October 3, 2002

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON THE DUKE COGEMA STONE & WEBSTER (DCS) PROPOSED 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 Proposed Mixed Oxide (MOX)Fuel Fabrication Facility Environmental Report (ER), dated July 11, 2002. Attached is a request for additional information (RAI), which is a list of questions we need responses to in order to continue our environmental review and begin drafting the NRC Environmental Impact Statement. Some of the questions may require information from the Department of Energy.

In order to meet the current schedule, which requires us to prepare the NRC Proposed MOX Fuel Fabrication Facility Draft Environmental Impact Statement (DEIS) by February, 2003, we need to receive your responses to this request on or before October 30, 2002. If you have any questions, please contact Tim Harris on (301) 415-6613.

Sincerely,

/RA/

Cheryl Trottier, Chief
Environmental and Performance Assessment Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Attachment: As stated

cc: James Johnson, DOE
Henry Porter, S.C. Dept. of Health and Environmental Control
John Conway, DNFSB
Glenn Carroll, GANE
Ruth Thomas, Environmentalists, Inc.
Donald Moniak, BREDL
Edna Foster

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Docket No.: 70-03098

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REQUEST FOR ADDITIONAL INFORMATION
FOR THE DUKE COGEMA STONE & WEBSTER (DCS)
PROPOSED MIX OXIDE (MOX) FUEL FABRICATION FACILITY
ENVIRONMENTAL REPORT (ER)

General

1. To better define the annual impacts of construction fugitive emissions, identify the time period during which the major earthmoving activities will occur. If MOX facility construction is expected to take 3.66 years, provide the number of months that major clearing, earthmoving, grading, and excavation activities occur. It is unclear if the MOX facility, WSB, and PDCF will be constructed simultaneously or staged in time. As a conservative estimate, impacts can be simply added; however, a more realistic evaluation of impacts can be made if DCS provides specific information on the schedule of construction activities. Included should be the schedule for heavy earth moving activities for the MOX facility, PDCF, and WSB to determine whether the periods during which major construction fugitive emissions are generated during construction of the three facilities overlap or are distinct.

2. Under the current configuration of the PDCF and MOX facilities, specify if gallium removal from plutonium would be conducted in both facilities or only in the MOX facility. If gallium removal would take place in the PDCF, indicate the type of process that would be used. If the process would be different from the dry, thermal process originally described in the SPD EIS, describe it.

3. Provide any separate design documents available (aside from Appendix G in the ER) for the WSB.

4. Provide the text that is missing at the bottom of page 3-10, section 3.2.3.1.

5. For section 3.3.1, provide the actual emission rates instead of referencing the SPD EIS.

Facility footprint / Land use

6. Provide the acreage of disturbance that would be associated with construction of the PDCF/WSB complex. Also, clarify whether the 17 acres of fill to be placed on the PDCF site (listed as part of the MOX facility disturbed area in reference ER-PR-829) are within this area of disturbance or not. If it is, clarify whether the MOX facility disturbed area would be more correctly stated as 89 acres.

7. Figure 4-3 in the ER shows the WSB site as being within the PDCF site. Clarify whether the 5 acres required for construction of the WSB (ER pg. G-8) is included in the area disturbed during PDCF construction, and provide details regarding the disturbed areas for both facilities.

8. Provide a site contour map for the PDCF/WSB area (similar to the one that was previously provided for the MOX facility area).

Attachment

9. Provide the expected future land cover breakdown for the PDCF/WSB complex (i.e. during the operations phase). The information requested is similar to that which was provided for the MOX facility complex (e.g., the 41 acres MOX facility area would be comprised of 17 acres of buildings, facilities, and parking lots and 24 acres of grass or gravel).

