

March 15, 2001

MEMORANDUM TO: Ashok C. Thadani, Director  
Office of Nuclear Regulatory Research

FROM: Martin J. Virgilio, Director **/RA/**  
Office of Nuclear Material Safety  
and Safeguards

SUBJECT: REQUEST FOR ASSISTANCE TO REVIEW MIXED OXIDE FUEL  
FABRICATION FACILITY LICENSE APPLICATION

Introduction

The Office of Nuclear Material Safety and Safeguards (NMSS) is responsible for the licensing and regulation of a mixed oxide (MOX) fuel fabrication facility to be used for producing fuel for commercial nuclear power plants using surplus plutonium from nuclear weapons. The license applicant, Duke Cogema Stone & Webster (DCS), submitted an application for construction authorization on February 28, 2001. NMSS staff will review the application in accordance with NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide Fuel Fabrication Facility." NMSS requires technical support in the areas of instrumentation and controls, seismic hazards, tornado hazard, and structural design. These needs are described in more detail in the attachment.

NMSS requests the Office of Nuclear Regulatory Research (RES) to provide technical assistance in the review of the DCS application for construction authorization of a MOX fuel fabrication facility in the areas of instrumentation and controls, human factors, seismic hazards, tornado hazard, and structural design. The scope of work to meet this request would include, but would not be limited to:

- (1) Acceptance review of applicable sections of the DCS application for construction authorization in accordance with NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide Fuel Fabrication Facility." This will be performed without technical contract support.
- (2) If the application is accepted for review, review of applicable sections of the DCS application for construction authorization in accordance with NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide Fuel Fabrication Facility."
- (3) Review of applicable sections of the DCS Environmental Report.
- (4) Provide technical project management for contracts with the Center for Nuclear Waste Regulatory Analyses (CNWRA) in the area of seismic hazard, liquefaction-slope stability, tornado hazard, and structural analysis.

- (5) Prepare draft and final Safety Evaluation Report sections for the areas of instrumentation and controls, human factors, seismic hazards, tornado hazard, and structural design.

NMSS will prepare a separate user need memorandum for work to be performed for the review of the license application for facility operations, expected to be submitted in July 2002.

#### Contacts and Coordination

Mr. Andrew Persinko will serve as the NMSS technical monitor for the activities in the areas of seismic hazard, tornado hazard, and structural design. Mr. Fred Burrows will serve as the NMSS technical monitor for the activities in the area of instrumentation and controls. Both Mr. Persinko (301) 415-6522 and Mr. Burrows (301) 415-8110 work in the Division of Fuel Cycle Safety and Safeguards.

Docket: 70-3098

#### Attachment:

Requested RES Assistance on  
MOX Fuel Fabrication Facility Application  
Review

- (5) Prepare draft and final Safety Evaluation Report sections for the areas of instrumentation and controls, human factors, seismic hazards, tornado hazard, and structural design.

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#### DISTRIBUTION: Docket: 70-3098

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DOCUMENT NAME: G:\SPB\TCJ\MOXUSERNEED.WPD\*Please see previous concurrence.

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Requested Research Assistance on  
Mixed Oxide Fuel Fabrication Facility Application Review

A. Technical Issues

Under an agreement with Russia, the Department of Energy (DOE) is dispositioning approximately 34 metric tons of surplus plutonium from nuclear weapons and irreversibly converting this material into forms unusable for weapons. In this program, approximately 26 metric tons of plutonium will be converted into mixed oxide (MOX) fuel for use in commercial nuclear power plants. DOE contracted with a consortium of Duke, Cogema, and Stone & Webster (DCS) to build and operate the MOX fuel fabrication facility. In the 1999 Defense Authorization Act, Congress assigned the Nuclear Regulatory Commission (NRC) the responsibility for licensing the fuel fabrication facility for the MOX fuel. The Division of Fuel Cycle Safety and Safeguards (FCSS) is expecting an application for construction authorization from DCS in February 2001.

In August 2000, FCSS issued NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility." NRC staff will review the DCS application in accordance with this standard review plan. The standard review plan addresses the areas needed for review of the application. Technical issues in the areas of instrumentation and controls, seismic hazards, tornado hazard, and structural design need to be reviewed.

B. Regulatory Application

Part 70 establishes the requirements for issuance of a license for a plutonium processing and fuel fabrication facility. Under these requirements (10 CFR Sections 70.23(a)(7), 70.23(a)(8), and 70.23(b)), NRC must authorize the construction of the facility prior to construction. In this review, NRC will review the site description, a safety analysis of the design bases of the principal structures, systems, and components, and the quality assurance program. For the facility operating license, NRC staff will review a complete facility safety analysis, design of safety equipment and operator actions, management measures, an emergency plan, a physical protection plan, and a material accounting plan. At this stage, NRC will only be reviewing the information needed to authorize construction. That information will focus mostly on the design basis rather than the actual designs (see design basis definition in 10 CFR 50.2).

Under 10 CFR Part 51, NRC must prepare an environmental impact statement (EIS) for the licensing of the MOX fuel fabrication facility. DCS submitted an Environmental Report for the project in December 2000. The preparation of the EIS will include scoping, preparation of a scoping report and preparation of a draft and final EIS.

C. Products

The products needed by NMSS include:

1. Acceptance review comments on applicable sections of the construction authorization.
2. Comments on applicable sections of the construction application.
3. Comments on the Environmental Report.
4. Draft and final Safety Evaluation Report sections for the areas of instrumentation and controls, seismic hazards, tornado hazard, and structural design.

5. Appropriate contract management documents for the Center for Nuclear Waste Regulatory Analyses (CNWRA) task in the areas of seismic hazard, liquefaction-slope stability, tornado hazard, and structural analysis.
6. In the event of a hearing, appropriate information will need to be developed to support litigation activities.

D. Schedule

The applicant submitted the Environmental Report in December 2000 and the construction authorization application on February 28, 2001. Comments on the Environmental Report are needed in May 2001. Estimated review schedules for the construction authorization application are as follows:

Construction application submitted	February 28, 2001
Acceptance review completed	March 23, 2001
Review start date	March 1, 2001
Request for additional information to NMSS	June 1, 2001
Draft safety evaluation report sections to NMSS	November 30, 2001
Final safety evaluation report sections to NMSS	May 30, 2002
Hearing, if held, assumed to begin	September 2002

The above schedule applies to the review of the construction authorization application. A separate user need memorandum will be provided for review of the license application for operations.

E. Priority

The review of the MOX license application will be a high priority agency action.

F. Level of Effort

The estimated levels of effort are as follows:

	<u>FY01 (FTE)</u>	<u>FY02 (FTE)</u>	<u>FY03 (FTE)</u>
Human factors	0.4	0.2	0.1
Seismic, tornado, structural	0.25	0.15	0.15
Instrumentation and controls	0.2	0.1	0.1

G. Technical Monitor

Andrew Persinko (415-6522, email address - AXP1), the MOX fuel fabrication facility project manager, will serve as NMSS's principal contact for this technical assistance request. Timothy C. Johnson (415-7299, email - TCJ) will be the alternate contact.