

July 25, 2003

Mr. Peter S. Hastings
Licensing Manager
Duke Cogema Stone & Webster
P.O. Box 31847
Mail Code FC12A
Charlotte, NC 28231

SUBJECT: RESPONSE TO DUKE COGEMA STONE & WEBSTER LETTER DATED
MAY 30, 2003 (DCS-NRC-000141)

Dear Mr. Hastings:

U. S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in Duke Cogema Stone & Webster (DCS) May 30, 2003, letter in which you provided the results of its review of NRC's revised draft Safety Evaluation Report, dated April 30, 2003. Our review of the DCS response is described in the attachment.

In most cases, we agreed with your comments and will incorporate our response to your comments in the Final Safety Evaluation Report, however, in some instances, we staff disagreed with your comments for reasons stated in the attachment.

If further clarification is necessary, please contact me at 301-415-6522.

Sincerely,

/RA/

Andrew Persinko, Project Manager
Special Projects Section
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards

Docket: 70-3098

cc: James Johnson, DOE
Henry Porter, SC Dept. of H&EC
John T. Conway, DNFSB
Louis Zeller, BREDL
Glenn Carroll, GANE
Diane Curran, Esq., GANE
Donald Silverman, Esq., DCS

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*See previous concurrence

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RESPONSE TO DCS LETTER DATED MAY 30, 2003

Chapter 1, General Information

- 1-1 Agree in part. When the staff said "approve" in the DSER, the staff did not mean that it would sign the DCS-SRS agreement. Rather, the staff meant that it would review the agreement, if it is relied on to meet NRC regulations and will approve that DCS has met NRC regulations if the conclusions of the staff's review are positive. Clarifying text will be included in the FSER.
- 1-2 Agree. The requirements of 10 CFR 74 do not apply to source material, including depleted uranium. However, the MC&A requirements in 10 CFR 40.64, 150.17, and 75.31 do apply to any facility handling source material. DCS needs to refer to these requirements. Text will be clarified in FSER.

Chapter 2, Financial Qualifications

- 2-1 Agree Will revise Final Safety Evaluation Report (FSER) to reflect closure of the open item.

Chapter 5, Safety Assessment of the Design Basis

- 5-1 Agree. Will revise FSER to include hydrazine nitrate as a substance controlled by the principal structures, systems, and components (PSSC) "Chemical Safety Controls."
- 5-2 Agree Will revise Table 5-1b, as per page 5.5-118 of the 10/31/03 CAR, in FSER.
- 5-3 Agree Will revise Table 5-2 as per CAR 11.4.11.3 in FSER.
- 5-4 Agree. Will revise Table 5-2 as per CAR 5.6.2.3 in FSER.
- 5-5 Agree Will remove the statement "Initiated by low pressure alarms..." in FSER.
- 5-6 Agree in part. CAR Section 5.5.2.2.6.1, "AP Process Cells", last bullet on page 5.5-17 states "Temperatures are maintained at levels that prevent the creation of flammable vapors". This is under the paragraph that describes the process cell fire prevention features, which is a PSSC. This is also presented in Section 7.1.5.3 of the revised DSER. NRC will add CAR Section 5.5.2.2.6.1 to the cited DSER Sections of Table 5-2.
- 5-7 Agree. Will remove the redundant design basis safety function of the process safety control subsystem on page 5.0-93 and retain the safety function description on page 5.0-95, in FSER.

Chapter 6, Nuclear Criticality Safety

6-1 Agree Will revise in FSER.

Chapter 7, Fire Protection

7-1 Agree. Will revise in FSER.

7-2 Disagree. Principal structures, systems, and components have been identified in the CAR for the secured warehouse building, pages 5.5-57 and 5.5-145.

7-3 Staff is continuing to review DCS' comment.

7-4 Disagree. Fire barrier is still an open item.

7-5 Agree. ALARA was the reason initially given for the lack of suppression in the rod storage area. Agree that operational concerns make automatic suppression difficult in other areas such as solvent cells. DCS to describe operational concerns.

7-6 Agree. Will revise in FSER.

7-7 Disagree. Page 45, first bullet in Reference 7.3.9.1 addresses uranium powder.

