June 8, 2001

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON THE DUKE COGEMA STONE & WEBSTER (DCS) MIXED OXIDE FUEL FABRICATION FACILITY ENVIRONMENTAL REPORT

Dear Mr. Idhe:

The U.S. Nuclear Regulatory Commission (NRC) staff and their contractor, Argonne National Laboratory have reviewed the Mixed Oxide (MOX) Fuel Fabrication Facility (FFF) Environmental Report (ER), dated December 19, 2000. We have attached 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 input from the Department of Energy (DOE). This is particularly evident in areas where responsibilities shift from DCS to DOE, for example, waste and decommissioning. We would encourage DCS to work with DOE in preparing those responses.

In order to meet the current schedule, which requires us to prepare the NRC MOX FFF Environmental Impact Statement (EIS) by September 30, 2002, we need to receive your responses to the RAI on or before July 12, 2001. If you have any questions, please contact Jennifer Davis on (301) 415-5874.

Sincerely,

Thomas H. Essig, Chief ***/RA/***
Environmental and Performance Assessment Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

cc: James Johnson, DOE
Henry Potter, 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: 70-3098

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DATE	6 /6 /01	6 /7 /01	6 /8 /01	6 /8 /01

This document <u>should</u>/should not be made available to the PUBLIC __BJD__ 06/05/2001

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

GENERAL COMMENTS

1. The ER does not include a section on potential mitigative actions in the unlikely event of a severe accident. General Savannah River Site (SRS) site-wide emergency management plans and MOX FFF-specific emergency management plans should be provided. Provide a copy of DCS and/or SRS Emergency Preparedness Plans and/or appropriate plans that would cover a MOX fuel transportation accident. Also, identify and briefly describe local emergency plans for the surrounding communities of Aiken, North Augusta, and Augusta that would address a MOX-related accident either at SRS or on local roadways.

2. The following Global Information System (GIS) information is needed to describe SRS existing conditions and conduct the impact assessment: (a) a roads digital layer, (b) a railroads digital layer, and (c) a F-Area digital layer or hardcopy map.

SPECIFIC COMMENTS*

1. Section 1.2.1, F-Area Infrastructure Upgrades. Section 1.2 of the ER refers to augmented de-ionized water supplies necessary to support the MOX FFF. Explain what is meant by "augmented water supplies." If augmentation requires construction of new water treatment facilities, indicate their size and show locations on a site map.

2. Section 1.2.8, Decommissioning of the Surplus Plutonium Disposition Facilities and Section 5.3 Deactivation. A general plan for decommissioning the MOX FFF is needed in sufficient detail to support a description of the process and impact analysis in the Environmental Impact Statement (EIS). (See also comments 35 and 50.)

3. Section 3.1.1, MOX Fuel Fabrication Building (1st Para., p. 3-2). The Environmental Report (ER) refers to Unclassified Controlled Nuclear Information (UCNI). It is our understanding that UCNI will not be applicable to the MOX FFF licensing review. Confirm if UCNI will or will not be used in the MOX licensing review.

4. Section 3.2.1, Plutonium Polishing. Under 10 CFR 51.45(b)(1), the applicant's ER must address the impact of the proposed action on the environment. The ER provides no discussion on processing, handling, storage, and disposition of U-235 that will be produced in the aqueous polishing step. U-235 is a decay product of Pu-239. While it is present in low concentrations, a significant quantity could be produced in the polishing of the 25.6 MT of surplus plutonium. Provide the environmental impacts from the processing, handling, storage, and disposition of U-235 produced in the aqueous polishing process.

*Unless otherwise noted Section numbers refer to the ER

Attachment

5. Section 3.2.1, Plutonium Polishing. Under 10 CFR 51.45(b)(3), the ER must contain alternatives to the proposed action. The applicant's ER discusses the aqueous polishing process for removing impurities from the plutonium feedstock. However, the ER provides no discussion of the dry process alternative developed by Los Alamos National Laboratory for removing gallium impurities. Based on comments received at the scoping meetings, NRC staff currently plan to evaluate both the dry and the wet process for plutonium polishing in the EIS. Information about the dry process at the same level of detail as the wet process should be provided to allow an analysis of the two options and comparison in the EIS.

