August 15, 2001

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

THRU: Joseph G. Giitter, Chief
Enrichment Section
Special Projects Branch, FCSS

FROM: Timothy C. Johnson
Senior Mechanical Systems Engineer
Enrichment Section
Special Projects Branch, FCSS

SUBJECT: MIXED OXIDE FUEL FABRICATION FACILITY REQUEST FOR ADDITIONAL INFORMATION MEETING SUMMARY - JULY 26, 2001

On July 26, 2001, U.S. Nuclear Regulatory Commission (NRC) staff met with staff from Duke Cogema Stone & Webster (DCS) to discuss and clarify NRC's June 21, 2001, Request for Additional Information (RAI) related to the mixed oxide (MOX) fuel fabrication facility construction application review. I am attaching the meeting summary for your use.

Docket No: 70-3098

Attachment: MOX Facility RAI Meeting Summary

cc: Mr. Peter Hastings, DCS
Mr. James Johnson, DOE
Mr. Henry Potter, SC Dept. of H&EC
Mr. John T. Conway, DNFSB
Mr. Don Moniak, BREDL
Ms. Edna Foster
Ms. Glenn Carroll, GANE
Ms. Ruth Thomas, Environmentalists, Inc.

August 15, 2001

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

THRU: Joseph G. Giitter, Chief **/RA/**
Enrichment Section
Special Projects Branch, FCSS

FROM: Timothy C. Johnson
Senior Mechanical Systems Engineer **/RA/**
Enrichment Section
Special Projects Branch, FCSS

SUBJECT: MIXED OXIDE FUEL FABRICATION FACILITY REQUEST FOR ADDITIONAL INFORMATION MEETING SUMMARY - JULY 26, 2001

On July 26, 2001, U.S. Nuclear Regulatory Commission (NRC) staff met with staff from Duke Cogema Stone & Webster (DCS) to discuss and clarify NRC's June 21, 2001, Request for Additional Information (RAI) related to the mixed oxide (MOX) fuel fabrication facility construction application review. I am attaching the meeting summary for your use.

Docket No: 70-3098

Attachment: MOX Facility RAI Meeting Summary

cc: Mr. Peter Hastings, DCS
Mr. James Johnson, DOE
Mr. Henry Potter, SC Dept. of H&EC
Mr. John T. Conway, DNFSB
Mr. Don Moniak, BREDL
Ms. Edna Foster
Ms. Glenn Carroll, GANE
Ms. Ruth Thomas, Environmentalists, Inc.

DISTRIBUTION: Docket: 70-3098 ADAMS PUBLIC FCSS r/f
SPB r/f APersinko RMartin/NRR WSmith JHull/OGC
AFernandez/OGC DAyres,Reg II EMcAlpine/Reg II MWeber RPierson
RLee,RES RWescott FBurrows JCalvert,RES
DBrown RHannah,Reg II THarris,DWM CAbrams,DWM BJDavis,DWM

ADAMS: **Package #: ML012280372 Cover Ltr. # ML012280410** Attach. 1.
Attach. 2. Attach. 3.
G:\SPB\TCJ\MOXRAIMTGMIN.WPD *SEE PREVIOUS CONCURRENCE

OFC	SPB		SPB		SPB	
NAME	TCJohnson:cc\dw*		DHoadley*		JGiitter*	
DATE	8 /14 /01		8 /15/01		8 /15/01	

C = COVER E = COVER & ENCLOSURE N = NO COPY
OFFICIAL RECORD COPY

Mixed Oxide Fuel Fabrication Facility Request for
Additional Information Meeting

Date: July 26, 2001

Place: North Augusta Community Center; North Augusta, SC

Attendees: See Attachment 1

Purpose:

The purpose of this meeting was to discuss and clarify Requests for Additional Information (RAIs) sent by the U.S. Nuclear Regulatory Commission (NRC) to Duke Cogema Stone & Webster (DCS) on June 21, 2001.

Discussion:

Following introduction of individuals attending the meeting, DCS staff presented a discussion on design versus design basis (see Attachment 2). This discussion focused on what DCS staff considered to be the level of detail of information required to be provided under the regulations in 10 CFR 70.22(f) to provide a safety assessment of the design bases of the principal structures, systems, and components of the plant. DCS staff stated that, in accordance with previous NRC guidance, design basis is being used consistent with the definition in 10 CFR 50.2 and Regulatory Guide 1.186, “Guidance and Examples for Identifying 10 CFR 50.2 Design Bases.” DCS staff indicated that in responding to NRC’s RAIs, they would provide design bases and additional detailed engineering design information if it is available.

DCS staff provided some examples of their understanding of design bases in the instrumentation and controls area. Regarding RAI 170 on software programming, DCS staff stated that they intended to comply with the referenced standards in the construction application. The NRC question was what level of commitment did DCS intend. DCS staff said that they will make clear their commitment, but that NRC can conclude that the word "adopt" means "comply." For example, International Electrotechnical Commission Standard IEC 60113-3 (1993-03) "Programmable Controllers-Part 3: Programming Languages , Functional Sequence Chart " would be an acceptable standard for use in the facility, providing that DCS states that they will comply with the standard. Where there is partial compliance with a particular standard, NRC will necessarily seek digital system and software design details to clarify the acceptability of the planned design basis.