10. Clarify what components contribute to the 106 acres that would be disturbed in conjunction with MOX facility construction. The following components were obtained from the revised ER: 52 acres for the MOX facility, 0.6 acre for existing stormwater basin (supposedly this basin would be reshaped), 1.5 acres for the new stormwater basin, 1.5 acres for the waste pipelines, 26 acres for road and utility upgrades, 11 acres for the transmission line reroute (we have some uncertainty as to whether this is considered a portion of the 26 acres for the road/utility upgrades), and 5 acres for the F-area perimeter roadway (again, there is uncertainty as to whether this was accounted for in the 26 acres for road/utility upgrades). The amount of land to be disturbed during construction of the MOX facility is presented inconsistently. The value is stated as 106 ac on page ES-4 (executive summary) but as 52 ac on page 5-1 and elsewhere.

Cultural and Paleontological Resources

11. Provide the location of the waste transfer pipeline from the MOX facility to the WSB.

12. Provide written documentation that the archaeological work for the proposed action, including mitigation of sites within the MOX facility footprint and archaeological clearance for the PDCF, WSB, and Batch Plant sites, has been completed and concurred with by the SC SHPO and that no further work will be necessary for the project. This documentation will be needed in an Appendix on consultation in the EIS. If this documentation can not be provided, the NRC will not be able to demonstrate full compliance with Section 106 of the National Historic Preservation Act.

Geology / Water Use and Quality

13. For the WSB, footprints, resource needs (e.g., construction water, operation water, construction waste water, and operations waste water) are said to be “bounded” by those for the immobilization facility. Provide justification or supporting data for using PIP data to bound the impacts associated with the WSB. WSB-specific information is needed for the analysis.

Ecology

14. Provide survey results or reports on the biota and habitats of SRS that have been completed recently (i.e., in 2001 and the first 6 months of 2002), particularly for listed species (e.g., red-cockaded woodpecker) and unique habitats (e.g., Carolina bays and set-aside areas).

Cumulative Impacts

15. Provide HLW waste volumes for the PDCF and WSB in Table 5-15c. If there is no HLW generation, enter a zero.

16. Explain the inconsistencies between Table 5-15c and 5-12. The cumulative LLW, hazardous/mixed, TRU, and non-hazardous solid waste generation volumes presented in Table 5-15c do not seem consistent with the annual generation values presented in Table 5-12.

17. Provide additional information regarding planned industrial facilities and federal and state highway projects and projections of air emission concentrations. The statement that emissions from facilities greater than 20 miles away from the MOX facility have little opportunity to interact with those from the MOX facility is not substantiated and may not be justified. Although highway projects will be completed before the MOX facility is in operation, vehicles using those roads will affect regional air emission concentrations and contribute to cumulative impact.

Socioeconomics

18. Additional annual data on construction cost and schedule for the MOX facility, PDCF and WSB facilities, and on operating costs for each facility are required to perform the analysis. Although total annual construction and operating costs are available in the *Report to Congress on the Projected Life-Cycle Costs of the U.S. and Russian Fissile Materials Disposition Program*, these costs do not provide any detail on the costs associated with the various material, equipment and labor components for the construction of each facility, or on the material and labor components during facility operations. These data are necessary for a detailed assessment of the impact of these facilities in the region-of-influence surrounding the SRS.

19. Annual expenditure reports for three jurisdictions at SRS are still outstanding. These financial reports (there may be some variation in the actual titles used for each document) for 2000 for the following jurisdictions are required:
Richmond County School District, GA,
School District #19 and #45, Barnwell County, SC

Cost-Benefit Analysis

20. Provide more information on the financial impacts to the utilities using MOX fuel, including a comprehensive assessment of the costs and benefits of the various facilities. This information should include the annual cost of the MOX fuel to utilities using the fuel compared to the utilities' annual cost of fuel from existing non-MOX sources of supply. If the information is proprietary, submit as such, in accordance with 10 CFR 2.270.

Human Health

21. Provide the number of employees at the SRS. This information will support estimates of SRS employee impacts. Questions were raised regarding Attachment A-10 in a follow-up DCS response (June 19, 2001; DCS-NRC-000050) to the SRS site visit.
a) Area G is listed with 251 employees. Confirm our understanding that Area G is not used to denote a specific location on the SRS site, but rather indicates the general site as a whole.

b) Area T (61 employees) and Area W (6 employees) are listed. We have not been able to determine their location on the SRS site. Does Area T refer to the TNX Area? Is Area W offsite?

c) On page 3 of the attachment (after Area Z) 837 more employees are listed without a location specified. Where are these employees?

