September 24, 2001

Mr. Robert H. Ihde
Duke Cogema Stone & Webster
P.O. Box 31847
Charlotte, NC 28231-1847

SUBJECT: CLARIFICATION REQUEST - RESPONSES TO REQUEST FOR ADDITIONAL INFORMATION ON THE DUKE COGEMA STONE & WEBSTER MIXED OXIDE FUEL FABRICATION FACILITY ENVIRONMENTAL REPORT

Dear Mr. Ihde:

The U.S. Nuclear Regulatory Commission (NRC) staff and their contractor, Argonne National Laboratory have reviewed the Duke Cogema Stone & Webster (DCS) response to our June 8, 2001, request for additional information (RAI). We have identified several responses that need clarification. In some cases, we are requesting further information, in others, we are requesting such things as attachments that were incomplete or not included with the responses.

We need this information in order to continue our environmental review and preparation of the NRC Environmental Impact Statement. In order to meet the current schedule, which requires us to prepare the NRC Mixed Oxide Fuel Fabrication Facility Environmental Impact Statement by September 30, 2002, we must receive your responses to the clarification request on or before October 26, 2001. If you have any questions, please contact Tim Harris on (301) 415-6613.

Sincerely,

/RA/

Charlotte Abrams, Chief
Environmental and Low-Level Waste Section
Environmental and Performance Assessment Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Docket 70-3098

Enclosure: Request for Clarification

cc: James Johnson, DOE
Henry Potter, SCDHEC
John Conway, DNFSB
Ruth Thomas, EI
Glenn Carroll, GANE
Donald Moniak BREDL
Edna Foster

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REQUEST FOR CLARIFICATION

Numbers that follow refer to the request for additional information (RAI) questions included with the letter from T. Essig/NRC to R. Ihde/DCS, dated June 8, 2001, "Request for Additional Information on the Duke Cogema Stone & Webster (DCS) Mixed Oxide Fuel Fabrication Facility Environmental Report."

SPECIFIC COMMENTS

RAI 4. Section 3.2.1, Plutonium Processing

It is not clear what the actual composition of the high level alpha waste stream will be when it goes to the neutralization facility. The High-Level Waste (HLW) System Plan briefly discusses the mixed oxide (MOX) fuel fabrication facility (FFF) liquid high alpha waste and concludes that the volume is within current system limits, but the waste acceptance criteria (WAC) must be amended to include silver. Waste glass modeling was conducted and indicates that the MOX FFF waste will not cause tolerance levels to be exceeded. What is not discussed in the HLW System Plan or the Savannah River Site (SRS) Waste Management Final Environmental Impact Statement (EIS) is how the composition of the high alpha liquid waste differs from the F-Area liquid HLW and how previous accident analyses bound a potential accident at or before the neutralization facility involving the high alpha liquid waste. Discuss.

RAI 6. Sections 3.2.4, 3.2.5, 5.2.10, 5.5.32.2, and Section 5.7.3.6

Section 12 of the referenced Department of Energy (DOE) study states that "the sand filter option has noncredible identified failure mechanisms." In contrast, the final bullet in the response lists risks associates with sand filters. These two statements appear contradictory. Correct or clarify.

RAI 8. Section 3.3, Section 4.12, and Section 5.2.12

Some of the information provided in the response to this RAI is inconsistent within the response, and with information provided in the Environmental Report (ER). For instance, the response to the RAI states that there would be 132 cubic meters of transuranic waste (TRU) produced annually by the MOX FFF, but the accompanying Table 8-1, replacement Table 5-15c for RAI #4, and the ER present this value as 160 cubic meters. The value is presented as 171 cubic meters in Table 5-15c for RAI #49. The volume of liquid high alpha waste produced annually also is not presented consistently. The response text states that 175 cubic meters (46,300 gallons) would be produced annually while the new insert for the ER provided with the response has a slightly different number (178 cubic meters; 47,000 gallons). Please resolve these inconsistencies and perform a qualify assurance check to ensure that similar numerical discrepancies are not present throughout the ER.

RAI 13. Section 4.4.3.3 Potential Sources of Groundwater Contamination

The response provides analytical results for all detected hazardous and radioactive constituents for the period 1997 through 2000 for the FNB-series wells at the Old F-Area Seepage Basin (OFASB) located west of the MOX FFF site. The text also states that "In January 2001, the results of the first round of groundwater sampling for the compliance wells indicated concentrations of H-3, I-129, Sr-90 and nitrates above Drinking Water Standards in several wells" In reviewing the analytical results provided, it was also noted that in some wells radium,

trichloroethylene, and uranium exceeded maximum concentrations limits (MCLs), lead was close to its action level, and manganese exceeded the secondary MCL (and also health advisory levels, but no primary MCL exists for manganese).

The new text proposed for inclusion in Section 4.4.3.3 does not mention the specific contaminants that exceed Drinking Water Standards, so the above information may not change that text. However, the text should be revised to give additional simple information about the relationship of groundwater in the OFASB to the adjacent MOX FFF site (e.g., direction of groundwater flow, depth of contamination, depth of planned MOX FFF construction), and include a figure showing the well locations. This information would aid the reviewer in judging whether groundwater contamination would be expected at the MOX FFF site due to past releases at OFASB.

