

September 14, 2004

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

THRU: Stewart L. Magruder, Chief /RA/  
Mixed Oxide Facility Licensing Section  
Special Projects Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

FROM: David D. Brown, Sr. Project Manager /RA/  
Mixed Oxide Facility Licensing Section  
Special Projects Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

SUBJECT: AUGUST 19, 25 & 30, 2004 AND SEPTEMBER 2, 2004, SUMMARY OF  
PHONE CALLS WITH THE APPLICANT: CHEMICAL PROCESS  
SAFETY, ORGANIZATION AND ADMINISTRATION, AND HVAC  
SYSTEMS AND CONFINEMENT FOR THE MIXED OXIDE FUEL  
FABRICATION FACILITY

On August 19, 25, & 30, 2004, and September 2, 2004, staff of the U.S. Nuclear Regulatory Commission (NRC) requested clarification by telephone of information provided by Duke Cogema Stone & Webster (DCS) in its June 10, 2004, revised Construction Authorization Request (CAR). The purpose of this memorandum is to document statements and requests that were made by NRC staff regarding chemical process safety, organization and administration, and Heating Ventilation and Air Conditioning (HVAC) systems and confinement. The statements are provided as an Attachment.

cc: P. Hastings, DCS  
L. Zeller, BREDL  
G. Carroll, GANE  
J. Johnson, DOE

J. Conway, DNFSB  
D. Curran, GANE  
D. Silverman, DCS  
H. Porter, SCDHEC

The following statements and requests were conveyed by NRC staff to DCS during phone calls on August 19, 2004, and September 2, 2004.

### **CHEMICAL PROCESS SAFETY**

1. Titanium Fires in Electrolyzers. Staff requested clarification of statements provided by DCS in the new Section 5.5.2.2.6.7 of the Construction Authorization Request (CAR), which describes a postulated Aqueous Polishing (AP) dissolution electrolyzer fire involving the titanium shell of the electrolyzers. Staff requested clarification of whether the purpose of this section is to address safety during maintenance of electrolyzers, or safety during both maintenance and operation of electrolyzers. Staff also requested clarification of whether Section 5.5.2.2.6.7 modifies or supercedes information provided by DCS by letters dated October 10, 2003, and March 12, 2004.

DCS explained that the March 12, 2004, letter is the current DCS proposal in response to staff concerns about postulated titanium fires in electrolyzers. The March 12 proposal was provided by DCS in response to staff open item AP-3 in the April 2003 NRC Draft Safety Evaluation Report. DCS explained that Section 5.5.2.2.6.7 was added to the CAR in June 2004 merely to make the text consistent with the existing tables at the end of CAR Chapter 5, and that this information should not be construed as modifying or superceding the information provided by DCS in its letter dated March 12, 2004. During the August 19 call, Mr. Murray reiterated his concerns with the passive engineered controls proposed in the March 12, 2004, letter, and briefly discussed the merits of using the active engineered approach involving rapid current interruption in the event of an electrical short. Staff will continue its review of the DCS proposal dated March 12, 2004. No further action from DCS was requested during the phone calls.

2. Postulated Fire in the Secured Warehouse (BSW). Staff requested clarification of the new safety strategy and design bases for a postulated fire involving drums of depleted uranium dioxide in the Secured Warehouse (BSW). The event had previously been addressed in the safety assessment of the design bases by applying two administrative PSSCs: Combustible loading controls and facility worker action. DCS now proposes to classify this event as "events involving only hazardous chemicals - Outside Chemical Events" (see CAR Table 5.5-23). As a result, DCS now views the hazard posed by depleted uranium dioxide within a more limited context, i.e., as a hazard which could impair the administrative safety functions performed by operators in the Mixed Oxide Fuel Fabrication Facility (MFFF) emergency control rooms. Staff understands the DCS proposal and will provide DCS with a response.
3. Protection of Site Workers from Toxic Gases in the Offgas Treatment System. Staff requested clarification of whether DCS proposes to limit site worker and individual at the controlled area boundary (IOC) exposures to toxic gases in the offgas treatment system to levels below TEEL-2 (Temporary Emergency Exposure Limit-2) and TEEL-1, respectively. DCS explained that it does, in fact, propose to limit exposures to below these levels, as stated on pages 8-12 and 8-12a, and Table 8-6, of the CAR. No further action from DCS was requested during the phone calls.