22. State the expected annual air emissions of radionuclides from WSB operations by isotope and amount in Ci. This information is not provided in Section G.3.4 for assessing risks to site workers and the public.

23. Provide the basis for the stated collective annual dose to WSB facility workers (Section G.3.4.3) of less than 200 person-rem/yr. Also, no data are provided for either average worker or maximum worker dose at the WSB.

24. Provide an estimate of site worker doses attributable to normal operations of the WSB. It is unclear whether the statement made in Section G.3.4.2 (Radiation Doses to Site Workers) means that the doses from WSB operations would be included in the doses given for the MOX facility or that the doses from WSB would be less than the MOX facility doses.

25. Provide the radionuclide source terms (by isotope and amount in Ci) for each of the accidents considered (loss of confinement, fire, and hydrogen explosion) at the WSB in Appendix G.

26. Provide analytical data on chemical contaminant levels for F-area soil (particularly for the MOX facility, PCDF, and WSB construction areas), and the spoils pile in the MOX facility area. It is stated that the spoils pile will be removed prior to the start of construction. These data would be used to assess potential risks to construction workers from inadvertent exposures, and to facilitate disposal of the excavated materials.

27. On-Site Chemical Inventories: For the chemicals listed in Table 3.2 of the ER, provide the container capacities and the maximum storage amount per container for each chemical. Also, add molar concentrations or percents by volume for chemicals lacking this information (i.e., dodecane, hydroxyl amine nitrate). These values are needed to conduct accidental release modeling.

28. Provide information on storage conditions for the gas (i.e., pressure level), and a reasonable estimate for the onsite inventory, the container capacity, the maximum storage amount per container, and molar concentration to Table 3-2. The anticipated onsite inventory for nitrogen tetroxide is listed as "not available" in ER Table 3-2. Apparently nitrogen tetroxide is stored as a gas.

29. Describe how nitrogen tetroxide is used in the MOX Fuel Fabrication process (Section 3.2).

30. In Section 5.5.2.9 (Chemical Accidental Releases), the text states "a spill or leak from the largest tank or container holding the chemical was modeled." Clarify whether there are any process chemicals that will be used in the MOX processing area (BMP) in volumes larger than the maximum storage amount per container in the BRP (or at equal or greater concentrations)? If so, provide the larger process volume.

31. Provide the technical basis for accident source terms involving uranium dioxide powder. In the Responses to NRC Request for Clarification of Additional Information for the ER (October 2001), response to #44, a table titled "Summary of Airborne Concentrations for Bounding Unmitigated Events Involving a Chemical Release" was provided. This table gave a storage quantity of 37,500 kg for uranium dioxide powder, and a release rate of 2.3 kg/hr. However, no description of the assumptions used in arriving at these values was given. Provide additional details and verification of these values.

32. Provide the design ventilation rates and the location of vents in the BAP area and the BRP building.

33. Table G.2 provides the annual consumption and onsite inventory values for the process chemicals to be used in the WSB. Provide the container capacities and the maximum storage amount per container for each chemical.

34. Provide annual usage, on-site inventory volumes, container capacities and maximum storage amounts per container for PDCF process chemicals. Appendix G, Table G-1 gives annual volumes of nitric acid waste liquids (dilute and concentrated) that would come from the PDCF (e.g., a maximum of 17,000 gal of 3% nitric acid lab liquids). The SPD EIS (Table E-7) did not indicate nitric acid as being used as a process chemical in the PDCF, so that list may be incomplete.

35. Provide an estimate of chemical releases resulting from a fire at the WSB. If structural damage to the facility were caused by a fire initiated in the low-activity and effluent processing sections of the WSB, describe the possible chemical releases from that section, or if the entire facility is engulfed in fire. Provide the chemical composition of the effluent bottoms and the effluent overheads.