6. Sections 3.2.4 and 3.2.5, Section 5.2.10, Section 5.5.2.2, and Section 5.7.3.6. Under 10 CFR 51.45(b)(3), the applicant's ER must contain alternatives to the proposed action. The confinement systems are based on the use of high efficiency particulate air (HEPA) filters. A cursory discussion of the sand filter option is presented in Section 5.7.3.6, but this discussion lacks details of the environmental impacts during routine operations and during accidents. For example, in certain fire accidents, the use of a sand filter may reduce releases of radioactive materials. In addition, sand filters would generally not need replacement over the life of the MOX FFF, minimizing the impacts associated with periodic replacement of HEPA filters. Based on comments received at the scoping meetings, NRC staff currently plan to evaluate both HEPA filters and sand filters in the EIS. Present a complete evaluation of the environmental impacts of using sand filters in the confinement system as an alternative to the proposed action. The impacts should include a full life-cycle cost analysis.

7. Section 3.3.2.7, Nonhazardous Liquid Waste. This section states that sinks, showers, etc., will be discharged to the sanitary sewer system. If the showers are ever used for the facility operators to wash themselves, describe what controls will be in place to ensure that contamination does not wash off of someone and into the sewer system. As has been shown in other locations at other fuel facilities, this can become a significant problem over time.

8. Section 3.3, Section 4.13, and Section 5.2.12. Under 10 CFR 51.45(b)(1), the applicant's ER must address the impact of the proposed action on the environment. The ER indicates that liquid and solid wastes will be transferred to the Department of Energy (DOE) for processing and management. The ER also provides general information regarding how DOE manages its waste streams, but provides no specific information on how MOX FFF wastes will be processed or managed. Although waste processing will not be a part of the DCS operations, it will produce environmental impacts that need to be considered in the EIS.

   Describe how wastes generated by the MOX FFF will be processed. Provide information on the applicable environmental impacts from the processing, effluent releases, storage, and disposal operations applicable to solid transuranic wastes and the liquid high alpha waste stream, including those areas under DOE control.

9. Section 4.1.1, Site Location. In the first paragraph of section 4.1.1, note that the description of public access to the SRS area should include the fact that the NRC considers SRS workers who are not closely and frequently connected to the licensed activity and who are outside the MOX FFF restricted area and within the controlled area boundary to be "members of the public." Identify whether this definition affects the ER determination of impacts to workers, and describe how those impacts should change.

   The NRC's policy on delineating members of the public in controlled areas is described in NRC Staff Requirements Memorandum SECY-98-038, "Hanford Tank Waste Remediation System Privatization Co-located Worker Standards."

10. Section 4.1.1, Site Location, and Figure 4.2, Location of F Area and Controlled Area Boundary. Section 70.61(f) states that each licensee must establish a controlled area for which they retain the authority to exclude or remove personnel and property. The area that is defined by DCS in Section 4.1.1 includes areas within the SRS that the DOE does not currently control access by physical structures, such as gates, barriers or fences. This includes, for example, the area north of SCR 278 and the area southwest of SCR 125. Revise the description of the controlled area boundary to include only those areas to which DCS can limit access for any reason, and describe whether this revision would alter any of the ER assessments of impacts to the public.

11. Section 4.2, Land Use. The following land use documents will need to be consulted for updates to information provided in the Surplus Plutonium Disposition (SPD) EIS and ER:

    a. Any applicable comprehensive planning documents prepared by the Lower Savannah River Council of Governments (comprising Aiken, Allendale, and Barnwell counties)
    b. Existing land use information and planning documents for areas along the likely transportation routes from the MOX FFF to Catawba and McGuire reactor stations.