7-8 Agree. Will revise in FSER.

7-9 Disagree. Staff believes that discussion of emergency control room air conditioning system should be retained. Will be moved in the FSER.

7-10 Disagree. Fire barrier is still an open item.

7-11 Agree in part. Will revise second paragraph of 7.1.5.7 to eliminate reference to gloveboxes.

7-12 Agree in part. Will delete the references. However, DCS to document its determination that SRS source meets the water capacity requirements of the facility.

Chapter 8, Chemical Process Safety

8-1 Disagree. Per Figure 11.1-1 of the revised CAR, the Reagents Processing Building (BRP) is about 40-50 feet away from the BAP, which is part of the main MOX building. Other documentation and previous discussions with the applicant have indicated this distance is less. There are no intervening structures. Clarifying text will be added in the FSER.

- 8-2 Agree in part. The DSER is referring to features for preventing or mitigating radioactive releases. DCS is referring to the fire rating of the walls surrounding the DUO2 area within the BSW. Clarifying text will be added in FSER.
- 8-3 Agree. Clarification will be made in FSER.
- 8-4 Agree. The second sentence came from DCS documentation and discussions - for clarity, it will be deleted in FSER.
- 8-5 Agree. The dichotomy exists in the DSER because it also exists in the revised CAR. As stated in Section 8.1.2.3.1 of the DSER, the limits used by the applicant are based upon the TEEL Rev. 18 list. Text will be clarified in FSER.
- 8-6 Agree in part. Nitrogen tetraoxide exists in both liquid and gaseous forms - clarifying text will be added in FSER.
- 8-7 Agree. No action necessary. The nitric acid administrative control refers to 29 CFR 1910 (OSHA) and not 10 CFR 70 (NRC). The RAI 211 response from the applicant is the reason for the DSER text.
- 8-8 Disagree. The DSER text is referring to the impact of air speed upon the concentrations predicted by the applicant's modeling approach. The applicant has committed to detailed analyses of each applicable process cell as part of the ISA and that, if necessary, existing MFFF features could be credited in the ISA to ensure that chemical consequences do not exceed the low level of concern. Clarifying text will be added to reflect the DCS commitments.
- 8-9 Disagree. As noted by the applicant, there is an air speed effect. During an in-office review of applicant documents, the staff noted calculations indicating the effect of velocity upon the chemical concentrations predicted by the model. Staff performed calculations with the evaporative model used by the applicant and concluded velocity effects are significant for this model and can produce results exceeding chemical consequence levels of concern. This is further discussed in the last paragraph on page 8.0-19 of the DSER. The applicant has committed to detailed analyses of each applicable process cell as part of the ISA and that, if necessary, existing MFFF features could be credited in the ISA to ensure that chemical consequences do not exceed the low level of concern. Clarifying text will be added to reflect the DCS commitments.
- 8-10 Agree in part. The staff agrees that conditions consistent with the location of the event can be used. However, as discussed on page 8.0-20, the staff does not conclude that an average air speed across the cell is likely to represent the area where a spill would collect - the staff

would anticipate higher air speeds due to the common practice of placing air exhaust inlets near potential spill areas. Retention basins are not credited in the safety analysis. The applicant has committed to detailed analyses of each applicable process cell as part of the ISA and that, if necessary, existing MFFF features could be credited in the ISA to ensure that chemical consequences do not exceed the low level of concern. Clarifying text will be added to reflect the DCS commitments.

- 8-11 Disagree. As noted in the discussion on page 8.0-20 of the DSER, velocity ranges that could exist at the facility can produce consequences exceeding the levels of concern with the models used by the applicant. Thus, there is a potential safety effect. This DSER page also mentions concerns with the air velocity in potential areas for spills being higher, which would result in much higher evaporation rates. Air exhaust inlets in cells are typically a few percent of the total cross-sectional area of the cell, and, in the vicinity of these inlets, velocity induced evaporation rates could be one or two orders of magnitude greater. Thus, the staff cannot conclude that the average velocity is necessarily part of supporting design analysis. The applicant has committed to detailed analyses of each applicable process cell as part of the ISA and that, if necessary, existing MFFF features could be credited in the ISA to ensure that chemical consequences do not exceed the low level of concern. Clarifying text will be added to reflect the DCS commitments.
- 8-12 Agree in part. NRC and DCS staff will continue to discuss the clarifying values for the hydrogen/argon concentrations.