Transportation

36. Provide the average Ci content by radionuclide per waste drum or TRUCPACT-II (assuming 14 drums per TRUPACT-II unless weight restricted) for the TRU waste to be sent to WIPP from the WSB.

37. For the TRU waste shipments, Section G.5 states that approximately 35 TRU waste shipments per year to WIPP will be made from the WSB. Clarify whether this assumes a fully loaded shipment (TRUPACT-II containers per truck?)

38. 34 MT of Pu is to be converted to MOX fuel. Of the 38.2 MT of surplus weapons-grade Pu identified (ref. DOE 1996p in DOE/EIS-0229), 21.3 MT are in the form of metal at the Pantex Plant, the SRS has 0.4 MT in metal form and 0.5 MT in oxide form, and Rocky Flats has 5.7 MT in metal form and 1.6 MT in oxide form (Table 15 in DOE/EIS-0229 ref. DOE 1996p). Even with the assumption that all of the metal form at Rocky Flats is non-pit Pu (which would then be shipped to the SRS according to DOE's second ROD [67 FR 19432] sending all non-pit Pu at Rocky Flats to the SRS), the total amount of Pu from Pantex and Rocky Flats/SRS is only 29.5 MT. Identify the source of the remaining 4.5 MT.

Waste Management

39. On page 5-23, provide more detail regarding the source of the potentially contaminated water that will be tested and released to the sanitary sewer.

40. Table 5-12 presents maximum estimated MOX facility waste that would be generated. The liquid high alpha activity waste is listed only as being solidified and added to TRU waste. This appears to be inconsistent with text presented on Page 3-19 which states that the distillate portion upon evaporation of liquid high alpha waste would be managed as LLW. Clarify if this distillate-LLW portion has been accounted for in the volumes presented in Table 5-12.

41. Provide the basis (and associated references) for the statement shown in Table 5-12 as footnote "d". Based on the volumes of TRU presented in Table 5-15c, it appears that TRU waste from the MOX facility, PDCF, and WSB would double the volume of TRU that the site has to manage. This does not appear consistent with the conclusion in footnote "d" noted above.

Air Quality

42. In Table 5-15a, provide the following values for the MOX facility, PDCF, and WSB:
    a)1-hour carbon monoxide concentrations;
    b)3-hr and 24-hr sulfur dioxide concentrations;
    c)maximum quarterly lead concentrations;
    d)24-hr PM_{10} concentrations.

43. In Table 5-15a, provide chlorine concentrations for the MOX facility, PDCF, WSB, baseline, and future facilities.

44. Clarify whether “NA” in Tables 5-15a and 5-15b stands for “not available” or “not applicable”. These tables should be revised accordingly.

45. *Table 5-2.* Table 5-2, footnote b appears to be in error. The SRS Maximum Concentrations are for SRS sources only and do not include background. See the analysis from the SCDHEC (Ross DuBose SCDHEC memo, April 3, 2001). To find a concentration for comparison with ambient standards, a background must be added to the Total increments listed in the table. For TSP, the result will exceed the standard (46.6+0.53+28 = 75.13). Same comment for Table G-6.

46. *Table 5-1.* Table 5-1 footnote b is no longer true; as the body of the table notes, PM < PM10.

47. *Section 5.1.4 and Tables 5-1 and 5-2*. State specifically whether the impacts in Table 5-2 include the impacts of vehicle emissions.

48. *Appendix G2.1, p. G-7*. Justify and provide a bases for the statement that impacts of constructing and operating the WSB will be less than the projected impacts for the PIP evaluated in the SPD EIS.

49. Provide the maximum area disturbed at any one time during construction of the MOX facility and its support facilities and the emission factor used for construction fugitives. (Item 24(a), DSC, July 12, 2001, gave 31 acres as a reasonable amount disturbed on an

annual average basis.)