RAI 18. Section 4.8, Regional Historic, Scenic, and Cultural Resources

With respect to the Global Information System (GIS) layer for archaeological sites at SRS, DCS provided hard copy maps with locations of the sites that will be directly impacted, but no information was provided on the locations of other sites in the surrounding area. One of the scoping comments was related to sites that may be indirectly affected by the MOX FFF and this topic needs to be addressed. The Savannah River Archaeological Research Project (SRARP) has the needed GIS data. Provide the information on sites that may be indirectly affected.

Were there Native American responses to prior consultation letters regarding the Surplus Plutonium Disposition (SPD) Final Environmental Impact Statement (FEIS)? Is it assumed that no responses were received since none are printed in the FEIS. Confirm that no responses were received after the printing of the FEIS.

RAI 21. Section 5.1, Land Use

In response to the request for F-Area environmental characterization data, the SPD Environmental Data Summary is referenced. This report contains monitoring data for radionuclides, but does not contain any environmental monitoring data for chemicals. The report does reference the Centers for Disease Control (CDC) 1998 Dose-Reconstruction study in a discussion of which chemicals emitted to air and water site-wide at SRS might be of concern for human health impacts. Explain how DCS plans to conduct soil surveys of the site to assure that no contamination exists that would be potentially harmful to workers.

RAI 49. Section 5.6.1, Impacts from SRS Activities

Concerns with the response to this RAI are as follows:

a. The impacts of the PDCF and PIP facilities cannot be determined from the information provided, because they are taken from the SPD EIS and are total estimated values for all three SPD facilities (including the MOX FFF). Inclusion of these numbers will result in some double counting of MOX impacts. Provide separate information for these two facilities based on current conceptual design.

b. The information provided in the accompanying tables is in disagreement with information provided elsewhere. Table 49-3 does not agree with Table 5-15c that is provided for the response to RAI #4 (although it does agree with Table 15-5c provided in response to RAI #49). The SRS baseline water usage value in Table 49-4 and 5-15d is presented as 1.7×10^{10} L/yr, but as 7.9×10^{9} L/yr in the response to RAI #14. These discrepancies should be rectified. The annual MOX FFF water usage is presented as 5.8×10^{7} L/yr in Table 49-4, but the rates of usage (in gpm) provided in the response to RAI #28 result in an annual usage of 5.8×10^{7} gal/yr and this value differs from the value provided in the insert for the ER (5.3×10^{7} gal.yr).

c. The average annual water usage for other SPD facilities is presented in Table 49-4 as 1.58×10^{8} L/yr. This value seems to conflict with the maximum annual value of 1.48×10^{9} L/yr presented in Table 4-178 of the SPD FEIS.

d. The waste volumes presented in Table 49-3 for the baseline and other future activities at SRS are 30 year totals, but the MOX FFF and other SPD values are annual estimates.

e. Provide estimates of liquid and solid non-hazardous waste generation to Table 49-3.

f. The values for MOX FFF TRU, low-level, and hazardous/mixed waste generation presented in Table 49-3 are different than the corresponding values presented in the response to RAI #4.

g. The Defense Waste Processing Facility (DWPF) has been operating since 1996. Included in the effort, and analyzed in the Supplemental EIS (SEIS) DOE/EIS-0082-S, are: (1) HLW storage and evaporation in F and H-Area Tank Farms; (2) sludge processing in the Extended Sludge Processing Facility; (3) salt processing through the In-Tank Precipitation (ITP) Process, including the Late Wash Facilities; (4) HLW vitrification in DWPF; (5) solidification of low-activity salt solution in the Saltstone Manufacturing and disposal Facility; (6) wastewater treatment in the Effluent Treatment Facility; (7) organic destruction in the Consolidated Incineration Facility (CIF). The ITP process has been rejected and will be replaced by a new process, which is being analyzed in the Salt Processing Alternatives SEIS. The CIF operations were suspended in October 2000. It is important to know if any of the DWPF operating processes have been included in the SRS baseline provided. The Salt Processing Alternatives (SPA) Draft SEIS, dated March 2001 states that SRS baseline data are not representative of the full DWPF operational impacts. Since NRC's contractor, Argonne National Laboratory, has incorporated a recent new air quality modeling effort, it is important to know if the SPA Draft SEIS included those facilities listed above that have been operating since 1996. Also, does the SPA Draft SEIS include the CIF whose operation was suspended in October 2000? Do the SRS radiological dose and waste generation baselines provided in the response to the RAI include these operations? Provide discussion.

   Prior to commencement of construction of the MOX FFF, it is recommended that a limited number of soil samples be collected and analyzed for hazardous chemical constituents (e.g., metals, organics, pesticides). Confirmation that no contamination exists is important in protecting construction workers and for disposition of excavated soil.

