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from: Ross Kirkes, 6821 (MS-1395) *RL*

subject: BOREHOLE PLUGGING PROBABILITIES TO BE USED IN COMPLIANCE  
RECERTIFICATION APPLICATION CALCULATIONS

This memorandum presents the borehole plug type probabilities to be used in the Compliance Recertification Application (CRA) calculations. These probabilities were derived from the most recent plugging data submitted by the Delaware Basin Monitoring Program (DBMP) (ERMS #530845). The DBMP data for borehole plugging shows six typical plugging configurations used in the vicinity of the WIPP. These six configurations have not changed from those reported in 1996 for use in the Compliance Certification Application (CCA), although their respective frequencies have varied slightly.

In the CCA, performance assessment modeled only three plugging configurations that conceptually represent the important features of the six plugging configurations identified by the DBMP. An explanation of the plugging configuration grouping can be found in the CCA Section 6.4.7.2, and CCA Appendix MASS, Section 16.3.3. The rationale and grouping process have not changed for the CRA. Therefore, this memo presents the new DBMP borehole plugging frequencies for the six borehole plug types, and consolidates the information to arrive at effective frequencies for the three plug types to be modeled in performance assessment and used in the CRA.

Table 1 below shows the plugging types and frequencies as reported by the DBMP (ERMS #530845):

Table 1: CCA and CRA DBMP Plugging Data						
TYPE	1996	CCA FREQUENCY	2003	TOTAL	CRA FREQUENCY	CHANGE
I	61	32.5%	55	116	34.1%	+1.6%
II	37	20.0%	23	60	17.7%	-2.3%
III	64	34.0%	47	111	32.6%	-1.4%
IV	19	10.0%	19	38	11.2%	+1.2%
V	3	1.5%	7	10	2.9%	-1.4%
VI	4	2.0%	1	5	1.5%	-0.5%
<b>TOTAL</b>	<b>188</b>	<b>100.0%</b>	<b>152</b>	<b>340</b>	<b>100.0%</b>	

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The data above must be grouped to arrive at effective conceptual plug frequencies. This grouping is consistent with the method used for the CCA.

The continuous plug through the Salado and Castille formations is unique and does not combine any other configurations in the derivation of the frequency. This plug type is represented as Plug Type VI in Table 1. Therefore, the frequency of the continuous concrete plug through the Salado and Castille formations is 0.015. See CCA Section 6.4.7.2.1 for a complete conceptual description of this configuration.

The two-plug configuration combines plug types I, III, and V from Table 1 and results in an effective frequency of 0.696. See CCA Section 6.4.7.2.2 for a complete conceptual description of this configuration.

The three-plug configuration combines plug types II and IV from Table 1 and results in an effective frequency of 0.289. See CCA Section 6.4.7.2.3 for a complete conceptual description of this configuration.

For illustrative purposes, Table 2 shows the CCA frequencies for the three conceptual plugging configurations as well as the new values to be used in the CRA calculations.

Plug Type	CCA Frequency	CRA Frequency	Change
Continuous Plug Configuration	0.02	0.015	- 0.005
Two Plug Configuration	0.68	0.696	+ 0.016
Three Plug Configuration	0.30	0.289	- 0.011

For consistency, these new frequencies should be represented in the CRA Chapter 6.4.12.7.

Copy to (w/enclosure):

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