12. Section 4.11, Current Risk from Ionizing Radiation, and Table 4-25, Radiation Doses to Workers from Normal SRS Operations. With regard to the actual average Savannah River Site radiation worker total effective dose equivalent from normal operations of 156 mrem per year that appears in Table 4-25, clarify whether this dose is from external radiation sources only or from both external and internal sources.

    The reference for the 156 mrem per year value that appears in Table 4-25 is the SRS External Dosimetry Technical Basis Manual. Therefore, it is not clear that the 156 mrem per year value includes the SRS radiation worker annual average 50-year committed effective dose equivalent from internally deposited radionuclides.

13. Section 4.4.3.3, Potential Sources of Groundwater Contamination. Describe any groundwater monitoring results, applicable to the existing proposed MOX FFF site, for radioactivity and hazardous chemicals, the location of monitoring wells, and the depth to well screens. Results should include data that are above and below Environmental Protection Agency Safe Drinking Water limits. Address any new understandings of the groundwater hydrology in the vicinity of the proposed MOX FFF. Address any predicted impacts from the remediated seepage basin.

14. Section 4.4, Hydrology. The following information is needed to characterize and update water use and surface water conditions on SRS and the vicinity. Where more current water use information or compliance statistics are available, include the data in your response. If the data mentioned below represents the most current information available, indicate that in the response.

    a. Current water use from the Savannah River (1999 data shows 140 billion liters).
    b. Current NPDES compliance statistics (listed as 99.8% compliant in 1995).
    c. More current data for mean flow in Upper Three Runs Creek (in 1991, mean discharge was 240 cfs).
    d. Information on the 500-year floodplain.
    e. Current information on groundwater withdrawals for site (3.4 billion gallons per year reported for 1993).

15. Section 4.6.1.2, Proposed Facility Location (Ecology). Provide more detailed information (i.e., from 1994 to the present), if available, on the fish community of Upper Three Runs and the aquatic community of Fourmile Branch. The requested information is needed to adequately describe and assess impacts to aquatic ecological resources.

16. Section 4.6.2.2, Proposed Facility Location (Ecology). If available, provide full copies of (1) “SRS Urban Wildlife: Environmental Information Document” by Mayer and Wike (1997) (the version accessible on the ER CD is an abridged copy), and (2) WSRC 1997, “SRS Ecology Environmental Information Document,” WSRC-TR-97-0223, Aiken, SC (ER Admin. Record ER-PR-265), (3) USDA Forest Service, 1999, “Savannah River Site Red-cockaded Woodpecker Management Plan,” and (4) Davis, C.E., and L.L. Janecek, 1997, “DOE Research Set- Aside Areas of the Savannah River Site,” SRO-NERP.

17. Section 4.7.1, General Site Description (Noise). The noise survey “Sound-Level Characterization of the Savannah River Site,” NUS Report No. NUS-5251 was written in August 1990. If a more recent noise survey is available, provide it so the survey data can be updated.

18. Section 4.8, Regional Historic, Scenic, and Cultural Resources. To complete the MOX FFF EIS we will need the following cultural and paleontological resources information. The following information is necessary to support the cultural resources impact analysis of the MOX FFF, support facilities, and site infrastructure upgrades:

    a. The SRS programmatic memorandum of agreement (1990) that stipulates how cultural resources are to be managed at SRS.

b. The 1984, 1993, and 1994 archaeological surveys for lands within or near F-Area, and the results of any other recent surveys of the area that were not explicitly mentioned in the ER.
c. The data recovery plan for the National Register of Historic Places (NRHP)-eligible site.
d. Concurrence letters from the State Historic Preservation Officer (SHPO) and other related consultations regarding the surveys and data recovery activities taking place in F-Area.
e. Summary of consultations with Native American groups, especially responses from these groups to the letters sent out for the SPD EIS.

