



SRNL-ESB-2008-00017

April 25, 2008

To: Jeffrey Newman, 766-H

From: Kenneth Dixon, 773-42A

**Re: Video Survey of Saltstone Vault 4, Cell G**

In May 2006, SRNL conducted a video survey of the waste in Saltstone Vault #4, Cell G (Figure 1). The goal of this survey was to collect video with sufficient resolution to qualitatively assess the extent of any cracking observed in the saltstone surface. A remote controlled Inuktun Spectrum 90 pan, tilt and zoom (PTZ) camera was lowered into Cell G through a twelve inch diameter pipe vent located near the north corner of Vault #4 (Figure 2). The camera had 40x zoom capability with both flood and spot lighting.

A five minute long video was made of the interior of Vault #4, Cell G. From this video, several still images were captured and are presented in Figures 3 through 5. These images provide a basis to qualitatively assess the surface condition of the saltstone waste including any observed cracking. Figure 3a provides a general view of the saltstone waste surface as seen from the north corner of Cell G. Figure 3b provides a close-up view of the saltstone waste surface. The surface of the saltstone waste appears to be relatively free of large scale cracking. Figure 4a shows a large aperture crack emanating from the north corner of Cell G. This crack propagates out from the corner at approximately a 45 degree angle and appears to extend entirely across the cell. The smaller aperture crack in Figure 4b is oriented perpendicular to the crack in Figure 4a and appears to extend a short distance from the main crack. Figure 5a shows the north corner of Cell G. This image shows that the crack observed in Figure 4a extends to the corner of the cell. The north wall of Cell G is shown in Figure 5b. There is no obvious separation between the vault wall and saltstone associated with shrinkage of the saltstone grout (Figure 5a and b).

The results of the video survey show that there is some cracking in the saltstone grout, but it is not considered to be extensive. The survey was limited by the zoom capability of the PTZ camera and the view accessible from the north corner of Cell G. It is possible to obtain better quality video and still images over a larger area by using a remote controlled vehicle equipped with a high resolution camera. The surface of the saltstone grout appears to be smooth enough to accommodate a rubber tracked vehicle for this type of survey. Access to the saltstone waste surface could be obtained via an access point similar to the one shown in Figure 6. It should be noted that any vehicle placed on the surface of the saltstone grout would be considered contaminated and would not be released for general non-radioactive use.

**We Put Science To Work™**

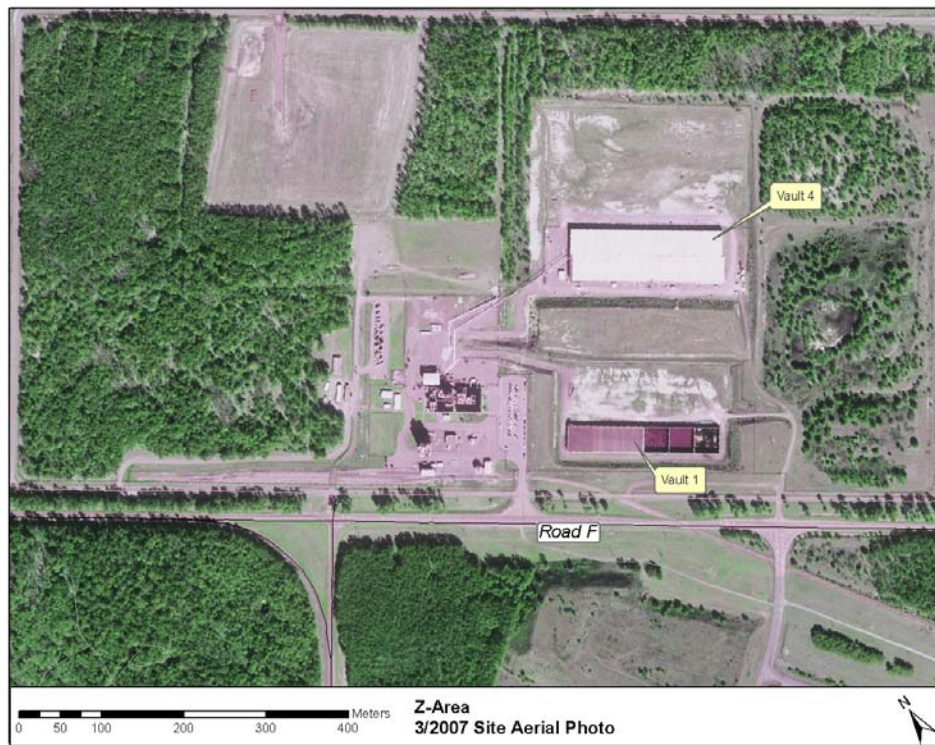
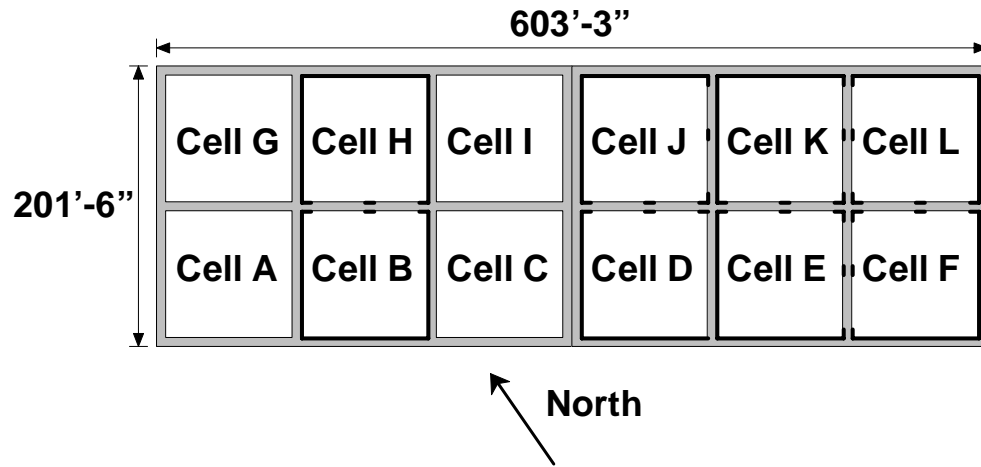


