oxide Fuel Fabrication Facility," January 24, 2001.

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NRC 2001. Persinko, A., U.S. Nuclear Regulatory Commission, letter to Hastings, P., Duke Cogema Stone & Webster RE "Duke Cogema Stone & Webster Quality Assurance Program for the Construction of the MFFF," October 1, 2001.

NRC 2001. Persinko, A., U.S. Nuclear Regulatory Commission, memorandum to E.J. Leeds, NRC RE "11/27-29/01 In-Office Review Summary of DCS Construction Authorization Request Supporting Documents for the MFFF," December 18, 2001.

NRC 2002. Persinko, A., U.S. Nuclear Regulatory Commission, memorandum to E.J. Leeds, NRC, RE "2/13/02 Meeting Summary: MFFF Program Changes and Applicant Reorganization," February 27, 2002.

NRC 2002. Persinko, A., U.S. Nuclear Regulatory Commission, memorandum to E.J. Leeds, NRC, RE "2/22/02 Phone Call Summary: DCS Construction Authorization Request Supporting Documents for the MFFF," February 28, 2002.

NRC 2002. Brown, D., U.S. Nuclear Regulatory Commission, Memorandum to Eric Leeds, NRC RE "February 21-22, 2002 In-Office Review Summary: Review of Duke Cogema Stone and Webster Construction Authorization Request Supporting Documents for the Mixed Oxide Fuel Fabrication Facility," March 11, 2002.

NRC 2002. U.S. Nuclear Regulatory Commission (NRC). Transcript of Staff and DCS Briefing to the Advisory Committee on Reactor Safety (ACRS) on the MFFF, "Electrical and Instrument and Control Systems Overview," April 10, 2002.

NRC 2002. Persinko, A., U.S. Nuclear Regulatory Commission, memorandum to M.N. Leach, NRC, RE "August 28-30, 2002 In-Office Review Summary of DCS Construction Authorization Request Supporting Documents for the MFFF," December 31, 2002.

NRC 2003. Persinko, A., U.S. Nuclear Regulatory Commission, letter to Hastings, P., Duke Cogema Stone & Webster RE "Duke Cogema Stone & Webster Quality Assurance Program for the Construction of the MFFF," January 10, 2003.

NRC 2003. Persinko, A., U.S. Nuclear Regulatory Commission, memorandum to Melvyn N. Leach, NRC, RE "December 10-12, 2002, Meeting Summary: Meeting with Duke Cogema Stone & Webster to Discuss Mixed Oxide Fuel Fabrication Facility Revised Construction Authorization Request," January 31, 2003.

NRC 2003. Persinko, A., U.S. Nuclear Regulatory Commission, memorandum to Melvyn N. Leach, NRC, RE "Meeting Summary: February 6-7 Meeting with Duke, Cogema, Stone & Webster to discuss the Mixed Oxide Fuel Fabrication Facility Revised Construction Authorization Report," March 5, 2003.

NRC 2003. Persinko, A., U.S. Nuclear Regulatory Commission, memorandum to K. Gibson, NRC, RE "June 2-4, 2003, Meeting Summary: Meeting with Duke Cogema Stone & Webster to Discuss Chemical Safety Related to Mixed Oxide Fuel Fabrication Facility," July 18, 2003.

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NRC 2003. Persinko, A., U.S. Nuclear Regulatory Commission, memorandum to K. Halvey Gibson, NRC, RE "July 29 - August 1, 2003, Meeting Summary: Meeting with Duke Cogema Stone & Webster to Discuss Open Items Related to Mixed Oxide Fuel Fabrication Facility," August 29, 2003.

NRC 2003. Brown, D., U.S. Nuclear Regulatory Commission, memorandum to J. Giitter, NRC, RE "October 16 & 21, 2003 Summary of Phone Call with the Applicant: Chemical Safety Open Items for the Mixed Oxide (MOX) Fuel Fabrication Facility," October 22, 2003.

NRC 2003. Persinko, A., U.S. Nuclear Regulatory Commission, memorandum to Joseph G. Giitter, NRC, RE "November 13, 2003, Meeting Summary: Meeting with Duke Cogema Stone & Webster to Discuss Nuclear Criticality Safety Related to Mixed Oxide Fuel Fabrication Facility Revised Construction Authorization Report," December 3, 2003.

NRC 2004. Tripp, C. S., U.S. Nuclear Regulatory Commission, memorandum to Joseph G. Giitter, NRC, RE "December 17-19, 2003, In-Office Review Summary: Duke Cogema Stone & Webster Construction Authorization Request Supporting Documentation for Criticality Code Validation," January 8, 2004.

NRC 2004. Persinko, A., U.S. Nuclear Regulatory Commission, letter to P.S. Hastings, Duke Cogema Stone & Webster, RE "Mixed Oxide (MOX) Fuel Fabrication Facility Nuclear Criticality Safety—Review of Validation Report," April 16, 2004.

NRC 2005. Tripp, C. S., U.S. Nuclear Regulatory Commission, memorandum to Joseph G. Giitter, NRC, RE "February 1-2, 2005, In-Office Review Summary: Duke Cogema Stone & Webster Construction Authorization Request Supporting Documentation for Criticality Code Validation," March 14, 2005.