

March 27, 2009

Mr. Dealis W. Gwyn, Licensing Manager
Shaw AREVA MOX Services
P.O. Box 7097
Aiken, SC 29804-7097

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING THE REVIEW
OF THE EMERGENCY PLAN INFORMATION IN THE LICENSE APPLICATION
FOR THE MIXED OXIDE FUEL FABRICATION FACILITY

Dear Mr. Gwyn:

We have reviewed the emergency plan (EP) information in your license application submittal, dated November 17, 2006, and as revised on December 17, 2007. The submittal requests a license to possess and use special nuclear, source, and by-product material in the Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF). The MFFF, which is to be located on the U.S. Department of Energy's (DOE's) Savannah River Site in Aiken, South Carolina, will process and fabricate MOX fuel for use in commercial nuclear power plants as part of the DOE's plutonium disposition program.

We have enclosed a list of additional information that is needed by the staff in order to complete the review of the EP regulatory requirements for the MFFF. Please provide us with a response describing how our questions were addressed and any other changes to licensing documents that were necessary to incorporate the response. The response should be provided within 90 days of the date of this letter.

In accordance to the Title 10 *Code of Federal Regulations* 2.390 of the U.S. Nuclear Regulatory Commission's (NRC's) "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

D. Gwyn

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Please contact me at (301) 492-3130 or Kevin.Morrissey@nrc.gov, if you have any questions.

Sincerely,

/RA/

Kevin Morrissey, Project Manager
Special Projects and Technical
Support Directorate
Mixed Oxide and Uranium
Deconversion Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket: 70-3098

Enclosure: As stated

cc w/enclosure :

S. Glenn NNSA/SRS
J. Olencz, DOE
S. Jenkins, SC Dept. of HEC
D. Curran, Esq., NWS

A.J. Eggenberger, DNFSB
L. Zeller, BREDL
G. Carroll, NWS
D. Silverman, Esq.

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**Mixed Oxide Fuel Fabrication Facility
Requests for Additional Information
Emergency Plan**

The applicant seeks to meet the emergency preparedness requirements of Title 10 *Code of Federal Regulations* (10 CFR) 70.22(i) by providing an emergency evaluation (EE) which demonstrates compliance with the dose and chemical exposure limits to a member of the public offsite, rather than submitting an emergency plan (EP). In order to submit an EE rather than EP, an applicant must demonstrate: 1) the release of radioactive materials and exposure cannot result in a dose of 1 rem; or 2) the intake of 2 milligrams of soluble uranium to a member of the public offsite.

Emergency Plan – 1

The fourth paragraph of the introduction section of the EE (page 3) contains the following statement, “[i]t is based on exposure to the Individual Outside the Controlled Area Boundary (IOC), which is a more conservative assumption than the dose to ‘a member of the public offsite.’” This reference to an IOC is not well defined. 10 CFR 70.22(i)(1)(i) states that the EE must show that the maximum dose to a member of the public offsite would not exceed specified limits.

- A. Consistent with 10 CFR 70.22(i)(1)(i), define in the EE the boundary which demarcates a member of the public offsite. Note that 70.22(i)(1)(i) boundary is not necessarily identical to the integrated safety analysis (ISA) boundary. Provide sufficient basis for the onsite/offsite boundary in the revised EE so that there is a clear distinction between an individual who is onsite versus a member of the public offsite.
- B. Consistent with the acceptance criteria in NUREG 1718 Section 14.4.3.1.4.I, specify that the boundary for a member of the public offsite is at the facility boundary or justify that the boundary is equivalent.
- C. Explain the controls (such as a fence) that exist at this boundary such that a member of the public is prevented from entering onsite without emergency preparedness training.
- D. Consistent with 10 CFR 70.22(a)(6) and 10 CFR 70.64(a)(6) describe the emergency preparedness training for individuals onsite to support proper evacuation.
- E. Consistent with U.S. Nuclear Regulatory Commission (NRC) emergency preparedness guidance, NUREG 1140, and NUREG 0640, discuss how you ensure that the onsite/offsite boundary is defined consistent with the regulatory use of the term “offsite,” i.e., the location where offsite response organizations such as local government authorities (fire and police generally) would have authority and capability to take immediate predetermined actions based on recommendations from the facility licensee (NUREG 0640 rev.1 page 26-27) in the event of an emergency.
- F. Consistent with acceptance criteria in NUREG 1718 Section 14.4.3.1.4.F, provide an estimate of the distance to the nearest member of the public offsite.