8-13 Agree. Will revise in FSER.

Chapter 9, Radiation Safety

- 9-1 Agree. Will revise in FSER.
- 9-2 Agree in part. Purpose of including the information in the revised draft SER was to acknowledge the additional information provided by DCS, even though this information is neither required nor credited in the safety assessment for construction authorization. The staff is merely stating that it will forego detailed review of this information until a license application is submitted.
- 9-3 Agree in part. See 9-2.
- 9-4 Agree in part. See 9-2.
- 9-5 Agree in part. See 9-2.

Chapter 10, Environmental Protection

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|------|----------------|--|
| 10-1 | Agree in part. | See 9-2. |
| 10-2 | Agree in part. | See 9-2. |
| 10-3 | Agree in part. | See 9-2. |
| 10-4 | Agree. | Will revise in FSER. Staff will remove reference to silver recovery process. |
| 10-5 | Agree. | Will revise in FSER. Staff will revise text to state "The applicant has committed to maintaining an operable continuous sample collection system as described in Reference 10.3.15." Reference 10.3.15 will be Regulatory Guide 4.16. The remainder of the paragraph will be deleted. |
| 10-6 | Disagree. | Historically, both GENII and MACCS2 have been acceptable to NRC for estimating the consequences of radiological releases to the atmosphere. The staff recognizes that GENII is conservative, and will address this issue in the Final Environmental Impact Statement. However, staff will continue using GENII to estimate accident consequences. By so doing, the staff intends to perform an independent assessment of DCS's estimates of accident consequences, which were determined using MACCS2. |
| 10-7 | Agree. | Will revise in FSER. |

Chapter 11.0, Plant Systems

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| 11.0-1 | Disagree. | The 10 CFR 70.64 BDC must be met for construction authorization. See DSER Introduction, page xviii. |
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Chapter 11.1, Civil Structural Systems

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| 11.1-1 | Agree. | Will revise in FSER. |
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Chapter 11.2, Aqueous Polishing Process

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|--------|--------|----------------------|
| 11.2-1 | Agree. | Will revise in FSER. |
| 11.2-2 | Agree. | Will revise in FSER. |
| 11.2-3 | Agree. | Will revise in FSER. |
| 11.2-4 | Agree. | Will revise in FSER. |
| 11.2-5 | Agree. | Will revise in FSER. |
| 11.2-6 | Agree. | Will revise in FSER. |
| 11.2-7 | Agree. | Will revise in FSER. |

11.2-8 Agree.	Will revise in FSER.
11.2-9 Agree.	Will revise in FSER.
11.2-10 Agree.	Will revise in FSER.
11.2-11 Agree.	Will revise in FSER.
11.2-12 Agree.	Will revise in FSER.
11.2-13 Agree in part.	Sentence reflects the fact that dodecane is the more volatile of the two components. Clarifying text will be added in FSER.
11.2-14 Agree.	Will revise in FSER.
11.2-15 Agree.	Will revise in FSER.
11.2-16 Agree.	Will revise in FSER.
11.2-17 Agree.	Will revise in FSER.
11.2-18 Agree.	Will revise in FSER.
11.2-19 Agree.	Clarifying text will be added in FSER.
11.2-20 Agree.	Clarifying text will be added in FSER.
11.2-21 Agree.	Will revise in FSER.
11.2-22 Agree.	Will revise in FSER.
11.2-23 Agree.	Will revise in FSER.
11.2-24 Agree.	Will revise in FSER.

Chapter 11.3, Mixed Oxide Process System

11.3-1 Agree in part.	Similar statement is already included in the text at the top of page 11.3-14.
11.3-2 Agree.	Will revise in FSER.

Chapter 11.4, Ventilation and Confinement Systems

11.4-1 Agree.	Will revise in FSER.
11.4-2 Agree.	Will revise in FSER.
11.4-3 Agree.	Will revise in FSER.