RAI 25 (a) and (b). Section 5.1.4, Air Quality (Construction and Section 5.2.4, Impacts on Ambient Air Quality (Operation)

The Source path data and receptor path data in Attachment 24-1 appears to contain only data for MOBILE data, not for ISC. Provide the ISC data as well.

RAI 26. Section 5.1.10, Impacts from Ionizing Radiation

The response states that the only construction workers likely to receive significant radiation exposures would be radiographers, and states that the ER text will make this clarification. No text revisions were provided in the Proposed ER Revised Text.pdf file. Clarify the type of work in which radiographers are involved during construction, and how the conclusion was reached that other workers would not receive significant doses.

RAI 27. Section 5.1.11, Infrastructure

Figure 27-1 which accompanies the response to this RAI does not clearly show the boundaries of each facility area. Indicate the boundaries of the Plutonium Immobilization Plant (PEP) and Pit Disassembly and Conversion Facility (PDCF) sites.

RAI 29. Section 5.2.4, Impacts on Ambient Air Quality (Operation)

Plot plan and elevation drawings (Attachment 29-1) were not provided as indicated.

RAI 29 (b) (4). Section 5.2.4, Impacts on Ambient Air Quality (Operation)

The ISC source pathway used o model the MOX FFF is not in Attachment 24-1. Only MOBILE information is in the attachment. Provide the ISC data as well.

RAI 33. Section 5.2.10.3, Radiation Doses to Facility Workers

The response does not fully address the problem. Only results were presented in the SPD EIS and the ER. The use of the worker doses from the MELOX facility as a staring point is reasonable, but how the doses were adjusted and how the additional doses from the aqueous polishing were calculated are necessary for inclusion in the EIS.

RAI 34. Section 5.2.12, Waste Management Impacts

If the information provided in this response is from a referenceable document, supply the reference.

RAI 44. Section 5.5.2.4, Explosion

The response states that the chemical analyses have been revised to include the chemical consequences for events involving uranium, and that ER Appendix F.6.5 will be revised to include the results of the chemical impacts of accidents. No revision was included in the Proposed ER Revised Text.pdf file.

Revisions to Appendix F.6.5 should include a more detailed discussion of the chemical accidents assessed, such as is provided in Section 8.3 and 8.4 of the CAR. In order to verify the ER conclusions regarding impacts of accidental chemical releases, ANL is also conducting ALOHA modeling of potential accidents based on the total material at risk from the largest single tank of container. To be consistent with the ER, specific data on the input parameters used in the DCS ALOHA modeling need to be provided. Provide electronic ALOHA output and any other relevant information.

RAI 47. Section 5.6.1, Impacts from SRS Activities

The response to this RAI provides useful information on conceptual design of certain aspects of coordinated infrastructure development for the SPF facilities, but additional information is required to complete the impact assessment.

a. The site boundaries (e.g., fenced area) of each facility should be provided (see RAI #27 above).

b. The size of the retention pond for the PIP is not provided. Can it be assumed that it will be the same size as that needed by the PDCF and MOX FFF? Provide a description.

c. An estimate of any new area to be occupied by utilities should be provided. The response indicates that utilities would be routed along a road. Will they be placed entirely within an existing corridor (i.e., no new land disturbance)? Provide a discussion of their placement and potential impacts.

d. Worker collective dose and excess latent cancer fatality numbers for “Other Plutonium Disposition Facilities” in Table 49-2 are inconsistent. The risk conversion factor between the two numbers should be 4×10^{-4}.

RAI 54. Appendix E, Transportation Risk Assessment, and Section E.5, Representative Routes, Parameters, and Assumptions

In the response to part a) of this RAI, it was stated that the external dose rate from the MOX fuel shipments was taken from the “MOX Fresh Fuel Package Preliminary Design.” Provide a copy of this document.

RAI 55. Appendix E, Transportation Risk Assessment, and Section E.5, Representative Routes, Parameters, and Assumptions

The per shipment inventories we estimate for UF_6 (2277 kg/30B cylinder; 5 cylinders per shipment) and UO_2 (667 kg/drum; 24 drums per shipment) [Table 1] are expected to be approximately three orders of magnitude higher than those given in the response. The values are based on an enrichment of 025%. Using a mass balance approach (total Ci U-238 shipped), it appears that the MOX fuel numbers are also too low. Provide an explanation of the numbers or revise.

Table 1. Single Shipment Radionuclide Inventories

Isotopes	UF_6 (Ci)	UO_2
U-234	4.74E-01	8.68E-01
U-235	4.45E-02	7.52E-02
U-238	2.57E+00	4.74E+00
TH-234	2.57E+00	4.74E+00
PA-234m	2.57E+00	4.74E+00

RAI 60. Appendix F, Sections F.5 and F.6

The response to RAI 60 misinterprets the intent of NUREG/CR-6410, “Nuclear Fuel Cycle Facility Accident Analysis Handbook.” NUREG/CR-6410 states that for severe accidents, removal efficiencies of 95 to 99 percent are recommended. The discussion provided by DCS applies to accident conditions similar to normal operating conditions, rather than severe accidents.