Figure 1. Layout of Saltstone Vault 4 showing Cell G where the video survey was performed.

**We Put Science To Work™**



Figure 2. Twelve inch diameter pipe vent located near the north corner of Saltstone Vault #4 Cell G. The pipe elbow was removed to provide an access point for lowering the remote controlled camera.



Figure 3. General view (a) and close-up view (b) of saltstone waste surface as seen from the north corner of Cell G.

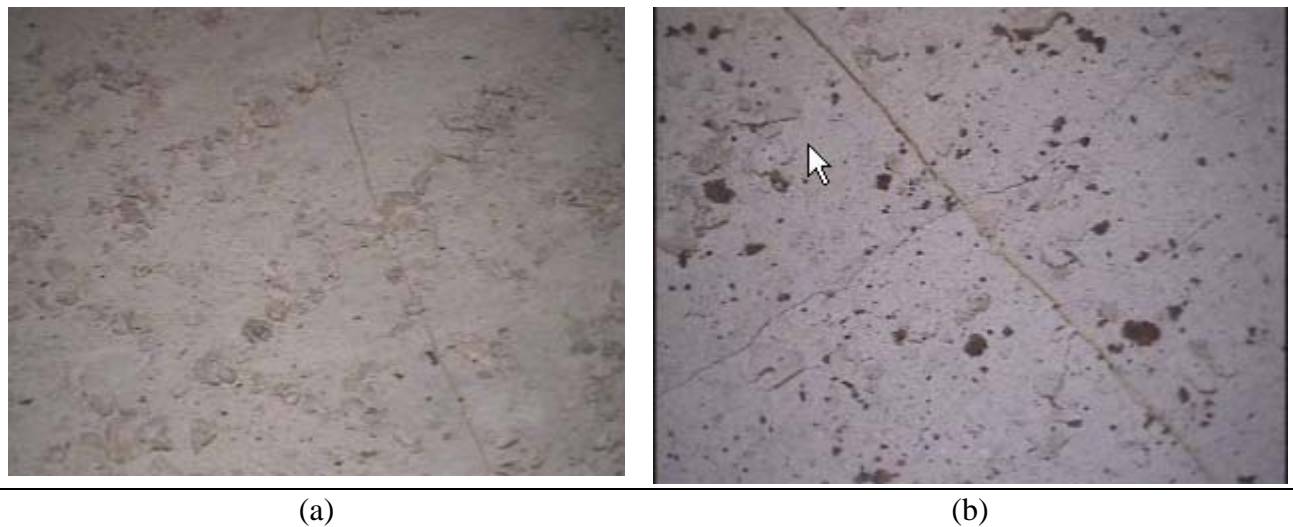


Figure 4. Crack in saltstone waste surface emanating from the north corner of Cell G (a) and smaller aperture crack oriented perpendicular to it (b). The larger aperture crack propagates out from the corner at approximately a 45 degree angle and appears to extend entirely across the cell. The smaller aperture crack appears to only extend a short distance from the main crack.



Figure 5. Close-up view of the north corner (a) and east wall of Cell G (b). There appears to be no separation of the saltstone from the vault wall along the edge of the walls in Cell G.



Figure 6. Access ports that could be used to lower a remote controlled vehicle for closer inspection of cracking in the saltstone surface.

cc: Mark Phifer, 773-42-A  
Heather Burns, 999-W  
Kent Rosenberger, 766-H  
Jack Mayer, 773-42A

**We Put Science To Work™**