



**UTAH DIVISION OF RADIATION CONTROL  
DENISON MINES (USA) CORPORATION  
WHITE MESA MILL  
BLANDING, UTAH**

**CELL 4B DESIGN REPORT**

**INTERROGATORIES – ROUND THREE**



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### **Acronyms and Abbreviations**

CFR	Code of Federal Regulations
DRC	Division of Radiation Control (Utah)
DUSA	Denison Mines (USA) Corporation
IPS	inches per second
PMP	Probable Maximum Precipitation
PPV	Peak particle velocity
URCR	Utah Radiation Control Rules

**INTERROGATORY DUSA R313-24-4-01/03: DIKE INTEGRITY**

**PRELIMINARY FINDING:**

*Refer to R313-24-4, 10 CFR 40 Appendix A, Criterion 5A(5): When dikes are used to form the surface impoundment, the dikes must be designed, constructed, and maintained with sufficient structural integrity to prevent massive failure of the dikes. In ensuring structural integrity, it must not be presumed that the liner system will function without leakage during the active life of the impoundment.*

*Refer to R313-24-4, 10 CFR 40 Appendix A, Criterion 4 (e): The impoundment may not be located near a capable fault that could cause a maximum credible earthquake larger than that which the impoundment could reasonably be expected to withstand. As used in this criterion, the term “capable fault” has the same meaning as defined in section III(g) of Appendix A of 10 CFR Part 100. The term “maximum credible earthquake” means that earthquake which would cause the maximum vibratory ground motion based upon an evaluation of earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material.*

**INTERROGATORY STATEMENT:**

*The issue of dike integrity has been satisfactorily addressed in all aspects, except for the concept of Peak Particle Velocity (PPV) related to construction blasting and how PPV limitations are incorporated into the project Technical Specifications and the Blast Plan.*

*Please provide a revised Technical Specification including the limits to be used for PPV during blasting. Please require that PPV limitation specifications be applied in the Blast Plan that is required under Technical Specification Section 02200, Articles 1.05B, 3.03B5, and 3.03B6.*

*Please provide a Blast Plan for Utah Division of Radiation Control (DRC) review.*

**BASIS FOR INTERROGATORY:**

*The Round 2 Interrogatory Response for the Cell 4B Design Report received from DUSA (letter dated August 7, 2009) suggested that a more conservative approach than that which was described in the original Cell 4B Design Report would be used to design the blasting work. The response cited past construction practices as well as an alternate reference applicable to open mining in developing the basis for the revised approach.*

*However, DUSA suggested in its response that the more conservative PPV limitations were now included in the revised Technical Specifications. These limitations do not appear to have been included in the Technical Specifications as stated.*

*Regarding the inquiry of proposed blasting PPV limitations, DUSA referenced a document “The Influence and Evaluation of Blasting on Stability” presented in “Stability in Open Mining”, 1971 and identified a more conservative PPV range of between 2 and 4 inches per second (IPS). Further, DUSA specified in its response that a PPV of 2 IPS would be utilized when blasting within 100 ft from the top of the existing berms. Please*

*include these limitations in the Technical Specifications for the Blast Plan requirements specified under Section 02200, Articles 1.05B, 3.03B5, and 3.03B6.*

*DUSA indicated in its response that the entire cell floor will require rock removal, which involves a significant amount of blasting to achieve design subgrades. Therefore, the Blast Plan document that is required in the Technical Specifications should be considered a critical component of the design. This document should be subject to review and comment prior to issuing the construction permit. Submission, review, and approval of the Blast Plan must be completed prior to blasting at the site.*

**REFERENCES:**

*“Cell 4B Design Report, White Mesa Mill, Blanding, Utah” by GeoSyntec Consultants, December 2007. Prepared for International Uranium (USA) Corporation.*

*“Cell 4B Lining System Design Report, Response to Division of Radiation Control (“DRC”) Request for Additional Information – Round 1 Interrogatory, Cell 4B Design”, Letter dated January 9, 2009, from Harold R. Roberts of Denison Mines (USA) Corp., to Dane L. Finerfrock, Division of Radiation Control.*

*Letter to Dane L. Finerfrock, “ Re: Cell 4B Lining System Design Report, Response to DRC Request for Additional Information – Round 2 Interrogatory, Cell 4B Design”, (including attachments) dated August 7, 2009.*

**INTERROGATORY DUSA R313-24-4-03/03: SPILLWAY CAPACITY  
DESIGN/CALCULATION AND SURFACE WATER RUNOFF**

**PRELIMINARY FINDING:**

*Refer to R313-24-4, 10 CFR 40 Appendix A, Criterion 5A(5): When dikes are used to form the surface impoundment, the dikes must be designed, constructed, and maintained with sufficient structural integrity to prevent massive failure of the dikes.*

*Refer to R313-24-4, 10 CFR Appendix A, Criterion 5A(4): A surface impoundment must be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations, overflowing, wind and wave actions, rainfall, or run-on.*

*Refer to R313-24-4, 10 CFR Appendix A, Criterion 4 (d): In addition to providing stability of the impoundment system itself, overall stability, erosion potential, and geomorphology of surrounding terrain must be evaluated to assure that there are not ongoing or potential processes, such as gully erosion, which would lead to impoundment instability.*

**INTERROGATORY STATEMENT:**

*Please provide an estimation of the Probable Maximum Precipitation (PMP) event for the site, as well as justification for the use of the 6 hour PMP duration.*

*Please identify, specifically, the location for compliance monitoring and all equipment, procedures, and a monitoring frequency to be used to monitor compliance at Cell 4B.*

**BASIS FOR INTERROGATORY:**

*DUSA provided an estimate of the freeboard necessary in Cell 4B to prevent discharge to surface water under PMP conditions (letter dated August 7, 2009). However, DUSA referred to a document entitled "White Mesa Mill Standard Operating Procedures Manual, Book II: Environmental Protection Manual, Section 3.1", which in turn references a "January 10, 1990 Drainage Report for Cells 1 and 4A" for the PMP estimate. This document could not be found for review. The process that was utilized to estimate the PMP needs to be reviewed, the derivation of the PMP duration of 6 hours needs to be reviewed, and the 6-hour duration needs to be verified as being appropriate for the design of Cell 4B. Ultimately, the source of the PMP estimate (10 inches in 6 hours) needs to be reviewed, or the PMP estimate needs to be recalculated.*

*DUSA has provided basic information regarding the compliance monitoring location for the Cell 4B freeboard measurements as the maximum contour elevation enclosing the perimeter of Cell 4B spillway at elevation 5,596 ft above Mean Sea Level. This information is helpful to understand the elevation of the freeboard limits, however the location of the measurement point and the measurement frequency have not been defined as requested. Equipment and procedures to be used for compliance monitoring must also be identified.*

**REFERENCES:**

*“Cell 4B Design Report, White Mesa Mill, Blanding, Utah” by GeoSyntec Consultants, December 2007. Prepared for International Uranium (USA) Corporation.*

*“Cell 4B Lining System Design Report, Response to Division of Radiation Control (“DRC”) Request for Additional Information – Round 1 Interrogatory, Cell 4B Design”, Letter dated January 9, 2009, from Harold R. Roberts of Denison Mines (USA) Corp., to Dane L. Finerfrock, Division of Radiation Control.*

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