11.4-4 Agree.	Will revise in FSER.
11.4-5 Agree.	Will revise in FSER.
11.4-6 Agree.	Will revise in FSER.
11.4-7 Agree.	Will revise in FSER.
11.4-8 Agree.	Will revise in FSER.
11.4-9 Agree.	Will revise in FSER.
11.4-10 Agree.	Will revise in FSER.
11.4-11 Agree.	Will revise in FSER.
11.4-12 Agree.	Will revise in FSER.
11.4-13 Agree.	Will revise in FSER.
11.4-14 Agree.	Will revise in FSER.
11.4-15 Agree.	Will revise in FSER.

Chapter 11.5. Electrical Systems

11.5-1 Agree	Will revise in FSER.
11.5-2 Agree.	Will revise in FSER.
11.5-3 Agree.	Will revise in FSER.
11.5-4 Agree.	Will revise in FSER.

Chapter 11.6. Instrumentation and Control Systems

11.6-1 Agree.	Will revise in FSER.
11.6-2 Agree.	Will revise in FSER.
11.6-3 Agree.	Will revise in FSER.
11.6-4 Agree.	Will revise in FSER.
11.6-5 Agree.	Will revise in FSER.
11.6-6 Agree.	Will revise in FSER.
11.6-7 Agree.	Will revise in FSER.

11.6-8 Agree. Will revise in FSER.

11.6-9 Agree. Will revise in FSER.

11.6-10 Agree. Will revise in FSER.

Chapter 11.8, Fluid Transport Systems

11.8-1 Agree. Will revise in FSER.

Chapter 11.9, Fluid Systems (Bulk Materials, Reagents, and Gases)

11.9-1 Agree. Will revise in FSER.

11.9-2 Agree. Will revise in FSER.

11.9-3 Agree. Will revise in FSER.

11.9-4 Agree. Will revise in FSER.

11.9-5 Agree. Will revise in FSER.

11.9-6 Agree. Will revise in FSER.

Chapter 12, Human Factors Engineering

12-1 Agree in part. Wording was taken out of context. Staff will clarify in FSER.

12-2 Agree. Will revise in FSER.

12-3 Agree in part. Staff will clarify in FSER. However, NUREG/CR-6636 does apply to new designs. NUREG-0700, Rev. 2 does not incorporate all of the guidance contained in the NUREG/CR references.

Chapter 14, Emergency Management

14-1 Disagree. Staff relied on information presented by DCS at the January 4, 2001, meeting.

Responses to Editorial Comments

Acronyms

E-1 Agree. Will revise in FSER.

Chapter 1.3, Site Description

E-2 Agree. Will revise in FSER.

E-3 Agree. Will revise in FSER.

E-4 Agree. Will revise in FSER.

E-5 Agree. Will revise in FSER.

Chapter 5, Safety Assessment of the Design basis

E-6 Agree. Will revise in FSER.

E-7 Agree. Will revise in FSER.

Chapter 8, Chemical Safety

E-8 Agree. Will revise in FSER.

Chapter 9, Radiation Safety

E-9 Agree. Will revise in FSER.

E-10 Agree. Will revise in FSER.

Chapter 11.1, Civil Structural Systems

E-11 Agree. Will revise in FSER.

Chapter 11.2, Aqueous Polishing Process

E-12 Agree. Will revise in FSER.

E-13 Agree. Will revise in FSER.

E-14 Agree. Will revise in FSER.

E-15 Agree. Will revise in FSER.

E-16 Agree. Will revise in FSER.

Chapter 11.4, Ventilation and Confinement Systems

E-17 Agree. Will revise in FSER.

E-18 Agree. Will revise in FSER.

Chapter 11.5, Electrical Systems

E-19 Agree. Will revise in FSER.

E-20 Agree. Will revise in FSER.

E-21 Agree. Will revise in FSER.

E-22 Agree. Will revise in FSER.

Chapter 11.9, Fluid Systems

E-23 Agree. Will revise in FSER.

E-24 Agree. Will revise in FSER.

E-25 Agree. Will revise in FSER.

Chapter 12, Human Factors Engineering

E-26 Agree. Will revise in FSER.

Chapter 15, Management Measures

E-27 Agree. Will revise in FSER.

E-28 Agree. Will revise in FSER.