May 22, 2001

MEMORANDUM TO: Eric J. Leeds, Chief
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

THRU: Joseph Giitter, Chief
Enrichment Section
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

FROM: Wilkins Smith, Quality Assurance Specialist
Enrichment Section
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

SUBJECT: SUMMARY OF MEETING WITH DUKE COGEMA STONE & WEBSTER TO DISCUSS TECHNICAL INFORMATION FOR THE MIXED OXIDE FUEL FABRICATION FACILITY CONSTRUCTION AUTHORIZATION REQUEST

On April 25, 2001, U.S. Nuclear Regulatory Commission (NRC) staff met with representatives from Duke Cogema Stone & Webster (DCS) to discuss project status, project schedules, and technical information related to the DCS Construction Authorization Request (CAR) for the mixed oxide (MOX) fuel fabrication facility. The attendee list and meeting agenda are attached (Attachments 1and 2, respectively).

At the outset, Andrew Persinko, NRC MOX Project Manager, stated that the primary purpose of the meeting was to communicate to DCS the major areas of the CAR where the NRC staff has identified additional information needs to complete its technical review. The CAR was submitted by DCS on February 28, 2001, and was accepted for staff technical review on March 28, 2001. In its acceptance letter, the staff mentioned the need for a meeting to discuss further CAR information needs. DCS detailed responses to these needs was not requested or expected at the meeting. It was noted that discussion of seismic issues will be reserved for another meeting, and that management measures, including quality assurance, will be added to the seismic meeting's agenda.

Peter Hastings, DCS Licensing Manager, stated that DCS wants to readily provide all needed information to further meeting the MOX schedule. DCS noted that a submittal for CAR Chapter 2, Financial Qualitfications, was being finalized and would be submitted shortly. The Criticality Validation Report will be submitted in two parts, the first part in May 2001 and the second in late Fall of 2001. DCS also stated that they would like to have a meeting soon with NRC management to discuss the CAR technical review schedule.

Eric Leeds, Special Projects Branch Chief, stated that he would support a management meeting to discuss DCS and NRC schedule commitments and goals. He also encouraged DCS to meet with the staff often to assure that the staff has the information needed to perform its review . The staff technical reviewers should plan to visit DCS offices in Charlotte, North Carolina, to review the in-depth information that supports the CAR.

Most of the meeting was devoted to discussing, by technical discipline, the major areas that the staff's technical review has identified to date as needing further information. One general issue noted from the discussions was the definitions of highly unlikely and unlikely events, in that the definitions provided by DCS do not involve numerical likelihoods. Another was that the staff seeks quantitative reliabilities or target reliabilities for items relied on for safety (IROFS), and DCS had not provided them to date. A continuing issue of discussion was the design basis level of detail needed in some technical areas, including quantification of design basis functions and values.

An additional, general discussion area was the DCS approach and application in committing to certain versions of national concensus standards that NRC has not endorsed. Currently, in the electrical area, DCS has committed to some different versions than those endorsed by the NRC. The staff and DCS planned to review the differences between the versions and intended to discuss these differences with DCS in future meetings. This same situation may arise in other technical disciplines.

The general issue of the use of the term restricted area in the environmental performance requirements of 10 CFR Part 70 was discussed. DCS calculated these at the controlled area boundary (the Savannah River Site site boundary) which is different than the restricted area (basically the facility's fenceline). This was not in accordance with the requirements of Part 70. The staff and DCS planned to review the requirements and commitments in this area.

The technical discipline discussions in the meeting included the items provided below which were identified by the NRC technical reviewer.

<u>Hazards Analysis</u>

- Information is needed to clarify the differences and relation between the events in Appendix 5A and the tables in Chapter 5. Also needed is correlation of events in Appendix 5A with the radioactive inventory in Table 5.5.2.

- The calculated consequences for all hazard assessment events listed in Section 5.5 tables are needed, as are the parameters for the Section 5.4 equations.

- Failure or reliability data, whether ranges, target values or minimums, are needed for the principal structures, systems, and components (SSCs) listed in Section 5.5 tables.

<u>Fire/Explosion Protection</u>

- Additional information that needs to be discussed includes combust able summary data regarding the type form and quantity of hazards, criteria, data and capacity for various suppression and detection systems, and locations of dampers on glove boxes and ventilation systems.

Health Physics/Radiation Protection

- The inappropriateness of the use of respirable fraction in the calculation of source term for releases to the environment was discussed.

- The general issue of the use of the term restricted area in the environmental performance requirements of 10 CFR Part 70 was discussed.

- Clarification was needed of which respirable release fraction should be used to calculate consequences of the bounding fire event.

Nuclear Criticality Safety

- Quantitative definition was needed of highly unlikely and incredible.

- Justification was needed for the administrative margin for k effective.

- The validation methodology, including statistical techniques and methods for validating codes should be provided.

- The staff stated that commitments, such as to Regulatory Guide RG-3.71, must be clarified as to which provisions, including “shoulds” and “shalls,” are being committed to or not.

- It was noted that exemptions from criticality alarm coverage must be applied for and justification provided.

