

BSC

# Calculation/Analysis Change Notice

1. QA: QA  
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Complete only applicable items.

3. Document Identifier: 000-PSA-MGR0-01300-000-00A <i>JST 2/4/08</i>		4. Rev.: 00A	5. CACN: 001
6. Title: GROA External Dose Rate Calculation			
7. Reason for Change: Provide an additional assumption as Section 3.2.11 in Section 3.2. This additional assumption is needed because the calculation assumes dose rates from SNF/HLW handling facilities are negligible.			
8. Supersedes Change Notice:		<input type="checkbox"/> Yes    If, Yes, CACN No.: _____ <input checked="" type="checkbox"/> No	
9. Change Impact:			
Inputs Changed:		Results Impacted:	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Assumptions Changed:		Design Impacted:	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
10. Description of Change: 3.2.11 Direct Radiation from SNF/HLW Handling Facilities			
<p>Assumption: It is assumed that the contribution to on-site public direct radiation exposures from radiation sources in the SNF/HLW handling facilities (including the CRCF, IHF, RF, and WHF) are negligible, compared to the contributions from the Aging Facility and the truck cask and railcar cask buffer areas.</p> <p>Rationale: The dose rates exterior to SNF/HLW handling facilities are required to be less than or equal to 0.25 mrem/hr (Reference 2.2.18, p. 182). Distance attenuation between the handling facilities and on-site public areas further reduces these dose rates. From Reference 2.2.19, the on-site public areas (areas outside the security fence) are over 200 m from the handling facilities. If each of these facilities were treated as a radiation source similar to the TN-32 cask, the dose rates surrounding these facilities drop off approximately 3000 times to less than 8.3E-5 mrem/hr at 200 m (Table 3, column III, <math>1.88E+1/6.32E-3 \approx 3000</math>). For 2000 working hours per year, the annual dose at 200 m from any one of these facilities is less than 0.17 mrem. Because the radiation sources inside the facilities would not be continuously present, the actual dose would be even lower.</p> <p>In comparison, the maximum surface dose rate of any transportation cask in the buffer areas is 200 mrem/hr (10 CFR 71.47), which is 800 times larger than 0.25 mrem/hr; the maximum surface dose rate of an aging overpack is 40 mrem/hr (Reference 2.2.18, p. 183) which is 160 times greater than 0.25 mrem/hr. Given that there are only 6 SNF/HLW process facilities (3 CRCFs, 1 IHF, 1 RF, and 1 WHF), compared to 5 truck and 25 rail casks in the buffer areas and thousands of aging overpacks in the Aging Facility, the contribution to direct radiation dose rates at on-site public locations (areas outside the security fence) from the SNF/HLW handling facilities is negligible.</p> <p>Usage: This assumption is used in the entire calculation.</p> <p>References: 2.2.18 BSC 2007. Project Design Criteria Document. 000-3DR-MGR0-00100-000-007. Las Vegas, Nevada: Bechtel SAIC Company. ACC: ENG.20071016.0005; ENG.20071108.0001; ENG.20071220.0003; ENG.20080107.0001; ENG.20080107.0002; ENG.20080107.0016; ENG.20080107.0017. 2.2.19 BSC 2007. Geologic Repository Operations Area North Portal Site Plan. 100-C00-MGR0-00501-000-00E. Las Vegas, Nevada: Bechtel SAIC Company. ACC: ENG.20071116.0004.</p>			
<b>11. REVIEWS AND APPROVAL</b>			
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11d. DEM:	M. Wisenburg	<i>M. Wisenburg</i>	1/30/2008
11e. Design Authority:	B. Rusinko	<i>B. Rusinko</i>	1/30/08