Enclosure 4

Consolidated May 10, 2017 RAI Responses

REQUEST FOR ADDITIONAL INFORMATION	REG BASIS	WESTINGHOUSE RESPONSE
RAI 1. Section 12.2.5 of the license application dated December 17, 2015, is an exemption from criticality monitoring system requirements under the following conditions: • Remote areas • Low concentration storage areas • Storage areas in which the only special nuclear material (SNM) present is contained in authorized packages as defined in Title 10 of the Code of Federal Regulations (10 CFR) Part 173. 1. Remote Areas. The term 'remote' is subjective. Describe and justify in precise terms the criteria used to determine "remote" in requiring that each office, conference room, laboratory, counting room, or machine shop must be distant from operations with SNM. Section 12.2.5 of the license application dated December 17, 2015, states an exemption from criticality monitoring system requirements. The individual container area limit of 1000 g ^{235}U (for uranium enriched to no more than 5 wt% ^{235}U) is sufficient to ensure subcriticality. However, neutron interaction between neighboring areas, as well as the potential for exceeding administrative mass limits in an individual area, should be addressed. This information is needed to ensure that nuclear processes will be subcritical under normal and credible abnormal conditions with use of an acceptable margin. Regulatory Requirement. Paragraph 70.61(d) of 10 CFR	10 CFR 173 10 CFR 70.61(d)	No change made to the License Application. Remote areas are determined based on ANSI/ANS-8.3-1997; R2003 definition of "excessive radiation dose", which is 12 rad of combined neutron and gamma radiation. That is, the maximum acceptable value for absorbed dose of personnel at a remote area boundary is 12 rad. Remote areas are neutronically isolated from neighboring areas to ensure that mass limits in an individual area are not exceeded.

states that the risk of nuclear criticality accidents must be limited by assuring that under normal and credible abnormal conditions, all nuclear processes are subcritical, including use of an approved margin of subcriticality for safety. Preventive controls and measures must be the primary means of protection against nuclear criticality accidents.		
RAI 2. Low concentration storage areas. Provide the technical basis for the limit for low concentration storage areas, including 350 g ^{235}U per package and no more than 5 g ^{235}U in any 10 liters of package, or no more than 50 g ^{235}U per container and no more than an average of 5 g ^{235}U per 10 liters of package. Section 12.2.5 of the license application dated December 17, 2015, states an exemption from criticality monitoring system requirements. If the effective average concentration is based on the "infinite sea" limit of 11.6 g U/l, describe how conditions of homogeneity will be ensured valid. Justify the neutron isolation criterion in the bullet below this paragraph, given that it is stated as applying to isolation between areas and not individual packages. This information is needed to ensure that nuclear processes will be subcritical under normal and credible abnormal conditions with use of an acceptable margin Regulatory Requirement. Paragraph 70.61(d) of 10 CFR states that the risk of nuclear criticality accidents must be limited by assuring that under normal and credible abnormal conditions, all nuclear processes are subcritical, including use of an approved margin of subcriticality for safety. Preventive controls and measures must be the primary means of protection against nuclear criticality accidents.	10 CFR 70.61(d)	No change made to the License Application. Low concentration storage areas are based on the notion that a concentration of 11.6 grams/liter ^{235}U is considered subcritical (regardless of enrichment) as recognized by ANSI/ANS-8.1-1998. Thus, if under all credible process upsets, the concentration would always be less than 11.6 grams per liter ^{235}U, then the operation would be considered subcritical. Therefore, there is no need for a CAAS. Each low concentration storage area is neutronically isolated from other storage areas containing special nuclear material to ensure that each low concentration storage area does not exceed 11.6 grams/liter ^{235}U as a whole.

RAI 3. Part 173 of 10 CFR storage packages. Provide the specific regulatory citation referring to storage in authorized packages as defined in 10 CFR Part 173, and the technical basis for the conditions in the two bullets following this paragraph. Demonstrate that all assumptions and limitations upon which the stated limits are based are met by complying with the two stated criteria. The criterion in Section 12.2.5 states that criticality monitoring is unnecessary, provided that: • The maximum number of containers permitted in each such area shall be unlimited for low specific activity packages. • The maximum number of packages bearing FISSILE labels stored in any one storage area must be limited so that the total sum of the criticality safety indices in any individual group of such packages does not exceed 100. Groups of such packages must be stored so as to maintain a spacing of at least 6m (20 feet) from all other groups of such packages. This information is needed to ensure that nuclear processes will be subcritical under normal and credible abnormal conditions with use of an acceptable margin. Regulatory Requirement. Paragraph 70.61(d) of 10 CFR states that the risk of nuclear criticality accidents must be limited by assuring that under normal and credible abnormal conditions, all nuclear processes are subcritical, including use of an approved margin of subcriticality for safety. Preventive controls and measures must be the primary means of protection against nuclear criticality accidents.	10 CFR 173	No change made to the License Application. Please note that 10 CFR 173 “storage packages” referred to in the RAI is not the correct standard. More specifically, the first bullet in the license application (referring to an unlimited number of containers being stored if considered low specific activity (LSA) packages) is based on transport requirements per 49 CFR 173.427. LSA material means Class 7 material with limited specific activity which is not fissile material. It is excepted under 49 CFR 173.453. The second bullet is based on 49 CFR 176.704 (the criticality safety index for a package containing fissile material is determined in accordance with the instructions provided in 10 CFR 71.22, 71.23, and 71.59).