19. <u>Section 4.9.1, Permanent Residents</u>. Current information is needed on residential locations by community and county for all DOE, and Westinghouse SRS employees. This information is necessary to support the economic impact assessment of MOX FFF.

20. <u>Section 5.1.1, Land Use</u>. This section indicated that the SRS and M & O contractor had not designed the F-Area Outside Facility needed to support the processing of liquid high alpha waste. Provide information on the approximate size and location of the F-Area Outside Facility. Describe the vegetation and topographic conditions of the site. Provide information on the location, width and length of the right-of-way to be disturbed for the double-walled pipeline leading from the MOX FFF to the F-Area Outside Facility.

21. <u>Section 5.1, Land Use</u>. Provide F-Area environmental characterization data (e.g., soil, surface water or groundwater sampling data) with specific emphasis on areas which would be excavated for the MOX FFF. The ER provides only qualitative statements about environmental data for the proposed site. These data are needed for the EIS evaluation of potential impacts of construction and operation of the MOX FFF on health of workers.

22. <u>Section 5.1.3, Water Use and Quality</u>. The discussion in this section suggests that current discharge structures may need to be increased to handle incremental wastewater and process discharge volumes produced by MOX FFF, the Pit Disassembly and Conversion Facility (PDCF) and Plutonium Immobilization Plant (PIP). Provide approximate locations for any new outfalls anticipated. This information is necessary to evaluate water quality effects downstream of the discharge locations.

23. <u>Section 5.1.3, Water Use and Quality</u>. Estimate the number of retention ponds designed to control stormwater runoff that would be constructed. Describe the size, depth, and design/landscaping characteristics of these ponds. Would these ponds be expected to contain water throughout the year?

24. <u>Section 5.1.4, Air Quality (Construction)</u>. The footprint of the MOX FFF, and the associated emissions differ in the SPD EIS, the ER, and the data calls. To ensure that the data being used are consistent with the latest design studies and to provide a basis for independently checking construction emissions the following information is needed:

    a. The maximum area disturbed at one time during construction of the MOX FFF and its support facilities, or the total area expected to be disturbed during construction,
    b. Measures to be used to control dust generation during construction (may be specified in the Construction Emissions Control Plan),

c. The activity levels and emission factors used to estimate diesel equipment emissions,
d. The throughput for the concrete batch plant and confirmation that its use is still anticipated,
e. The assumptions and activity levels used to estimate vehicle emissions using MOBILE5b and PART5 including vehicle miles traveled (VMT) estimates for the workforce and shipments.

25. Section 5.1.4, Air Quality (Construction) and Section 5.2.4, Impacts on Ambient Air Quality (Operation). To provide a basis for the independent verification of revised SRS MCB results, the following inputs for the ISC model runs used to produce the revised SRS MCB are needed:

    a. The source path data,
    b. The receptor path data, and
    c. Receptor locations at which the SRS MCB values occurred.

26. Section 5.1.10, Impacts from Ionizing Radiation. This section mentions that construction workers will be monitored for potential radiation exposure. Describe the monitoring program and whether it will be subject to NRC review and regulatory requirements.

27. Section 5.1.11, Infrastructure. The statement is made in reference to infrastructure that "... upgrades include clearing and grading of all three sites, developing integrated stormwater flow patterns for all three sites, providing utility services to all three sites, and providing any new access roads". Details of these upgrades, particularly design and location information, are needed to support the impact assessment of areas disturbed during construction. How much land will be disturbed for new access roads needed for MOX FFF construction? Provide a map showing the approximate locations of new access roads. Also, provide the types of habitats these upgrades would be routed through.

28. Section 5.2.3 Impacts on Groundwater Quality. There is no discussion on groundwater use for normal operations, although water use is indicated. Expected water use data should be provided and impacts on the groundwater system should be evaluated.