Attachment

The following statements and requests were conveyed by NRC staff to DCS during phone calls on August 25 & 30, 2004:

### **ORGANIZATION AND ADMINISTRATION**

1. Staff requested clarification of whether the Project Services and Administration Manager is responsible for security during design and construction of the MFFF. DCS explained that the Project Services and Administration Manager is responsible for security, as stated in the text of CAR Section 4.1.3, even though this function is not explicitly shown in Figure 4-1. DCS agreed to provide an explanation by letter and a CAR page change to update Figure 4-1.
2. Staff requested clarification of whether, during operations, the President of DCS will become the Plant Manager. DCS explained that the President of DCS and the MFFF Plant Manager will serve distinct roles during operation of the MFFF. DCS agreed to provide an explanation by letter and a CAR page change that clarifies this distinction.
3. Staff requested verification of whether DCS has selected construction contractors for the MFFF. DCS explained that no construction contractors have been selected, as stated in CAR Section 4.2. DCS agreed to provide an explanation by letter that clarifies this distinction.

### **HVAC SYSTEMS AND CONFINEMENT**

1. Staff requested clarification of whether Section 11.4.2.1, which references the offgas treatment system description in 11.3.1.13, should actually reference Section 11.3.2.13. DCS agreed to provide a page change to the CAR to correct the section reference.
2. Staff requested clarification of the rationale for eliminating pre-filters from the final filtration assemblies, as described in Section 11.4.9. Staff requested clarification of whether the prefilter function has been replaced by the second-stage spark arrestors. DCS confirmed that the pre-filters, which did not serve a credited safety function in the previous version of the CAR, have been removed from the design. DCS explained that the remaining components continue to serve the intended safety function of the final HEPA filter assembly.
3. Staff requested clarification of whether Sections 11.4.11.1.2, 11.4.11.1.3, 11.4.11.1.4, 11.4.11.1.6, 11.4.11.1.8, and 11.4.11.1.11 should still refer to pre-filters. DCS explained that references to pre-filters in Sections 11.4.11.1.2, 11.4.11.1.3, 11.4.11.1.4, and 11.4.11.1.8 should have been deleted, and that neither the Emergency Control Room (Section 11.4.11.1.6) nor the offgas treatment system (Section 11.4.11.1.11) would contain spark arrestors or pre-filters. DCS agreed to provide an explanation by letter of the rationale for removing the pre-filters and CAR page changes that clarify the design basis of final filter assemblies.
4. Staff requested clarification of the discrepancy between Section 11.4.2.2.5, which states that the C4 system is powered by the uninterruptible power supply (UPS), and Section 11.4.11.1.4, which does not list the UPS. Staff requested clarification of whether the C4 system will include a UPS. DCS verified that a UPS is a redundant source of power for the C4 ventilation system. DCS agreed to provide an explanation by letter of the use of a UPS power supply for the C4 system, and DCS agreed to provide a page change to the CAR to clarify this fact.

5. Staff requested clarification of whether fire-rated dampers, as that term is used in CAR Sections 11.4.11.1.2 (C2 ventilation system passive barrier) and 11.4.11.1.8 (process cell exhaust system, or POE), are manually or automatically actuated. Staff noted that manual or automatic actuation is specified for the C3 and C4 systems. DCS explained that the C2 system contains automatically actuated dampers, while the POE contains manual dampers. DCS also verified that C3 and C4 confinement system fire-rated dampers will be either manual or automatic. DCS agreed to provide an explanation by letter of the type of fire-damper actuation used for each system, and DCS agreed to provide a page change to the CAR to clarify this information.
6. Staff requested clarification of whether the C4 confinement system uses redundant pressure sensors to ensure that proper pressure differentials are maintained between the C4 and other systems. DCS verified that, as stated in CAR Section 11.4.7.1.4, and as shown in Figure 11.4-13, the C4 confinement system uses redundant pressure sensors. No further action from DCS is requested.
7. Staff requested clarification of why several standards referenced in Section 11.4.10 appear to be changed to older standards than are currently available. For example, AMCA 99 was revised in 2003; ASHRAE 90.1 was revised in 2001; NFPA 90A was revised in 2002; and AWS D1.1 was revised in 2004. DCS explained that the older standards were included in its initial contract with the Department of Energy, were cited in MFFF basis of design documentation, and these older versions were actually referenced in other parts of the CAR. DCS agreed to provide an explanation by letter of the reason for using the older versions of these standards.
8. Staff requested clarification of the new text in Section 11.4.2.2.2, which now states that the maximum glovebox flow will be based on the maximum postulated breach. Staff requested clarification of the design basis value for the maximum postulated breach. DCS agreed to provide an explanation by letter of the proposed design basis value for the maximum postulated breach, and DCS agreed to provide a page change to the CAR to clarify this information.
9. Staff requested clarification of information provided in Figure 11.4-2, which shows the process cells to be within the C3 confinement system. DCS agreed that Figure 11.4-2 is confusing, and agreed to update this figure in a subsequent CAR change page.

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Docket No. 070-03098

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(\*See memo dated September 13, 2004)

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