Emergency Plan – 2

According to §70.22(i)(1)(i), the EE must address conditions which result in “a release of radioactive materials,” i.e., accident scenarios. The ISA summary identifies multiple, credible accident scenarios which have the potential to exceed the EE threshold when unmitigated. Only

Enclosure

two of these accident scenarios, 1) the release of soluble uranium from large storage drums in the Secured Warehouse Building, and 2) the release and exposure due to a criticality event, are addressed in the EE. The applicant's statement that these two accident scenarios are bounding needs additional justification since many of the accidents identified in the ISA summary are independent. In addition, §70.22(i)(2)(i)-(vii) provide a list of factors which may be used to support the EE. The applicant's references to mitigated and unmitigated accidents in the EE appear to rely on §70.61 items relied on for safety (IROFS) to support the EE rather than the §70.22(i)(2)(i)-(vii) factors. Mitigating IROFS should not be used as a basis to remove credible accident scenarios from the EE unless they meet the criteria listed in §70.22(i)(2)(i)-(vii) and demonstrate compliance with the EE threshold (5 times lower than the ISA threshold).

- A. Discuss whether the scenarios addressed in the EE are bounding for all credible accidents identified in the ISA including the independent accidents identified in the ISA summary with high or intermediate consequences. When appropriate, use the factors in §70.22(i)(2)(i)-(vii) to support this discussion.
- B. NUREG 1140 Section 2.2.6.2 identifies the most probable events at a plutonium (Pu) facility as long-term pulsating criticalities, explosions, and fires. Consistent with §70.22(i)(1)(i), §70.22(i)(2)(i)-(vii), NUREG 1718 Section 14.4.3.1.2, and NUREG 1140, demonstrate that these accidents will not exceed the EE threshold or justify their exclusion from the evaluation. Consistent with NUREG 1718 Section 14.4.3.1.2 and using the factors in §70.22(i)(2)(i)-(vii), address accident types listed in the ISA summary including: loss of confinement, fire, load handling, explosion, criticality, natural phenomenon, external man-made event, external radiation exposure, and chemical release.
- C. Clarify that the use of the term "mitigated" in Sections 3.2.1 and 3.2.4 relies on the factors listed §70.22(i)(2)(i)-(vii) and justify use of §70.22(i)(2)(vii) "other factors." For example, the EE Section 3.2.4, "Radiological Calculation," indicates mitigated consequences are used to assign a leak path factor of zero.
- D. Consistent with §70.22(i)(2)(vi), describe the controls that will be in place to ensure assumptions made in the accident analysis remain valid during the lifetime of the facility (e.g., tank inventory of 66.3 kg Pu for criticality events, 34 drums of uranyl nitrate for chemical events).

Emergency Plan – 3

NUREG-1718 Sections 14.4.3.1.1 – 14.4.3.1.4 summarize the minimum set of information needed to comply with §70.22(i)(1)(i) and §70.64(a)(6). The "detection of accidents information" defined in NUREG-1718 Section 14.4.3.1.3 appears to be missing from the EE.

Consistent with 10 CFR 70.22(i)(1)(i), §70.64(a)(6), and NUREG-1718 Section 14.4.3.1.1 – 14.4.3.1.4, for each accident type, provide the detection of accidents information including: means of detecting the accident, means of detecting any release of radioactive or other hazardous material, means of alerting the operating staff, and anticipated response of the operating staff. This information may be used in conjunction with §70.22(i)(2)(vi) as supporting information for the EE.

Emergency Plan – 4

Section 5.1 of the ISA Summary states in the first paragraph that, "[e]vents with unmitigated

consequences satisfying the low dose limits established by 10 CFR 70.61 (i.e., less than intermediate)...are dispositioned and not analyzed further.” These unmitigated, low consequence events do not appear to have been addressed in the EE. Although the ISA Summary Table 5.3.2-2 indicates the doses for these events are below 1 rem to the IOC, there is no corresponding reference in the EE nor are they addressed in the EE. Accidents which meet the ISA summary thresholds in §70.61 do not necessarily fall below the EE thresholds in §70.22(i). Also, there is no corresponding chemical evaluation for soluble uranium for these events.

Consideration of low consequence events from the ISA summary in the EE is consistent with 70.22(i)(1)(i) and NUREG-1718 Section 14.4.3.1.2. Clarify that unmitigated, low consequence events identified in the ISA Summary Section 5.3.2 have been evaluated to meet the thresholds listed in §70.22(i)(1)(i).

Emergency Plan – 5

Part 70 contains two requirements for emergency commitments, 10 CFR 70.22(i) and 10 CFR 70.64(a)(6). 10 CFR 70.64(a)(6) requires an applicant to provide emergency capability to maintain control of licensed material and chemical products, evacuation of personnel, and onsite emergency facilities that support the use of available offsite services. §70.64(a) requires maintenance of these criteria. In addition, §70.22(a)(7)-(8) require the applicant to have equipment and procedures to protect health and minimize danger to life or property. In addition, NUREG-1718, Section 14.1, indicates that the applicant should describe how the emergency management facilities and procedures will coexist and interact with the U.S. Department of Energy's (DOE) emergency planning requirements. This information has not been provided in the EE.

Consistent with §70.22(a)(7)-(8), §70.64(a)(6), and NUREG-1718, Section 14.1, discuss how the emergency management facilities and procedures comply with NRC regulations while coexisting with DOE's emergency planning requirements. Include a discussion of memorandums of agreement/understanding which implement and coordinate the facility's response for both onsite and offsite emergencies.