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

    a. Operational emissions have changed between the ER, the SPD EIS, and some of the data calls. In addition, the SPD EIS states that no hazardous chemicals and no carcinogenic chemicals would be released as a result of operations. This may not be consistent with the list of input chemicals given in Table 3-2 of the ER which gives the carcinogen hydrazine as a required chemical. To ensure that the data being used are consistent with the latest design studies and to provide a basis for independently checking operational emissions and assessing the health impacts of chemical releases during routine operations, the following are needed:

        (1) For the MOX process itself, emissions of criteria pollutants (CO, NO_2, SO_2, VOCs, $PM_{2.5}$, PM_{10}, and TSP); emissions of process, trace, and hazardous pollutants such as hydrazine, nitric acid, and benzene; and emissions of uranium.

(2) Confirmation that boilers are not needed to support MOX FFF operations. Boilers were an emission source in the SPD EIS but not in the ER. If new boilers are needed, the data needed to calculate boiler emissions (fuel type and sulfur content, capacity, fuel use, and controls) should be provided,
(3) The activity levels and emission factors used to estimate emergency generator emissions,
(4) The throughput and assumptions used to estimate VOC emissions from storage of diesel fuel,
(5) The assumptions and activity levels used to estimate vehicle emissions using MOBILE5b and PART5 including VMT estimates for the workforce and shipments.

b. To model the MOX FFF or check the existing modeling, the following are needed:

(1) The latest stack parameters and stack configuration for the MOX FFF: height above grade, exit temperature, volume flow [stack diameter and exit velocity (the velocity of 0.03 m/sec used in the ER and SPD EIS appears to be too low)]; and the height above mean sea level of the grade level assumed for the MOX FFF.
(2) To account for downwash or determine whether downwash needs to be considered, the heights, dimensions, and locations of the buildings (existing and new construction such as the PDCF) within about five stack heights (about 150 ft based on ER stack height of 26 ft) of the MOX FFF building.
(3) The background values used in estimating total concentrations.
(4) The ISC source pathway used to model MOX FFF impacts.
(5) The location of the concrete batch plant.
(6) If a new boiler is required, the boiler's stack parameters (height, temperature, volume flow or exit velocity/diameter) and location.

30. Section 5.2.6, Impacts from Facility Noise (Operation). It is reasonable to assume that the distance of the MOX FFF from the site boundary will probably result in negligible noise impacts. However, to make the demonstration more quantitative, the following are needed:

a. If available, noise levels associated with MOX FFF operations,
b. The locations of the off-site residence and sensitive receptor (school, hospital, park, and nursing home) closest to the MOX FFF site,
c. If any, locations of on-site residence and sensitive receptor closest to MOX FFF site.

31. Section 5.2.8, Socioeconomic Impacts. Provide detailed cost and schedule information for construction and operation of the MOX FFF, Pit Disassembly Facility and Immobilization Facility. Cost and schedule information is needed to determine socioeconomic impacts by year. Annual detailed operating costs will also be needed to determine socioeconomic impacts during operations. Both construction and operations costs will be used in the cost benefit analysis.

32. Section 5.2.10.2, Radiation Doses to Site Workers. The distribution of on-site workers (locations and numbers of the workers) at SRS is needed to support derivations of more representative dose estimates. Provide a copy of "1992 Onsite Worker Population for PRA Applications," WSRC-RP-93-197, by J.M. East, as referenced by Tables 1.3-6 to

1.3-8 in "Natural Phenomena Hazards (NPH) Design Criteria and Other Characterization Information for the Mixed Oxide (MOX) Fuel Fabrication Facility at Savannah River Site (U)," WSRC-TR-2000-00454, Rev. 0, Nov. 2000.

33. Section 5.2.10.3, Radiation Doses to Facility Workers. Time-motion studies of involved (facility) workers and the dose rate(s) at their respective locations are needed in order to estimate exposures. This data was not provided in the ER or the SPD EIS. Only results were presented.