Chemical safety

- The staff discussed the particular difficulty for the chemical hazards review to identify design bases; chemical specifics, including chemical listings, inventories, handling and storage bases and associated values; daily usage; corrosive effects; and design margins.

- Details and interfaces for chemical system components and controls, and commitments to specific codes, standards, and design features should be identified.

- Quantification of reliabilities and failure data used and committed to by DCS.

Electrical

- Further clarification would be needed for the emergency diesel generator and fuel oil supply system.

- Commitment to specific standards for maintenance and periodic testing for electrical and I&C SSCs should be clarified.

- The DCS commitment to different versions of various standards than those that NRC has endorsed was discussed, including sections that DCS takes exception to. The staff’s technical review would include the differences.

Instrumentation and Control/Software

- The need for software design basis information for the normal control subsystems and protective control subsystems was discussed.

- Identification and information needs for safety system software, design of non-principle SSCs, interfaces between systems relied on for safety and those not, and software control standards were discussed.

Human Factors

- Additional information was needed regarding CAR Chapter 12 commitments to maintenance and testing, the role of staff versus automation, and operational experience from MELO and La Hague.

Material Handling Equipment, Fluid Systems

- Further information is needed regarding the materials handling, fluid transport and utilities systems designs to review the functions and safety categories.

Management Measures

- Section 4, and the MOX Quality Assurance Program (QAP), should adequately describe the DCS construction organization.

- Section 15 refers to the QAP. The QAP must adequately discuss the flow down of, and commitments to, QA program requirements for subcontractors, and how DCS assures the adequacy and implementation of subcontractor QA programs.

- The Quality Level definitions in CAR Section 15.1, and QAP Section 2.0 should be clarified, including the methods for grading and application of QA program controls.

- CAR Section 15.2 should discuss the configuration management program and commitments for all SSCs, not just principal SSCs and IROFS.

Attachments:
1. Attendee List
2. Meeting Agenda

ATTENDEES AT ALL OR PART OF THE MEETINGS ON APRIL 25, 2001

| NAME | AFFILIATION |
|---|---|
| Andrew Persinko | Nuclear Regulatory Commission (NRC) |
| Joseph Giitter | NRC |
| Fred Burrows | NRC |
| Wilkins Smith | NRC |
| Alex Murray | NRC |
| Steven Arndt | NRC |
| Christopher Tripp | NRC |
| Eric Leeds | NRC |
| Keith Everly | NRC |
| Ed Johannemann | NRC |
| David Brown | NRC |
| Bill Gleaves | NRC |
| Larry Campbell | NRC |
| David Ayres | NRC |
| Tim Harris | NRC |
| Joel Kramer | NRC |
| Jennifer Davis | NRC |
| Tom Pham | NRC |
| Jeremy Smith | NRC |
| Banad Jagannath | NRC |
| Khaled Shaukat | NRC |
| Rex Westcott (by phone) | NRC |
| | |
| Ed Brabazon | Duke Cogema Stone & Webster (DCS) |
| Peter Hastings | DCS |
| Bill Hennessy | DCS |
| Tom St. Louis | DCS |
| Dick Berry | DCS |
| Gary Kaplan | DCS |
| Gary Bell | DCS |
| | |
| Patrick Rhoads | Department of Energy (DOE) |
| Jon Thompson | DOE |
| John Connelly | DOE |
| Phil Kusik | DOE/MPR |
| | |
| Herb Massie | Defense Nuclear Facilities Safety Board |
| | |
| Ryan Coles | Government Appropriations Office (GAO) |
| | |
| Don Williams | Oak Ridge National Laboratory |
| Faris Badwan | Los Alamos National Laboratory |
| | |
| Edwin Lyman | Nuclear Control Institute |
| | |
| Andrea Jennetta | WNC/Fuel Publications |

AGENDA
MEETING WITH DUKE COGEMA STONE & WEBSTER (DCS)
April 25 - 26, 2001
NRC-HQ ROOM T8A1

Introduction (NRC/DCS) (9:00 - 9:30 AM)
- Introduce participants (NRC/DCS)
- Purpose of meeting (NRC)

MOX Project Status Update (9:30 - 10:00 am)
- summary
- status/schedule for licensing submittals (DCS)

MOX Fuel Fabrication Facility Technical Information (10:00 am-4:30 pm)
- Hazards analysis
- Nuclear criticality safety
- Fire/explosion protection
- Chemical safety
- Radiation protection
- Electrical
- Instrumentation and control/software
- Human factors
- Material handling equipment
- Seismic
- Management Measures/QA (added 4/25/01 WRS)

The meeting will start at 9:00 am on April 25, 2001, and will proceed according to the agenda unless otherwise announced at the meeting. If needed, the meeting will continue on April 26, 2001, starting at 9:00 am. Times shown are approximate. For each technical area, NRC will begin the discussion followed by NRC/DCS discussion, before proceeding to the next technical area.

Attachment 2

Instrumentation and Control/Software

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|---|---|---|---|---|---|---|---|---|
| **NAME** | WSmith:dr* | | AMurray* | | DAHoadley | | JGiitter* | |
| **DATE** | 5/22/01 | | 5/22/01 | | 5/22/01 | | 5/22/01 | |

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