During a discussion of design basis versus design information, DCS staff provided some additional examples of design basis parameters (e.g., redundant air flow and air supplies) and supporting design information (setpoints and piping and instrumentation diagrams) to highlight the level of detail contained in each group (design basis/design information). The level of detail proposed would provide NRC staff with the necessary information for those RAIs.

As an example of active and passive components, DCS staff indicated that the ventilation systems would perform their safety function assuming a single failure of an active component. The staff stated that there has been historical problems over the definition of active versus passive failures especially as applied to electrical components such as batteries. DCS staff pointed out that definitions of active and passive failures for electrical and fluid systems were provided in the application in Section 5.5.5.2.

NRC staff asked DCS staff to discuss how they would be responding to the RAI questions that require a comparison of different versions of industry standards and related regulatory guides. DCS staff stated they would provide the requested comparisons. DCS staff also stated that where DCS was taking exception to sections of referenced standards, it would specifically identify those areas.

In the RAI package, NRC staff questioned the DCS basis for allowable particulate removal efficiencies in the safety analysis for accidents. In the application, DCS took credit for a 99.99 percent removal using two banks of High Efficiency Particulate Air-filters (HEPAs). NRC staff recommended that for severe conditions, such as a fire, the maximum allowable removal efficiency for filter assemblies using HEPAs should be 99 percent as recommended in NUREG/CR-6410, "Nuclear Fuel Cycle Facility Accident Analysis Handbook." NRC staff explained that DCS's approach would be allowable only for normal operating or ambient conditions at the HEPAs. Since conditions resulting from fires would be substantially more severe, DCS should use the 99 percent value. NRC staff and DCS staff agreed that further discussion on this RAI would be needed.

NRC staff and DCS staff discussed a series of RAIs relating to likelihoods and reliabilities used for the principal structures, systems, and components in the safety assessment and the integrated safety assessment. DCS staff indicated that it was basing its safety assessment on a qualitative analysis to show compliance with 10 CFR 70.61 (see Attachment 3). DCS staff said that the "high unlikely" criteria would be met by application of --

- Single failure or double failure criteria;
- Management measures including surveillance of Items Relied On For Safety (IROFS);
- A quality assurance program in accordance with 10 CFR 50, Appendix B; and
- Industry codes and standards.

DCS staff provided numerical examples of approximate failure frequencies as a function of surveillance time for IROFS meeting the single failure criterion with specific reliabilities. NRC staff pointed out that the numerical results were not only a function of assumed failure rates and surveillance intervals but also assumed repair times. DCS staff agreed, but also concluded that their approach would produce likelihood values that are equal to or lower than those provided in NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility," without presenting a quantitative analysis. NRC staff recognized that a qualitative approach can be used to show compliance with 10 CFR 70.61, but questioned whether this approach could be adequately defended within the schedule goals for the application review without providing some quantitative information to support the DCS position. NRC staff also made the point that at this stage of design, a probability target should be provided for each system relied on for safety dependent on its safety function from the hazard analysis. In addition, NRC staff stated that any assumptions of numerical reliability based on qualitative properties would have to be made and defended by DCS. NRC staff indicated that additional internal discussion would be needed to resolve this issue.

NRC staff clarified their position on how DCS should select area boundaries and associated radiological limits for safety. The staff's comments were in reference to RAIs 1, 3, 42 and 44.

With regard to RAIs 1 and 3, the staff understood and accepted DCS's response that 10 CFR 70.61(f)(2) contains provisions for treating members of the public as workers, for the purposes of meeting the performance requirements of 10 CFR 70.61. However, the staff clarified that even if DCS chooses to train individuals in accordance with the provisions of 10 CFR 70.61(f)(2), this provision does not alter the NRC regulations of 10 CFR Part 20 regarding protection of members of the public in the controlled area. The staff explained that under 10 CFR Part 20, the nature of an individual's assigned duties, even if those duties are inside the controlled area, is the key distinguishing factor in determining whether an individual receives either an occupational dose or a public dose. The staff position is that there are individuals employed at the Savannah River Site whose assigned duties do not involve exposure to radiation or radioactive material. These individuals should be protected under 10 CFR Part 20 as members of the public. DCS recapitulated the staff's position and had no objection at the meeting.

NRC staff also stated their concern that DCS staff may have misinterpreted the intent of the rule in 10 CFR 70.61(c)(3), as described in RAIs 42 and 44. NRC staff's preliminary calculations suggest that DCS may have evaluated this intermediate consequence event at the controlled area boundary, rather than at the restricted area boundary. Further, in RAI 44, NRC staff questioned whether a credit for respirable fraction had been applied to the concentrations derived for the purpose of comparison against this performance requirement. The staff explained that this consequence is to be evaluated at the restricted area boundary and that no reduction in the source term should be applied that would limit the concentration derived to only that fraction that is respirable. NRC staff explained that DCS may find that these corrections to the safety assessment will reveal that this performance requirement is the limiting intermediate consequence event for accidents resulting in releases of radioactive material to the atmosphere. For this reason, failure to accurately calculate the consequences could have a direct impact on identifying principal structures, systems, and components. DCS staff had no response at the meeting.

Action Items:

Set up telephone conference on issues applicable to fire safety, HEPA removal efficiency, criticality safety, and chemical safety.