34. Section 5.2.12, Waste Management Impacts. Provide the expected capacity of the planned double-walled pipeline needed to support the processing of the liquid high-alpha waste.

35. Section 5.3, Deactivation. Under 10 CFR 51.45(b)(1), the applicant's ER must address the impact of the proposed action on the environment. The ER indicates that because DCS will deactivate the MOX FFF at the end of its operations and return the facility to DOE, no meaningful decommissioning impacts can be assessed. Even though DCS will not be performing decommissioning activities, there will be decommissioning impacts for the facility.

    Discuss reasonable decommissioning options for the facility and the resultant environmental impacts assuming that DOE does not reuse the facility.

36. Section 5.4.2.2, Impacts of Transportation Accidents. Provide an assessment of non-radiological impacts from transportation accidents involving the chemical hazard from UF_6.

37. Section 5.4.5, Comparison with NUREG-0170. Provide a transportation assessment which includes potential sabotage impacts.

38. Section 5.5, Facility Accidents. The accident analyses in the ER are presented at a very general level. There is minimal discussion to show that the results presented will bound the impacts. For example, it is unclear why the bounding internal fire is a fire in the PuO_2 Buffer Storage Unit or the bounding explosion is an explosion in the aqueous polishing cell.

    Provide a basis for the selection of the evaluated scenarios as being the bounding accident events.

39. Section 5.5, Facility Accidents. Provide a reference for the "MOX FFF Integrated Safety Analysis, Safety Assessment of the Design Basis," mentioned in this paragraph.

40. Section 5.5, Facility Accidents. Source terms are needed for potential accidents involving uranium oxide powder. All accidents assessed in the ER consider only plutonium source terms. Since substantial quantities of uranium dioxide powder will also be located in the MOX facility, estimates of consequences of accidental release of uranium are also needed.

41. Section 5.5 and Appendix F. Aside from the location of the off-site MEI and the accident source terms, no input data to the MACCS2 or ARCON96 codes were provided in the

SPD EIS or the ER. These data are required to evaluate the exposures estimated in the ER and includes:

a. The complete methodology used to estimate the off-site population impacts, including information such as the exposure pathways evaluated and exposure duration,
b. Hourly weather data for input to MACCS2.

42. Section 5.5 and Appendix F Accident Definitions and Characteristics. The following data are needed to assess the MOX FFF accident impacts in the EIS:

a. Descriptions of one or more bounding accidents (accidents that are likely to cause the highest consequences to the public offsite and/or workers on the SRS who are not directly involved in the MOX FFF operations) in each of the following frequency bins

greater than 10^{-2} per year
between 10^{-2} and 10^{-4} per year
between 10^{-4} and 10^{-6} per year, and
less than 10^{-6} per year (generally between 10^{-6} and 10^{-7})

Since the radiolological and chemical health risk endpoints are different, consideration should be given to assigning different bounding accidents under radiological and chemical impacts.

b. Source terms for each accident sequence giving the quantities of radionuclides and/or hazardous chemicals released to the environment and time dependence of release
c. Stack parameters for releases through a stack (i.e., height, flow velocity, and temperature).
d. The ER describes and provides source term data for four accidents; two of the accidents are said to be in the unlikely frequency range and the other two in the highly unlikely range. Need confirmation that these two frequency categories correspond to the 10^{-2} to 10^{-4} per year and 10^{-4} to 10^{-6} per year frequency bins given above and that the accidents can be taken as the bounding accidents for those categories.

43. Section 5.5.2.3, Internal Fire. This section states that the radiological consequences to the nearest site worker due to a fire are low. However, fire is one of the most significant methods for dispersing contamination. A fire involving radioactive materials in a contained area could expose workers to significant airborne activity. Provide the analysis that determined the maximum exposure to an operator would be limited to 90 mrem. Secondly, this analysis (and all others discussing radiological exposures) needs to address chemical toxicity from uranium and plutonium. The effects of the chemical toxicity of uranium at low enrichments far exceed the radiological hazard.