50. Provide the maximum area disturbed at any one time during construction of the PDCF and the WSB.

51. Provide the following information on concrete batch plants needed for construction:
    a) Considering all three facilities (MOX, PDCF, and WSB), provide the number of concrete batch plants.
    b) The maximum annual throughput for a each plant. (Update Item 24(d), DCS, July 12,2001 and provide similar information for any other plants.)
    c) If there is more than a single batch plant, provide the proposed periods of operation to determine whether emissions could occur simultaneously.
    d) The anticipated location(s) of the batch plant(s).

52. Provide the modeled air quality data for annual TSP concentrations and the corresponding UTM coordinates for the SRS boundary receptors modeled by Hunter.

53. Confirm that the construction fugitive emissions were not modeled as an area source. If they were modeled as an area source, provide the ISC source path for the area source and the emission rate (g/sec).

54. Provide the annual process emissions of criteria, process, trace, and hazardous pollutants from the PDCF.

55. Section G.3.1 indicates that there are potential emissions of nitric acid, aluminum nitrate, and sodium hydroxide from the WSB. Provide the annual process emissions of criteria, process, trace, and hazardous pollutants from the WSB.

56. Update the expected annual fuel usage for all MOX facility emergency/standby generators and the aggregate hours of operation for all generators. Provide the vendor emission factors for criteria pollutants.

57. Provide the maximum hourly fuel use assuming that all emergency/standby generators are operating simultaneously.

58. Provide the number of hours per year a single generator is expected to operate for testing and maintenance.

59. Clarify whether there are additional emergency generators associated with the PDCF and/or the WSB. If so, provide the number, the capacities, total annual fuel consumption, maximum hourly fuel consumption for all generators operating simultaneously, and the number of hours per year a single generator is expected to operate for testing and maintenance.

60. Provide the length of the round trip assumed for facility workers in estimating VMT for each of the three facilities.

61. The PDCF as presented in the SPD EIS has both boiler and process stacks.
    a) Clarify whether the use of new boilers at the PDCF is still planned.

b) Provide the current stack parameters needed for modeling (temperature, diameter, exit velocity, height above grade, grade height above msl) for all PDCF stacks including, if still planned, the boiler stack.

62. The PIP as presented in the SPD EIS has both boiler and process stacks. The WSB contributions to ambient air concentrations presented in Table G-6 are from Table G-64 in the SPD EIS for the PIP.
    a) Clarify whether the use of new boilers at the WSB is still planned
    b) Provide the current stack parameters needed for modeling (temperature, diameter, exit velocity, height above grade, grade height above msl) for all WSB stacks including, if still planned, the boiler stack.

63. Update elevation and height data in Item 29 (b)(2), DCS, July 12, 2001, (identical to data in Item 29, DCS, October 26, 2001) for the MOX facility including the new BRW and all structures within 600 ft of the MOX facility stack.

64. Provide plot plan and elevation and height data for all structures within 5 stack heights of the PDCF stack(s).

65. Provide plot plan and elevation and height data for all structures within 5 stack heights of the WSB, if there is a stack(s).

66. Provide the following data on the modeling conducted for the 1998 update of air dispersion modeling for SRS permitted air emission sources.
    a)Clarification on whether the modeled ambient boundary concentrations were based on measured 1998 emission levels for each source, or were based on maximum permitted emission levels.
    b)Additional information on new sources hydrazine or hydrazine compounds permitted at SRS since the 1998 modeling effort (e.g., annual emission amounts, modeled ambient SRS boundary concentrations) because hydrazine is a MOX-related chemical .
    c)Additional or updated ambient air concentration estimates for toxic air pollutants at SRS have been generated, please provide.

    In the “Environmental Report for 2000", Chapter 2: Environmental Compliance, it is stated that air dispersion modeling for all site sources was completed and submitted to SCDHEC in 1993, demonstrating compliance at the site boundary line with allowable concentrations (see page 27 of Chapter 2). However, ANL has a letter describing the results of an update to the 1993 modeling (letter from M.D. Dukes, Westinghouse, to C.W. Richardson, SCDHEC, Oct 13, 1998).