44. Section 5.5.2.4, Explosion. This analysis needs to address chemical toxicity from uranium and plutonium. The effects of the chemical toxicity of uranium at low enrichments far exceed the radiological hazard.

45. Section 5.5.2.6, External Man-Made Events. This section does not adequately explain how the screening evaluation determined that credible external man-made events will not significantly impact MOX FFF operations. It would seem that the proximity of the numerous radiological and chemical hazards of both existing and proposed facilities in that area warrant a detailed discussion of how this conclusion was reached.

46. Section 5.5.2.9, Chemical Releases. This section does not appear to consider the release of uranium or plutonium as a chemical release. Low enriched, natural, and depleted uranium are more of a hazard from a chemical toxicity perspective than a radiological perspective. List the chemicals that were analyzed, and address uranium and plutonium as chemical releases.

47. Section 5.6.1, Impacts From SRS Activities. Coordinated infrastructure development associated with the MOX FFF, PDCF, and PIP should be described in sufficient detail to allow an evaluation of its cumulative impact. The location, size, and design characteristics of all parking areas, stormwater detention facilities, and utility corridors should be identified and described. The ER defers evaluation of these impacts to "separate EISs." However, they are related "reasonably foreseeable actions" and therefore should be included in the cumulative impact analysis.

48. Section 5.6.1, Impacts From SRS Activities. Impacts of current SRS activities should be itemized to the extent possible. The ER presents a single aggregated value for each impact area (Table 5-15) that presumably includes the impacts of all current activities. For the cumulative impact analysis, it will be important to identify the sources of existing SRS impacts including those impacts resulting from existing operations and from past actions that have resulted in residual impacts such as land disturbance or existing contamination. The historical data review report (Fledderman 2000) would be a useful document for estimating past impacts. In addition, the final version (October 2000) of the Surplus Plutonium Disposition Preconstruction and Pre-Operational Monitoring Plan (Fledderman 2000) should be provided.

49. Section 5.6.1, Impacts From SRS Activities. Impacts of reasonably foreseeable future SRS activities should be itemized to the extent possible. The ER aggregates these impacts with those of current activities making it very difficult to discern the source of impacts. Values are taken from the SPD EIS which were based on a list of DOE EISs available at the time. This information should be updated and any new proposals (as described in draft or final NEPA documents) should be included. As for the impacts of current activities, this information would be most usefully presented in a table.

50. Section 5.6.1, Impacts From SRS Activities. Provide estimates of the impacts of decontamination and decommissioning of the MOX FFF. Decontamination and decommissioning are dismissed in the ER as "too far into the future to allow any meaningful evaluation of impacts." This position is consistent with that presented in the SPD EIS, but is not acceptable for the MOX FFF because these impacts, while perhaps ill-defined at this time, would be directly related to facility construction and operation. Reasonable assumptions should be made as to the nature of decontamination and decommissioning activities and the impacts of these actions determined. (See also Comment 35.)

51. Section 5.6.2, Impacts from Other Nearby Actions. Provide quantitative estimates of the impacts (in each impact area) of current and reasonably foreseeable future actions in the SRS vicinity. Currently, the Vogtle nuclear plant, Chem-Nuclear Services disposal facility, and Starmet CMI are mentioned as contributing to the cumulative impact in the region of influence, but their incremental impacts are not presented. Other non-radiological impacts are not provided. The cumulative impact analysis must consider the nonradiological and radiological impacts of other nearby actions particularly those that would impact air and water quality (e.g., the Savannah River).

52. Section 5.6.3, Transportation Impacts. The impacts of transportation associated with other activities on and off SRS should be provided. The impacts of transportation associated with MOX FFF operations will be an incremental addition to the impacts of current and future transportation activities. These impacts should be provided in sufficient detail to allow addition to the transportation impacts of the MOX FFF in the cumulative impact analysis.

53. Section 5.10, Environmental Monitoring Program. The direct radiation measurements and the air, soil, vegetation, surface-water and sediment sampling programs for uranium and plutonium should also sample for americium and technetium-99, and depleted uranium daughter products and fission products.

54. Appendix E, Transportation Risk Assessment, and Section E.5, Representative Routes, Parameters, and Assumptions. Although the following input parameters to the transportation risk models can be reasonably assigned by ANL staff, they have a large impact on the estimated risks. To be consistent with the ER and SPD EIS, the same values, if deemed reasonable, should also be used in the MOX FFF EIS.
    a. External dose rate at 1 m from the side of the transport vehicle for each of the UF_6, UO_2, and fresh MOX fuel assembly shipments.
    b. Package size (length) used in RADTRAN for each of the UF_6, UO_2, fresh MOX fuel assembly, and spent fuel (SNF) shipments.

55. Appendix E, Transportation Risk Assessment, and Section E.5, Representative Routes, Parameters, and Assumptions. Provide the complete radionuclide inventory (Ci per isotope) for each type of shipment (UF_6, UO_2, fresh MOX fuel assembly, and SNF).

56. Appendix E, Transportation Risk Assessment, and Section E.3.1, Uranium Hexafluoride Packaging. Transportation of depleted UF_6 is stated to occur using Model 30B cylinders in overpacks. The bulk of the depleted UF_6 stored at the Portsmouth Gaseous Diffusion Plant site is in 14-ton (48 inch diameter) cylinders, not the smaller 30B (30 inch diameter) cylinders. Since the conversion facility is not designed to accommodate the larger 14 ton cylinders, the 30B cylinders must be used and transfer of the UF_6 from the 14 ton cylinders must be performed before transport. Describe the arrangements that have been made for this transfer to be accomplished.

57. Appendix E, Transportation Risk Assessment, Section E.2.3.1, Transportation Modes and Section E.3 Packaging and Representative Shipment Configurations. All shipments are assumed to occur using truck transport. However, SRS and both the McGuire and Catawba reactors have direct rail access and the depleted UF_6 storage locations and potential UF6-> UO2 conversion facility location have direct or nearby access to rail transport. Should rail transport of the UF_6 and UO_2 be considered as well as truck transport? If there is a rail alternative to the SafeGuards Transporter, should rail transport of the fresh MOX fuel be considered.

58. Appendix F, Section F.1.4, Dispersion Modeling. Evaluate whether inventories of soluble chemical compounds of plutonium (such as plutonium nitrate) would result in the bounding accident scenarios. The doses from soluble plutonium are generally more limiting than doses from insoluble forms.

59. Appendix F, Section F.1.6, Likelihood of Fatal Cancer. Section F.1.6 describes a bounding consequence assessment in which the respirable release fraction (ARF x RF) is $6x10^{-4}$. However, the reference for this value (NUREG/CR-6410, Nuclear Fuel Cycle Facility Accident Analysis Handbook) cites an ARF = $6x10^{-3}$ and an RF = 0.01 for solid, noncombustible powders exposed to thermal stress (i.e., an ARF x RF = $6x10^{-5}$). Clarify the choice of $6x10^{-4}$ as the respirable release fraction (ARF X RF) for the bounding accident consequence assessment in Section F.1.6.

60. Appendix F, Sections F.5 and F.6. In the ER, the ventilation filtration system is assumed to operate and mitigate releases of radioactive material following accidents. The ER states that the leak path factor for two banks of HEPA filters is assumed to be 1E-04. The basis for this assumption is not presented. NRC guidance in “Nuclear Fuel Cycle Facility Accident Analysis Handbook,” NUREG/CR-6410, recommends that removal efficiencies of 99 percent to 95 percent be used of a series of HEPA filters that are not protected by prefilters, sprinklers, and demisters under severe accident conditions. Justify the use of a leak path factor of 1E-04 for ventilation filtration system under accident conditions.